



EUROPEAN CENTRAL BANK

EUROSYSTEM

THE INTERNATIONAL ROLE OF THE EURO JULY 2010

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JULY 2010

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ABBREVIATIONS

COUNTRIES

AL	Albania	KZ	Kazakhstan
AT	Austria	LT	Lithuania
AU	Australia	LU	Luxembourg
BE	Belgium	LV	Latvia
BG	Bulgaria	LT	Lithuania
CA	Canada	MD	Moldova
CH	Switzerland	MY	Malaysia
CL	Chile	MK	Macedonia, former Yugoslav Republic of
CY	Cyprus		
CZ	Czech Republic	MT	Malta
DE	Germany	MX	Mexico
DK	Denmark	NL	Netherlands
DZ	Algeria	NO	Norway
EE	Estonia	PE	Peru
ES	Spain	PL	Poland
FI	Finland	PT	Portugal
FR	France	RO	Romania
GE	Georgia	RU	Russia
GR	Greece	SE	Sweden
HK	Hong Kong	SI	Slovenia
HR	Croatia	SK	Slovakia
HU	Hungary	SR	Serbia
ID	Indonesia	TH	Thailand
IE	Ireland	TR	Turkey
IL	Israel	UA	Ukraine
IN	India	UK	United Kingdom
IT	Italy	US	United States
JP	Japan	UY	Uruguay
KR	Korea, Republic of		

OTHERS

BIS	Bank for International Settlements
CDS	Credit default swap
CLS	Continuous Linked Settlement
COFER	Currency Composition of Official Foreign Exchange Reserves
EA	Euro area
EBS	Electronic Broking Services
ECB	European Central Bank
ESCB	European System of Central Banks
EU	European Union
IMF	International Monetary Fund
MFI	Monetary financial institution
OeNB	Oesterreichische Nationalbank
OTC	Over the counter

FOREWORD

This is the ninth issue of the ECB's annual review of the international role of the euro. It reviews developments during 2009 in the use of the euro by non-euro area residents in global markets and in individual countries outside the euro area. The review presents the main findings of the Eurosystem's analytical work on recent developments in as well as the main drivers and the implications of the euro's international role.

The main finding of the review is that the international role of the euro displayed a high degree of stability throughout 2009. Although the global financial crisis had a very profound impact on the overall levels of activity in the market segments discussed in the review, the relative use of major international currencies was broadly unchanged across markets over the review period. The observed stability of currency preferences is fully in line with the conclusions of earlier reviews. The review once again finds evidence of the strong regional character of the euro's international role, as the

euro tends to be more widely used in countries and regions neighbouring the euro area.

Developments in the international role of the euro are primarily the outcome of market forces. The ECB will continue its monitoring of the international role of the euro and its dissemination of regular information to the public.

Jean-Claude Trichet

A handwritten signature in blue ink, appearing to read 'J. Trichet', with a stylized flourish on the left side.

President of the European Central Bank



I INTRODUCTION

This review presents and analyses developments in the international role of the euro during 2009. It provides information to the public on a broad set of timely indicators and statistics, covering various segments of markets for goods and services and financial markets. It examines, in particular, the role of the euro in global markets as well as the use of the euro in individual countries outside the euro area, using available information up to December 2009. The main focus is on the relative importance of the euro in transactions and outstanding amounts in these various market segments.

Compared with earlier issues, the review has been streamlined and some of the regular sections have been shortened to facilitate reading. At the same time, the review contains three special features that present analytical work on the international role of the euro. The main special feature focuses on the implications of international currency usage and provides a detailed analysis of the returns on international assets and liabilities of issuers of international currencies. Two shorter special features discuss the construction of a summary indicator of the international role of the euro and review the degree of internationalisation of major currencies.

The review promotes the dissemination of high-quality and timely data on the international role of the euro, for use by researchers and the broader public. It draws on available international statistics, complemented by data compiled by the ECB and the national central banks of the Eurosystem. To the extent possible, the data are harmonised and treated using a consistent methodology. For instance, in order to facilitate comparisons between currencies over time, the review consistently removes exchange rate-related valuation effects by presenting statistical time series at constant exchange rates. To ensure easy public access to the data, a statistical annex provides detailed information and time series for some key data.

The review is structured as follows. Section 2 summarises the main findings. Section 3 examines

the role of the euro in global markets, in particular debt securities markets, international loan and deposit markets, foreign exchange markets, and international trade. Section 4 focuses on the euro's role in countries outside the euro area, covering both official uses as anchor and reserve currency and private uses in cash holdings, bank deposits and bank loans. This section also contains the new results of the survey by the Oesterreichische Nationalbank on the use of the euro in central, eastern and south-eastern Europe. Finally, Section 5 contains the special features of this review.



2 MAIN FINDINGS

DEVELOPMENTS IN THE INTERNATIONAL ROLE OF THE EURO DURING 2009

The year 2009 was characterised by a severe global economic crisis and serious disruptions to global financial markets. The crisis had a profound impact on the market segments examined in this review. The outstanding amount of international debt securities, for instance, reached a trough of USD 9.4 trillion at the end of the first quarter of 2009, down from a peak of USD 10.5 trillion at the end of the second quarter of 2008.¹ In the subsequent quarters of 2009, however, international bond issuance gradually recovered, and the outstanding amount of international bonds in December 2009, at USD 10.3 trillion, was again approaching pre-crisis levels. A similar trend was observed in global foreign exchange reserves, international loan and deposit markets, global foreign exchange markets and global derivatives markets, which all recorded a decline or collapse in activity or amounts outstanding towards the end of 2008 and the first quarter of 2009, followed by a gradual recovery or at least stabilisation towards the end of 2009.

Despite these volatile developments in international markets, currency preferences have been, by and large, unaffected. The share of euro-denominated instruments, in particular,

displayed considerable stability throughout 2009. When measured at constant exchange rates, the share of the euro declined by 1.3 percentage points in the outstanding amount of international debt securities (narrow measure) and by 1.6 percentage points in the outstanding amount of cross-border loans, remained virtually unchanged in foreign exchange transactions and in total cross-border deposits,² and increased by around half a percentage point in global reserve holdings (see Table 1).³ Changes of that order of magnitude are fully in line with normal fluctuations observed in the years prior to the global economic and financial crisis. A summary indicator of the international role of the euro, based on the aggregation of the euro's weight in five market segments, confirms the relative stability of the euro's international role in 2009 (see Section 5.2).

All in all, these findings suggest that any shifts in the international or global role of the euro

- 1 International bonds as defined under the narrow measure used in Section 3.1 of this review, i.e. comprising only international debt security issuance and excluding issuance in domestic currencies.
- 2 Data on the currency composition of foreign exchange markets are based on settlements in the CLS system and discussed in more detail in Section 3.3.
- 3 Data on the currency composition of global reserve holdings do not cover all reserve holders. See Section 4.1 for details.

Table 1 Key data on the international role of the euro

(percentages)	2009 (unless otherwise indicated)	2008 ³⁾ (unless otherwise indicated)
<i>Share of the euro in:</i>		
– Stock of international debt securities (narrow definition) ¹⁾	31.4	32.7
– Stock of cross-border loans ¹⁾	20.3	22.0
– Stock of cross-border deposits ¹⁾	22.0	22.3
– Daily foreign exchange trading (settled by CLS) ²⁾	42.8	42.6
– Settlement/invoicing of goods exports from selected euro area countries to non-euro area countries	11.8 to 97.3	11.5 to 96.5
– Settlement/invoicing of goods imports of selected euro area countries from non-euro area countries	2.5 to 86.3	2.1 to 82.1
– Stock of global foreign exchange reserves ¹⁾	27.3	27.0
Cumulative net shipments of euro banknotes to destinations outside the euro area	€116.5 billion	€114.1 billion

Sources: See the respective sections of this review.

Notes:

1) At constant end-2009 exchange rates.

2) The sum of currency percentage shares reported for foreign exchange markets adds up to 200%, as the two currencies involved in the settlement of one foreign exchange transaction are counted separately.

3) Figures may differ from those presented in the 2009 review owing to data revisions and the recalculation of historical time series at constant end-2009 exchange rates.



as a direct consequence of the crisis cannot be detected during the review period. The observed stability of currency preferences is fully in line with the conclusions of earlier reviews, and can be seen as confirmation that the international role of currencies is characterised by considerable inertia and network effects. The euro remained firmly anchored in 2009 as the second most important international currency globally, after the US dollar which maintained its status as the leading international currency.

Turning to currency and asset substitution outside the euro area, the role of the euro gradually increased during 2009. Regarding currency substitution, statistics on net shipments of euro banknotes to destinations outside the euro area suggest that in 2009 there was no visible unwinding of demand for banknotes from non-residents, which had peaked in the last quarter of 2008. The amount of euro banknotes circulating outside the euro area is estimated at around 20-25% of euro currency in circulation and is concentrated in countries neighbouring the euro area.

In terms of asset substitution, the share of the euro in total deposits increased in 2009 in most non-euro area EU Member States and EU candidate countries. These developments appear to reflect a combination of valuation effects and the response of economic agents outside the euro area to persistent macroeconomic and financial uncertainty. With respect to borrowing in foreign currency, the global financial crisis has again underscored the risks associated with unhedged borrowing by households and firms. These risks were already highlighted and discussed in the previous review. Despite the crisis, borrowing in euro increased further during 2009 in most countries in EU neighbouring regions. To some extent, this increase may stem from valuation effects in countries that experienced a depreciation of their currencies, while in those countries that had only limited or no exchange rate adjustment, private agents may continue to perceive the risks of foreign currency borrowing as relatively low.

MAIN FINDINGS OF THE SPECIAL FEATURES

The main special feature of this review studies the phenomenon whereby the US economy enjoys positive excess returns between its foreign assets and its foreign liabilities, and examines to what extent this feature is shared by other countries, in particular those issuing an international currency. Excess returns on net foreign assets of the United States are found to have exceeded 300 basis points per year, on average, over a sample period between 1981 and 2008. These excess returns are found to be indeed very high from a global perspective, larger than in other countries, consistently positive over time, and statistically significant. Notably, the United States obtained these positive excess returns from both a positive differential in yields from investment income and a positive differential in the rates of capital gain. Only when focusing on the yield differential from investment income is it possible to find a similar excess return for other issuers of international currencies, such as Japan, Switzerland and, to a lesser extent, the United Kingdom between 2000 and 2008. The euro area did not enjoy positive yield differentials comparable with those of these countries; however, the analysis shows a clear upward trend in the excess yield of countries belonging to the euro area, starting before the launch of the single currency and continuing up to the end of the sample period. In addition, the special feature investigates the potential determinants of differential returns between foreign assets and liabilities in a large cross-section of countries, confirming that exchange rates have an important impact on excess returns, which is channelled through capital gains. An asymmetric composition of foreign assets and liabilities in terms of risky assets, by contrast, does not seem to affect the outcome. Finally, issuers of international currencies may be perceived by global investors as relatively safe markets, and this contributes to higher excess yields on the investment income balance.

The second special feature discusses the construction of a possible summary indicator that aggregates available information on the international role of the euro in different market

segments into a single dimension with a view to making assessments over time – and possibly across various international currencies – more straightforward. The construction of a summary indicator is found to be fraught with conceptual, practical and methodological challenges, as it should ideally combine various dimensions of international money that are, however, qualitatively very different and therefore cannot easily be aggregated. Notwithstanding these difficulties, a principal component analysis is performed on the basis of five sub-indicators for which high-quality data are available between 1999 and 2009. The results suggest that the international role of the euro increased somewhat during the first few years of existence of the single currency. Since then, the international use of the euro has remained relatively stable relative to that of other international currencies.

The third special feature revisits the degree of currency internationalisation of the main global currencies. It finds that the use of the euro is most common in countries located in the broad geographical neighbourhood of the euro area, while the US dollar's international use is more widespread across the global economy. The special feature also discusses an alternative concept of currency internationalisation, namely the use of a currency outside the borders of the issuing country as compared with its use within. Applying this approach to the market for international debt securities, the most "international" currencies are generally those from small advanced economies, such as New Zealand, Switzerland and Hong Kong. By the same measure, the euro became substantially more internationalised between 1999 and 2009.



3 THE EURO IN GLOBAL MARKETS

3.1 THE EURO IN INTERNATIONAL DEBT MARKETS

The issuance of international debt securities picked up during 2009 after a trough in 2008. The euro's share in the stock of international debt securities declined by more than 1 percentage point in 2009, when measured at constant exchange rates, reaching 31.4% at the end of the year. This reflected the relatively subdued net issuance of international debt instruments denominated in euro during 2009, which declined compared with the previous year, whereas the issuance of US dollar-denominated international debt instruments was relatively strong. The financial sector remained the major issuer of euro-denominated bonds and notes; however, by contrast with previous years, banks from the Nordic countries gained in relative importance as issuers by comparison with banks located in the United Kingdom.

This section examines developments during 2009 in the use of the euro in international debt securities markets, including bonds, notes and money market instruments. The international use of a currency in these markets arises when a transaction of an instrument denominated in a given currency involves at least one party that is not a resident of the country or currency area issuing that currency. However, information on the issuer and the investor in a single statistical database is limited and it is impossible to obtain a precise distinction between domestic transactions – in which both the issuer and buyer of a security are residents of the same country, whose currency is used to denominate the security – and international transactions, where the currency in which the security is denominated is not the currency of one of the two counterparts. For this reason, this review traditionally focuses on a “narrow” concept of international issuance of debt securities, covering issuance in a currency other than the currency of the country in which the borrower resides. This “narrow” measure of international debt issuance is the only indicator which is available in a timely manner and which unambiguously includes only international transactions. Sub-section 3.1.1 reviews currency shares in this

market segment and compares them with global debt markets, which include domestic issuance as at end-2009. Sub-section 3.1.2 provides more details on developments within the market segment of euro-denominated debt securities issued by non-residents, i.e. the narrow concept.

3.1.1 NARROW VERSUS GLOBAL MEASURE: THE CURRENCY COMPOSITION OF INTERNATIONAL DEBT SECURITIES MARKETS IN 2009

The narrow measure of international debt issuance captures only international transactions, although it does not cover the entire spectrum of international debt transactions. For instance, a non-euro area investor buying a euro-denominated security issued by a euro area resident would not be included in this measure. However, this narrow measure remains an unambiguous indicator of the international use of a currency. The global measure includes all debt securities, including domestic currency issues targeting the domestic market, and thus does not distinguish between domestic and international bonds. Therefore, its currency composition is distorted by the size of the home market and the purely domestic transactions. At the end of 2009, the outstanding amount of global bonds reached more than USD 91 trillion, of which around USD 10 trillion were international transactions, according to the narrow measure.

Turning to the currency denomination of instruments in the international debt market, as at the end of 2009, the global measure of euro-denominated debt, i.e. total domestic and international debt in euro, stood at USD 27.2 trillion, accounting for around 30% of total global issuance. According to the narrow measure, international debt, including money market instruments, denominated in euro stood at end-2009 at USD 3.2 trillion, corresponding to a share of 31.4% of total issuance. By comparison, the ratio of international debt securities denominated in US dollars to total issuance was around 38% according to the global measure and almost 46% according to the narrow measure (see Table 2).

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

(fourth quarter of 2009; values at current exchange rates)

	Amounts outstanding (USD billions)				Shares (%)		
	Total	Euro	US dollar	Japanese yen	Euro	US dollar	Japanese yen
“Narrow” measure	10,337	3,248	4,733	598	31.4	45.8	5.8
“Global” measure	91,230	27,152	34,811	12,229	29.8	38.2	13.4

Sources: BIS and ECB calculations.

Over the past decade, the share of the euro remained relatively stable in terms of the global measure of debt issuance, slowly increasing from around 27% of global issuance in 1999 to about 30% in 2009, measured at constant exchange rates. The share of the euro based on the narrow measure of international debt, by contrast, displays a hump-shaped curve, peaking in 2005 and then gradually decreasing (see Chart 1). As noted in the previous issue of this review, opportunistic motives may have prompted borrowers to shift towards issuance in low interest rate currencies, partly explaining these trends.⁴ The next sub-section provides a more detailed analysis of trends in the international debt market according to the narrow measure.

3.1.2 THE MARKET FOR EURO-DENOMINATED DEBT SECURITIES ISSUED BY NON-RESIDENTS: DEVELOPMENTS DURING 2009 AND STRUCTURE AS AT END-2009

DEVELOPMENTS IN INTERNATIONAL DEBT SECURITIES MARKETS

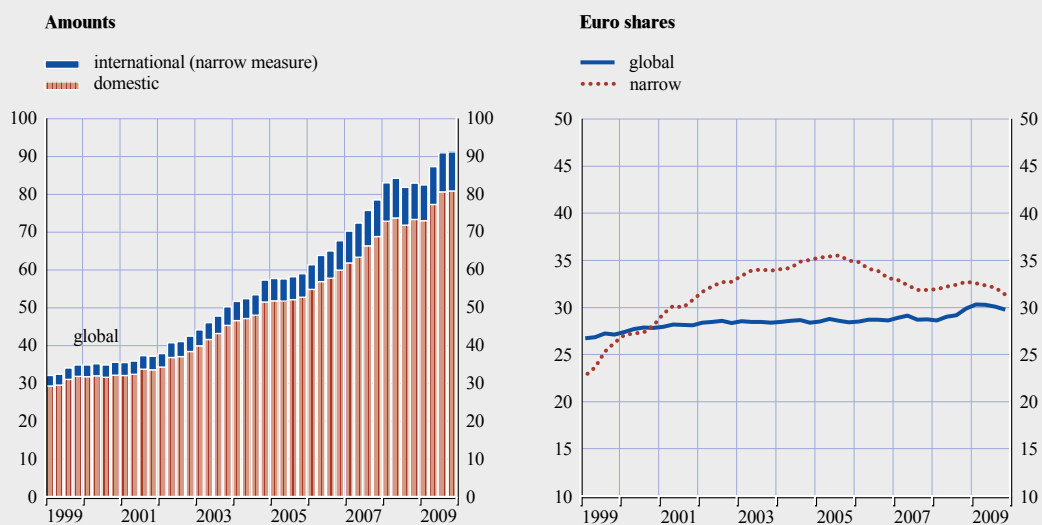
In 2009 the net issuance of international debt securities (measured throughout this sub-section according to the narrow definition, i.e. excluding domestic issuance) increased by around 20% compared with the previous year, when the global financial crisis caused a drastic reduction in international borrowing (see Table 3).

4 See the special focus chapter of the 2009 issue of this report.

Chart 1 International (narrow) and global measures of outstanding international debt securities

(USD trillions; at current exchange rates)

(percentages; at constant exchange rates)



Sources: BIS and ECB calculations.
Note: The shares at constant exchange rates are reported at Q4 2009 exchange rates.

Table 3 Net issuance of international debt securities

(narrow measure, i.e. excluding home currency issuance; USD billions)

	Annual					Quarterly			
	2006	2007	2008	2009	2008 Q4	2009			
						Q1	Q2	Q3	Q4
Euro	288.6	334.5	179.9	39.9	-38.7	0.2	55.8	30.9	-47.0
US dollar	749.5	726.9	108.7	441.0	-44.9	41.3	137.3	124.4	138.0
Japanese yen	15.4	76.1	10.0	-44.2	-25.1	-8.5	-9.8	-13.9	-12.0
Total (including other currencies)	1,318.0	1,399.5	381.0	458.0	-143.9	59.6	205.9	137.5	55.0

Sources: BIS and ECB calculations.

The net issuance of international debt securities in 2009, at around USD 458 billion, remained well below the levels reached in the years preceding the crisis, more than USD 1.3 billion in 2006 and 2007. Table 3 shows that the issuance of euro-denominated securities by non-euro area residents was very subdued, at only USD 40 billion, declining by almost 80% compared with the previous year. It is necessary to go as far back as 1995 to find such a low figure for the net issuance of international debt securities denominated in euro. The overall issuance of international debt securities was supported by a strong resumption of the issuance of US dollar-denominated bonds, notes and money market instruments by non-US residents, which stood at around USD 440 billion. There is

only tentative evidence that deviations from the covered interest parity arose in the course of 2009, prompting non-US borrowers, mainly Europeans, to tap the US market, borrowing in US dollars and switching the funds back into euro or the domestic currency through the swap market.⁵

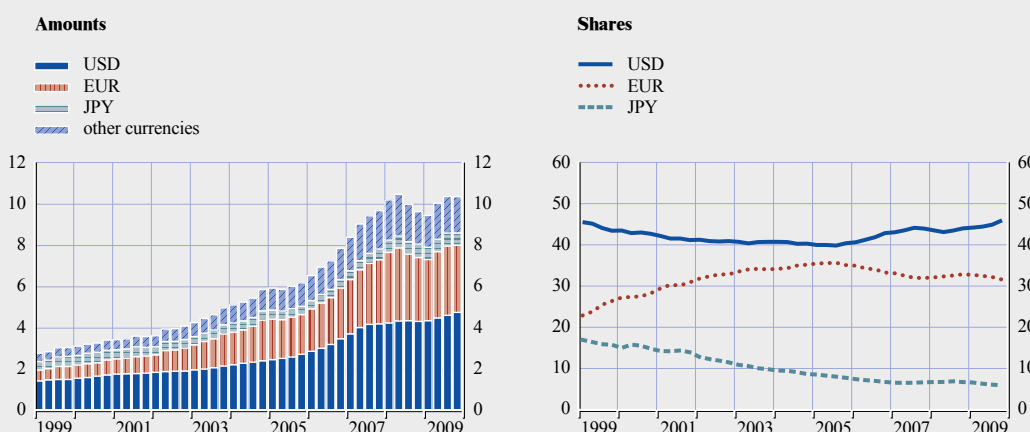
A closer look at the trends in the international debt market shows that the stock of outstanding international debt securities reached

⁵ See Habib and Joy (2010) for a technical explanation of how deviations from covered interest parity, if large enough, can produce arbitrage opportunities that may influence the currency choice of borrowers. However, the authors do not find compelling evidence that deviations from the covered interest parity play a significant role in the aggregate currency composition of international bond issuance.

Chart 2 Stock of international debt securities (narrow measure): outstanding amounts and currency shares

(USD trillions; at current exchange rates)

(percentages; at constant exchange rates)



Sources: BIS and ECB calculations.

Note: The shares at constant exchange rates are reported at Q4 2009 exchange rates.

USD 10.4 trillion at the end of 2009, a level that is close to the peak that was reached in June 2008, before the financial crisis. In the course of 2009, the share of the euro in this market declined by more than 1 percentage point, from 32.7% (end-2008) to 31.4% (end-2009), measured at constant exchange rates. At the same time, the share of the US dollar in international bond issuance continued its upward trend, rising by 2 percentage points, from 43.8% (end-2008) to 45.8% (end-2009), measured at constant exchange rates. International issuance in the Japanese yen also continued to decline in relative terms, with a share of less than 6% of total international issuance as at the end of 2009 (see Chart 2).

INTERNATIONAL BONDS AND NOTES BY SECTOR AND GEOGRAPHICAL ORIGIN OF ISSUANCE

The breakdown by sector and residency of issuer provides further insight into the structural features of international euro-denominated bonds and notes (excluding money market instruments). Issuance activity in the international debt market was weak in the first quarter of 2009 as a consequence of the sharp increase in global financial volatility following

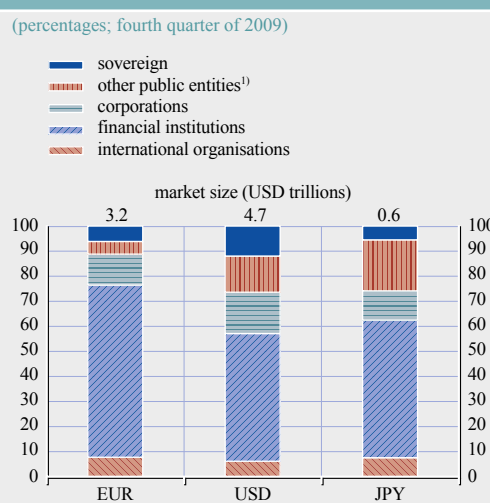
the financial crisis. The amount outstanding of international bonds and notes denominated in euro decreased to a trough of USD 2.8 trillion in the first quarter of 2009, rebounding to more than USD 3 trillion in the second half of the year. The swing in euro-denominated international bond issuance during 2009 was shaped by the fall and mild recovery in issuance by the financial sector (+3% as at end-2009 compared with the previous year), which was by far the largest issuer sector. In relative terms, however, the other sectors posted the largest annual rates of growth, ranging from +10% (corporate sector and sovereigns) to +32% (international organisations) in the last quarter of 2009 (see Chart 3).

Indeed, the majority of international euro-denominated bonds and notes were issued by the private sector, and in particular by the financial sector (see Chart 4). At the end of 2009, financial institutions' share in total international bonds and notes denominated in euro stood at around 69%. It is worth noting that the share of financial issuers was much lower for international bonds and notes denominated in US dollars (52%) and Japanese yen (56%). At the same time, the share

Chart 3 Outstanding volume of euro-denominated international bonds and notes by sector



Chart 4 Outstanding volume of international bonds and notes by sector



of sovereign issuers, at 6%, and non-financial corporations, at 12%, in total international bonds and notes denominated in euro was smaller than that of sovereign issuers and non-financial corporations issuing securities denominated in US dollars, at 12% and 16% respectively.

In 2009 the role of financial institutions based in the United Kingdom in the issuance of euro-denominated bonds, although still important, was less significant than in previous years. Similarly, investment banks in the United States were less active in issuing euro-denominated debt than in the past. By contrast, several financial institutions in Sweden and the Baltic area issued large amounts of euro-denominated bonds. For the first time in several years, a sovereign issuer (Sweden) was among the top five issuers of international bonds denominated in euro (see Table 4). As regards the US dollar, European public banks were among the largest issuers of US dollar-denominated

international debt. In addition, several European and international organisations (European Investment Bank, Inter-American Development Bank, International Bank for Reconstruction and Development, and Asian Development Bank) were among the top issuers of US dollar-denominated international bonds in 2009.

In the review period, there were no major changes in the geographical breakdown of international bonds and notes denominated in euro by the region in which the issuers reside. Residents from non-euro area EU countries, in particular Denmark, Sweden and the United Kingdom, accounted for the bulk of the issuance of euro-denominated international debt instruments, approximately 48% as at the end of 2009 (see Chart 5). North American residents were also active issuers of euro-denominated international bonds and notes, accounting for around 23% of total issuance.

Table 4 List of top 20 non-euro area issuers of euro-denominated bonds and non-US issuers of US dollar-denominated bonds

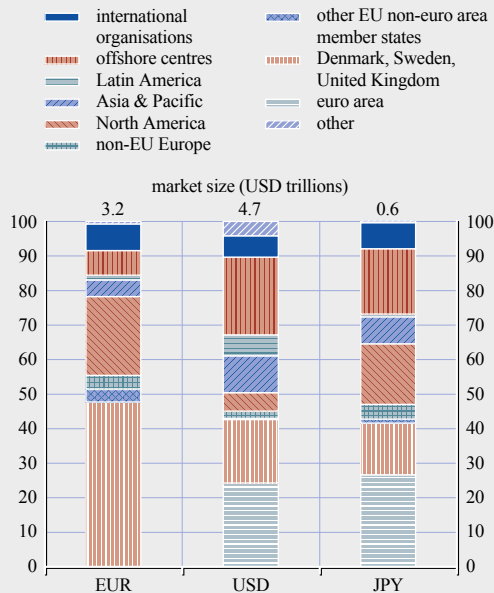
(issuer; total amount issued in the review period; EUR millions)

Top 20 non-euro area issuers of euro-denominated bonds		Top 20 non-US issuers of US dollar-denominated bonds	
Barclays Bank plc	13,505	Société de Financement de l'Économie Française – SFEF	24,546
Roche Holdings Inc	11,250	Kreditanstalt für Wiederaufbau – KfW	21,835
Danske Bank A/S	9,090	European Investment Bank – EIB	19,365
Lloyds TSB Bank plc	8,484	Westpac Banking Corp	18,146
Kingdom of Sweden	7,000	Commonwealth Bank of Australia	17,456
Nordea Bank AB	6,780	Royal Bank of Scotland plc	16,170
Royal Bank of Scotland plc	6,450	Newfoundland CLO 1 Ltd	14,652
Pfizer Inc	5,850	World Bank	13,754
Credit Suisse (London)	5,767	Lloyds TSB Bank plc	13,078
Skandinaviska Enskilda Banken AB – SEB	5,755	Barclays Bank plc	13,014
Titlos plc	5,100	Rabobank Nederland	12,472
Swedbank Mortgage AB	5,050	Government of Dubai	11,979
Svenska Handelsbanken AB	4,841	Province of Ontario	9,906
Swedbank AB	4,785	Inter-American Development Bank – IADB	8,220
UBS AG (London)	4,750	Kingdom of Denmark	7,552
HSBC Bank plc	4,507	Caisse d'Amortissement de la Dette Sociale – CADES	7,100
Toyota Motor Credit Corp	3,750	State of Qatar	6,899
EDF Energy plc	3,400	BP Capital Markets plc	6,508
Anaptyxi SME II 2009-I plc	3,300	ING Bank NV	6,426
Citigroup Inc	3,250	Asian Development Bank	6,012
Memo item:			
European Investment Bank	40,306		
European Community	7,225		

Sources: DCM Analytics and ECB calculations.

Chart 5 Outstanding volume of international bonds and notes by region

(percentages; fourth quarter of 2009)

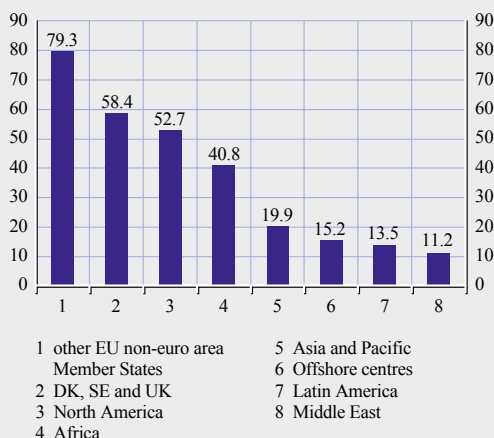


Sources: BIS and ECB calculations.

Looking at the popularity of issuing international bonds and notes in euro from the point of view of the issuing regions (see Chart 6), non-euro area

Chart 6 Euro share in the stock of outstanding international debt securities in selected regions

(narrow measure, i.e. excluding home currency issuance; as a percentage of the total amount outstanding; fourth quarter of 2009)



Sources: BIS and ECB calculations.

EU and North American residents still chose the euro in the majority of their international (i.e. foreign currency) issuances of debt instruments. Residents from central and eastern European countries maintained their strong preference for issuing euro-denominated bonds and notes, which accounted for almost 80% of their total international issuance.

3.2 THE EURO IN INTERNATIONAL LOAN AND DEPOSIT MARKETS

After contracting in the first quarter of 2009 as a result of the global financial turmoil, the outstanding amounts of international loans and international deposits stabilised in the remainder of 2009, although remaining well below the pre-crisis peaks of early 2008. The currency composition of these markets remained broadly unchanged in 2009. When measured at constant exchange rates, the share of the euro in total cross-border loans declined slightly by 1.6 percentage points, while it remained broadly unchanged at 22% of total cross-border deposits.

3.2.1 THE ROLE OF THE EURO IN INTERNATIONAL LOAN MARKETS

Following the contraction of the cross-border loan market in 2008 amid the global financial turmoil, the total outstanding amount of cross-border loans by banks to non-financial firms and households continued to decline in the first quarter of 2009. The market stabilised in the subsequent quarters of 2009. In the fourth quarter, outstanding cross-border loans totalled USD 5.1 trillion, down from USD 5.3 trillion at the end of December 2008 (see Chart 7, left panel).

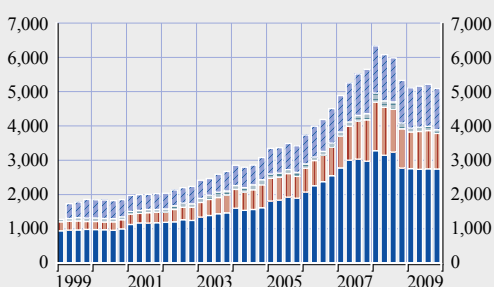
At the same time, the crisis did not have a marked impact on the currency composition of total cross-border loans, which remained relatively stable throughout the year. In December 2009 the share of the euro stood at 20.3%, i.e. around 1.6 percentage points lower

Chart 7 International loan markets: all cross-border loans by currency

(USD billions)

Amounts

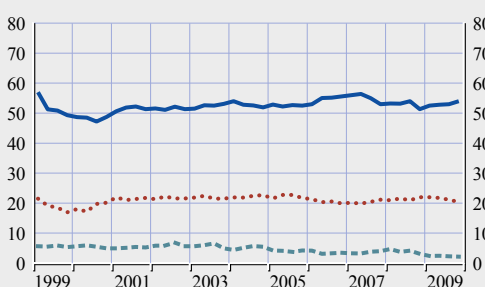
■ USD
■ EUR
■ JPY
■ other



(percentages; at constant exchange rates)

Shares

— USD
— EUR
— JPY



Sources: BIS and ECB calculations.

Note: The shares at constant exchange rates are reported at Q4 2009 exchange rates.

than at end-2008 when accounting for valuation effects (see Chart 7, right panel).

3.2.2 THE ROLE OF THE EURO IN INTERNATIONAL DEPOSIT MARKETS

After declining in the first quarter of the year, the cross-border deposit market broadly stabilised in the remainder of 2009. At the end

of the fourth quarter, the total outstanding amount of cross-border deposits, at USD 5.7 trillion, was 6.5% below its end-2008 value (see Chart 8, left panel).⁶

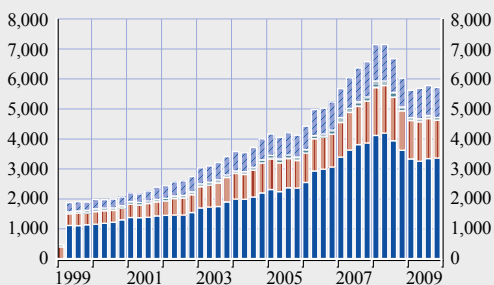
⁶ This decline can be explained only to some extent by valuation effects. Total cross-border deposits exclude interbank deposits and refer, in the case of the euro, to the sum of deposits by non-euro area residents in euro area banks, deposits by euro area residents in non-euro area banks and deposits made entirely outside the euro area.

Chart 8 International deposit markets: all cross-border deposits by currency

(USD billions)

Amounts

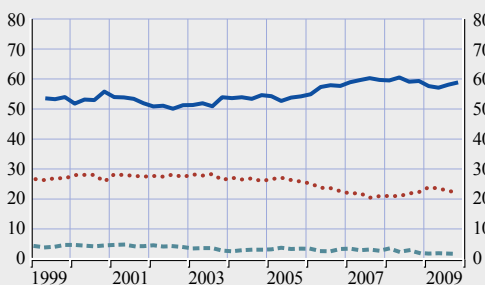
■ USD
■ EUR
■ JPY
■ other



(percentages; at constant exchange rates)

Shares

— USD
— EUR
— JPY



Sources: BIS and ECB calculations.

Note: The shares at constant exchange rates are reported at Q4 2009 exchange rates.

The currency composition of cross-border deposits did not change markedly during 2009. Following a slight increase in the first quarter, the share of the euro in cross-border deposits – after adjusting for valuation effects – stood at 22.0% in December 2009 down from 22.3% in December 2008.

3.3 THE EURO IN FOREIGN EXCHANGE AND DERIVATIVES MARKETS

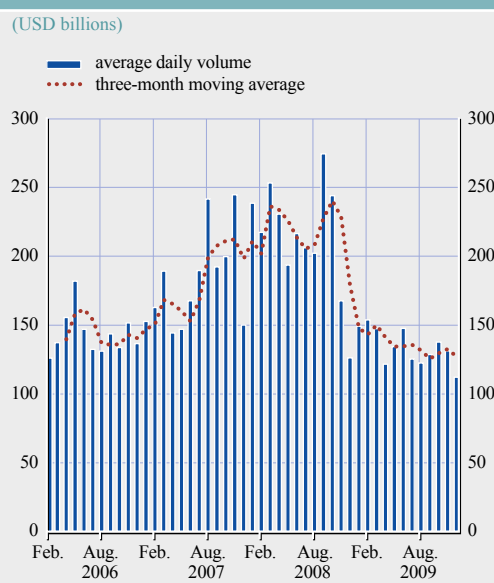
While the substantial turbulence experienced in foreign exchange and derivatives markets at the end of 2008 and in early 2009 resulted in considerable contractions in transaction volumes and outstanding amounts, it did not manifest itself in tangible changes in the way currencies are used in these markets. Indeed, any shifts in the role of the euro as a direct consequence of the crisis could not be detected during the review period.

3.3.1 FOREIGN EXCHANGE MARKETS

Following its rapid fall after the intensification of the financial crisis in the autumn of 2008, trading on foreign exchange markets stabilised in the course of 2009. EBS⁷ data recorded an average daily volume of USD 134.2 billion per month in 2009, roughly in line with the USD 151.6 billion registered between February 2006 and July 2007.⁸ Thus, the comparatively high and volatile activity (USD 211.5 billion) seen between August 2007 and December 2008 indeed appears to be attributable to the exceptional financial market strains witnessed during this period (see Chart 9).

Settlement data for obligations related to foreign exchange trades provided by CLS display a similar tendency, broadly confirming the trends present in the EBS trading system. Average daily volumes in 2009 amounted to €2.3 trillion per month in 2009 as compared with €2.7 trillion between August 2007 and December 2008 and €2.4 trillion from February 2006 to July 2007

Chart 9 Interbank spot foreign exchange transactions in EBS



Source: ICAP.

(see Chart 10). Despite these considerable fluctuations in settlement volumes, changes in their currency composition were relatively negligible in 2008 and 2009. Generally, the shares of the US dollar and the euro remained at around 90% and 40%⁹, confirming the role of the US dollar as the main vehicle currency¹⁰ in global foreign exchange markets (see Chart 11).

7 Next to Reuters Matching, EBS is the leading electronic trading system in the interbank market for spot foreign exchange transactions (see Gallardo and Heath (2009), pp. 84-85). According to a study conducted by the ECB in 2003, the two systems accounted for around 85% to 90% of these transactions (see ECB (2003), p. 26).

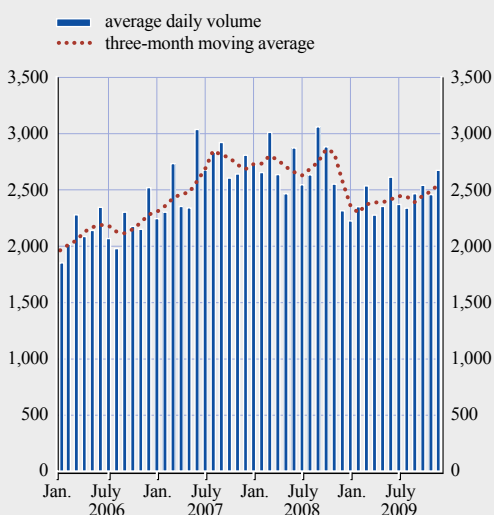
8 Earliest available data supplied by ICAP date as at February 2006.

9 The sum of currency percentage shares reported for foreign exchange markets adds up to 200%, as the two currencies involved in the settlement of one foreign exchange transaction are counted separately.

10 A vehicle currency (B) is defined as a currency that is used in the foreign exchange markets as a means to exchange two other currencies, so that currencies A and C are not exchanged directly (AC) but via B in two transactions (AB and BC). In the foreign exchange markets, most transactions between relatively illiquid currencies are executed via vehicle currencies owing to the lower transaction costs and the possibility of avoiding excess intraday volatility.

Chart 10 Settlement volumes in the CLS system

(EUR billions)



Source: CLS.

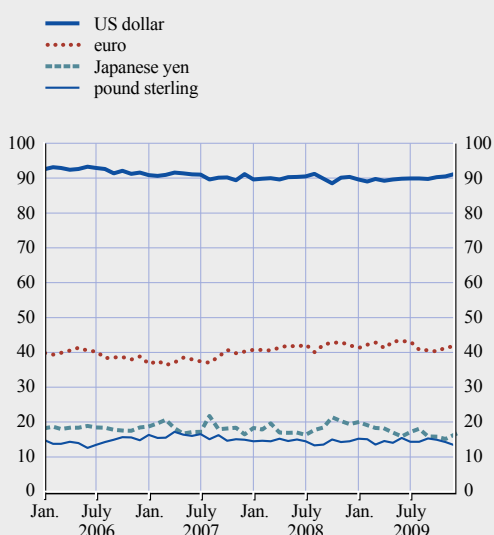
3.3.2 DERIVATIVES MARKETS

Notional principal outstanding in derivatives markets peaked in mid-2008, followed by a considerable contraction across all segments by early 2009, in the wake of the escalation of the financial crisis in the autumn of 2008. Subsequently, volumes recovered towards the end of 2009 but remained below the quantities seen in early 2007 in most cases.

Among derivatives traded on organised exchanges, equity and interest rate instruments experienced the largest drops, with notional principal outstanding falling by 41.6% and 34.1% respectively by the first quarter of 2009 in comparison with the first quarter of 2007 (see Chart 12). A reduced appetite for risk concomitant with a decrease in hedge fund activity and expectations of low and stable interest rates in major economies were the main

Chart 11 Currency breakdown of settlement in the CLS system

(average daily volume; percentages¹⁾)

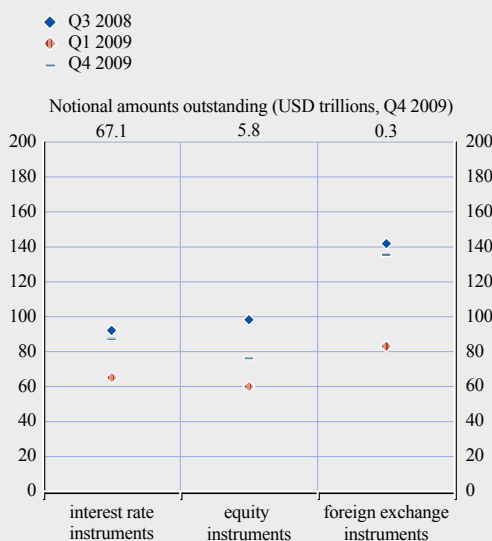


Sources: CLS and ECB calculations.

1) The sum of currency percentage shares adds up to 200% as both currencies involved in the settlement of a foreign exchange trade are counted individually.

Chart 12 Derivatives traded on organised markets

(index; Q1 2007 = 100)



Sources: BIS and ECB calculations.

drivers behind these developments.¹¹ Fluctuations in foreign exchange derivatives primarily mirrored the trends in spot markets described in Section 3.3.1.¹² The significant decline in the second half of 2008 and the first quarter of 2009 was followed by a robust rebound in the second half of 2009, partly based on a renewed interest in carry trades against the backdrop of rising investor confidence and widening interest rate differentials.¹³

Interest rate, equity and foreign exchange derivatives traded on over-the-counter (OTC) markets were subject to similar changes to those experienced by derivatives traded on organised exchanges (see Chart 13), although the notional principal outstanding of OTC contracts based on interest rates did not dip below pre-crisis levels in the review period. Unlike other OTC instruments, volumes of credit default swaps (CDSs) and commodity derivatives showed no tangible recovery by the second half of 2009, with notional principal outstanding of CDSs even

dropping further in the face of continued efforts to achieve multilateral termination of offsetting positions.

By contrast with the significant volatility witnessed in notional amounts outstanding, the currency breakdown of OTC foreign exchange and interest rate derivatives did not appear to have been particularly affected by the crisis during the review period. The shares of the euro and the US dollar, net of valuation effects owing to exchange rate changes, stayed within their previously observed ranges for foreign exchange instruments, at around 40% for the euro and 80% for the US dollar (see Chart 14).¹⁴

11 See BIS (2009a), p. 27.

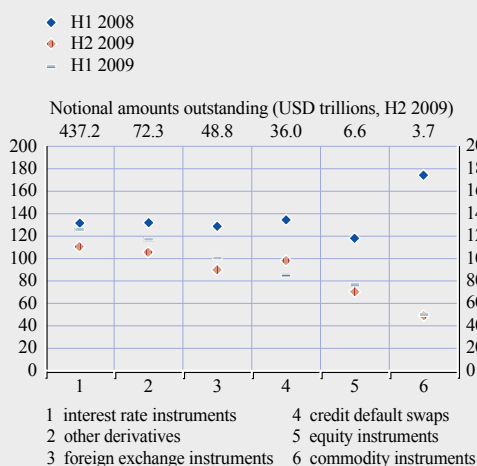
12 The fairly large correlation between CLS settlements and notional principal outstanding of foreign exchange derivatives is explained by the fact that the system settles not only foreign exchange spot transactions but also forwards, swaps and options.

13 See BIS (2009b), p. 26.

14 As with spot markets, the sum of currency percentage shares reported for derivatives markets adds up to 200%, as the two currencies involved in the settlement of one transaction are counted separately.

Chart 13 Derivatives traded on OTC markets

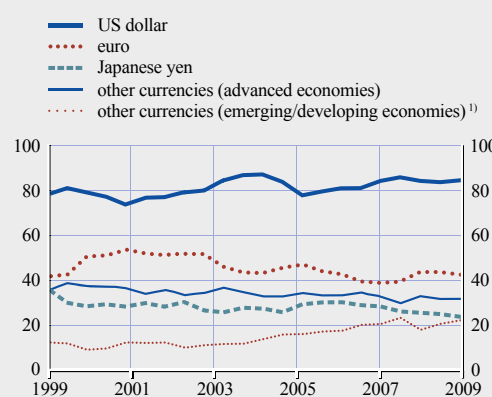
(index; H1 2007 = 100)



Sources: BIS and ECB calculations.

Chart 14 Currency breakdown of OTC foreign exchange derivatives

(percentages; at constant exchange rates)



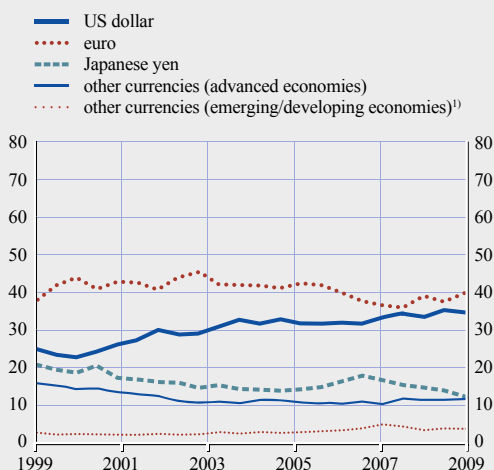
Sources: BIS and ECB calculations.

Note: The sum of currency percentage shares adds up to 200% as both currencies involved in the settlement of a foreign exchange trade are counted individually.

1) Difference between the total and the shares of AUD, CAD, CHF, DKK, EUR, GBP, HKD, JPY, NOK, NZD, SEK and USD. This may include some advanced economy currencies not reported separately. Although their shares are likely to be rather small, the figures reported should be seen as an upper bound.

Chart 15 Currency breakdown of OTC interest rate derivatives

(percentages; at constant exchange rates)



Sources: BIS and ECB calculations.

1) Difference between the total and the shares of AUD, CAD, CHF, DKK, EUR, GBP, HKD, JPY, NOK, NZD, SEK and USD. This may include some advanced economy currencies not reported separately. Although their shares are likely to be rather small, the figures reported should be seen as an upper bound.

For interest rate contracts, the share of the US dollar and the euro increased to 34.1% and 39.1% respectively against a 2.3 percentage point fall of the Japanese yen (see Chart 15). Additionally, the persistently rising trend in the role of peripheral currencies from emerging and developing countries seemed to have been at least temporarily interrupted by the financial and economic turbulence, with the shares of these currencies recording some retrenchment during the review period.

3.4 THE EURO IN INTERNATIONAL TRADE IN GOODS AND SERVICES

Since the launch of the single currency in 1999, the prominence of trade conducted in euro has increased steadily, particularly in those countries which have joined the euro area more recently, but also in those located in its neighbourhood or with institutional links to the euro area or the EU. Additionally, with a larger group of EU countries now regularly providing the currency denomination of

merchandise trade with their counterparts outside the EU, an analysis of these data in combination with the information available thus far reveals that euro area countries are able to exert considerable producer currency pricing power, while importers into the euro area tend to use local currency pricing. Furthermore, these patterns are also observable, albeit to a lesser extent, for EU countries outside the euro area, despite the fact that the euro is not their domestic currency.

Between 2007 and 2009¹⁵ the use of the euro by euro area countries in their trade of goods (see Chart 16) and services with countries outside the euro area generally rose, although increases were primarily observable in imports, whereas the picture for exports was more mixed. As a result, the euro's share in merchandise exports varied between 97.3% (Slovakia) and 11.8% (Cyprus) in 2009, after 79.0% (Slovenia) and 2.8% (Cyprus) in 2007. For imports, the corresponding figures varied between 86.3% (Slovakia) and 2.5% (Cyprus) in 2009, as compared with 73.1% (Slovenia) and 1.7% (Cyprus) in 2007.¹⁶

A comparison of these ranges with those in 2001 shows that the distribution of euro-denominated trade has become more dispersed with the enlargement of the euro area since 2007. Indeed, while Slovakia and Slovenia conduct a large part of their trade in their home currency, Cyprus' transactions in euro are relatively small, with some of these discrepancies potentially being due to different trade shares with the euro area and/or distinct trade structures.¹⁷ However, given that Cyprus trades only marginally less with the euro area than Slovakia and Slovenia,

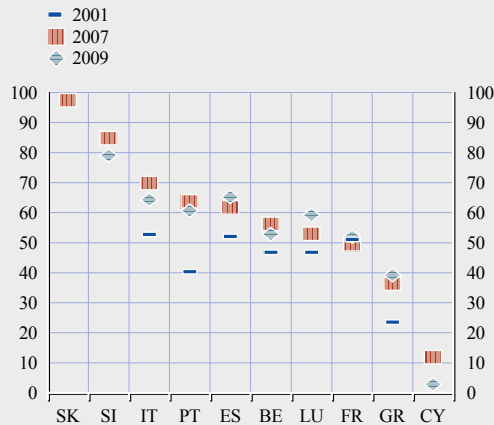
¹⁵ By contrast with previous issues of this publication, data on the currency denomination of trade are no longer subject to a one-year lag, allowing for a more timely coverage of developments. Consequently, the period of comparison spans two years in this year's review. Corresponding figures for 2008 can be found in the statistical annex.

¹⁶ The equivalent figures for services exports were 19.1% (Greece) to 82.7% (Slovenia) in 2009, after 14.9% (Greece) to 80.8% (Slovenia) in 2007. Services imports ranged from 34.5% (Greece) to 72.6% (Portugal) in 2009, following 27.9% (Cyprus) to 71.8% (Belgium and Portugal) in 2007.

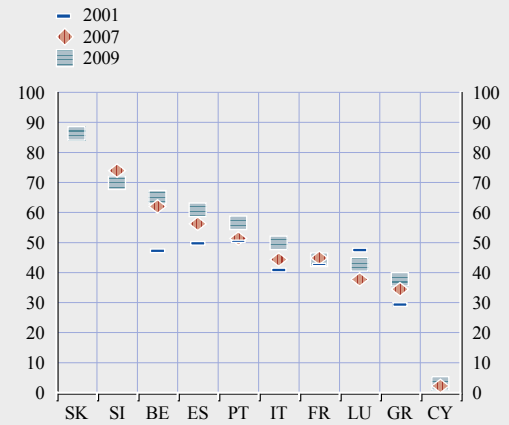
¹⁷ Malta does not report data on the currency denomination of its trade.

Chart 16 The euro's share in extra-euro area merchandise trade of selected euro area countries

(as a percentage of total exports)



(as a percentage of total imports)



Sources: National central banks and ECB calculations.

Note: Data for Cyprus, Slovakia and Slovenia are unavailable before 2007, 2008 and 2006 respectively; 2009 data for Belgium refer to 2008 and data from 2007 onwards are not comparable with previous years; data for France are based on estimates from 2005 onwards; 2009 data for Italy are provisional; 2008 data for Slovenia refer to the first quarter of that year.

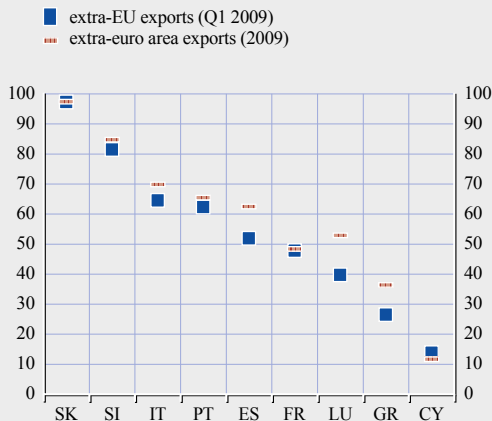
the markedly lower role for the euro is likely to be due to other factors, such as the higher share of petroleum and petroleum products in its imports and exports.

Against the background of a wider group of EU countries now regularly providing the currency denomination of merchandise trade with their

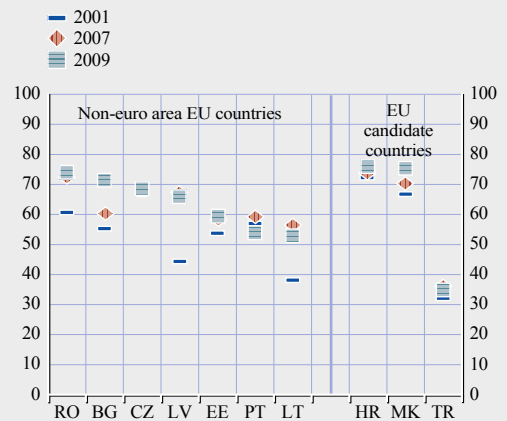
counterparts outside the EU, it seems worthwhile to contrast these figures with those supplied for transactions with countries outside the euro area. Although the two datasets are not precisely comparable owing to their divergent sampling periods, the pattern of the use of the euro in merchandise exports indicates that most of the reporting euro area countries are able to impose

Chart 17 The euro's share in merchandise trade of selected EU and EU candidate countries

(as a percentage of total exports)¹⁾



(as a percentage of total imports)²⁾



Sources: National sources and ECB calculations.

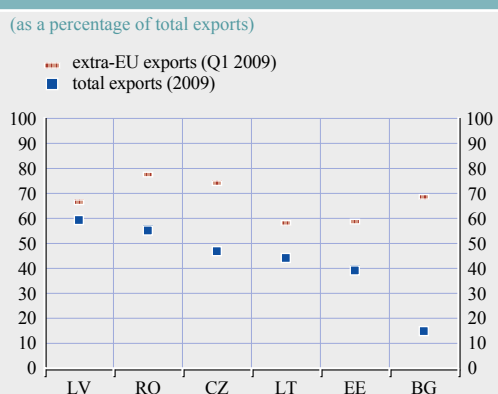
1) Extra-euro area data for France are based on estimates; extra-euro area data for Italy are provisional.

2) For the Czech Republic and Estonia, data from 2004 onwards are not comparable with previous years; 2009 data for Estonia refer to 2008; 2009 data for Latvia refer to the first three quarters of that year; 2009 data for Lithuania refer to the average of the first three quarters of that year; 2001 data for the former Yugoslav Republic of Macedonia refer to 2002.

their domestic currency both on their trading partners in the EU and on non-EU countries, pointing towards non-negligible producer currency pricing power, despite the euro's overall share being slightly lower in the latter case (see Chart 17, left panel). This finding is further corroborated by corresponding import data available for some EU countries outside the euro area and EU candidate countries, where shares of the euro have been high and rising since 2001 (see Chart 17, right panel), illustrating its predominance as the currency in which imports are denominated, irrespective of whether they originate from the euro area or from other countries.¹⁸

Interestingly, exports of non-euro area EU countries to destinations outside the EU are conducted in euro on a sizeable scale too, although the euro is not their domestic currency. With shares of between 15% in Bulgaria and close to 60% in Latvia (see Chart 18), its role is substantial, potentially mirroring the relatively high level of euroisation in some of these economies, together with the fact that the euro is evidently accepted as an alternative international currency by their major trading partners. Nevertheless, the ability to price exports in euro appears to diminish as geographical distance

Chart 18 The euro's share in merchandise exports of selected EU countries outside the euro area

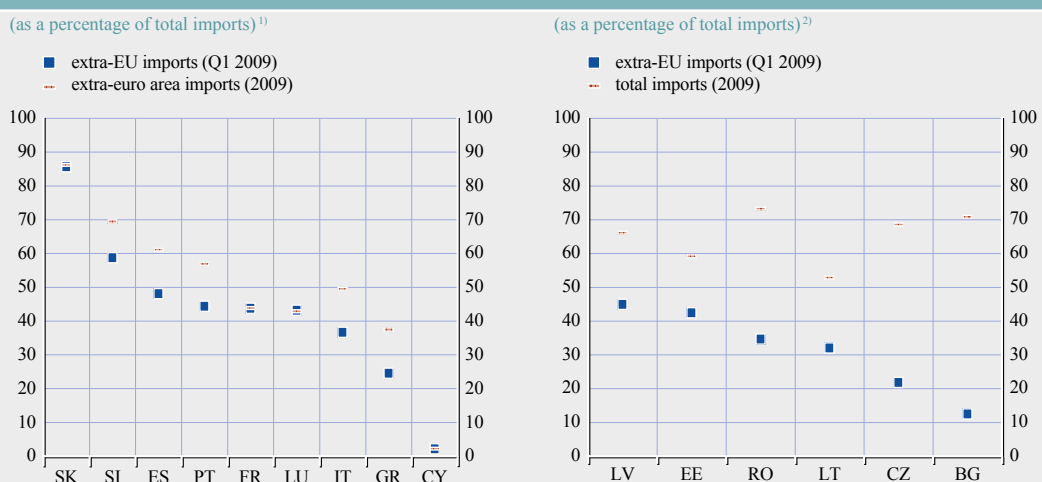


Sources: National sources and ECB calculations.
Note: Total exports data for Estonia refer to 2008; total exports data for Latvia refer to the first three quarters of 2009; total exports data for Lithuania refer to the average of the first three quarters of 2009.

from the euro area increases. Although evidence in this respect is very scarce, the share of imports by Indonesia and Thailand that are denominated in euro is smaller than is warranted by the

18 In fact, for most of the countries presented in the right panel of Chart 17, the share of imports denominated in euro is higher than the respective share of imports originating from the euro area (see ECB (2009), p. 38).

Chart 19 The euro's share in merchandise imports of selected EU countries



Sources: National sources and ECB calculations.
1) Extra-euro area data for France are based on estimates; extra-euro area data for Italy are provisional.
2) Total imports data for Estonia refer to 2008; total imports data for Latvia refer to the first three quarters of 2009; total imports data for Lithuania refer to the average of the first three quarters of 2009.

respective levels of trade of these countries with the euro area.

Lastly, turning to the currencies used to denominate imports into the EU, there is evidence that a significant share of these goods are priced in euro. For the euro area (see Chart 19, left panel), this implies that its trading partners follow a strategy of local currency pricing in many instances, suggesting a necessity or readiness to tolerate exchange rate risk in order to remain price-competitive. For EU countries outside the euro area (see Chart 19, right panel), the case is less clear-cut, with the greater role observed for the euro potentially being the result of a combination of a tendency on the part of extra-EU trading partners to favour transactions conducted in euro instead of in local currency and a willingness on the part of importing countries to accept these conditions, probably owing to their economies' considerable degree of euroisation. Nonetheless, the share of the euro in extra-EU imports is generally lower than its share in corresponding exports (see Chart 19, left panel, and Chart 17, left panel), possibly reflecting the fact that raw material and commodity-related imports are denominated in US dollars.



4 THE USE OF THE EURO IN COUNTRIES OUTSIDE THE EURO AREA

This section reviews the role of the euro in countries outside the euro area. It focuses on official uses of the euro in exchange rate anchoring and in global foreign exchange reserve holdings, as well as private uses in the form of euro banknote holdings (currency substitution) and euro-denominated bank deposits and loans (asset and liability substitution) in countries outside the euro area.

relative stability of currency shares appears to confirm new research findings suggesting that there is no strict relationship between reserve accumulation and reserve diversification. As in the past, these figures refer only to countries which disclose the currency composition of their foreign exchange reserves to the IMF and cover less than two-thirds of global foreign exchange reserves.

4.1 OFFICIAL USE: THE EURO AS ANCHOR AND RESERVE CURRENCY

As in previous years, the use of the euro as an anchor currency remained largely limited to EU neighbouring countries in 2009. The share of the euro in global foreign exchange reserves increased somewhat during the period under review, reaching 27.4% at end-2009 (up from 26.4% in 2008), while the share of the US dollar declined to 62.1% (down from 64.1% in 2008). When adjusting for valuation effects, these changes were less pronounced. Against the backdrop of a re-accumulation of foreign assets by some emerging market central banks, this

THE USE OF THE EURO IN EXCHANGE RATE ANCHORING

As in previous years, the use of the euro in the exchange rate regimes of countries outside the euro area had a strong geographical and institutional underpinning, as it was observed mainly in EU neighbouring regions and in countries that have established special institutional arrangements with the EU or its Member States (see Table 5 and Box 1). With the exception of those countries participating in exchange rate mechanism II (ERM II), the decision to use the euro as an anchor currency is a unilateral decision and does not involve any commitment on the part of the Eurosystem.

Table 5 Countries with exchange rate regimes linked to the euro

(as at 1 May 2010)

Region	Exchange rate regimes	Countries
European Union (non-euro area)	ERM II	Denmark, Estonia ¹⁾ , Latvia ²⁾ , Lithuania ¹⁾
	Euro-based currency boards	Bulgaria
	Managed floating with the euro as reference currency	Romania
	<i>Pro memoria:</i> Independent floating	Czech Republic ³⁾ , Hungary ⁴⁾ , Poland ⁵⁾ , Sweden, United Kingdom
Candidate and potential candidate countries	Unilateral euroisation	Kosovo, Montenegro
	Euro-based currency boards	Bosnia and Herzegovina
	Pegs or managed floating with the euro as reference currency	Croatia, former Yugoslav Republic of Macedonia, Serbia ⁶⁾
	<i>Pro memoria:</i> Independent floating	
	Albania, Turkey	

Table 5 Countries with exchange rate regimes linked to the euro (cont'd)

(as at 1 May 2010)

Region	Exchange rate regimes	Countries
Others	Euroisation	European microstates ⁷⁾ , French territorial communities ⁸⁾
	Pegs based on the euro	CFA franc zone ⁹⁾ , French overseas territories ¹⁰⁾ , Cape Verde, Comoros, São Tomé e Príncipe.
	Pegs and managed floats based on the SDR and other currency baskets involving the euro (share of the euro)	Algeria ¹¹⁾ , Azerbaijan (30%) ¹²⁾ , Botswana ¹³⁾ , Fiji ¹⁴⁾ , Iran ¹⁵⁾ , Kuwait ¹⁶⁾ , Libya ¹⁷⁾ , Morocco (80%) ¹⁸⁾ , Russian Federation (45%) ¹⁹⁾ , Samoa ²⁰⁾ , Singapore ²¹⁾ , Syria ²²⁾ , Tunisia ²³⁾ , Vanuatu ²⁴⁾

Sources: IMF and ECB compilation.

Notes:

- 1) Unilateral commitment to a currency board.
- 2) Unilateral commitment to an exchange rate fluctuation band of +/-1%.
- 3) Česká národní banka has not engaged in direct interventions in the foreign exchange market.
- 4) Hungary let the forint float freely on 25 February 2008.
- 5) Narodowy Bank Polski intervened in the foreign exchange market for the first time on 9 April 2010.
- 6) In December 2008 the National Bank of Serbia's Monetary Policy Committee adopted a Memorandum on Inflation Targeting as a Monetary Strategy, which defines the main principles of using an inflation-targeting regime as the official monetary policy strategy from 1 January 2009.
- 7) Republic of San Marino, Vatican City, Principality of Monaco, Andorra. In the case of Andorra: unilateral euroisation. The other countries and jurisdictions are entitled to use the euro as their official currency.
- 8) Saint-Pierre-et-Miquelon, Mayotte.
- 9) WAEMU (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo) and CAEMC (Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea, Gabon).
- 10) French Polynesia, New Caledonia, Wallis and Futuna.
- 11) Managed float with no preannounced path for the exchange rate.
- 12) Bi-currency basket against the US dollar (70%) and the euro (30%) from 11 March 2008, previously 80% and 20% respectively.
- 13) Weighted basket of currencies comprising the SDR and the South African rand.
- 14) The currency was pegged to a basket of international currencies in May 2007.
- 15) Maintains a de jure managed floating arrangement against a basket of currencies including the euro, US dollar and Japanese yen.
- 16) The currency was pegged to a basket of international currencies in May 2007.
- 17) The rate of exchange is established using a basket of SDR currencies with a fluctuation margin of 25%.
- 18) Bi-currency basket against the euro (80%) and US dollar (20%).
- 19) 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 dollar-euro basket for daily exchange rate management (since February 2007 euro share of 45%).
- 20) The central bank maintains an exchange rate peg based on a basket of the currencies of Samoa's six main trading partners.
- 21) Managed float against an undisclosed basket of currencies maintained within an undisclosed target band.
- 22) In August 2007, the authorities moved the de facto exchange rate regime from a peg to the US dollar regime to an SDR basket within a relatively wide margin.
- 23) The de facto exchange rate regime is a conventional peg to an undisclosed basket of currencies.
- 24) Weighted (trade and tourism receipts) basket of currencies of Vanuatu's major trading partners.

Box I

LONG-TERM TRENDS IN EXCHANGE RATE ANCHORING OF EMERGING MARKET AND DEVELOPING ECONOMIES

Owing to their increasing weight in global trade and global finance, emerging market and developing economies play an increasingly important role in global exchange rate configurations and the adjustment of global trade imbalances. The exchange rate regime choice of these economies has therefore come under increased scrutiny in the economic literature, with particular attention to “de facto” exchange rate regimes as revealed by actual exchange rate behaviour instead of “de jure” regimes as publicly announced by policy authorities. This box proposes a measurement of de facto exchange rate regimes in a sample of almost 150 emerging market and developing economies over the period 1982-2008, and aggregates the individual country results in a global trade-weighted indicator of exchange rate regime choice.

The measurement of de facto exchange rate regimes is performed through a dynamic and synthetic measure of exchange rate policies following an extended version of the Frankel and Wei (2008) estimation methodology. The methodology¹ combines considerations from the fixed-versus-floating literature on de facto exchange rate regimes and the literature on the composition of currency baskets. It determines, in an agnostic way, whether exchange rates are pegged or floating, and in the case of pegs, to which anchor currencies they are pegged, with a focus on the US dollar, the euro, the pound sterling and the Japanese yen as possible anchor currencies.² Specifically, the following system of equations is estimated:

$$d \ln e_{it} = \beta_{i0}^t + \beta_{i1}^t FLEX_{it} + \beta_{i2}^t d \ln EUR_t + \beta_{i3}^t d \ln USD_t + \beta_{i4}^t d \ln JPY_t + \beta_{i5}^t d \ln GBP_t + \varepsilon_{it}$$

$$\text{with } FLEX_{it} = d \ln e_{it} + \frac{\sigma_e^2}{\sigma_{RES}^2} \cdot d \ln RES_{it}$$

$$\text{s.t. } \beta_{iFLEX}^t + \beta_{i1}^t + \beta_{i2}^t + \beta_{i3}^t + \beta_{i4}^t = 1 \text{ and } \beta_{iFLEX}^t, \beta_{i1}^t, \beta_{i2}^t, \beta_{i3}^t, \beta_{i4}^t \geq 0$$

where e_{it} denotes the nominal exchange rate of currency i against a numeraire currency (the SDR), EUR_t , USD_t , JPY_t and GBP_t are the anchor currency exchange rates against the reference currency, β_2, \dots, β_5 are the weights of the four anchor currencies and ε_{it} the error term. The coefficient β_{i1} reflects the degree of flexibility and $FLEX_{it}$ is a bivariate exchange rate flexibility index based on exchange rate behaviour as well as the level of foreign exchange reserves, so as to capture also the policy choices of monetary authorities. To assess developments over time, estimations are carried out over rolling 24-month windows.

The estimation results of the 149 individual countries are then aggregated into a summary indicator of exchange rate regime choice. This summary indicator is computed as a weighted average of estimation coefficients for individual countries, using as weights the share of each individual country in global trade (exports and imports of goods and services).

The results highlight some important features of the long-term trends in exchange rate regimes of emerging market and developing economies. On a trade-weighted basis, over the period 1999 to 2008, the weight of flexible exchange rates oscillated without a clear trend around 40%, suggesting that the degree of fixity of exchange rates has not changed much for the entire group of emerging market and developing economies (see chart).

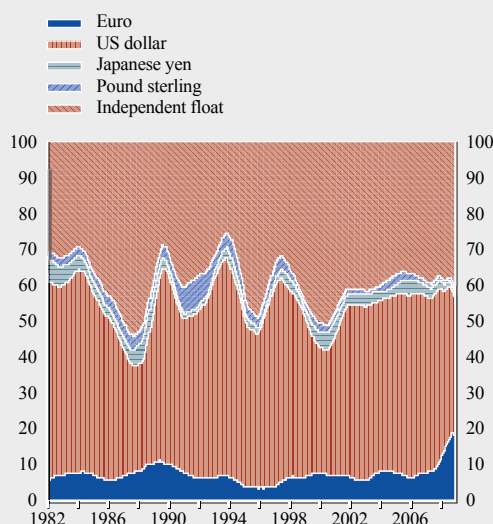
Turning to the four main anchor currencies, the euro's weight remained relatively stable at below 10%, although there was some increase in 2008. This increase may reflect the policy choices of some authorities, for instance that of Russia, where the weight of the euro in exchange rate

1 The original methodology by Frankel and Wei (2008) is extended by performing rolling estimations over time. Moreover, there are some small technical differences from Frankel and Wei, including the formulation of constraints, the construction on the exchange rate flexibility index and the use of optimisation techniques through constrained linear least squares.

2 In the literature, these four currencies are found to have played some role as exchange rate anchors during the past two or three decades, including the IMF's de jure and de facto exchange rate regime classifications and the de facto classifications by Reinhart and Rogoff (2004) and Ilzetzki, Reinhart and Rogoff (2008). In the estimations, the exchange rate of the euro prior to 1999 is proxied by exchange rate series of the French franc. There are three main reasons for this approach. First, it is not possible to introduce several euro legacy currencies into the estimation framework, as that would create a severe multicollinearity bias. Second, the potential alternative of introducing the exchange rate of the synthetic euro, as computed inter alia by the ECB, would be problematic, as it would assign some weight to legacy currencies that did not play any anchoring role in the past. Third, available studies, such as Reinhart and Rogoff (2004) and Meissner and Oomes (2008), show that the French franc was the main euro legacy currency to provide some anchoring role at the global level, while other euro legacy currencies (in particular the Deutsche Mark) played a more limited role at the regional level.

Summary indicator of de facto exchange rate regime choice

(monthly data, 1982-2008)



Note: See text for explanation of estimation methodology and construction of the indicator.

policy formulation was gradually increased between 2006 and 2008. It may, however, also mask increased correlations of some emerging market economies' exchange rates with the euro that are not explained by policy choices but rather by common shocks.³ This highlights a shortcoming of the underlying methodology, which may have difficulty in disentangling exchange rate policy choices from correlations induced by common macroeconomic or financial shocks. The results also suggest that the US dollar's role as an anchor currency was subject to some volatility, but all in all its trade-weighted share as an anchor currency remained at around 50% from 1980 onwards, whereas the share of the pound sterling declined from levels of around 4% in the mid-1990s to roughly 2% over the period 1999 to 2008. Finally, the trade-weighted share of the Japanese yen, although very volatile, was around 3% on average over 1999 to 2008.⁴

All in all, the global indicator suggests that the exchange rate regimes of emerging market and developing economies have, on aggregate, remained fairly stable throughout the past three decades. The weight of floating regimes has oscillated around 40% since the late-1990s, while the US dollar has remained the preponderant anchor currency for fixed exchange rate regimes. The euro's weight as an anchor currency for emerging market and developing economies generally remained limited over the sample period, and was largely confined to countries and regions close to the euro area.

3 This shortcoming of the Frankel and Wei (2008) methodology has been identified, inter alia, by Tavlas et al. (2008).

4 These patterns of exchange rate regime choice developed in quite heterogeneous ways across specific regions. The weight of the euro as an anchor currency turns out to be highest in central, eastern and south-eastern European economies, in line with earlier findings of this review on the strongly regional role of the euro as an anchor currency. In this region, the euro's role as a de facto anchor currency has been subject to some volatility, but overall it appears to have increased over time, reaching above 40% on a trade-weighted basis towards the end of the sample.

THE USE OF THE EURO IN GLOBAL FOREIGN EXCHANGE RESERVES

During the period under review, rapid global reserve growth resumed. As a result, global foreign exchange reserves reached a new historical high (USD 8.2 trillion) at end-2009. Such reserve buffers may have been useful in many vulnerable emerging market countries during the crisis, but the excessive accumulation of foreign reserves is costly (Rodrik, 2006). While enhanced exchange rate flexibility

would help to reduce the social costs of holding reserves, reserve diversification has also been mentioned as a possible remedy.

There appears to be no mechanical link between reserve accumulation and reserve diversification. In fact, recent research suggests that, depending on the motives for holding foreign exchange reserves, a rise in the level of foreign exchange reserves may not be associated with increased diversification of reserve portfolios (see Box 2).

with less diversified reserve portfolios. As can be seen in the charts below, the share of the euro (US dollar), which is the “safe asset” for countries anchoring their exchange rate to the euro (the US dollar), is higher in countries which have large holdings of reserves relative to GDP.

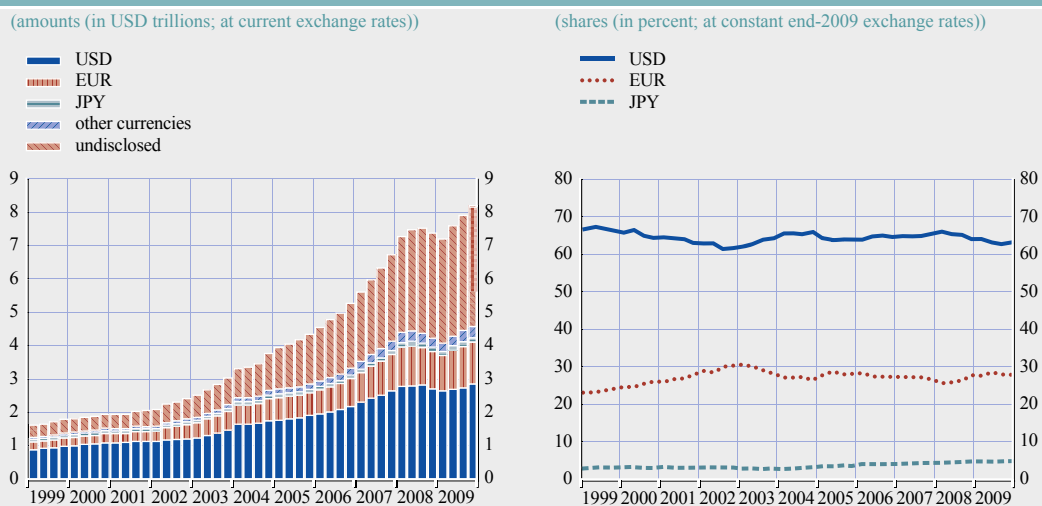
Beck and Weber (2010) propose a possible explanation for such a negative relationship between reserve accumulation and reserve diversification. In a model in which optimal reserve levels and their optimal composition are determined jointly, a rise in reserves which is driven by precautionary motives leads to reserve portfolios with a larger optimal share of the “safe asset”. An exogenous rise in reserves not explained by precautionary motives leads to more reserve diversification, however.

In an empirical application, the authors show that the rise in reserves in the sample of countries shown in the charts is mainly driven by precautionary motives, measured by capital account openness, the imports-to-GDP ratio and exchange rate anchoring. Taken together, these factors explain more than 50% of the variation in reserve holdings. Therefore, it is reasonable to assume that the rise in reserves in these countries was associated with larger allocations to the “safe asset”. A regression of the portfolio share of the safe asset on the residual part of the reserve increase provides some evidence for the notion that an exogenous rise in reserves – i.e. one that is not driven by precautionary motives – leads to more reserve diversification. The emergence of sovereign wealth funds which have been created to manage “excess reserves” to achieve higher returns appears to be consistent with this reasoning.

The notion that reserve accumulation may not necessarily lead to swift diversification of foreign exchange reserve portfolios is also supported by aggregate data which is available at the global level. According to the IMF’s Currency Composition of Official Foreign Exchange

Reserves (COFER) database, which covers the currency composition of around 60% of global foreign exchange reserves, the share of major reserve currencies remained relatively stable throughout 2009. However, this observation should be interpreted with caution since,

Chart 20 Currency composition of global foreign exchange reserves



Sources: IMF and ECB calculations.

according to the IMF, Asian countries in particular do not disclose the currency composition of their foreign exchange reserves.¹⁹

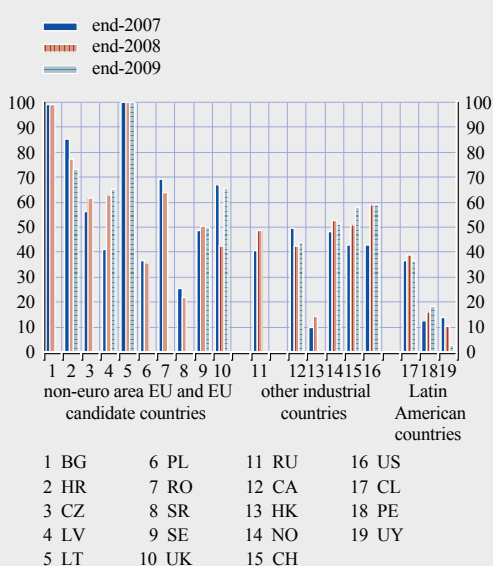
Keeping this caveat in mind, the share of the euro increased by around 1 percentage point to 27.3% at end-2009 (from 26.4% at end-2008). However, this increase reflects to some extent the depreciation of the US dollar against the euro during the same period. When measured at constant end-2009 exchange rates, the share of the euro increased by 0.3 percentage point, whereas the share of the US dollar decreased by around 1 percentage point (see Chart 20).

These changes are in line with normal fluctuations observed before the global economic and financial crisis.

Evidence from the few central banks that publish the currency breakdown of their reserves (see the statistical annex for a complete data overview) suggests that during the period under review, the share of the euro displayed no uniform pattern (see Chart 21) and exhibited somewhat higher volatility when compared with more tranquil periods. In the case of some countries, interventions in the foreign exchange market during the crisis may have affected the currency composition, while, to the extent that “other foreign currency assets”²⁰ are included in national definitions of foreign exchange reserves, the activated currency swap lines with other central banks distorted figures on the currency composition in 2008 and 2009.

Chart 21 Share of the euro in foreign exchange reserves of selected countries

(at constant Q4 2009 exchange rates)



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

4.2 PRIVATE USE: THE EURO AS A PARALLEL CURRENCY

Over the review period, the role of the euro in currency and asset substitution continued to gradually increase outside the euro area. Regarding currency substitution, statistics on net shipments of euro banknotes to destinations outside the euro area suggest that in 2009 there was no visible unwinding of demand for banknotes from non-residents, which had peaked in the last quarter of 2008. The amount of euro banknotes circulating outside the euro area is estimated at around 20-25% of euro currency in circulation and is concentrated in countries neighbouring the euro area.

As regards asset substitution, the share of the euro in total deposits increased during the review period in most non-euro area EU Member

19 As argued in ECB (2008), aggregate figures on the currency composition of global foreign exchange reserves may also reflect changes in the relative weight of individual reserve-holding countries rather than changes in currency preferences.

20 Other foreign currency assets include mainly claims vis-à-vis residents. In particular, in the context of foreign currency liquidity operations, these claims include the foreign currency obtained from currency swaps and distributed to domestic banks.

States and EU candidate countries. These developments are likely to reflect a combination of valuation effects and the response of economic agents outside the euro area to persistent macroeconomic and financial uncertainty. With respect to loans in foreign currency, the global financial crisis has underscored the risks associated with unhedged borrowing by households and firms. Nevertheless, borrowing in euro increased further during 2009 in most countries in EU neighbouring regions. To some extent, such an increase may stem from valuation effects in countries that experienced a depreciation of their currencies, while in those countries that had only limited or no exchange rate adjustment, private agents continued to underestimate the potential risks of foreign currency lending.

4.2.1 CURRENCY SUBSTITUTION – THE USE OF EURO BANKNOTES OUTSIDE THE EURO AREA

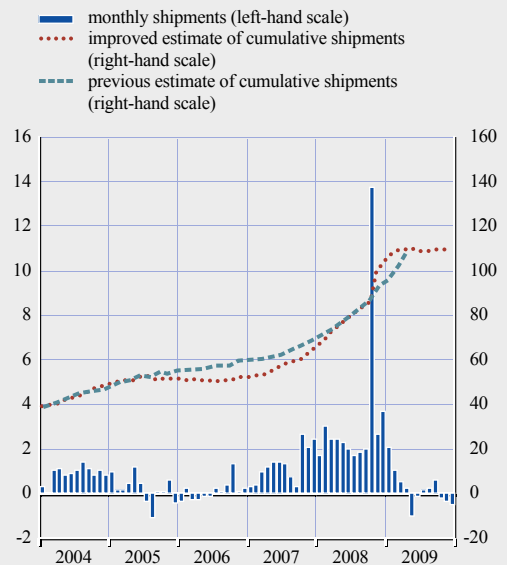
EVIDENCE FROM NET EURO BANKNOTE SHIPMENT DATA COLLECTED BY THE EUROSISTEM

The use of euro banknotes outside the euro area cannot be estimated with full precision. One estimate of the amount of euro banknotes circulating abroad published regularly in this report is the accumulation over time of net shipments of euro banknotes by euro area monetary financial institutions (MFIs) to destinations outside the euro area (see Chart 22).

According to this method, around €116 billion worth of euro banknotes are estimated to have been in circulation outside the euro area at the end of December 2009, around 14% of the currency in circulation for that reference month. This estimate is considered to be a lower bound, given that the banking channel is only one of a number of channels via which euro banknotes are shipped outside the euro area. Indeed, anecdotal evidence suggests that the outflows of euro banknotes via non-MFI channels (for example, via tourism or workers' remittances) are greater than the backflow via non-MFI channels in most countries. The net shipments by banks thus create an incomplete picture of the true net banknote flows. Taking into account a range of different

Chart 22 Net shipments of euro banknotes to destinations outside the euro area

(EUR billions; seasonally adjusted)



Source: Eurosystem.

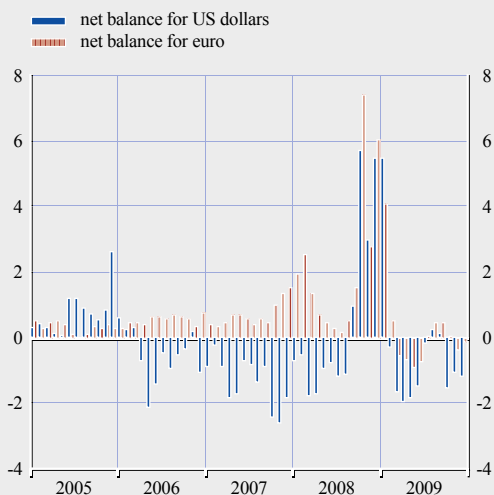
Notes: Net shipments = euro banknotes sent abroad minus euro banknotes received.

estimates suggests that around 20% to 25% of euro currency in circulation was circulating outside the euro area at the end of 2009.

The coverage of the statistics on net shipments of euro banknotes to/from destinations outside the euro area has been revised since the last review. The revised figures show even more clearly net shipments of euro banknotes abroad in the immediate aftermath of the default of Lehman Brothers and for the remainder of 2008. In 2009 foreign demand for euro banknotes increased only slightly as compared with the level observed at the end of 2008. Indeed, from the second quarter of 2009 onwards seasonally adjusted net shipments were close to zero, but there was no visible unwinding of the additional demand by non-residents registered during the period of heightened uncertainty after the default of Lehman Brothers. The largely balanced net shipment position during most of 2009 conceals the fact that the underlying gross shipments of banknotes abroad and the gross backflows received from non-euro

Chart 23 Foreign currency brought into and taken out of the Russian Federation by authorised banks

(USD billions)



Source: Bank of Russia.

for instance, publishes data on foreign currency brought into and taken out of the Russian Federation by authorised banks. These statistics show that the strong increase recorded in the net shipment of euro banknotes in the last quarter of 2008 continued in January 2009 (see Chart 23). However, several subsequent months of 2009 saw net outflows of banknotes, so that for the year as a whole the increase in holdings of euro banknotes by residents of Russia was relatively limited when compared with previous years. Demand for US dollar banknotes by Russian residents had also increased in the aftermath of the default of Lehman Brothers, but the subsequent net outflows in 2009 were larger than in the case of the euro, suggesting a return to the pattern observed until mid-2008. This points to a gradual reduction in the holdings of US dollar banknotes and a rebalancing of the composition of non-ruble banknote holdings.

area residents remained in line with volumes observed in earlier periods.

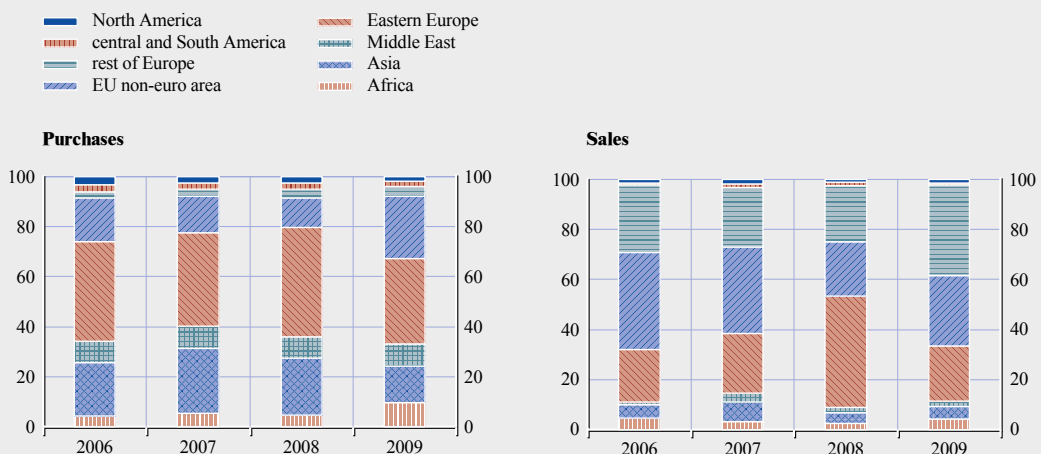
Further evidence on the holdings of euro currency abroad can be taken from statistics provided by the monetary authorities of non-euro area countries. The Bank of Russia,

THE REGIONAL BREAKDOWN OF EURO PURCHASES FROM AND SALES TO DESTINATIONS OUTSIDE THE EURO AREA: EVIDENCE FROM GLOBALLY ACTIVE BANKNOTE WHOLESALE BANKS

Since 2006 globally active banknote wholesale banks have provided their trade figures on a voluntary basis to the ECB. On the basis of these annual reports, the inflows and

Chart 24 Regional breakdown of euro banknote purchases from and sales to destinations outside the euro area (from 2006 to 2009)

(percentages)



Source: ECB, based on data from banknote wholesale banks.

outflows of euro banknotes can be attributed to different regions, and shifts in the usage of euro banknotes per region can be identified. In 2009 exports and imports of euro banknotes by wholesale banks were fairly balanced, following a strong net outflow of euro banknotes from the euro area in the last quarter of 2008 owing to the intensification of the crisis after the default of Lehman Brothers. Chart 24 shows the regions from which wholesale banks purchased euro banknotes and those to which they sold them from 2006 to 2009.

In 2009, 37% of all euro banknotes sold by wholesale banks to destinations outside the euro area went to the region “rest of Europe” (predominantly to Switzerland). The region “EU – non-euro area” (mainly the United Kingdom) accounted for 28% and “eastern Europe” for 22% of all sales. In the latter region, demand mainly came from Russia.

Looking at imports of euro banknotes (purchases), 34% of euro banknote inflows in 2009 came from the region “eastern Europe” and 25% from the region “EU – non-euro area”. Most of the inflows from these regions originated from eastern or south-eastern European countries

such as Turkey (remittances from expatriates, tourism and trade). As in past years, significant euro banknote inflows originated from the regions “Asia” (14% of all purchases) and the “Middle East” (9% of all purchases), which host international market-places where the use of cash is preferable to cashless transactions owing to immediate settlement.

Overall, as in previous years, euro banknotes circulating outside the euro area in 2009 were predominantly used in neighbouring countries of the euro area. In fact, taken together, banknote sales to Switzerland and the United Kingdom account for nearly two-thirds of all outflows. Anecdotal evidence suggests that the main motive for holding euro cash in the latter case was linked to tourism, i.e. a preference on the part of British tourists to hold the major part of their holiday expenditure in cash. In the case of Switzerland, the high demand for euro banknotes may partially be explained by the preference of some Swiss residents to pay cash, even for relatively high-value goods. The comparably lower prices of consumer goods in the euro area countries surrounding Switzerland make the import of such goods attractive for Swiss residents.

Box 3

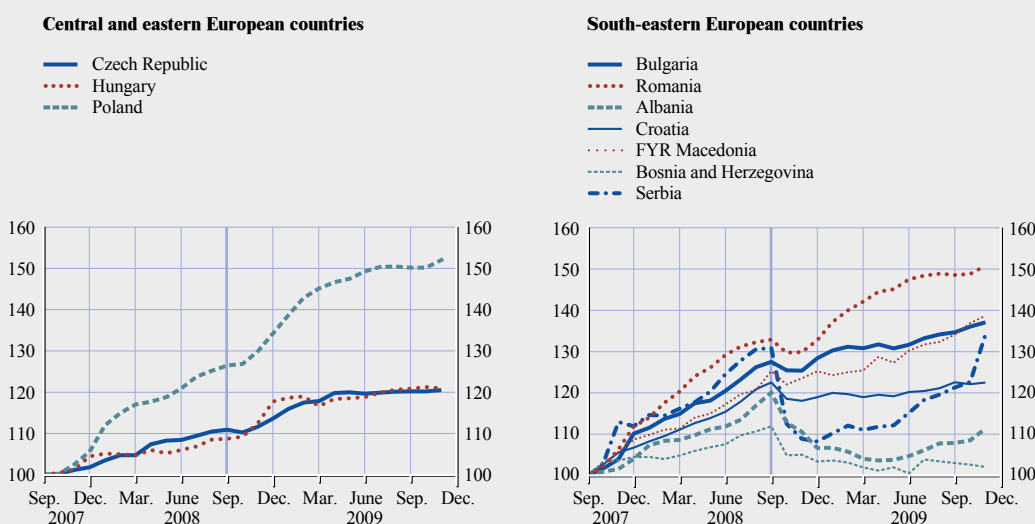
CENTRAL, EASTERN AND SOUTH-EASTERN EUROPEAN HOUSEHOLDS AND THE CRISIS: LOWER CASH HOLDINGS DESPITE DEPOSIT WITHDRAWALS. WHERE DID THE MONEY GO?

When households make portfolio decisions, they seem to choose the currency denomination of asset holdings based on their confidence in the local currency. The choice they make between cash and deposits appears to be based on their trust in banks.

Monetary statistics (adjusted for exchange rate movements) show that the arrival of the financial crisis in central, eastern and south-eastern Europe in the autumn of 2008 provoked an immediate reaction from households: in many countries, people withdrew substantial amounts of savings deposits in October and November 2008 (see Chart A). On the one hand, these adjustments were driven by a substantial substitution effect caused by a significant deterioration in both trust in banks and trust in the future stability of the local currency, in particular in south-eastern European countries. On the other hand, the development of total household deposits also reflects an income effect caused by the (actual and expected) adverse effects of the recession. The size and sign of the combined effect differ across the countries in the region as well as over time.

Chart A Total savings deposits (exchange rate-adjusted) of households at banks in central, eastern and south-eastern Europe

(index September 2007=1)



Sources: Dvorsky, Scheiber and Stix (2010).

Note: The constructed index keeps the exchange rate fixed at the level of end-September 2007 and therefore depicts the actual change in total savings deposits through net flows.

In central and eastern Europe, the growth of total savings deposits came to a temporary halt in October 2008, but growth resumed in the following months at an even faster pace than before the start of the crisis. This development may partly reflect a portfolio shift from riskier assets to savings deposits as well as an increase in precautionary savings. However, in the second quarter of 2009, the growth of savings deposits slowed down, and it stagnated in the third and fourth quarters of 2009. This may be seen as a reflection of the real effects of the financial crisis, which as of 2009 were increasingly being felt by households dampening their ability to save.

In south-eastern Europe, public trust in the banking system and the perceived safety of bank deposits dropped sharply as the crisis started to unfold. This drop provoked massive withdrawals of savings deposits in many countries in the region in the autumn of 2008. Savers in Bulgaria, Romania and the former Yugoslav Republic of Macedonia were fairly quick to redeposit these funds in the following months, whereas this process took considerably longer in Serbia and Croatia. In those two countries, the pre-crisis level of total savings was not re-attained until the end of 2009.

Additional information can be obtained from the Euro Survey of the Oesterreichische Nationalbank (OeNB), which is conducted every half year and comprises ten countries, five EU Member States (Bulgaria, Czech Republic, Hungary, Poland and Romania) and five EU candidate and potential candidate countries (Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia and Serbia). One of the particular advantages of the OeNB Euro Survey is that it provides evidence on households' behaviour, as regards their savings and their cash holdings, which are not covered by monetary statistics. Thus we know that a relatively high share of savers withdrew their deposits for fear of a bank collapse (see the table). In Serbia, for instance, 34% of respondents reported that they had withdrawn money for this reason. Interestingly, the share of

Financial crisis and dissemination of savings deposits

	Share of savers in percentage who withdrew money for fear of a bank collapse	Pre-crisis level: Share of respondents in percentage who hold savings deposits	2009 autumn wave: Share of respondents in percentage who hold savings deposits
Czech Republic	13.6	35.7	32.2
Hungary	17.1	23.1	24.6
Poland	9.4	13.5	10.6
Bulgaria	10.7	22.9	16.4
Romania	16.9	16.5	13.5
Albania	16.1	23.4	15.5
Bosnia and Herzegovina	19.1	6.3	3.8
Croatia	5.6	27.0	20.1
FYR Macedonia	19.3	18.6	24.3
Serbia	33.8	10.9	10.1

Source: OeNB Euro Survey.

Notes: Pre-crisis levels refer to the combined average of the responses received in the autumn 2007/spring 2008 waves. The pre-crisis entry for Poland refers to the autumn 2008 wave.

respondents who said that they had savings deposits significantly declined from pre-crisis levels in six out of ten countries in autumn 2009. It may be assumed that some interviewees not only withdrew their savings but in fact closed their savings accounts completely.

In particular in south-eastern Europe, monetary statistics indicate that a substantial share of deposits are denominated in euro. Therefore, it may be assumed that savers preferred to have withdrawals disbursed in euro cash. This shift in households' portfolios is reflected by the net issuance of euro banknotes in Austria. OeNB data show a tremendous increase in the demand for euro banknotes between end-September and mid-October 2008.¹

Dvorsky, Scheiber and Stix (2009b) discuss several possible explanations for the whereabouts of the withdrawn money. First, withdrawn amounts might have been kept as cash "under the mattress". Judging from local cash-in-circulation figures, however, this hypothesis only accounts for a share of the withdrawn money in some countries. The authors' second hypothesis is thus that withdrawn deposits and cash reserves in euro mainly served to replace lost or decreased income. The third hypothesis relates to the possibility that the withdrawn money and euro cash reserves might have been reinvested in alternative assets or abroad.

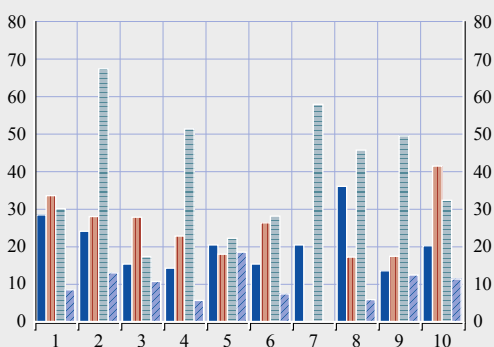
Direct evidence from responses to ad hoc questions in the autumn 2009 wave of the OeNB Euro Survey broadly confirmed the second hypothesis, namely that people essentially used the money they withdrew to cover their current expenses (see Chart B). This result was particularly pronounced in Hungary, Bosnia and Herzegovina, Bulgaria, the former Yugoslav Republic of Macedonia and Croatia. Only 20% to 30% of respondents reported that they had redeposited the money (or parts thereof) with the banking system. Between 10% and 30% of respondents answered that they had retained the withdrawn money in cash. The share of respondents who reported that they had reinvested the money in alternative assets or abroad was lowest; this share may – in the absence of quantitative information – be assumed to reflect the wealthier households covered by the survey.

¹ Compared with the monthly average, the value of euro banknotes withdrawn increased by 110% in October 2008. At the same time, lodgements remained stable.

Chart B Answers to the question “How did you use the money you have withdrawn since September 2008?”

(as a percentage of respondents who withdrew money (multiple answers))

- I still hold all or some of the withdrawn money as cash
- I put all or some of the money back into the bank
- I spent all or some of the money to finance my life
- I invested the money in other assets or transferred it abroad



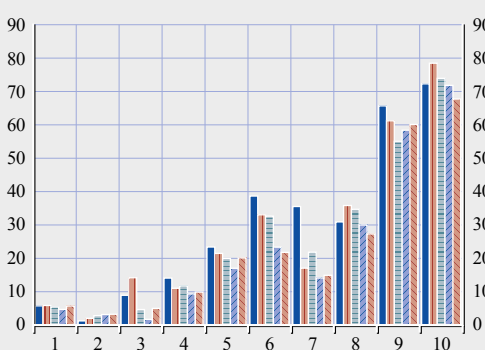
- | | |
|------------------|--------------------------|
| 1 Czech Republic | 6 Albania |
| 2 Hungary | 7 Bosnia and Herzegovina |
| 3 Poland | 8 Croatia |
| 4 Bulgaria | 9 FYR Macedonia |
| 5 Romania | 10 Serbia |

Source: OeNB Euro Survey, autumn 2009 wave.

Chart C Currency substitution index

(in percent)

- 2007 autumn wave
- 2008 spring wave
- 2008 autumn wave
- 2009 spring wave
- 2009 autumn wave



- | | |
|------------------|--------------------------|
| 1 Czech Republic | 6 Albania |
| 2 Hungary | 7 Bosnia and Herzegovina |
| 3 Poland | 8 Croatia |
| 4 Bulgaria | 9 FYR Macedonia |
| 5 Romania | 10 Serbia |

Source: OeNB Euro Survey.
Note: Currency substitution index = euro cash/total currency in circulation.

Chart C reports the evolution of currency substitution over the last five survey waves. During the crisis, the share of euro cash in circulation over total currency in circulation declined mainly in candidate and potential candidate countries. It may be assumed that this development was driven by the aforementioned adverse income effect.

To sum up, aggregate statistics show that the growth in savings deposits slowed down considerably in many of the countries analysed. The survey results reveal that this may be explained, at least partly, by households’ reduced ability to save and by the need of many households to use the deposits they withdrew to finance their current expenses. Furthermore, during the financial and economic crisis, the extent of currency substitution declined mainly in candidate and potential candidate countries, presumably as the result of an adverse income effect.

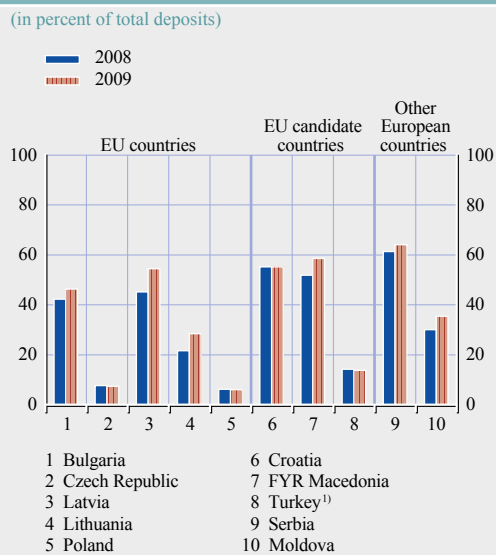
4.2.2 ASSET AND LIABILITY SUBSTITUTION – THE USE OF EURO-DENOMINATED BANK DEPOSITS AND LOANS

Economic agents in central, eastern and south-eastern Europe widely use the euro for domestic financial transactions. As in previous years, this review reports two measures related to the use of the euro in the denomination of deposits and loans in non-euro area countries: the euro’s share in total foreign currency deposits (loans)

and its share in total deposits (loans) including domestic assets (liabilities). Whereas the first measure provides an indication of the role of the euro in asset (liability) substitution compared with other currencies, the second indicator refers more closely to the use of foreign currencies and asset (liability) substitution in general.

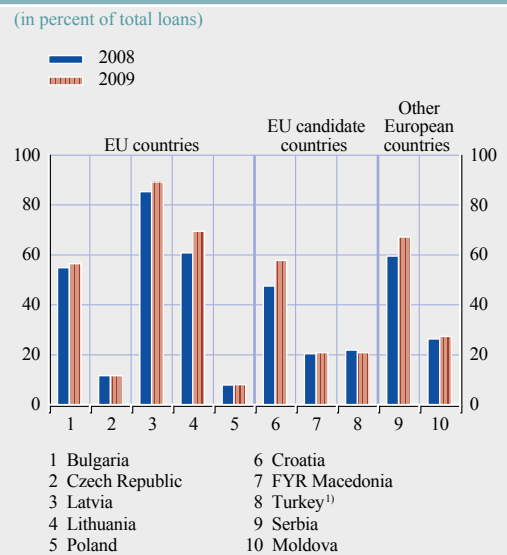
Over the review period, the share of the euro in total deposits increased in most non-euro area EU Member States and EU candidate countries

Chart 25 The share of the euro in the deposits of selected EU Member States and EU candidate countries



Sources: National central banks and ECB staff calculations.
Notes: The definition of deposits may vary across countries. Data include foreign exchange-indexed deposits for Bulgaria, Croatia and Serbia.
1) Deposits of foreign branches of Turkish banks are included.

Chart 26 The share of the euro in the loans of selected EU Member States and EU candidate countries



Sources: National central banks and ECB staff calculations.
Notes: The definition of loans may vary across countries. Data include foreign exchange-indexed loans for Bulgaria, Croatia and Serbia.
1) Includes foreign branches of Turkish banks.

(see Chart 25).²¹ While this increase to some extent reflects valuation effects stemming from the depreciation of most local currencies against the euro during 2009, it could also stem from a response of economic agents to elevated macroeconomic and financial uncertainty.²² In such an environment, a rise in perceived exchange rate risk can foster the use of foreign currencies, including the euro, as a store of value (see Box 4).

As regards euro-denominated loans in EU Member States and EU candidate countries, the global financial crisis has underscored the risks associated with unhedged borrowing by households and corporations.²³ In particular, the depreciation of local currencies against the euro or the US dollar will lead to an increase in the borrowing costs of these economic agents. Nevertheless, despite local regulatory efforts to limit foreign currency lending, borrowing in euro relative to total borrowing increased in most countries in 2009 (see Chart 26).²⁴ To some extent, such an increase may stem from widening interest rate differentials, valuation effects and the fact that the depreciation of local currencies

was relatively contained in most countries, in some cases owing to interventions in the foreign exchange markets.²⁵ At the same time, economic agents may have formed expectations of returning trend appreciations of the local currencies. More generally, increases in foreign currency borrowing can also be driven by the deposit side or parent bank financing in euro as banks active in the region cannot run large net open foreign exchange positions (see Box 2).

21 Within foreign currency deposits, the share of the euro has remained high, i.e. ranging from around 60% to 90%, except in Turkey, where the share of the euro in total foreign currency deposits stood at 41% as at end-2009 (see Table 10 in the Statistical Annex).
22 A complete currency breakdown of deposit data is not available. Therefore, currency shares are reported at current exchange rates, thus including valuation effects.
23 See the ESCB reports by Winkler and Beck (2006) and Bracke et al. (2008) and ECB (2010) for a discussion of these risks in EU candidate countries.
24 Within foreign currency loans, the share of the euro has remained high, i.e. ranging around 80-90%, except in Poland and Turkey, where the share of the euro in total foreign currency deposits stood at 26% and 65% as at end-2009 (see Table 10 in the Statistical Annex).
25 SA complete currency breakdown of loan data is not available. Currency shares are therefore reported at current exchange rates, thus including valuation effects.

Box 4

WHY IS LOAN AND DEPOSIT SUBSTITUTION IN CENTRAL AND EASTERN EUROPE SO PERSISTENT? NEW EVIDENCE FROM HOUSEHOLD AND COMPANY DATA

Between 1999 and 2009, the use of foreign currency for domestic assets and liabilities in central and eastern Europe has been very persistent and can only to some extent be explained by short-term interest rate differentials (Calvo et al, 2007). One such structural factor is the expectation of EU membership and the subsequent adoption of the euro, which might encourage borrowing in euro owing to a lower perceived exchange rate risk (Rosenberg and Tirpak, 2008). In addition, the memory of past periods of macroeconomic instability can be a motive for households to make deposits in foreign currency (see Box 3). Finally, asset and liability substitution may influence each other as banks attempt to keep only limited open foreign currency positions on their balance sheets (Luca and Petrova, 2008).

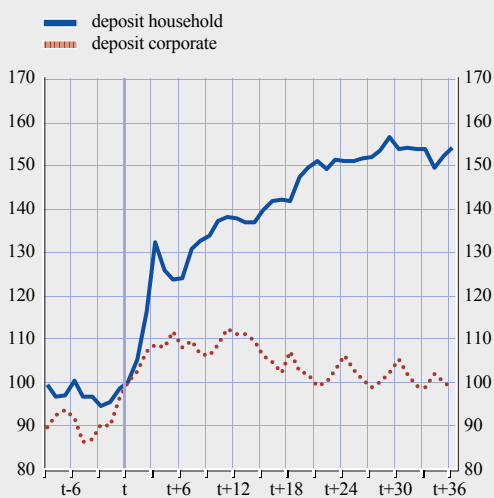
This box focuses on these structural factors which might explain asset and liability substitution in central and eastern Europe. Using an event study-like approach, it first examines how asset and liability substitution were affected by financial crises. Chart A shows the evolution of an index of deposit substitution following major currency and financial crisis episodes in the 1990s, suggesting that households in particular tend to shift towards foreign currency deposits after financial crises. This increase is persistent, i.e. after 36 months, household deposits in foreign currency relative to total deposits are still at elevated levels. Corporate deposits, on the other hand, tend to gradually return to pre-crisis levels. Since the origins of

the 2008/09 crisis were different to those of past crises in the region, separate evidence was collected for deposits and loans for that period. They confirm that households have also increasingly made deposits in foreign currency since September 2008 (Chart B). At the same time, household borrowing in foreign currency also increased during this period. For firms, a similar but less pronounced pattern can be observed in the aftermath of the 2008/09 crisis.

While the increases in deposit substitution appear to be consistent with rational risk and return considerations, the rise in foreign currency borrowing after financial crises is more difficult to explain. To some extent, these increases may reflect valuation effects owing to the depreciation of the respective local currencies against the euro. In addition, the increase in foreign currency borrowing could also be driven by increased deposit substitution.

Chart A Levels of deposit substitution after crisis episodes in the 1990s

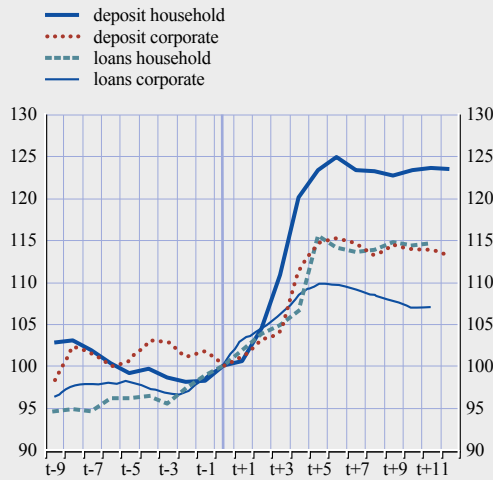
(index: $t = 100$)



Sources: National central banks and ECB calculations.
Notes: The index in Chart A is the unweighted average for Russia, Kazakhstan, Bulgaria, Croatia, Czech Republic, Latvia and Albania and includes individual crisis observations for each country.

Chart B Levels of deposit and loan substitution before and after September 2008

(index: Sep. 2008 = 100)



Sources: National central banks and ECB calculations.
 Notes: For loans, the unweighted average index in Chart B is computed for Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Latvia, Moldova, Poland, Turkey, Russia, Ukraine, Lithuania and Estonia. For deposits, the index is an unweighted average for Russia, Kazakhstan, Bulgaria, Croatia, Czech Republic, Latvia, Poland, Turkey, Georgia, Moldova and Lithuania.

In order to shed more light on these different factors, an econometric study was carried out, using an unbalanced panel of 14 central and eastern European countries. In separate regressions of the share of foreign currency-denominated deposits and loans, the impact of a crisis memory indicator was studied when controlling for exchange rate levels (to capture valuation effects) and for the share of foreign currency-denominated loans when analysing deposits, and vice versa.¹ The crisis memory indicator was chosen so as to maximise the explanatory power of the regression. On the deposits side, the results confirm that the “crisis memory” of households (estimated at around eight years) is considerably longer than that of firms (estimated at around four years). On the loans side, the results are less robust, with some indications that the impact of crises on foreign currency-denominated loans may be negative when controlling for valuation effects and the rise in foreign currency-denominated deposits.

¹ In order to account for endogeneity, lags of the respective variables were also used as a robustness check. Using lags of the respective variables does not affect the main results.



5 SPECIAL FEATURES

5.1 EXCESS RETURNS ON NET FOREIGN ASSETS AND INTERNATIONAL CURRENCIES²⁶

This special feature examines whether economies which issue an international currency enjoy superior excess returns on their foreign assets and liabilities. Residents of the United States earn relatively high returns on their foreign assets, while paying relatively low returns on their liabilities towards foreign residents. This is considered one of the main implications associated with the issuance of the US dollar and the central position of the US financial system in the international monetary system. This special feature extends the analysis of excess returns on foreign assets and liabilities to a large sample of countries, focusing in particular on the main international currencies, including the euro, over the period 1981-2008. The results show that the benefit of having an international currency seems to emerge only when focusing on the yield differential from investment income. Japan, Switzerland and, to a lesser extent, the United Kingdom display excess yields similar to those of the United States. Excess yields of the euro area are on average negative, although it is possible to detect a clear upward trend until the end of the sample period, which started before the launch of the single currency. The empirical investigation shows that a reduction in country risk, other things being equal, tends to increase excess yields, excluding capital gains. However, when capital gains are included, the United States remains the only country to enjoy positive excess total returns which are far above those of all the other countries. Valuation effects owing to exchange rate movements may help to explain these gains and higher excess total returns.

INTRODUCTION

It has been noted that US residents earn relatively high returns on their foreign assets, while paying relatively low returns on their liabilities towards foreign residents. This positive excess return enjoyed by US residents is sometimes referred to in the literature as the “exorbitant privilege” of having an international currency, issuing widely accepted and relatively safe low-yield domestic currency liabilities to

finance investment abroad with a higher risk-return profile. For many economists, this is therefore one of the implications stemming from the issuance of the main international currency, the US dollar, and the central position of the US financial system in the international monetary system. Countries which issue international currencies may be subject to different costs and benefits stemming from the wider circulation of their currencies.²⁷ For instance, the internationalisation of the currency may make it more difficult to run an independent monetary policy. On the other hand, there are also microeconomic gains for residents stemming from lower transaction costs and macroeconomic gains for the monetary authorities which issue non-interest-bearing liabilities and hold remunerated foreign reserve assets, i.e. seigniorage revenues.²⁸ The notion of “positive excess returns between foreign assets and liabilities” is therefore an extension of the concept of seigniorage – which is limited to the balance sheet of monetary authorities – to the whole economy issuing an international currency.

The majority of economic studies, so far, have tried to explain the nature and origin of the positive differential returns between foreign assets and liabilities for the US dollar, but have paid less attention to other international currencies such as the euro. As the euro has progressively achieved international status, it is interesting to consider whether the new standing of the European currency in the international financial markets has implications similar to those for the United States or whether the latter are a unique feature of the US currency. The purpose of this special feature is to place the excess return on foreign assets and liabilities of the United States in an international perspective, examining the euro and other international currencies, and to study the determinants of

²⁶ This section is based on the research work of Habib (2010).

²⁷ See Portes and Papaioannou (2008).

²⁸ These gains are, however, relatively small. For instance, the seigniorage revenues of the United States are estimated to be only around 0.1% of GDP and even lower in the euro area, where the share of currency in circulation held by non-euro area residents is much lower than in the United States.

differential returns between foreign assets and liabilities in a large cross-section of countries over the past three decades.

The special feature starts with a brief survey of the relevant literature on excess returns on net foreign assets, in particular in the United States. It then presents some descriptive statistics, comparing major international currencies, and explores the determinants of excess returns on net foreign assets in a formal panel setting. Some conclusions are presented at the end.

THE EXISTENCE OF EXCESS RETURNS WHEN ISSUING AN INTERNATIONAL CURRENCY: A REVIEW OF THE LITERATURE

There are two puzzles in the dynamics of US external accounts. First, the income balance of the United States – the net flow of revenues generated by foreign investment positions – has persistently remained positive in spite of an overall negative external stock position. Second, large current account deficits have been only partly reflected in a deterioration of the international investment position of the United States, owing to large net capital gains of US residents. Overall, irrespective of whether capital gains are included or excluded, US residents pay relatively low returns on their liabilities to foreigners, while earning relatively high returns on their foreign assets. This is the so-called “exorbitant privilege” of issuing an international currency, which is usually explained by the central role of the United States in the international monetary system, issuing relatively safe, low-yield dollar liabilities to foreigners, mainly in the form of debt securities, and investing the proceeds in riskier high-yield investments abroad.

There has been a lively debate among economists about the rationale for large positive excess returns on the net foreign assets of the United States. Hausmann and Sturzenegger (2006) maintain that the “positive” income balance of the United States – despite an overall negative stock position towards the rest of the world – measures the “true value” of its foreign assets, which are

therefore positive and not negative as reported by financial statistics. The difference between the fair valuation of US net foreign assets and official statistics is referred to by these two authors as “dark matter”, and they propose two potential factors which may account for this: first, the underestimation of the true value of US direct investment abroad, with official statistics failing to capture the export of US intangible capital; second, unreported trade of liquidity and insurance services provided by the United States, reflecting seigniorage and a negative risk premium on US dollar reserve assets.

Indeed, as regards the first factor, the income balance of the United States has remained positive, mainly owing to excess returns from US direct investment abroad relative to returns from foreign direct investment (FDI) in the United States (Higgins et al., 2005 and ECB, 2006). This in turn has been justified by a seniority or maturity premium of US direct investment abroad compared with foreign investment in the United States (Mataloni, 2000); compensation for the relatively higher risk attached to US investment abroad (Hung and Mascaro, 2004); tax-induced income shifting of multinational companies (Bosworth et al., 2007); and, finally, asymmetries in recorded reinvested earnings (Gros, 2006b).

The second factor ties the existence of a positive return differential on the foreign assets and liabilities of the United States to the international status of the US dollar. This benefit represents the compensation for the role of the United States as provider of (a) international liquidity and (b) safe financial assets. The first function – the provision of liquidity to the rest of the world – is the traditional view dating back to the contribution of Triffin (1960). The second one – the provision of safe financial assets – is the modern version of the Triffin dilemma (Caballero et al., 2008 and Caballero and Krishnamurthy, 2009). This second function has been investigated by Gourinchas and Rey (2005), who stress the role of the United States as *levered investor*, issuing safe low-yield assets and reinvesting the proceeds in riskier

high-yield securities. In their view, leverage – measured as the share of risky assets, FDI and equity in total assets relative to the same share in total liabilities – explains up to a quarter of the excess returns of the United States between 1973 and 2004.

Other economists, however, believe that the positive excess returns of the United States are just a statistical artefact. According to this view, statistical adjustments, not the over-performance of US investments or exchange rate effects, explain large net positive valuation gains by the United States and part of the excess return implied in US net foreign assets. Curcuru et al. (2008) claim that there is a bias in the calculation of returns owing to the internal inconsistency of stock data – which are subject to substantial revisions – and flow data – which are only partly revised. Gros (2006) notes that the category “other changes”, which are different from exchange rate and price adjustments and not easy to interpret by means of economic theory, explains a large part of the valuation gains of US investors in the international statistics of the US Bureau of Economic Analysis. Finally, Lane and Milesi-Ferretti (2008) argue that excess returns could reflect unrecorded financial flows in the portfolio category and mis-measured initial positions of non-portfolio holdings of banks and non-banks.

However, as this special feature will show, according to international statistics, the positive excess return of the United States is exceptional when compared with that of other countries. In addition, there is tentative evidence that other international currencies may benefit from positive excess returns on their foreign assets and liabilities. Meissner and Taylor (2006) show that Great Britain between 1870 and 1913 – when the British empire was the major world financial power and the pound sterling the main international currency – enjoyed a *yield* privilege – excluding capital gains – similar to that of the United States since the 1980s. The work of Meissner and Taylor (2006) is one of the few studies that devotes attention to the “excess returns” of other G7 economies.

Notably, they find that France and Japan enjoy a positive return differential, which is, however, statistically significant only for *yield* differentials, i.e. from investment income excluding capital gains. Other cross-country studies of returns on foreign assets and liabilities include Bracke and Schmitz (2008) and Lane and Milesi-Ferretti (2002, 2003, 2005a and 2005b). Finally, only Portes and Papaioannou (2008) compare excess returns of the United States and the euro area since 1999. Differential returns oscillate between positive and negative values for the euro area, suggesting that euro area residents do not enjoy a benefit similar to that of the United States. The next section examines this question more closely by expanding the comparison of differential returns between foreign assets and liabilities to cover a longer period of time, starting from 1981, and other international currencies.

DIFFERENTIAL RETURNS ON FOREIGN ASSETS AND LIABILITIES: AN INTERNATIONAL COMPARISON

Following the seminal work of Lane and Milesi Ferretti (2002 and 2003), real (CPI-deflated) returns on foreign assets and foreign liabilities were calculated for 48 countries from 1981 to 2008.²⁹ These returns include two main components: yields from the investment income balance (i.e. dividends, interest payments, branch profits and reinvested earnings) and rates of capital gain, mainly owing to the valuation effects of exchange rate and asset price changes. These returns represent what countries earn on their foreign assets and pay out on their foreign liabilities. Returns are derived from balance of payments flows and international investment positions, using IMF data and the Mark-II database of Lane and Milesi-Ferretti (2007). In practice, investment income *flows* in one period are divided by the

29 The sample includes the following countries: - advanced economies: Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States; emerging market economies: - Argentina, Brazil, Chile, China, Colombia, Croatia, Czech Republic, Hong Kong, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, Thailand, Turkey, Uruguay and Venezuela.

asset or liability *positions* at the end of the previous period to obtain “yields” from the investment income balance on assets (i^A) and on liabilities (i^L). Similarly, the capital gain in one period – which is equal to the change in the asset/liability position between two periods minus the capital outflow/inflow in the same period – is divided by the stock position in the previous period to obtain “rates of capital gain” on assets (k^A) and on liabilities (k^L). Capital gains or losses are the result of changes in the prices at which securities are valued and changes in the exchange rate at which the foreign currency part of foreign assets and liabilities is converted into domestic currency. Total returns on assets (r^A) and liabilities (r^L) are calculated as the sum of yields and rates of capital gain, including an adjustment term for inflation when calculating returns in real terms. This adjustment term for inflation, however, is cancelled out when computing differential returns between foreign assets and liabilities, producing the following identity:³⁰

$$r_t^A - r_t^L = (i_t^A - i_t^L) + (k_t^A - k_t^L) \quad (1)$$

excess real total return = excess real yield + excess real rate of capital gain.

This key concept of the excess real total return is analysed in the remainder of this special feature. This sub-section focuses on the excess total returns and yields of the six major international currencies, according to their foreign exchange turnover in 2007: the US dollar, the euro, the Japanese yen, the pound sterling, the Swiss franc and the Australian dollar.³¹ Since the sample goes back to the beginning of the 1980s, the excess returns of Germany and France, which both issued currencies with an international role before the introduction of the euro, are included as a benchmark. In the next sub-section, the determinants of excess real returns are studied in a formal panel econometric setting for the entire sample of 48 countries.

Chart 27 shows the excess real *yields* – i.e. the excess returns implied by the income balance excluding capital gains – between 1981 and 2008 for the international currencies examined, highlighting a number of interesting stylised facts. First, yields on the foreign assets of the

30 See Habib (2010) for a more detailed explanation of the calculation of returns.

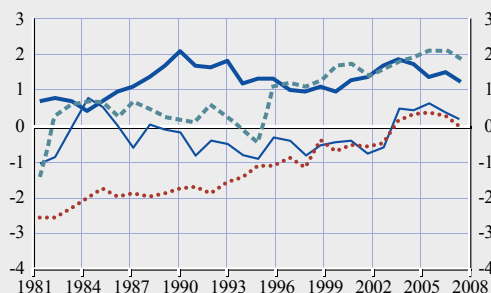
31 See BIS (2007).

Chart 27 Differential real yields (income balance) between foreign assets and liabilities

(percentages)

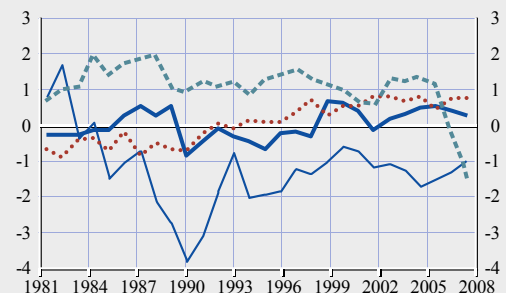
a) United States, euro area, Japan and Germany

— United States
 euro area
 - - - Japan
 — Germany



b) France, United Kingdom, Switzerland and Australia

— France
 United Kingdom
 - - - Switzerland
 — Australia



Sources: Habib (2010) based on IMF Balance of Payments Statistics and Mark-II dataset of Lane and Milesi-Ferretti (2007).
 Notes: For the euro area, yields until 1999 are calculated as the average of those of the founding countries, including Greece and excluding Belgium and Luxembourg.

United States consistently exceeded yields on foreign liabilities by 1 or 2 percentage points (see Chart 27a), a well-known feature that helped the United States to keep a positive income balance in spite of a large net foreign debt position. Second, it is interesting to note that other issuers of international currencies, such as Japan – after the mid-1990s – Switzerland – at least until 2006 – and the United Kingdom – to a lesser extent and in the last decade – enjoyed positive differential yields of a magnitude similar to the United States. In addition, it is worth noting that this was not the case for Germany and France before the introduction of the euro. Third, there seems to be a clear upward trend in the excess yield of the euro area. Back in the 1980s, euro area countries had a negative yield differential between foreign assets and liabilities of around 2 percentage points. After the 1992 EMU crisis, this negative differential began to shrink, disappearing a few years after the introduction of the euro. For Germany and France, which are shown separately, this trend is less evident, although excess yields seem to have shifted upwards in the last few years compared with the long-run average. This is suggestive evidence of the potential macroeconomic benefits stemming from the compression of risk premia in the euro

area during the sample period, which may have accrued in particular to the euro area countries which did not issue legacy currencies with an international status in the past.

Excess real *total returns*, including capital gains, display a rather different time path from that of yields (see Chart 28). The short-term behaviour of excess total returns is dominated by the excess rates of capital gain – not shown in the chart – which are much more volatile than yields, oscillating between positive and negative values. It is not unusual to observe spikes in excess total returns in the order of 10 percentage points or more in absolute value. As a result of this high volatility, it is more difficult to identify clear trends in the data. However, it is possible to note that in the United States excess real total returns are rarely negative and often above the excess returns in the other countries issuing international currencies. By contrast, excess total returns of the euro area are often in negative territory.

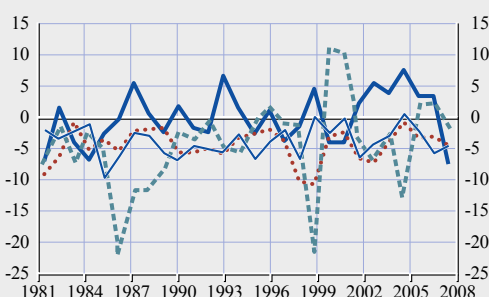
In order to obtain an accurate quantitative description of these results and facilitate the comparison, averages and standard errors of excess yields and excess total returns have

Chart 28 Differential real total returns (including capital gains) between foreign assets and liabilities

(percentages)

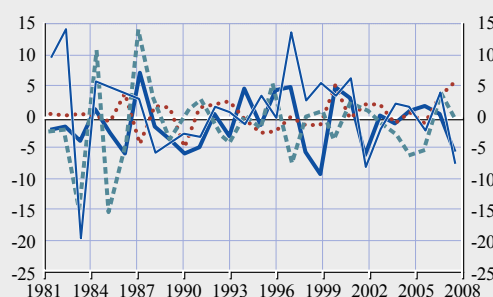
a) United States, euro area, Japan and Germany

— United States
 euro area
 - - - Japan
 — Germany



b) France, United Kingdom, Switzerland and Australia

— France
 United Kingdom
 - - - Switzerland
 — Australia



Sources: Habib (2010) based on IMF Balance of Payments Statistics and Mark-II dataset of Lane and Milesi-Ferretti (2007).

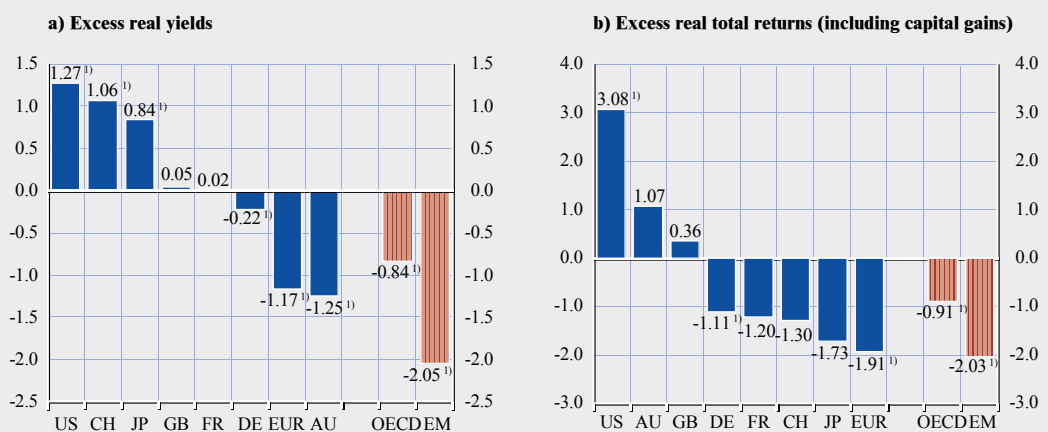
Note: For the euro area, total returns until 1999 are calculated as the average of those of the founding countries, including Greece and excluding Belgium and Luxembourg.

been calculated over the period 1981-2008. Chart 29 summarises these results. First, examining average excess real “yields” from net foreign assets – income balance flows excluding capital gains – the United States is the country which shows the highest positive and statistically significant excess yield: on average 127 basis points per annum between 1981 and 2008 (see Chart 29a). Interestingly, other issuers of international currencies, such as Switzerland and Japan, enjoy statistically significant positive differential yields of a magnitude similar to the United States, of 106 basis points and 84 basis points respectively. Germany and France have average excess yields of close to zero. Remarkably, the euro area posts an average negative yield differential of almost 120 basis points per year. As discussed above, this is the result of large negative differential yields in the 1980s. The average excess yield of the euro area between 1999 and 2008 is, in fact, close to zero (-15 basis points). Across the whole sample of 48 countries, average excess yields are negative, in particular for emerging markets. This provides support for the hypothesis that issuers of international currencies may indeed be an exception in terms of obtaining positive excess yields from their net foreign assets.

Once capital gains are included in the calculation of excess total returns, substantial differences emerge by comparison with the analysis of excess yields (see Chart 29b). On the one hand, the United States remains the country with the highest excess total return, which is equal to more than 300 basis points and statistically different from zero. Large capital gains between 2002 and 2007 contributed to the creation of this significant excess return on net foreign assets in the United States. These gains were partly due to the depreciation of the US dollar, to some extent the outcome of the over-performance of non-US stock markets compared with the US stock market, and partly due to other statistical adjustments in the international investment position of the United States. Two Anglo-Saxon economies, the United Kingdom and Australia, exhibit positive average excess returns, which are, however, not statistically different from zero, taking into account the high volatility of rates of capital gain. The other international currencies post negative excess total returns. Enlarging the analysis to the full sample of countries does not modify this picture. Only a dozen countries generate average positive excess total returns between their foreign assets and liabilities, which are generally smaller than

Chart 29 Differential real yields and total returns between foreign assets and liabilities

(average percentages from 1981 to 2008)



Sources: Habib (2010) based on IMF Balance of Payments Statistics and Mark-II dataset of Lane and Milesi-Ferretti (2007).
 Notes: OECD and emerging markets (EM) data cover the period until 2007. For the euro area, yields and returns until 1999 are calculated as the average of those of the founding countries, including Greece and excluding Belgium and Luxembourg.
 1) Indicates statistical significance at the 5% level.

those of the United States and not statistically different from zero. The average excess total returns of OECD economies and emerging markets remain negative.

In conclusion, over the past decades the United States has managed to generate positive return differentials on net foreign assets. The average level of this differential is very high, as is the ability of the United States to achieve it consistently over time from both investment income and capital gains. The benefit of having an international currency seems to emerge only when focusing on the yield differential from investment income. Japan and Switzerland – both issuers of international currencies – display excess yields similar to those of the United States. This is not the case for the euro area, but it is possible to detect a clear upward trend in the excess yields of countries belonging to the euro area from the mid-1990s until the end of the sample period in 2008. However, when capital gains are included, the United States remains the only country to enjoy statistically significant excess returns on foreign assets and liabilities. The potential determinants of these excess returns for a large panel of countries are studied in the next sub-section.

DETERMINANTS OF EXCESS RETURNS ON NET FOREIGN ASSETS

This sub-section presents the results of an empirical investigation of the potential determinants of excess returns on net foreign assets. Following the literature, it is possible to identify three variables that may affect excess returns: the exchange rate, leverage and country risk. Before presenting the empirical results, it is useful to understand how these variables may affect excess returns.

Exchange rate and excess returns

Exchange rate changes are expected to have an impact on the valuation of foreign assets and liabilities that are denominated in a foreign currency. A nominal appreciation lowers the domestic currency return, while a depreciation raises it. This effect is directly proportional to the foreign currency share of total assets or

liabilities. The higher the share of foreign assets (liabilities) denominated in foreign currency, the greater the negative impact of exchange rate appreciation on the domestic currency return on assets (liabilities). In theory, the overall impact of exchange rate changes on the “excess” return, i.e. the differential between the return on foreign assets and the return on foreign liabilities, is undetermined, depending on whether the foreign currency share of total assets is substantially different from that of liabilities. In practice, recent estimates by Lane and Shamabugh (2007) show that the foreign currency share of total foreign assets is generally larger than the foreign currency share of total foreign liabilities. As a consequence of this asymmetry, returns on assets are more sensitive to exchange rate changes than returns on liabilities. A nominal appreciation (depreciation) of the domestic currency reduces (raises) the returns on assets more than the returns on liabilities and decreases (increases) the “excess” return.³²

32 A simple numerical example clarifies this important point. Let us assume that a country has both foreign assets and liabilities equal to 100, measured in domestic currency terms. Liabilities are all in domestic currency. Half of the foreign assets are denominated in domestic currency (50 units) and the other half are denominated in foreign currency (50 units). For the sake of simplicity, income flows and changes in asset prices are assumed to be absent, and the only change is a devaluation of the domestic currency which leads to a 10% increase in the price of the foreign currency in domestic currency terms. This will bring about a capital gain of +5 in foreign assets (from 50 to 55 units) and a return on total assets of 5%. The return on liabilities will remain equal to zero, as there is no exchange rate effect. The “excess” return resulting from the devaluation of the domestic currency is therefore equal to 5%: a negative relationship between the exchange rate and excess returns. A small modification of the previous example shows how the impact of exchange rate movements on excess returns crucially depends on the foreign currency share of assets and liabilities. As in the previous case, let us assume that foreign assets are equal to 100 domestic currency units and that 50% of them are denominated in foreign currency. Now, however, foreign liabilities are assumed to be much larger and equal to 1,000 domestic currency units, of which 200 units are denominated in foreign currency. As in the previous example, the foreign currency share of total foreign assets (50%) is greater than the foreign currency share of total foreign liabilities (20%). A depreciation of the domestic currency by 10% will generate a return on assets of 5% and a return on liabilities of 2% (+20 capital gain on liabilities), corresponding to an excess return of 3%. The relationship between the exchange rate and excess returns is again negative, although the effect of the devaluation is lower than in the previous case.

Leverage and excess returns

A levered investor, a country, shorting safe low-yield securities (debt and other investment in the balance of payments) and taking a long position in risky foreign assets (FDI and equity) should be able to generate a positive excess return, as long as risk-taking investment is remunerated with higher average returns. For the purposes of this report, the variable measuring the assumption of risk, i.e. the *leverage*, is the ratio of FDI and equity assets to total foreign assets minus the same ratio for total foreign liabilities. It is implicit in this assumption that FDI and equity generate higher average returns than debt and other investment, even though they are more risky. As in the previous case of exchange rates, since the analysis focuses on “returns” and not on gross assets or liabilities, the crucial explanatory variable is the difference in the “share” of risky foreign assets vis-à-vis risky foreign liabilities. The higher the ratio of risky assets to total assets compared with the ratio of risky liabilities to total liabilities, the higher the excess return.³³

Risk and excess returns

Finally, in the case of international currencies acting as a safe haven for foreign investors, higher excess returns on net foreign assets have been justified on the grounds of the lower overall risk of investing in a safe-haven country compared with the rest of the world. It is therefore interesting to check whether lower country risk is associated with higher excess returns and vice versa in our panel of countries.

The empirical model

Eventually, the relationship to be tested is the following:

$$y_{i,t} = \alpha + \beta DRER_{i,t} * FC_{i,t} + \gamma LEV_{i,t-1} + \delta RiskR_{i,t} + \varepsilon_{i,t} \quad (2)$$

$\beta < 0; \gamma > 0; \delta > 0$

where the dependent variable, y , is the excess real total return ($r^A - r^L$) or, alternatively, the excess real yield ($i^A - i^L$) or the excess real rate of capital gain ($k^A - k^L$); $DRER_t$ is the difference

of the (log) real effective (trade-weighted) exchange rate between time t and $t-1$. $FC = (FC^A - FC^L)$ is the difference between the ratio of foreign currency assets to total assets, FC^A , and the ratio of foreign currency liabilities to total liabilities, FC^L .³⁴ Following the previous discussion, the sign of the coefficient associated with the change in the real exchange rate interacted with the relative foreign currency share is expected to be negative, $\beta < 0$. Since the marginal effect of $DRER_t$ is expected to be negative: $(\beta * FC_t) < 0$. It is important to remember that exchange rate movements should influence the capital gain part of the excess return, whereas excess yields from the income balance may be less sensitive, or perhaps not sensitive at all, to changes in the real exchange rate.

LEV_{t-1} is the measure of leverage at time $t-1$. It is equal to the ratio of FDI and equity assets (the risky investment) to total foreign assets minus the same ratio for total foreign liabilities. The coefficient associated with this variable is expected to be positive, $\gamma > 0$, if leveraged investors are to be compensated for higher risk-taking. Finally, $RiskR$ is a risk rating obtained from the International Country Risk Guide (ICRG), which comprises 22 variables in three subcategories of risk: political, financial and economic. Apart from its rich qualitative dimension, one of the main advantages of this index is that it provides a fairly long time dimension, being available for all countries in our sample as far as back 1984.³⁵ The higher the rating, the lower the risk associated with the particular country. The coefficient associated with this variable is therefore expected to be positive, $\delta > 0$, as low-risk countries, or countries improving their risk profile, are expected to pay relatively lower returns on their foreign liabilities and hence obtain a higher excess return.

³³ See Habib (2010) for a technical explanation.

³⁴ Data on the currency composition of foreign assets and liabilities are estimates from Lane and Shambaugh (2007), which are available from 1990 to 2004. The foreign currency shares are kept constant at the 1990 value for the period 1980-89 and at the 2004 value for the period 2005-07, i.e. for those periods in the sample that are not covered by these estimates.

³⁵ The index is kept constant at the 1984 level in the previous years, back to 1981.

Empirical results

The model in equation (2) has been estimated for a panel of 48 countries over the period 1981-2007. The panel is strongly balanced, with only six transition economies having observations for less than half of the period under examination. As a first step, a traditional static panel linear method was applied to estimate excess returns, yields and rates of capital gain. In a second phase, a dynamic panel estimator was used to check the robustness of the preliminary step.

Table 6 reports the results of the static panel Ordinary Least Squares (OLS) estimation allowing for country fixed-effects.³⁶ The signs of the estimated coefficients are in general in line with theoretical predictions, in particular as regards the impact of the exchange rate and with the exception of the country risk variable. In particular, it can be noted that the coefficient of the *real effective exchange rate* interacted with the relative foreign currency share is statistically significant at the 5% level. For a country with a foreign currency share of foreign assets that is 30 percentage points higher than the foreign currency share of foreign liabilities – corresponding to the sample mean of this variable, $FC = 0.3$ – an appreciation of 10% (close to one standard deviation) in the real effective exchange rate is associated with a decrease in the excess real total return of

around 150 basis points (column 1 of Table 6). As expected, the exchange rate channel works through capital gains (column 3), whereas the impact on excess yields turned out to be not significantly different from zero (column 2).

Turning to the impact of *leverage*, the coefficient associated with this variable is very close to zero and not statistically significant. Finally, *country risk* has an ambiguous, albeit not statistically significant, impact on excess total returns. This is the result of two opposite forces. On the one hand, as predicted, larger excess yields are associated with higher ratings (i.e. lower risk); on the other hand, excess rates of capital gain are negatively related to ratings.

In order to deal with potential misspecifications in a dynamic setting, the model was re-estimated using the Pooled Mean Group (PMG) procedure of Pesaran, Shin and Smith (1999).³⁷ This estimation method allows for common long-run slope coefficients, but different

36 The F-test rejects the null hypothesis that individual effects are all equal to zero in the fixed-effect estimations. See Habib (2010) for between and GLS random-effect estimations of the same model, which generate similar results.

37 Coefficients obtained from traditional static panel one-way estimators are traditionally subject to two types of bias: (i) a bias stemming from residual correlation in a dynamic setting (Nickell, 1981) and (ii) a bias deriving from the imposition of homogeneous slopes when the time dimension T is large (Pesaran and Smith, 1995).

Table 6 Excess real returns, yields and rates of capital gain: panel estimations

Dependent variable	$r^A - r^L$ (1)	$i^A - i^L$ (2)	$k^A - k^L$ (3)
<i>DRER* FC</i>	-0.5002 ²⁾ (0.2006)	0.0050 (0.0299)	-0.5053 ²⁾ (0.2086)
<i>LEV (-1)</i>	-0.0070 (0.0318)	-0.0037 (0.0119)	-0.0034 (0.0315)
<i>RiskR</i>	-0.0855 (0.0645)	0.0051 (0.0249)	-0.0906 (0.0588)
Const.	0.0472 (0.0463)	-0.0192 (0.0182)	0.0665 (0.0421)
R ² Within	0.021	0.001	0.024
R ² Between	0.002	0.009	0.044
R ² Total	0.011	0.007	0.024
Countries	48	48	48
N. obs.	1,209	1,212	1,212

Notes: The table shows the results of the OLS fixed-effect estimation of equation (2) in the main text. Standard errors, robust to clustering of residuals by country, are reported in parentheses. 3), 2) and 1) indicate significance at the 1%, 5% and 10% level respectively.

short-term interactions, across countries. The results of this alternative estimation method are shown in Table 7, which reports the long-run coefficients associated with the explanatory variables. From a qualitative point of view there are no dramatic divergences with respect to the static model with fixed effects; nevertheless, the size and statistical significance of the coefficients is different.

The signs of the coefficient associated with changes in the *real exchange rate* display a pattern similar to previous regressions. This coefficient is negative when the dependent variable is the excess total return or the excess rate of capital gain, but positive for excess yields. However, the absolute value of the coefficient of the real effective exchange rate interacted with the relative foreign currency share is about one-half of the estimated coefficient in static regressions. The effect of *leverage* on excess returns is negative and statistically significant in the case of excess returns (see column 1), contrary to expectations and previous estimates, shedding further doubt on the role of this variable in explaining excess returns. Finally, the impact of *country risk* is also consistent across static and dynamic regressions.

This effect is positive for excess yields and negative for excess total returns and rates of capital gain. In the dynamic setting, the absolute size and statistical significance of estimated parameters for country risk are magnified by comparison with static regressions.

Robustness checks

A number of checks have been performed to test the robustness of the estimation of the benchmark model. These include the use of finance-weighted exchange rates (see Lane and Shambaugh, 2007) properly reflecting the currency composition of foreign assets and liabilities and better gauging the valuation impact of exchange rate movements; the use of nominal variables in domestic currency terms in order to see whether the relationship between real exchange rate and real excess returns is driven only by inflation; and, finally, tests of the robustness of results splitting the sample between advanced economies and emerging markets. All these checks deliver results substantially similar to the estimation of the basic model.³⁸

³⁸ See Habib (2010) for further details.

Table 7 Excess real returns, yields and rates of capital gain: dynamic panel estimations

Dependent variable	$r^A - r^L$ (1)	$i^A - i^L$ (2)	$k^A - k^L$ (3)
<i>DRER* FC</i>	-0.2544 ³⁾ (0.0993)	0.1356 ³⁾ (0.0362)	-0.2853 ³⁾ (0.0859)
<i>LEV (-1)</i>	-0.0434 ²⁾ (0.0182)	-0.0027 (0.0072)	-0.0255 (0.0160)
<i>RiskR</i>	-0.2573 ³⁾ (0.0392)	0.0364 ²⁾ (0.0153)	-0.2444 ³⁾ (0.0349)
Const.	0.1629 ³⁾ (0.0107)	-0.0158 ³⁾ (0.0023)	0.1765 ³⁾ (0.0106)
Error corr. (ϕ)	-0.9467 ³⁾ (0.0398)	-0.3397 ³⁾ (0.0396)	-0.9668 ³⁾ (0.0450)
LogL	1,573.7	3,961.4	1,593.2
Countries	48	48	48
N. obs.	1,161	1,161	1,161

Notes: The table shows the results of the estimation of equation (2) in the main text with the Pooled Mean Group (PMG) maximum-likelihood estimator of Pesaran, Shin and Smith (1999) with the following reparametrisation of equation (2): $\Delta y_{i,t} = \phi(y_{i,t-1} - \theta_0 - \theta_1 x_{i,t}) - \beta_1 \Delta x_{i,t} + \varepsilon_{i,t}$, where the subscript for individual countries and additional regressors have been eliminated to simplify the notation. The PMG estimator imposes common long-run slope coefficients (θ) but different short-term interactions (β) across countries. ϕ is an error correction term equal to $(\lambda - 1)$, where λ is the first-order autoregressive coefficient. Standard errors are reported in parentheses. 3), 2) and 1) indicate significance at the 1%, 5% and 10% level respectively.

Summing up, the econometric analysis shows that not all potential determinants of excess returns between foreign assets and liabilities have the expected impact. The empirical investigation confirms the significant negative effect of changes in the exchange rate on excess returns, which is transmitted through capital gains. There is, however, no evidence that higher leverage is positively associated with higher excess returns. Interestingly, countries with a better risk rating benefit from higher excess yields, i.e. they have a better income balance than countries with a similar net foreign position, confirming that the issuers of international currencies may enjoy positive yield differentials as long as these countries are perceived to be relatively safer than the rest of the world. This advantage, however, disappears when capital gains are included. In this case, less risky countries in fact tend to suffer from an inferior relative performance in terms of capital gains, which overturns the positive yield effect, resulting in lower excess total returns.

CONCLUSIONS

This special feature has examined whether the positive excess return between foreign assets and liabilities in the United States is indeed a unique feature of the US economy or whether it is a characteristic that is shared by other countries, in particular those issuing an international currency such as the euro. Excess returns on net foreign assets of the United States, at more than 300 basis points per year between 1981 and 2008, are indeed sizeable from a global perspective, larger than in other countries, consistently over time, and statistically significant. Notably, the United States obtains these positive excess returns from both a positive differential in yields from investment income and a positive differential in the rates of capital gain. Only when focusing on the yield differential from investment income it is possible to find similar positive differentials for other issuers of international currencies, such as Japan, Switzerland and, to a lesser extent, the United Kingdom in the last decade. The euro area – as well as Germany and France before 1999 – does not enjoy positive yield differentials

comparable to those of these countries; however, the analysis shows a clear upward trend in the excess yields of countries belonging to the euro area, starting before the launch of the single currency and continuing until the end of the sample period in 2008. However, when capital gains are included, the United States remained the only country to enjoy positive excess total returns which are far above those of all the other countries.

In addition, the potential determinants of differential returns between foreign assets and liabilities were investigated in a large cross-section of countries over the past three decades, confirming that exchange rates have an important impact on excess returns, which is channelled through capital gains. Countries experiencing large real exchange rate depreciations are expected to boost their excess returns on net foreign assets, with an impact that is proportional to the relative foreign currency exposure. An asymmetric composition of foreign assets and liabilities in terms of risky assets, however, does not seem to affect the outcome. Finally, issuers of international currencies may be perceived by global investors as relatively safe markets, and this contributes to higher excess yields on the investment income balance. Unexpectedly, however, less risky countries are associated with negative capital gains and lower excess total returns.

5.2 CONSTRUCTING A SUMMARY INDICATOR OF THE INTERNATIONAL ROLE OF THE EURO

The ECB's annual reviews of the international role of the euro, including the present issue, monitor various aspects of the euro's use in global markets and in individual countries outside the euro area. While an analysis by market segment is important for a thorough understanding of the international role of the euro, it does not allow for a synthetic overview of developments across time. This special feature discusses the construction of a possible summary indicator that aggregates available information into a single dimension with a view to making

assessments over time more straightforward. The construction of such a summary indicator is complicated by conceptual, practical and methodological challenges. A summary indicator should ideally combine various dimensions of international money that are, however, qualitatively very different and can therefore not easily be aggregated. In practice, fully fledged time series since 1999 with currency breakdowns at the global level are available only for a subset of financial market segments. A principal factor analysis on the basis of five sub-indicators for which data are available until 2009 suggests that assigning equal weights to these sub-indicators is appropriate and that the international role of the euro increased during the first few years of existence of the single currency. Since then, the international use of the euro has remained relatively stable relative to that of other international currencies until the end of the sample period.

The construction of a summary indicator of the international role of the euro is not straightforward. A first challenge is that such a summary indicator should take into account the various dimensions of international currencies. In the literature, the traditional functions of money, namely medium of exchange, store of value and unit of account, are often applied at the level of international currencies in order to arrive at a matrix of international currency use (see Table 8). Among these various dimensions of international money, the use of international currencies in global foreign exchange reserves, global trade invoicing and exchange rate anchoring often feature most

prominently in the literature on international currencies (see for example Goldberg, 2010). At the same time, against the backdrop of the growing importance of financial flows relative to trade flows, the international bond market has often been seen as an important element of international currency usage (Papaioannou and Portes, 2008). Therefore, an indicator aimed at summarising the international role of a currency would ideally include elements of at least these four dimensions.

A second challenge is that a summary indicator of the international role of currencies should ideally be based on data series that are available in a timely manner and that are of consistent quality. Such series should ideally be available since the creation of the euro in 1999, and have a high frequency (at least annual but preferably quarterly) in order to track possible short-term fluctuations. Moreover, the data series that feed into the summary indicator should cover global markets, or at least represent a significant part of global markets. Only a limited number of time series meet these criteria.³⁹ In the remainder of this special feature, the following quarterly series are used to construct a summary indicator: (i) global foreign exchange reserves, (ii) international bond markets (global measure), (iii) international bond markets (narrow measure), (iv) cross-border loans, and (v) cross-

³⁹ Historical time series on the currency denomination of trade invoicing are not available at the global level. Data on foreign exchange markets are available from CLS, but only since 2002. Global indicators measuring the use of international currencies in (de facto) exchange rate anchoring are not available so far (see Subsection 5.3 for a suggested approach to constructing such an indicator).

Table 8 Dimensions of international money

	Private use	Official use
Medium of exchange	Vehicle currency	Intervention currency
Unit of account	Quotation currency	Anchor currency
Store of value	Investment & financing currency	Reserve currency
	Use in global markets	Use in third countries
	Foreign exchange markets	Exchange rate anchor
	Global trade invoicing	Foreign exchange reserves
	International debt markets	Asset and liability substitution

Sources: Kenen (1983) and Thimann (2009).

border deposits.⁴⁰ Although these are imperfect matches for the different dimensions of international money listed above, they provide the best possible approximation with which to construct an overall indicator. For each market segment, the share of the euro in that market is used as an input into the summary indicator.

A third challenge is to assign appropriate weights to the individual sub-indicators. A natural choice is to assign equal weight to each sub-indicator, a usual practice in the construction of a majority of prominent indices (e.g. the UN's *Human Development Index* and the World Bank's *Doing Business Index*). However, this may introduce an element of double-counting if sub-indicators are highly correlated. Instead, this special feature proposes to use principal factor analysis, which reduces the dimensionality of the sub-indicators by decomposing the variance of the data into common and unique factors. This is achieved by transforming correlated sub-indicators into a new set of uncorrelated factors that account for the highest variation in the dataset.

The principal factor analysis suggests that the five sub-indicators chosen for the construction of the summary indicator can be synthesised well using two key common factors, which together explain 85% of the total variation of individual sub-indicators.⁴¹

The factor loadings and weights of these two key common factors are shown in Table 9.

The final summary indicator gives equal weight to the individual sub-indicators, which are expressed as shares of the euro relative to other currencies in a certain market segment. Using shares rather than normalised variables could bias the summary indicator if the starting-points of the sub-indicators were to differ by a large margin. However, all shares lie in a narrow range around 25% in the first period of observation, so that subsequent changes in an individual indicator mirror changes in the euro's importance in one market relative to other market segments. The robustness of the qualitative interpretation of the index with respect to alternative normalisation methods has been tested.⁴²

40 All series are adjusted for valuation effects, i.e. measured at constant exchange rates.

41 These two factors have eigenvalues above 1, i.e. these factors explain at least as much of the variation in the data as a single untransformed sub-indicator (Kaiser criterion).

42 The sub-indicators have been standardised by their mean and variance, re-scaled to a range between 0 and 1 and transformed into quarter-on-quarter growth rates. Although the underlying scaling of the summary indicator changes depending on the chosen normalisation procedure, all alternative transformations are co-moving, indicating that the ranking of the summary indicator fulfils the criterion of Ebert and Welsch (2004) to be invariant to admissible transformations of the sub-indicators.

Table 9 Results of principal factor analysis

	Factor loadings ¹⁾		Weights ²⁾		
	Factor 1	Factor 2	Composite 1	Composite 2	Overall weight ³⁾
Share of the euro in:					
Bonds "narrow" measure	0.90	-0.23	0.28		0.19
Bonds "global" measure	0.72	-0.61	0.18	0.28	0.21
Reserves	0.92	0.10	0.29		0.20
Cross-border loans	0.84	0.00	0.25		0.16
Cross-border deposits	0.02	0.98		0.72	0.24
Variance	2.87	1.40			
Proportion of total explained variance	0.57	0.28	0.85		
Implied factor weight	0.67	0.33			

1) Following Nardo et al. (2005), factor loadings have been retrieved from principal component factor analysis after varimax rotation. For further details on the interpretation of these factor loadings, see Nicoletti et al. (2000). Sub-indicators with high factor loadings are marked in bold, indicating that they form part of the intermediate composite.

2) Applying the approach used by Nicoletti et al. (2000), weights are calculated as the squared factor loadings divided by the sum of squared loadings of the intermediate composite.

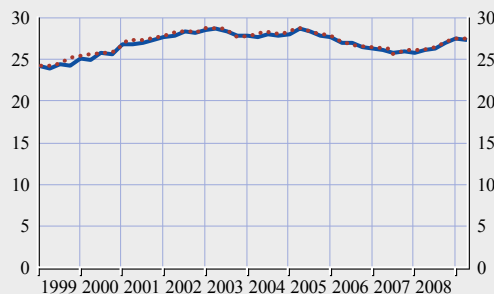
3) Intermediate composites are aggregated by weighting each composite with the implied factor weights.

Chart 30 Summary indicator of the international role of the euro

(in percentages)

a) Summary indicator

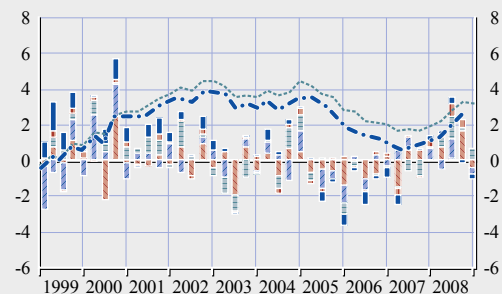
- summary indicator (equal weights)
- summary indicator (factor weights)



(in percentage points)

b) Decomposition of quarterly changes

- bonds "narrow" measure
- bonds "global" measure
- reserves
- cross-border loans
- cross-border deposits
- summary indicator (equal weights)
- summary indicator (factor weights)



Sources: IMF, BIS and ECB calculations.

The results suggest that the international role of the euro gradually increased during the first five years following the start of Monetary Union, possibly reflecting growing trust in the stability-oriented policies of the Eurosystem and the enhanced liquidity of euro-denominated financial markets (see Chart 30a). This period appears to have been followed by some levelling-off in the international use of the euro as, for example, optimal weights in reserve portfolios were reached (Beck and Rahbari, 2008).

A similar summary indicator can also be constructed on the basis of percentage point changes in the share of the euro. Using this approach, changes can be decomposed for each sub-indicator (see Chart 30b). In line with the trends observed in the sub-indicator series, the gradual rise in the international role of the euro during the first years following the creation of the euro was mainly driven by its use in global foreign exchange reserves and international bond markets. Its subsequent stabilisation until the end of the sample period has mainly been due to developments in the share of the euro in international bond markets and cross-border deposits.

5.3 HOW INTERNATIONAL IS THE EURO? A BRIEF REASSESSMENT OF ITS ROLE IN GLOBAL FINANCIAL MARKETS

Previous issues of this review have emphasised the euro's regional significance, which is often directly related to geographical and institutional links with the euro area. Indeed, across many market segments, the use of the euro is most common in countries located in the broad neighbourhood of the euro area or featuring close ties with it. This special feature systematically assesses the geographical distribution of the euro's international role in a variety of financial markets, and finds confirmation that the euro tends to be used mainly in international transactions of the euro area itself, non-euro area EU Member States and other European countries outside the EU, while the US dollar's role is spread more globally. The special feature also discusses an alternative concept of currency internationalisation, namely the use of a currency outside the borders of the issuing country as compared with its use within. Following this approach, the most "international" currencies are generally those from small advanced economies, such as those

Table 10 Currency use in selected financial markets

	Euro		US dollar		Japanese yen		Total ¹⁾
	Countries	Percentages	Countries	Percentages	Countries	Percentages	Countries
Debt securities market ²⁾	69	(66.3)	96	(92.3)	51	(49.0)	104
Market for cross-border loans ²⁾	148	(83.6)	168	(94.9)	114	(64.4)	177
Market for cross-border deposits ²⁾	172	(96.6)	178	(100.0)	84	(47.2)	178
Foreign exchange market turnover ³⁾	53	(98.1)	54	(100.0)	52	(96.3)	54

Sources: BIS and ECB calculations.

1) All countries registering any activity in the respective market.

2) As at Q3 2009.

3) As at April 2007.

of New Zealand, Switzerland and Hong Kong. By the same measure, the euro became substantially more internationalised between 1999 and 2009.

Measuring the true international reach of a currency necessarily hinges on the availability of individual country or at least region-wide data on a global scale, additionally providing a currency breakdown of transactions. Since this level of detail is not available for the full range of financial and goods markets, the analysis in this special feature focuses on debt securities, cross-border loans and deposits and foreign exchange markets, for which comprehensive BIS databases provide a sufficient degree of information.⁴³

As a first approximation, the worldwide distribution of the three currencies under consideration can be gauged by counting the number of countries and territories registering any use of the euro, the US dollar and the Japanese yen in any given market (see Table 10). Clearly, the US dollar is the currency most widely employed according to the most recent data available in terms of debt security issuance (96 countries), the issuance of cross-border loans and deposits (168 and 178 countries respectively) or trading in foreign exchange markets. In particular, there is no country where cross-border deposits with BIS reporting banks are not made at least to a certain extent in US dollars, with the prominence of the euro being similarly high. Moreover, the US dollar is present in all foreign exchange markets,

reflecting its role as vehicle currency in this segment of the financial system, although the euro and the Japanese yen have an almost equally large stake.⁴⁴ In debt securities markets, there is some euro-denominated debt outstanding in about two-thirds of all instances, as compared with more than 90% for the US dollar and around 50% for the Japanese yen. Regarding cross-border loans, the shares of both the euro and the Japanese yen are higher, possibly because BIS reporting euro area and Japanese banks have an inclination to extend credit in their domestic currencies, whereas the currency denomination of debt securities is more likely to be guided by the preferences of issuers.

Turning to an analysis by market segment, the use of the euro in global debt securities markets has a fairly regional orientation.⁴⁵ Besides being the natural currency of choice of euro area issuers themselves, it otherwise surpasses the popularity of the US dollar only in European countries outside the euro area (see Chart 31, Panel A, Sections 1 and 2). In the remaining

43 The BIS databases used are the International Capital Market Statistics, offering global coverage of domestic and international debt securities, the International Banking Statistics, covering cross-border bank loans and deposits of banks located in 38 countries reporting this information to the BIS vis-à-vis the rest of the world, and the Triennial Central Bank Survey, which provides the currency breakdown of foreign exchange market turnover in 54 countries.

44 According to BIS data, only Israel registered no foreign exchange turnover in euro in April 2007, while there was no trading in Japanese yen in Israel and Slovakia.

45 As the use of the Japanese yen outside the borders of Japan is fairly restricted, with its share remaining below 10% in the vast majority of cases, the following analysis concentrates solely on the euro and the US dollar.

regions, its share in the stock of outstanding debt securities is generally below 30%. Furthermore, while the euro is represented to some degree in most of the world, its role in the traditionally US dollar-oriented economies of Asia and the Pacific is relatively marginal (see Chart 31, Panel A, Section 9). However, the share of the US dollar in those countries is often fairly limited too, in many instances reflecting reasonably well-developed domestic debt securities markets. Looking at developments over time, the share of the euro has increased most briskly over the past decade in European countries outside the euro area, followed by some rises in the euro area itself, frequently replacing US dollar-denominated debt (see Chart 31, Panel B, Sections 1 and 2).⁴⁶ In the rest of the world, changes over time to the euro's share have remained comparatively limited.

In cross-border loan and deposit markets, the patterns of the international role of currencies differ somewhat from those observed in debt securities markets (see Chart 32, showing data for international deposit markets).⁴⁷ First, many more countries participate in the market for bank loans and deposits than in the debt securities market, indicating access to cross-border banking services for almost all economies, whereas equivalent entry to debt securities markets has not been found, in particular in the case of Africa. Second, the currency denomination of cross-border loans and deposits displays a tendency to converge towards less extreme values than that in the debt securities markets, pointing towards a non-negligible involvement of currencies other

46 All changes in shares are computed net of valuation effects owing to exchange rate fluctuations.

47 The pattern for international loan markets is similar.

Chart 31 Currency denomination in global debt securities markets

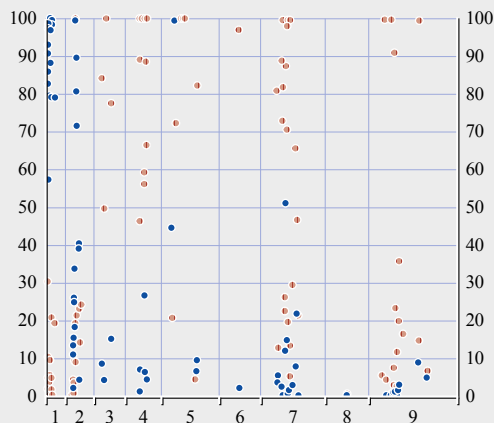
(percentages; as at Q3 2009)

(percentage point changes; Q3 2009 vis-à-vis Q1 1999)

x-axis: distance to the euro area ¹⁾

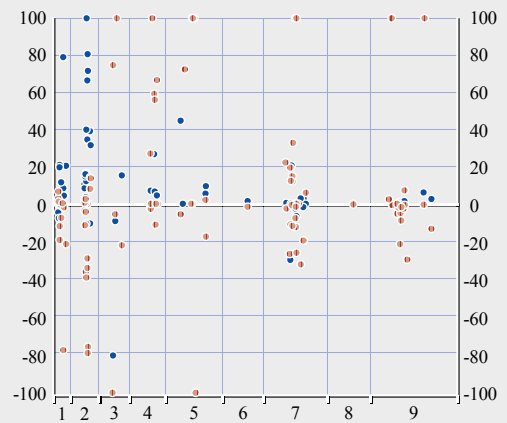
- euro
- US dollar

Panel A: Currency shares in the stock of outstanding debt securities



- 1 euro area
- 2 non-euro area Europe
- 3 Commonwealth of Independent States
- 4 Middle East
- 5 Africa
- 6 United States

Panel B: Changes in currency shares in the stock of outstanding debt securities



- 7 Western hemisphere
- 8 Japan
- 9 Asia Pacific

Sources: BIS and ECB calculations.

Note: Inter-regional distances not according to scale/intra-regional distances according to scale.

1) Germany.

than the main international currencies. Finally, the share of the euro is more evenly distributed across the different regions for cross-border deposits, with its prevalence less visible in the euro area and European countries outside the euro area but generally higher in the rest of the world (see Chart 32, Panel A). Specifically, countries in the Commonwealth of Independent States seem to have substituted US dollar for euro deposits, in addition to the familiar changes seen in the euro area itself and in European countries outside the euro area (see Chart 32, Panel B, Sections 1, 2 and 3). Interestingly, the popularity of US dollar deposits appears to have dwindled between 1999 and 2009, with its share broadly declining across the world, although this development has not benefited the euro in every instance. Contrasting this trend with changes in US dollar-denominated international loans also reveals notable decreases in some cases, although these are generally less widespread and of a smaller magnitude.

Lastly, the use of the euro and the US dollar in foreign exchange markets unambiguously exposes the latter's vehicle function, with its share in turnover reaching more than 80%⁴⁸ in most cases, indicating that the majority of foreign currency transactions are intermediated via the US dollar (see Chart 33). Nonetheless, the euro area and EU countries outside the euro area exhibit some deviations from this usual pattern. In fact, the overall share of the euro in these markets is usually higher. For EU countries outside the euro area, this implies that the euro is either being traded more frequently against the US dollar than in the rest of the world or being employed more often as the primary currency against which other currencies are exchanged. The latter argument

48 The sum of currency percentage shares reported for foreign exchange markets adds up to 200%, as the two currency legs involved in one foreign exchange transaction are counted separately.

Chart 32 Currency denomination in the market for cross-border deposits

(percentages; as at Q3 2009)

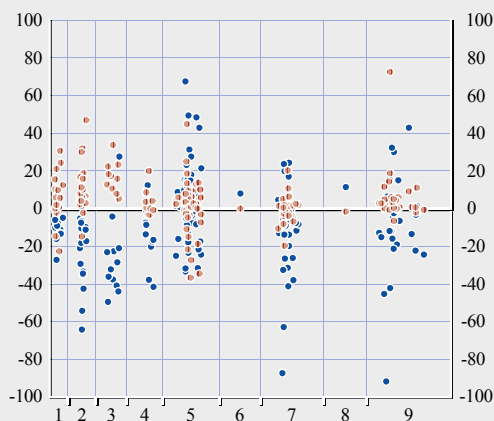
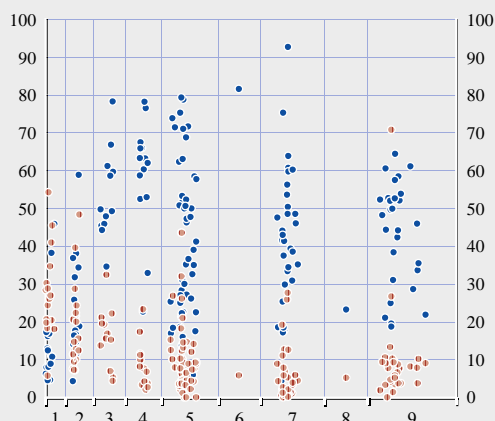
(percentage point changes; Q3 2009 vis-à-vis Q1 1999)

x-axis: distance to the euro area¹⁾

- US dollar
- euro

Panel A: Currency shares in outstanding cross-border deposits

Panel B: Changes in currency shares of outstanding cross-border deposits



- | | |
|--------------------------------------|-----------------|
| 1 euro area | 4 Middle East |
| 2 non-euro area Europe | 5 Africa |
| 3 Commonwealth of Independent States | 6 United States |

- | |
|----------------------|
| 7 Western hemisphere |
| 8 Japan |
| 9 Asia Pacific |

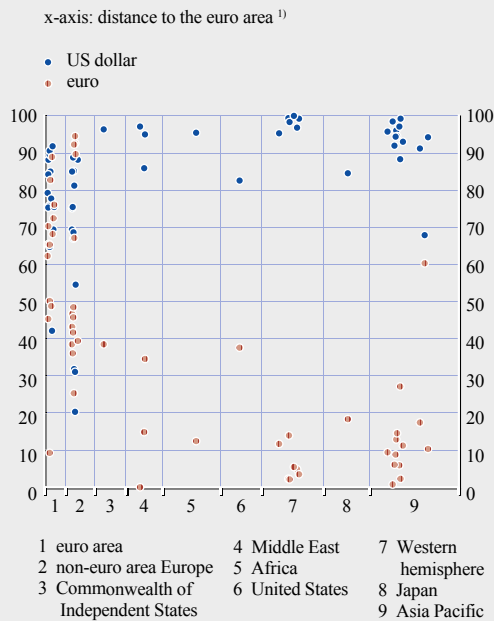
Sources: BIS and ECB calculations.

Note: Inter-regional distances not according to scale/intra-regional distances according to scale.

1) Germany

Chart 33 Currency denomination of foreign exchange market turnover

(percentage point changes; April 2007 vis-à-vis April 2001)

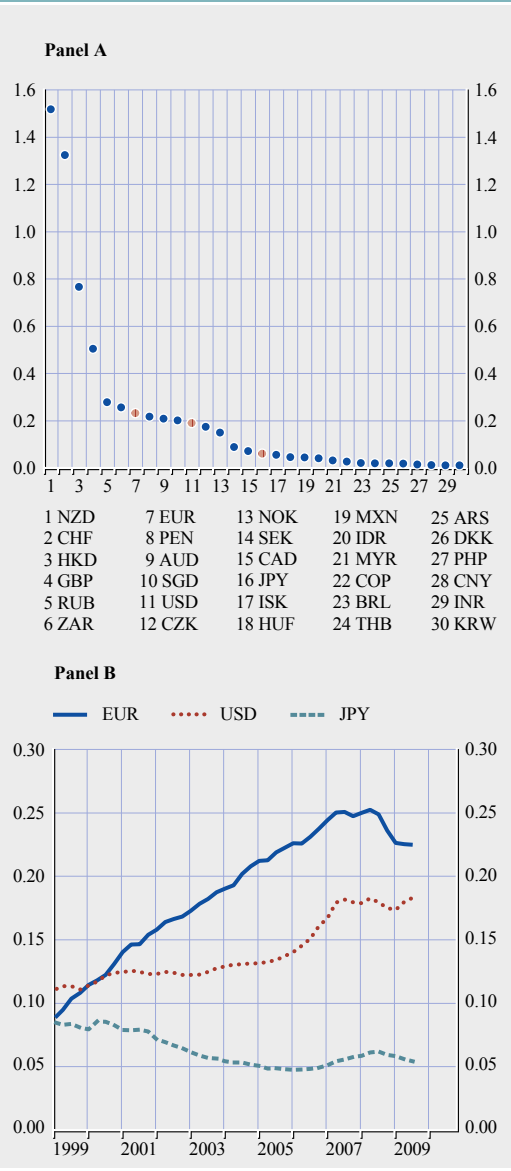


Sources: BIS and ECB calculations.
 Note: Inter-regional distances not according to scale/intra-regional distances according to scale.
 1) Germany.

is further supported by the sometimes lower than typical role for the US dollar in this region. For the euro area, elevated euro shares simply point towards the fact that most trading takes place in the euro-US dollar currency pair. Remarkably, however, even in the euro area trading of third currencies appears to occur against the US dollar, as evidenced by the fact that its share mostly surpasses that of the euro.

Whereas the analysis above broadly confirms the regional significance of the euro, some rise in its role between 1999 and 2009 notwithstanding, a more conceptual issue revolves around the definition of an international currency or the question of what makes a currency truly international. Although price stability, integrated and liquid financial markets and a large and open economy are the major prerequisites for a currency to obtain international status, it is also interesting to

Chart 34 Ratio of outstanding international to domestic debt securities



Sources: BIS and ECB calculations.

consider a simpler indicator, namely the use of a currency outside the borders of the issuing country as compared with its use within. Data available from the BIS, which segregate the global debt securities market into a domestic segment and enable the compilation of the narrow measure of international debt derived in this report, allow for a direct

comparison of outstanding amounts of domestic and international debt securities.⁴⁹ Following this approach, Chart 34 (Panel A) shows that the most “international” currencies as of 2009 were generally those from small advanced economies, with the ratio of outstanding international to domestic debt securities being highest for the New Zealand dollar (1.52), the Swiss franc (1.32), the Hong Kong dollar (0.76) and the pound sterling (0.50). By contrast, this ratio stands at 0.22 for the euro, 0.18 for the US dollar and only 0.05 for the Japanese yen, undoubtedly reflecting the large scale of their domestic bond markets. Thus, while New Zealand, Switzerland, Hong Kong and the United Kingdom certainly meet common definitions of economic openness and price stability, a limited supply of investable financial instruments denominated in their currencies in comparison with the supply available in the euro area or the United States is probably limiting the degree to which their currencies can be internationalised. However, countries with potentially very large financial markets, such as China and India, probably have significant scope for augmenting the role of their currencies in the future, despite their currently non-existent degree of internationalisation.

As well as considering the value of the ratio of international to domestic debt securities, it is also worth taking a look at how it has developed over time (see Chart 34, Panel B). In fact, the euro became substantially more internationalised between 1999 and 2009, although that trend was interrupted since the intensification of the financial crisis in the autumn of 2008, possibly against the background of sizeable domestic issuance activity of euro area banks and sovereigns. Likewise, the repercussions of the credit boom in the United States are discernible in the steep rise of the ratio between early 2006 and mid-2007, signifying that international issuance outpaced domestic issuance during this period.

⁴⁹ However, this partition of the debt securities market is necessarily artificial, as foreign investors are easily able to participate in the domestic segment in the absence of major impediments to free capital flows. The analysis presented in this section is consequently hampered by this caveat.

REFERENCES

- Bank for International Settlements (2007), “Triennial Central Bank Survey”, December.
- Bank for International Settlements (2009a), *BIS Quarterly Review*, March.
- Bank for International Settlements (2009b), *BIS Quarterly Review*, December.
- Basso, H., O. Calvo-Gonzalez and M. Jurgilas (2007), “Financial Dolarization: The Role of Banks and Interest Rates”, *ECB Working Papers* 748, May 2008.
- Beck, R. and E. Rahbari (2008), “Optimal reserve composition in the presence of sudden stops: the euro and the dollar as safe haven currencies”, *ECB Working Papers* 916, European Central Bank, July.
- Beck, R. and S. Weber (2010), “Should large reserve portfolios be more diversified?”, *ECB Working Papers* 1193, European Central Bank, May.
- Bracke, T. and M. Schmitz (2008), “Channels of international risk-sharing: capital gains versus income flows”, *ECB Working Papers* 938, European Central Bank, September.
- Bosworth B., S. M. Collins and G. Chodorow-Reich (2007), “Returns on FDI: Does the US Really Do Better?”, NBER Working Paper 13313, National Bureau of Economic Research, August.
- Caballero, R. J., E. Farhi and P. Gourinchas (2008), “An Equilibrium Model of ‘Global Imbalances’ and Low Interest Rates”, *American Economic Review* 98 (1), 358-393.
- Caballero, R. J. and A. Krishnamurthy (2009), “Global Imbalances and Financial Fragility”, *American Economic Review Papers & Proceedings* 99 (2), 584-588.
- Codogno, L., C. Favero and A. Missale (2003), “Yield spreads on EMU government bonds”, *Economic Policy* 18 (37), 503-532, October.
- Curcuro, S., T. Dvorak and F.E. Warnock (2008), “Cross-Border Returns Differentials”, *Quarterly Journal of Economics* 123, 1495-1530, November.
- Djankov, S. D. Manraj, C. McLiesh and R. Ramalho (2005), “Doing Business Indicators: Why Aggregate, and How to Do It”, World Bank, Washington, DC.
- Dvorsky, S., Scheiber, T. and H. Stix (2009a), “The 2008 Fall Wave of the OeNB Euro Survey – A First Glimpse of Households’ Reactions to the Global Financial Crisis”, in *Focus on European Economic Integration* Q2/09, Vienna: OeNB, 67-77.
- Dvorsky, S., Scheiber, T. and H. Stix (2009b), “CESEE Households amid the Financial Crisis: Euro Survey Shows Darkened Economic Sentiment and Changes in Savings Behavior”, in *Focus on European Economic Integration* Q4/09, Vienna: OeNB, 71-83.
- Dvorsky, S., Scheiber, T. and H. Stix (2010), “Real Effects of Crisis Have Reached CESEE Households: Dampened Savings, Different Borrowing Behavior”, in *Focus on European Economic Integration* Q2/10, Vienna: OeNB, forthcoming.

- Ebert, U. and Heinz Welsch (2004), “Meaningful environmental indices: a social choice approach”, *Journal of Environmental Economics and Management* 47, 270-283.
- European Central Bank (2003), “Review of the foreign exchange market structure”, March.
- European Central Bank (2006), “Financial Stability Review”, June.
- European Central Bank (2008), “The international role of the euro”, special focus chapter: “The use of the euro in global foreign exchange reserves”, July.
- European Central Bank (2009), “The international role of the euro”, July.
- European Central Bank (2010), “Financial Stability Review”, June.
- Frankel, J. and S.-J. Wie (2008), “Estimation of De Facto Exchange Rate Regimes: Synthesis of the Techniques for Inferring Flexibility and Basket Weights”, *IMF Staff Papers* 55(3), 384-416.
- Gallardo, P. and Heath, A. (2009), “Execution methods in foreign exchange markets”, *BIS Quarterly Review*, March, pp. 83-91.
- Goldberg, L. (2010), “Is the International Role of the Dollar Changing?”, Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, 16 (1), January.
- Gros, D. (2006), “Foreign Investment in the US (II): Being taken to the cleaners?”, CEPS Working Document 243, Centre for European Policy Studies, April.
- Gourinchas, P. and H. Rey (2005), “From World Banker to World Venture Capitalist: US External Adjustment and the Exorbitant Privilege”, NBER Working Paper 11563, National Bureau of Economic Research, August.
- Habib, M. (2010), “Excess returns on net foreign assets: the exorbitant privilege from a global perspective”, *ECB Working Papers* 1158, European Central Bank, February.
- Habib, M. and M. Joy (2010), “Foreign-currency bonds: currency choice and the role of uncovered and covered interest parity”, *Applied Financial Economics* 20 (8), 601-626.
- Hausmann, R. and F. Sturzenegger (2006), “Global Imbalances or Bad Accounting? The Missing Dark Matter in the Wealth of Nations”, Center for International Development Working Paper 124, Harvard University, September.
- Higgins, M., T. Klitgaard and C. Tille (2005), “The Income Implications of Rising US International Liabilities”, *Current Issues in Economics and Finance* 11 (12), Federal Reserve Bank of New York, December.
- Hung, J. H. and A. Mascaro (2004), “Return on Cross-Border Investment: Why Does US Investment Abroad Do Better?”, CBO Technical Paper Series 17, US Congressional Budget Office, December.

- Ilzetzki, E., Reinhart, C. M. and K. S. Rogoff (2004), “Exchange Rate Arrangements into the 21st Century: Will the Anchor Currency Hold?”.
- Kenen, P. (1983), The Role of the Dollar as an International Currency, *Occasional Papers* No. 13, Group of Thirty, New York.
- Lane, P.R. and G. Milesi-Ferretti (2002), “External Wealth, the Trade Balance and the Real Exchange Rate”, *European Economic Review* 46, 1049-1071.
- Lane, P.R. and G. Milesi-Ferretti (2003), “International Financial Integration”, *IMF Staff Papers* 50, Special Issue, 82-113, International Monetary Fund.
- Lane, P.R. and G. Milesi-Ferretti (2005a), “Financial Globalization and Exchange Rates”, IMF Working Paper 05/03, International Monetary Fund, January.
- Lane, P.R. and G. Milesi-Ferretti (2005b), “A Global Perspective on External Positions”, IMF Working Paper 05/161, International Monetary Fund, August.
- Lane, P.R. and G. Milesi-Ferretti (2007), “The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004”, *Journal of International Economics* 73, 223-250.
- Lane, P.R. and G. Milesi-Ferretti (2008), “Where Did All the Borrowing Go? A Forensic Analysis of the US External Position”, IMF Working Paper 08/28, International Monetary Fund, February.
- Lane, P.R. and J.C. Shambaugh (2007), “Financial Exchange Rates and International Currency Exposures”, NBER Working Paper 13433, National Bureau of Economic Research, September.
- Luca, A. and I. Petrova (2007), “What Drives Credit Dollarization in Transition Economies?”, *Journal of Banking and Finance* 32, 858-869.
- Mataloni, R. J. (2000), “An examination of the Low Rates of Return of Foreign-Owned US Companies”, *Survey of Current Business*, US Bureau of Economic Analysis, March.
- Meissner, C. M. and N. Oomes (2008), “Why Do Countries Peg the Way They Peg? The Determinants of Anchor Currency Choice”, IMF Working Papers 08/132, International Monetary Fund, Washington D.C.
- Meissner, C. M. and A. Taylor (2006), “Losing our Marbles in the New Century? The Great Rebalancing in Historical Perspective”, NBER Working Paper 12580, National Bureau of Economic Research, October.
- Nardo, M., M. Saisana, A. Saltelli, S. Tarantola, A. Hoffman, and E. Giovannini (2005), “Handbook on constructing composite indicators: Methodology and user guide”, *OECD Statistics Working Paper* No. 13, STD/DOC(2005)3.

- Nicoletti G., S. Scarpetta and O. Boylaud, (2000), “Summary indicators of product market regulation with an extension to employment protection legislation”, *OECD Economics department working papers* No. 226, ECO/WKP(99)18.
- Nickell, S. (1981), “Biases in Dynamic Models with Fixed Effects”, *Econometrica* 49, 1417-1426.
- Papaioannou, E. and R. Portes (2008), “The International Role of the Euro: A Status Report” *European Economy Economic Papers* 317, European Commission, DG-EC/FIN, April, in Buti, M., S. Deroose and V. Gaspar (eds), *EMU@10*.
- Pesaran, M.H., Y. Shin and R.P. Smith (1999), “Pooled Mean Group Estimation of Dynamic Heterogeneous Panels”, *Journal of the American Statistical Association* 94 (446), 621-634, June.
- Pesaran, M.H. and R.P. Smith (1995), “Estimating Long-run Relationships from Dynamic Heterogeneous Panels”, *Journal of Econometrics* 68, 79-113.
- Portes R. and E. Papaioannou (2008), “Costs and benefits of running an international currency”, *European Economy, Economic Papers* 348, European Commission, November.
- Reinhart, C. M. and K. S. Rogoff (2004), “The Modern History of Exchange Rate Arrangements: A Reinterpretation”, *Quarterly Journal of Economics* 119(1), 1-48.
- Rodrik, D. (2006), “The social cost of foreign exchange reserves”, *International Economic Journal* 20 (3), September, pp. 253-266.
- Rosenberg, C. and M. Tirpak (2008), “Determinants of the Foreign Currency Borrowing in the New Member States of the EU”, IMF Working Paper 08/173, July.
- Royal Bank of Scotland (2010), “RBS Reserve Management Trends 2010”, Central Banking Publications, London.
- Scheiber, T. and H. Stix (2009), “Euroization in Central, Eastern and Southeastern Europe – New Evidence on Its Extent and Some Evidence on Its Causes”, OeNB Working Paper No. 159.
- Tavlas, G., H. Dellas and A. C. Stockman (2008), “The classification and performance of alternative exchange-rate systems”, *European Economic Review* 52(6), 941-963.
- Thimann, C. (2009), “Global roles of currencies”, *ECB Working Papers* 1031, European Central Bank, and *International Finance* 11, pp. 211-245.
- Triffin, R. (1960), “Gold and the Dollar Crisis: the Future of Convertibility”.

STATISTICAL ANNEX

Table 1 Currencies' shares in the stock of outstanding international debt securities in selected regions

(narrow measure; in USD billions and as a percentage of the total amount outstanding; at constant exchange rates)

	Total amount outstanding		<i>of which denominated in:</i>							
	All currencies (USD billions)		US dollar		Euro		Japanese yen		Other currencies	
			(%)	(% point change) vis-à-vis	(%)	(% point change) vis-à-vis	(%)	(% point change) vis-à-vis	(%)	(% point change) vis-à-vis
	2009 Q4	2008 Q4	2009 Q4	2008 Q4	2009 Q4	2008 Q4	2009 Q4	2008 Q4	2009 Q4	2008 Q4
Africa	31	29	53.4	2.3	40.8	-1.7	5.2	-0.4	0.6	-0.1
Asia and Pacific	742	657	64.4	3.3	19.9	-2.8	6.1	0.0	9.6	-0.5
<i>of which:</i>										
Japan	60	60	62.4	8.2	27.6	-8.5	...	...	10.0	0.3
Europe	4,952	4,546	41.0	0.6	34.2	-0.6	5.5	-1.0	19.2	1.0
<i>of which:</i>										
Euro area	1,977	1,789	54.7	1.2	...	...	7.9	-1.9	37.5	0.7
Denmark, Sweden, United Kingdom	2,532	2,344	32.4	0.3	58.4	-0.4	3.4	-0.5	5.8	0.6
Other EU non-euro area Member States	145	120	9.9	1.3	79.3	0.6	4.6	-1.5	6.1	-0.4
EU27	4,654	4,253	41.1	0.7	33.9	-0.6	5.4	-1.1	19.6	1.0
Non-EU developed Europe ¹⁾	219	214	24.7	-0.2	48.5	-0.4	11.3	1.1	15.5	-0.6
Non-EU developing Europe	86	86	74.5	-1.7	20.2	0.3	0.3	-0.3	5.1	1.6
International organisations	794	638	34.5	1.0	30.1	1.8	5.6	-1.6	29.9	-1.2
Latin America	323	283	83.5	0.9	13.5	-1.6	1.4	0.5	1.5	0.2
Middle East	138	119	85.7	3.2	11.2	-2.6	0.2	-0.1	2.9	-0.5
North America	1,342	1,260	17.7	2.0	52.7	-0.9	7.6	-1.8	21.9	0.8
<i>of which:</i>										
Canada	337	298	70.3	3.8	18.7	-2.2	2.5	-1.4	8.4	-0.2
United States	1,004	962	...	...	64.2	0.4	9.4	-1.8	26.5	1.5
Offshore centres	1,456	1,444	70.9	1.5	15.2	-0.9	7.6	-0.7	6.3	0.0
Total	9,778	8,976	45.6	1.0	31.5	-0.7	6.0	-1.0	16.9	0.7

Sources: BIS and ECB calculations.

Note: Q4 2008 figures are expressed at Q4 2009 exchange rates.

1) Iceland, Norway, Switzerland and European microstates.

Table 2 Outstanding international debt securities, by currency

	Global measure				Narrow measure			
	EUR	USD	JPY	Other	EUR	USD	JPY	Other
Outstanding amounts in USD billions, at current exchange rates, end of period								
1999	7,348	16,021	6,535	4,915	628	1,484	484	436
2000	7,439	16,983	6,208	4,917	727	1,701	471	489
2001	7,711	18,441	5,936	5,073	823	1,793	426	516
2002	9,949	19,800	6,827	5,909	1,108	1,896	411	648
2003	13,263	21,409	8,321	7,275	1,560	2,130	439	828
2004	15,814	23,279	9,400	8,846	1,970	2,386	456	1,031
2005	15,041	25,326	8,851	9,727	1,924	2,707	401	1,127
2006	18,744	28,177	8,905	11,902	2,451	3,456	413	1,507
2007	23,304	31,240	9,464	14,456	3,107	4,183	510	1,853
2008 Q1	25,407	31,760	10,849	14,982	3,414	4,222	593	1,949
Q2	26,238	32,157	10,155	15,627	3,538	4,316	578	2,016
Q3	24,058	32,759	10,299	14,670	3,222	4,337	593	1,823
Q4	24,215	33,121	11,832	13,808	3,095	4,292	654	1,568
2009 Q1	23,968	33,853	10,943	13,684	2,960	4,333	597	1,542
Q2	26,180	34,122	11,459	15,579	3,201	4,471	600	1,746
Q3	27,545	34,518	12,342	16,580	3,348	4,595	627	1,772
Q4	27,152	34,811	12,229	17,037	3,248	4,733	598	1,758
Percentages of outstanding amounts, at constant exchange rates, end of period								
1999	27.1	41.2	18.6	13.1	26.2	43.2	15.6	14.9
2000	27.8	41.0	18.6	12.5	28.1	42.5	14.6	14.8
2001	28.1	41.1	18.7	12.0	30.8	41.0	13.8	14.4
2002	28.3	41.0	18.1	12.5	32.7	40.7	11.3	15.2
2003	28.3	40.1	18.0	13.5	33.9	40.6	9.7	15.8
2004	28.4	39.5	17.7	14.5	35.0	40.1	8.5	16.3
2005	28.4	39.1	17.4	15.0	34.9	40.3	7.6	17.2
2006	28.6	39.3	16.0	16.1	33.1	42.7	6.6	17.6
2007	28.7	39.3	14.4	17.5	31.8	43.8	6.5	17.9
2008 Q1	28.6	39.2	14.4	17.7	31.9	43.3	6.6	18.2
Q2	29.0	38.9	14.0	18.1	32.2	43.0	6.6	18.3
Q3	29.2	39.4	14.1	17.3	32.4	43.3	6.7	17.6
Q4	29.9	39.5	13.8	16.9	32.7	43.8	6.6	16.9
2009 Q1	30.3	39.5	13.6	16.6	32.6	44.0	6.5	17.0
Q2	30.2	38.7	13.5	17.6	32.3	44.3	6.2	17.3
Q3	30.0	38.3	13.3	18.4	32.1	44.7	5.9	17.3
Q4	29.8	38.2	13.4	18.7	31.4	45.8	5.8	17.0
Percentages of outstanding amounts, at current exchange rates, end of period								
1999	21.1	46.0	18.8	14.1	20.7	49.0	16.0	14.4
2000	20.9	47.8	17.5	13.8	21.4	50.2	13.9	14.4
2001	20.7	49.6	16.0	13.7	23.1	50.4	12.0	14.5
2002	23.4	46.6	16.1	13.9	27.3	46.7	10.1	16.0
2003	26.4	42.6	16.6	14.5	31.5	43.0	8.9	16.7
2004	27.6	40.6	16.4	15.4	33.7	40.8	7.8	17.6
2005	25.5	43.0	15.0	16.5	31.2	43.9	6.5	18.3
2006	27.7	41.6	13.1	17.6	31.3	44.2	5.3	19.3
2007	29.7	39.8	12.1	18.4	32.2	43.3	5.3	19.2
2008 Q1	30.6	38.3	13.1	18.1	33.5	41.5	5.8	19.2
Q2	31.2	38.2	12.1	18.6	33.9	41.3	5.5	19.3
Q3	29.4	40.1	12.6	17.9	32.3	43.5	5.9	18.3
Q4	29.2	39.9	14.3	16.6	32.2	44.7	6.8	16.3
2009 Q1	29.1	41.1	13.3	16.6	31.4	45.9	6.8	16.3
Q2	30.0	39.1	13.1	17.8	32.0	44.6	6.0	17.4
Q3	30.3	37.9	13.6	18.2	32.4	44.4	6.1	17.1
Q4	29.8	38.2	13.4	18.7	31.4	45.8	5.8	17.0

Sources: BIS and ECB calculations.

Table 3 The euro's share as a settlement/invoicing currency in extra-euro area exports and imports of goods and services of selected euro area countries

(as a percentage of the total)

	Goods									Services								
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2001	2002	2003	2004	2005	2006	2007	2008	2009
Exports																		
Belgium ¹⁾	46.7	53.6	56.6	57.7	54.8	58.5	52.8	56.2	...	...	64.1	70.6	72.2	73.0	73.7	74.1	73.8	...
Cyprus	...	...	...	...	...	...	2.8	11.5	11.8	...	...	...	...	...	...	40.0	39.9	40.7
France ²⁾	50.8	50.5	49.0	49.2	49.8	50.8	51.5	49.3	49.2	40.0	40.3	42.4	42.4	43.6	47.2	49.0	39.9	41.1
Greece	23.5	39.3	47.3	44.3	39.1	38.8	39.2	32.6	36.3	11.3	13.3	16.3	14.1	15.6	14.6	14.9	15.6	19.1
Italy ³⁾	52.7	54.1	58.2	59.0	58.3	59.4	64.3	68.7	69.8	39.7	43.1	47.0	48.9	56.5	53.9	59.3	61.4	64.9
Luxembourg	46.7	44.0	51.5	61.8	61.4	57.7	59.2	51.9	52.9	...	40.4	41.6	41.9	42.4	47.7	48.4	46.6	47.3
Portugal	40.3	44.1	50.4	55.6	56.8	55.8	61.4	63.0	63.7	41.2	47.2	53.4	56.1	58.1	55.7	61.3	65.8	67.9
Slovakia	...	...	...	...	...	...	...	96.5	97.3	...	...	...	...	...	...	...	...	...
Slovenia ⁴⁾	74.2	79.0	79.4	84.7	...	...	...	...	...	80.1	80.8	83.2	82.7
Spain	52.0	57.5	61.7	62.4	62.1	61.6	65.2	60.6	62.4	53.3	59.5	64.1	64.3	67.5	67.2	71.8	71.2	70.3
Imports																		
Belgium ¹⁾	47.2	53.7	57.8	55.7	51.2	58.3	62.7	65.0	...	...	60.1	65.8	68.3	71.2	73.8	71.8	73.5	...
Cyprus	...	...	...	...	...	...	1.7	2.1	2.5	...	...	...	...	...	...	27.9	44.5	42.7
France ²⁾	42.6	40.8	44.1	45.7	46.3	44.7	44.8	44.2	44.2	43.3	44.0	46.6	49.2	50.3	54.6	54.8	54.9	52.8
Greece	29.3	35.8	39.6	40.6	34.1	33.6	34.9	37.3	37.9	15.3	16.8	20.1	22.7	24.0	26.2	29.5	29.0	34.5
Italy ³⁾	40.8	44.2	44.5	41.2	39.4	43.0	44.3	47.8	49.8	45.2	53.2	54.4	52.3	55.5	56.0	59.1	63.8	66.9
Luxembourg	47.2	31.9	41.9	50.0	43.8	38.8	37.9	38.8	42.4	...	27.7	34.3	30.2	31.2	29.8	34.0	38.4	38.2
Portugal	50.3	54.7	57.9	57.9	54.3	52.4	51.3	53.5	56.5	63.1	65.5	69.4	71.3	73.2	73.4	71.8	73.2	72.6
Slovakia	...	...	...	...	...	...	...	82.1	86.3	...	...	...	...	...	...	...	...	...
Slovenia ⁴⁾	64.0	73.1	75.0	69.9	...	...	...	...	...	53.1	57.2	58.1	64.8
Spain	49.7	55.9	61.1	61.3	56.0	54.8	56.7	58.8	60.8	45.2	48.8	54.3	57.0	60.2	60.3	60.7	61.5	61.8

Sources: National central banks and ECB calculations.

Notes: Data for 2001 include trade settled in euro and in legacy currencies. Data refer to the use of the euro as a settlement currency, except for Cyprus, where the invoicing currency is reported for imports of goods. Data on services exclude travel, with the exception of Belgium and Slovenia.

1) Data from 2007 onwards are not comparable with previous years.

2) Data for goods from 2005 onwards are based on estimates.

3) Data for 2009 are provisional.

4) Data for 2008 refer to the first quarter of that year.

Table 4 The euro's share as a settlement/invoicing currency in extra-EU exports and imports of goods of selected EU countries

(as a percentage of the total)

	Exports				Imports			
	2006 Q1	2007 Q1	2008 Q1	2009 Q1	2006 Q1	2007 Q1	2008 Q1	2009 Q1
Euro area countries								
Austria	62.9	...	72.9	74.7	60.9	55.9	62.4	56.2
Cyprus	...	...	16.9	13.8	...	...	1.8	2.1
France	51.5	51.2	49.5	48.3	45.4	44.6	45.5	43.7
Germany	...	...	...	73.7	40.9	43.2	46.1	36.5
Greece	28.1	25.6	18.4	27.2	18.0	21.8	26.6	24.5
Ireland	19.4	16.6	20.0	16.7	46.6	41.8	42.5	34.7
Italy	53.1	55.6	58.5	64.5	26.4	30.4	32.6	36.6
Luxembourg	34.5	51.4	44.8	39.7	33.1	36.6	36.7	43.1
Portugal	50.7	57.8	66.2	61.8	43.8	42.5	49.7	44.3
Slovakia	...	...	...	97.5	...	...	...	85.6
Slovenia	...	76.9	79.4	81.5	...	63.1	65.3	58.7
Spain	53.0	55.3	61.4	51.8	42.7	44.8	47.7	48.1
Non-euro area EU countries								
Bulgaria	...	...	...	14.8	...	...	...	12.5
Czech Republic	...	...	...	46.8	...	...	...	21.8
Estonia	...	...	...	39.1	...	...	...	42.4
Latvia	...	...	...	59.3	...	...	...	44.9
Lithuania	...	...	...	44.1	...	...	...	32.0
Romania	...	...	...	55.1	...	...	...	34.6

Sources: National central banks/national statistical offices and ECB calculations.

Table 5 The euro's share in exports and imports of selected non-euro area countries

	Exports																		
	Exports of goods invoiced/settled in euro (percentage of total exports of goods)									Exports of services invoiced/settled in euro (percentage of total exports of goods)									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Non-euro area EU countries																			
Bulgaria	48.1	52.4	60.7	62.2	60.4	57.7	60.5	61.5	68.5	...	...	...	...	...	73.1	76.3	77.9	77.0
Czech Republic ¹⁾	68.7	68.2	70.3	73.4	71.9	68.8	72.0	73.6	74.0	62.5	67.9	67.9	68.3	64.6	70.3	67.2	72.3	77.2	
Estonia ¹⁾	53.8	65.3	70.3	65.7	60.3	55.1	57.8	59.1	...	10.3	21.6	37.4	38.3	41.6	44.2	48.0	53.3	...	
Latvia ²⁾	34.1	40.4	41.6	47.9	53.3	54.8	59.5	66.9	66.4	...	...	20.7	26.4	33.2	37.9	42.5	51.5	54.4
Lithuania ³⁾	27.8	36.6	46.8	49.7	51.3	56.2	56.5	57.3	58.1	28.5	38.4	42.8	49.4	51.1	51.9	53.9	55.0	36.2	
Poland	57.2	60.1	64.9	69.3	70.1	69.9	69.8	68.2	66.1	57.2	60.1	64.9	69.3	70.1	69.9	69.8	68.2	66.1	
Romania	55.7	58.6	63.8	66.3	64.3	67.6	67.7	68.5	77.5	...	...	...	...	71.0	72.0	71.2	75.2	74.1
EU candidate countries																			
Croatia	63.0	69.4	71.9	69.2	71.2	71.7	74.3	75.6	81.0	...	...	...	...	...	...	...	...	...
FYR Macedonia	...	66.4	67.4	75.5	74.9	73.7	70.7	78.4	81.2	...	...	...	...	...	...	...	...	...
Turkey	42.9	46.7	49.3	49.3	48.3	48.5	50.3	46.6	48.0	...	...	...	...	...	...	...	...	...
Other countries																			
Indonesia ⁴⁾	1.0	2.4	2.3	2.0	1.8	1.6	1.8	1.8	1.8	...	...	...	...	...	...	...	...	...
Thailand	2.8	3.2	2.7	3.1	2.6	2.8	3.4	3.4	2.9	...	...	...	...	...	...	...	...	...
	Imports																		
	Imports of goods invoiced/settled in euro (percentage of total imports of goods)									Imports of services invoiced/settled in euro (percentage of total imports of services)									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Non-euro area EU countries																			
Bulgaria	55.5	60.1	62.7	63.6	60.4	58.9	60.2	65.7	70.8	...	...	...	...	...	69.9	77.1	77.1	80.8
Czech Republic ¹⁾	66.6	66.7	67.6	71.3	70.6	67.8	68.0	68.3	68.5	58.1	62.9	59.0	64.8	61.1	61.4	61.3	69.3	75.4	
Estonia ¹⁾	53.9	59.3	61.5	59.7	59.0	56.1	58.5	59.1	...	14.6	31.4	46.9	34.2	39.8	42.3	51.2	53.6	...	
Latvia ²⁾	44.5	51.9	49.6	52.8	59.2	61.2	67.2	67.4	66.1	...	...	25.4	29.0	33.3	36.8	39.3	42.7	43.9
Lithuania ³⁾	38.3	48.5	53.0	55.0	51.3	53.8	55.4	54.6	52.8	31.8	40.6	43.0	47.0	47.8	54.1	53.5	49.9	51.0	
Poland	57.7	59.6	60.2	61.7	60.5	58.6	59.1	56.4	54.8	40.8	46.8	52.1	53.0	54.8	54.3	54.0	54.0	58.9	
Romania	60.6	65.6	67.9	70.8	71.1	73.4	71.5	70.9	73.2	...	...	...	...	64.0	69.0	74.6	74.5	78.3
EU candidate countries																			
Croatia	72.7	77.1	78.0	77.5	73.7	73.3	73.6	71.3	75.8	...	...	...	...	...	...	...	...	...
FYR Macedonia	...	67.6	70.6	74.7	70.5	69.0	70.2	72.8	74.6	...	...	...	...	...	...	...	...	...
Turkey	33.0	37.2	39.7	40.3	38.5	37.6	35.8	31.8	34.8	...	...	...	...	...	...	...	...	...
Other countries																			
Indonesia ⁴⁾	2.7	5.5	5.8	6.2	4.3	3.6	4.3	4.3	4.6	...	...	...	...	...	...	...	...	...
Thailand	5.1	5.3	4.3	4.6	3.7	3.5	3.8	3.8	4.1	...	...	...	...	...	...	...	...	...

Sources: National sources. Data for non-euro area EU countries have been provided by the national central banks of the ESCB. Data for Croatia, the former Yugoslav Republic of Macedonia and Turkey have been kindly provided by the Croatian National Bank, the National Bank of the Republic of Macedonia and TurkStat.

1) As a result of changes in the way data are collected from 2004 onwards, more recent figures for the Czech Republic and Estonia are not comparable with previous years.

2) Data for 2009 refer to the first three quarters of that year.

3) Data for 2009 refer to the average of the first three quarters of that year.

4) Non-oil and gas exports and respectively imports only.

Table 6 Outstanding international loans, by currency

	All cross-border loans ¹⁾				Loans by banks outside the euro area to borrowers outside the euro area ²⁾			
	EUR	USD	JPY	Other	EUR	USD	JPY	Other
Outstanding amounts in USD billions, at current exchange rates, end of period								
1999	234	979	95	545	37	274	40	111
2000	266	999	81	505	42	254	47	98
2001	304	1,174	84	462	50	260	47	90
2002	379	1,241	105	506	79	263	50	113
2003	519	1,465	116	571	110	292	44	154
2004	666	1,612	152	646	157	296	42	171
2005	639	1,889	118	774	141	385	58	194
2006	832	2,545	121	1,007	173	497	51	282
2007	1,210	2,966	181	1,292	299	646	73	386
2008 Q1	1,413	3,277	265	1,378	313	688	101	384
Q2	1,393	3,145	193	1,347	309	724	79	387
Q3	1,245	3,237	218	1,285	293	733	98	354
Q4	1,145	2,770	168	1,245	230	712	77	343
2009 Q1	1,065	2,755	117	1,174	216	702	59	311
Q2	1,103	2,733	122	1,199	224	693	50	348
Q3	1,115	2,749	120	1,228	224	702	48	375
Q4	1,035	2,744	109	1,201	215	737	49	369
Percentages of outstanding amounts, at constant exchange rates, end of period								
1999	16.9	49.3	5.3	28.5	10.9	56.9	9.1	23.0
2000	20.1	48.7	4.9	26.3	13.5	53.2	12.1	21.2
2001	21.7	51.3	5.2	21.8	16.2	52.1	13.2	18.5
2002	21.5	51.3	5.6	21.6	19.7	47.9	11.6	20.8
2003	21.5	53.1	4.9	21.6	19.7	47.0	8.1	24.8
2004	22.6	51.9	5.4	20.1	24.4	43.6	6.9	25.1
2005	21.7	52.5	4.2	21.7	20.8	46.6	8.9	23.6
2006	19.9	55.5	3.4	21.2	18.3	48.1	6.4	27.2
2007	21.1	52.9	3.9	22.0	20.8	45.8	6.3	27.2
2008 Q1	20.9	53.2	4.6	21.3	19.5	47.1	7.5	26.0
Q2	21.5	53.1	3.7	21.7	19.1	48.9	6.1	26.0
Q3	20.9	53.9	4.1	21.0	19.8	49.1	7.5	23.6
Q4	22.0	51.3	3.0	23.7	17.4	51.9	5.5	25.2
2009 Q1	21.9	52.5	2.4	23.2	17.8	53.5	4.8	23.9
Q2	21.7	52.8	2.4	23.1	17.3	52.4	3.9	26.4
Q3	21.1	52.9	2.2	23.7	16.4	52.3	3.4	27.9
Q4	20.3	53.9	2.2	23.6	15.7	53.8	3.6	26.9
Percentages of outstanding amounts, at current exchange rates, end of period								
1999	12.6	52.8	5.1	29.4	7.9	59.4	8.6	24.1
2000	14.4	54.0	4.4	27.3	9.4	57.6	10.6	22.3
2001	15.0	58.0	4.1	22.8	11.1	58.3	10.5	20.2
2002	17.0	55.6	4.7	22.7	15.6	52.1	9.9	22.4
2003	19.4	54.8	4.4	21.4	18.3	48.7	7.3	25.7
2004	21.6	52.4	4.9	21.0	23.5	44.5	6.3	25.7
2005	18.7	55.2	3.4	22.6	18.1	49.5	7.4	25.0
2006	18.5	56.5	2.7	22.3	17.2	49.5	5.1	28.1
2007	21.4	52.5	3.2	22.9	21.3	46.0	5.2	27.5
2008 Q1	22.3	51.7	4.2	21.8	21.1	46.3	6.8	25.8
Q2	22.9	51.7	3.2	22.2	20.6	48.3	5.3	25.8
Q3	20.8	54.1	3.6	21.5	19.9	49.6	6.6	23.9
Q4	21.5	52.0	3.1	23.4	16.9	52.2	5.7	25.2
2009 Q1	20.8	53.9	2.3	23.0	16.7	54.5	4.6	24.2
Q2	21.4	53.0	2.4	23.2	17.1	52.7	3.8	26.5
Q3	21.4	52.7	2.3	23.6	16.6	52.1	3.5	27.8
Q4	20.3	53.9	2.2	23.6	15.7	53.8	3.6	26.9

Sources: BIS and ECB calculations.

Note: Excluding interbank loans.

1) Including loans to/from Japan, Switzerland, the United Kingdom and the United States in their domestic currency.

2) Excluding loans to/from Japan, Switzerland, the United Kingdom and the United States in their domestic currency.

Table 7 Outstanding international deposits, by currency

	All cross-border deposits ¹⁾				Deposits by depositors outside the euro area in banks outside the euro area ²⁾			
	EUR	USD	JYP	Other	EUR	USD	JYP	Other
Outstanding amounts in USD billions, at current exchange rates, end of period								
1999	393	1,136	88	277	89	427	40	86
2000	389	1,303	84	287	77	472	29	85
2001	464	1,435	84	404	103	510	35	187
2002	597	1,542	93	507	135	455	38	235
2003	812	1,898	84	613	192	531	40	282
2004	989	2,198	112	703	239	539	34	326
2005	919	2,361	116	727	239	652	55	331
2006	1,096	3,060	135	936	292	842	46	422
2007	1,387	3,863	146	1,178	431	1,082	49	517
2008 Q1	1,593	4,114	222	1,213	467	1,085	73	517
Q2	1,586	4,192	145	1,223	454	1,030	57	532
Q3	1,443	3,937	168	1,129	445	1,025	69	484
Q4	1,315	3,622	126	952	397	957	59	423
2009 Q1	1,277	3,332	96	913	392	930	42	409
Q2	1,312	3,255	102	1,012	401	923	39	458
Q3	1,328	3,345	104	1,003	401	932	44	465
Q4	1,256	3,362	93	1,001	402	917	40	467
Percentages of outstanding amounts, at constant exchange rates, end of period								
1999	26.8	54.0	4.7	14.6	18.6	61.9	6.4	13.1
2000	25.8	55.8	4.5	14.0	16.6	65.7	5.1	12.6
2001	27.4	51.9	4.3	16.5	18.3	55.3	5.4	21.0
2002	27.3	51.2	4.0	17.5	20.1	49.1	5.2	25.6
2003	26.3	53.9	2.8	17.1	20.4	49.3	4.3	26.0
2004	26.0	54.6	3.1	16.4	22.1	46.9	3.3	27.8
2005	25.8	54.2	3.4	16.7	21.8	48.5	5.2	24.6
2006	22.6	57.6	3.3	16.5	19.5	51.5	3.6	25.3
2007	21.0	59.6	2.7	16.7	20.4	52.4	2.9	24.4
2008 Q1	21.0	59.5	3.5	16.1	20.3	51.8	3.8	24.1
Q2	20.9	60.5	2.4	16.2	20.4	50.8	3.2	25.6
Q3	21.8	59.1	2.9	16.3	22.1	50.5	3.9	23.6
Q4	22.3	59.3	2.0	16.4	22.2	51.6	3.1	23.1
2009 Q1	23.9	57.6	1.8	16.8	23.4	51.3	2.5	22.9
Q2	23.4	57.1	1.9	17.6	22.4	50.5	2.2	25.0
Q3	22.7	58.1	1.7	17.5	21.5	50.8	2.3	25.4
Q4	22.0	58.8	1.6	17.5	22.0	50.2	2.2	25.6
Percentages of outstanding amounts, at current exchange rates, end of period								
1999	20.8	60.0	4.7	14.6	13.9	66.5	6.2	13.4
2000	18.8	63.2	4.1	13.9	11.6	71.1	4.4	12.8
2001	19.4	60.1	3.5	16.9	12.3	61.1	4.2	22.4
2002	21.8	56.3	3.4	18.5	15.7	52.8	4.4	27.2
2003	23.8	55.7	2.5	18.0	18.4	50.8	3.8	27.0
2004	24.7	54.9	2.8	17.6	21.0	47.4	3.0	28.6
2005	22.3	57.3	2.8	17.6	18.8	51.1	4.3	25.9
2006	21.0	58.5	2.6	17.9	18.2	52.6	2.9	26.3
2007	21.1	58.8	2.2	17.9	20.7	52.0	2.3	24.9
2008 Q1	22.3	57.6	3.1	17.0	21.8	50.6	3.4	24.1
Q2	22.2	58.7	2.0	17.1	21.9	49.7	2.7	25.7
Q3	21.6	59.0	2.5	16.9	22.0	50.7	3.4	23.9
Q4	21.9	60.2	2.1	15.8	21.6	52.1	3.2	23.0
2009 Q1	22.7	59.3	1.7	16.2	22.1	52.5	2.4	23.1
Q2	23.1	57.3	1.8	17.8	22.0	50.7	2.1	25.1
Q3	23.0	57.9	1.8	17.4	21.8	50.6	2.4	25.3
Q4	22.0	58.8	1.6	17.5	22.0	50.2	2.2	25.6

Sources: BIS and ECB calculations.

Note: Excluding interbank deposits.

1) Including deposits in/of Japan, Switzerland, the United Kingdom and the United States in their domestic currency.

2) Excluding deposits in/of Japan, Switzerland, the United Kingdom and the United States in their domestic currency.

Table 8 Global holdings of foreign exchange reserves

	All countries					Advanced economies					Emerging and developing economies				
	Total (incl. unallocated reserves)	EUR	USD	JPY	Other (excl. unallocated reserves)	Total (incl. unallocated reserves)	EUR	USD	JPY	Other (excl. unallocated reserves)	Total (incl. unallocated reserves)	EUR	USD	JPY	Other (excl. unallocated reserves)
Outstanding amounts in USD billions, at current exchange rates															
1999	1,782	247	980	88	65	1,121	182	706	73	49	661	65	274	15	16
2000	1,936	278	1,080	92	69	1,216	203	772	81	51	720	75	308	11	18
2001	2,050	301	1,122	79	67	1,246	213	792	68	49	804	88	330	11	18
2002	2,408	427	1,205	78	86	1,442	297	850	69	63	966	131	355	9	23
2003	3,025	559	1,466	88	111	1,766	358	1,045	81	73	1,259	201	421	7	38
2004	3,748	659	1,751	102	144	2,069	416	1,228	91	90	1,679	243	523	11	54
2005	4,320	684	1,903	102	155	2,077	385	1,261	86	87	2,243	299	642	16	68
2006	5,251	832	2,171	102	210	2,250	438	1,350	84	107	3,001	394	821	18	103
2007	6,699	1,082	2,642	120	275	2,429	519	1,423	85	126	4,270	563	1,219	35	149
2008 Q1	7,237	1,169	2,769	137	307	2,543	565	1,452	93	141	4,693	604	1,317	44	167
Q2	7,452	1,186	2,784	146	313	2,508	546	1,431	94	141	4,944	640	1,353	52	172
Q3	7,490	1,113	2,813	139	296	2,442	495	1,444	91	129	5,048	618	1,369	48	167
Q4	7,338	1,112	2,698	132	267	2,487	508	1,475	94	117	4,850	604	1,223	38	150
2009 Q1	7,164	1,046	2,645	114	253	2,450	478	1,478	1,478	107	4,715	568	1,167	29	146
Q2	7,561	1,171	2,682	133	284	2,603	560	1,504	1,504	119	4,959	611	1,178	32	165
Q3	7,877	1,231	2,733	143	333	2,710	596	1,542	1,542	132	5,167	635	1,191	37	201
Q4	8,166	1,246	2,837	138	343	2,775	602	1,586	1,586	138	5,391	644	1,251	38	205
Currency shares in foreign exchange reserves with disclosed currency composition at constant exchange rates															
1999	...	23.6	65.4	6.5	4.5	...	23.8	64.3	7.4	4.5	...	23.2	68.5	4.0	4.4
2000	...	25.3	63.6	6.7	4.4	...	25.3	62.2	8.1	4.5	...	25.3	67.4	3.1	4.2
2001	...	27.3	62.3	6.2	4.1	...	26.9	61.3	7.5	4.2	...	28.3	64.8	3.0	3.9
2002	...	29.6	60.8	5.1	4.5	...	28.9	60.2	6.3	4.6	...	31.6	62.4	2.0	4.1
2003	...	27.6	63.4	4.4	4.6	...	25.3	64.7	5.8	4.3	...	33.1	60.6	1.2	5.1
2004	...	25.9	65.1	4.2	4.8	...	23.8	66.3	5.4	4.5	...	30.6	62.3	1.5	5.6
2005	...	27.7	63.0	4.3	5.0	...	24.4	65.5	5.7	4.4	...	33.4	58.8	1.8	6.0
2006	...	26.8	63.9	3.9	5.5	...	23.5	66.4	5.3	4.8	...	31.6	60.2	1.7	6.6
2007	...	25.9	64.7	3.6	5.8	...	23.7	66.3	4.8	5.2	...	28.4	62.9	2.2	6.5
2008 Q1	...	25.1	65.1	3.5	6.3	...	23.5	66.2	4.6	5.7	...	26.7	64.0	2.3	7.0
Q2	...	25.1	64.6	3.9	6.4	...	23.1	66.1	4.9	5.9	...	27.3	63.1	2.8	6.9
Q3	...	25.7	64.4	3.6	6.3	...	23.0	66.6	4.8	5.6	...	28.3	62.2	2.5	7.0
Q4	...	27.0	63.3	3.0	6.7	...	23.7	66.6	4.1	5.6	...	30.5	59.7	1.8	7.9
2009 Q1	...	27.1	63.4	2.9	6.6	...	23.5	67.2	4.1	5.2	...	31.1	59.1	1.6	8.1
Q2	...	27.8	62.5	3.2	6.5	...	24.8	65.5	4.5	5.1	...	31.2	59.0	1.7	8.1
Q3	...	27.4	61.9	3.1	7.6	...	24.8	65.2	4.4	5.6	...	30.4	58.0	1.7	9.8
Q4	...	27.3	62.2	3.0	7.5	...	24.8	65.4	4.1	5.7	...	30.1	58.5	1.8	9.6
Currency shares in foreign exchange reserves with disclosed currency composition at current exchange rates															
1999	...	17.9	71.0	6.4	4.7	...	18.0	69.9	7.3	4.8	...	17.5	74.2	3.9	4.4
2000	...	18.3	71.1	6.1	4.5	...	18.4	69.8	7.3	4.6	...	18.1	74.8	2.7	4.3
2001	...	19.2	71.5	5.0	4.3	...	19.0	70.6	6.1	4.4	...	19.7	73.8	2.4	4.0
2002	...	23.8	67.1	4.4	4.8	...	23.2	66.5	5.4	4.9	...	25.3	68.6	1.7	4.5
2003	...	25.2	65.9	3.9	5.0	...	23.0	67.2	5.2	4.7	...	30.2	63.1	1.1	5.7
2004	...	24.8	65.9	3.8	5.4	...	22.8	67.3	5.0	4.9	...	29.2	63.0	1.3	6.5
2005	...	24.0	66.9	3.6	5.5	...	21.2	69.3	4.7	4.8	...	29.2	62.7	1.5	6.7
2006	...	25.1	65.5	3.1	6.3	...	22.1	68.2	4.3	5.4	...	29.5	61.5	1.3	7.7
2007	...	26.3	64.1	2.9	6.7	...	24.1	66.1	4.0	5.9	...	28.6	62.0	1.8	7.6
2008 Q1	...	26.7	63.2	3.1	7.0	...	25.1	64.5	4.1	6.2	...	28.3	61.8	2.0	7.8
Q2	...	26.8	62.9	3.3	7.1	...	24.7	64.7	4.2	6.4	...	28.9	61.0	2.3	7.7
Q3	...	25.5	64.5	3.2	6.8	...	22.9	66.9	4.2	6.0	...	28.1	62.2	2.2	7.6
Q4	...	26.4	64.1	3.1	6.4	...	23.1	67.2	4.3	5.3	...	30.0	60.7	1.9	7.4
2009 Q1	...	25.8	65.2	2.8	6.2	...	22.3	68.8	3.9	5.0	...	29.7	61.1	1.5	7.7
Q2	...	27.4	62.8	3.1	6.7	...	24.5	65.9	4.4	5.2	...	30.7	59.3	1.6	8.3
Q3	...	27.7	61.5	3.2	7.5	...	25.1	64.9	4.5	5.5	...	30.8	57.7	1.8	9.7
Q4	...	27.3	62.2	3.0	7.5	...	24.8	65.4	4.1	5.7	...	30.1	58.5	1.8	9.6

Sources: IMF and ECB calculations.

Table 9 Currency composition of foreign exchange reserves for selected countries

(share of euro in foreign exchange reserve holdings as a percentage of total; at current exchange rates)

	End-2006	End-2007	End-2008	End-2009
Total of EU countries outside the euro area	-	68.6	60.7	70.4
<i>of which</i>				
Bulgaria	99.4	99.7	99.1	
Czech Republic	55.3	58.0	60.5	
Latvia	46.4	42.6	62.0	65.3
Lithuania	100.0	100.0	100.0	100.0
Poland	40.0	40.0	35.0	
Romania	68.8	69.5	63.0	
Sweden	50.0	50.0	50.0	50.0
United Kingdom	66.8	68.5	41.4	65.5
Candidate and potential candidate countries				
Croatia	85.5	85.4	76.8	73.1
Serbia	71.3	74.8	71.2	
Other industrial countries				
Canada	51.0	50.2	41.5	43.8
Hong Kong	9.8	10.0	13.8	
Norway	47.2	48.4	49.8	49.6
Russia		42.4	47.5	43.8
Switzerland	47.0	45.6	49.4	58.1
United States	61.2	47.5	57.4	59.0
Latin American countries				
Chile	24.9	37.1	38.2	36.5
Peru	18.2	12.9	15.4	18.5
Uruguay	1.3	14.2	10.0	2.8

Sources: National central banks and ECB calculations.

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

Table 10 Outstanding euro-denominated bank deposits in selected countries and dependent territories

	Absolute amounts (EUR millions)			As a % of total deposits		As a % of foreign deposits	
	2008	2009	as of	2008	2009	2008	2009
New Member States							
Bulgaria	8,258	9,450	Dec. 2009	42.2	46.3	83.8	86.4
Czech Republic	7,187	7,385	Dec. 2009	7.5	7.2	72.8	81.2
Latvia	3,917	4,579	Dec. 2009	45.1	54.4	89.0	91.4
Lithuania	2,244	3,078	Dec. 2009	21.6	28.4	82.8	87.8
Poland	8,534	9,182	Dec. 2009	6.1	5.9	63.7	67.4
Average new Member States				24.5	28.5	78.4	82.8
EU candidate countries							
Croatia	15,781	17,865	Dec. 2009	55.1	55.1	96.6	96.6
FYR Macedonia	1,208	1,478	Dec. 2009	51.8	58.6	87.4	90.4
Turkey ¹⁾	29,943	32,548	Dec. 2009	14.2	13.7	40.4	40.8
Average EU candidate countries				40.4	42.5	74.8	75.9
Potential candidate countries							
Serbia	7,175	8,667	Dec. 2009	61.3	64.0	88.8	87.6
European CIS							
Moldova	513	489	Dec. 2009	30.0	35.4	75.0	73.8
Other non euro-area Europe							
Norway	13,034	10,642	Dec. 2009	5.4	3.8	19.4	15.0
Sweden	51,392	37,518	Dec. 2009	11.1	8.3	33.3	31.7
Switzerland	39,956	85,014	Dec. 2009	9.6	14.9	37.1	44.7
United Kingdom	1,453,047	1,325,515	Dec. 2009	23.8	22.5	40.5	42.5
Middle East and North Africa							
Israel	9,506	9,974	Dec. 2009	6.5	6.8	22.8	24.9

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. Data includes foreign exchange-indexed deposits for Bulgaria, Croatia, Serbia and Israel.

1) Deposits of foreign branches of Turkish banks are included.

Table II Outstanding euro-denominated bank loans in selected countries and dependent territories

	Absolute amounts (EUR millions)			As a % of total loans		As a % of foreign loans	
	2008	2009	as of	2008	2009	2008	2009
New Member States							
Bulgaria	13,945	14,660	Dec. 2009	54.8	56.5	96.5	96.8
Czech Republic	8,942	9,190	Dec. 2009	11.6	11.6	82.5	86.2
Latvia	18,246	17,319	Dec. 2009	85.2	89.2	96.5	96.9
Lithuania	12,643	12,976	Dec. 2009	60.8	69.3	95.2	95.8
Poland	12,240	13,794	Dec. 2009	7.8	7.9	24.0	26.3
Average new Member States				44.0	46.9	78.9	80.4
EU candidate countries							
Croatia	16,307	19,851	Dec. 2009	47.4	57.7	72.2	79.0
FYR Macedonia	577	604	Dec. 2009	20.3	20.8	91.0	95.2
Turkey ¹⁾	37,802	38,081	Dec. 2009	21.8	20.8	62.8	65.5
Average EU candidate countries				29.9	33.1	75.3	79.9
Potential candidate countries							
Serbia	7,257	8,411	Dec. 2009	59.5	67.2	68.9	79.9
European CIS							
Moldova	450	345	Dec. 2009	26.3	27.3	63.4	58.9
Other non euro-area Europe							
Norway	9,090	7,785	Dec. 2009	3.4	2.7	21.9	21.7
Sweden	73,227	74,880	Dec. 2009	11.5	11.0	47.8	47.9
Switzerland	27,314	26,021	Dec. 2009	3.9	3.7	22.9	24.4
United Kingdom	844,093	684,593	Dec. 2009	20.1	16.7	44.1	41.7
Middle East and North Africa							
Israel	3,745	3,523	Dec. 2009	3.1	3.0	17.7	20.2

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. Data includes foreign exchange-indexed loans for Bulgaria, Croatia, Serbia and Israel.

1) Includes foreign branches of Turkish banks.

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