The international role of the euro

Contents

Foreword

This 16th annual review of the international role of the euro published by the ECB presents an overview of developments in the use of the euro by non-euro area residents.

This report covers developments in 2016 and early 2017. This period was characterised by heightened non-economic risks stemming in particular from geopolitical developments, elections in some euro area countries, economic policy uncertainty in the wake of the outcome of the United Kingdom's referendum on EU membership and the arrival of a new US administration, as well as the continued impact of the ECB's asset purchases on financial markets. These developments affected the international role of the euro in the review period; the currency continued to lose some ground, albeit not uniformly. For instance, the share of the euro in official holdings of foreign exchange reserves rebounded slightly in 2016 compared with the previous review period. But a number of indicators tracked in this report show the share of the euro as having declined. This was particularly the case for outstanding amounts of international debt securities and loans, issuance of foreign currency-denominated debt, foreign exchange turnover and shipments of euro banknotes to destinations outside the euro area. Overall, the euro remained unchallenged as the second most important currency in the international monetary system, but with a significant gap to the US dollar.

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

Mario Draghi

President of the European Central Bank

1 Main findings

In 2016 and early 2017 heightened non-economic risks stemming in particular from geopolitical developments, elections in some euro area countries, economic policy uncertainty in the wake of the outcome of the referendum in the United Kingdom on membership of the European Union and the arrival of a new US administration, as well as the continued impact of the ECB's asset purchases on financial markets, were among the main developments affecting the international role of the euro.

This challenging environment affected the international use of the euro; the currency continued to lose some ground, albeit not uniformly.

One exception is the share of the euro in official holdings of foreign exchange reserves, which rebounded slightly in 2016 compared with the previous review period. The stabilisation of the share of the euro in global foreign exchange reserves offers tentative evidence that its role as an official store of value remained resilient to the various shocks buffeting global financial markets in the review period. The share of the euro in international payments also increased.

Chart 1

Euro remains second most important currency in international monetary system

Snapshot of the international monetary system

(percentages)

- USD
- EUR
- Renminbi
- JPY
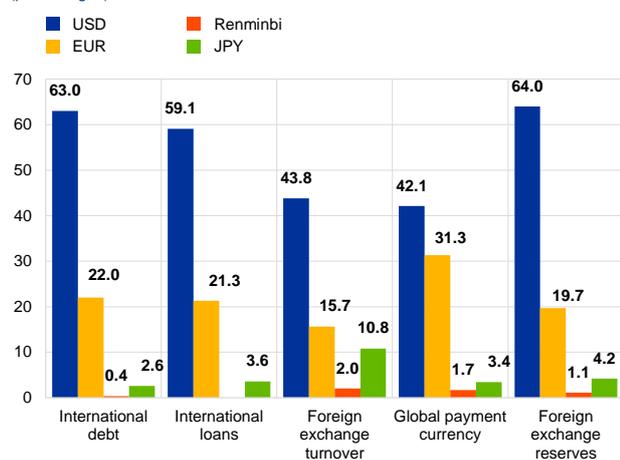
Sources: BIS, IMF, SWIFT and ECB calculations.
Notes: Data as at end-2016 or latest available.

Other indicators tracked in this report showed the share of the euro as having declined over the review period (see **Table 1**). This was particularly the case for outstanding amounts of international loans, issuance of foreign currency-denominated debt, foreign exchange turnover and shipments of euro banknotes to destinations outside the euro area. Likewise, the share of the euro in outstanding international debt securities declined in 2016 and remains well below levels prevailing prior to the onset of the global financial crisis. Heightened costs of "synthetic" US dollar borrowing have discouraged use of the euro as a funding currency when borrowing US dollars in international debt markets, despite historically low levels of interest rates prevailing in the euro area. Moreover, composition effects – in particular a shift, since the global financial crisis, from advanced to emerging market economies as main issuers of foreign currency-denominated debt – were another determinant of the decline in the share of the euro in international debt security markets.

This said, the euro remained unchallenged as the second most important currency in the international monetary system, but with a significant gap to the US dollar (see **Chart 1**). Monitoring developments in the use of the euro by non-euro area residents is warranted from the perspective of the international monetary system and is also relevant for their implications in terms of transmission of monetary policy impulses (see **Box 1**) and financial stability in third countries (see **Special Feature C**).

Deeper and better connected European capital markets, for instance as a result of moving towards an EU capital markets union, as well as a completed banking union may contribute to the depth and liquidity of euro area financial markets and, as an indirect result, foster the international role of the euro (see **Box 2**). Although a stronger international role for the euro is not a policy objective per se, it would be a mark of the rest of the world's confidence in successful completion of the Economic and Monetary Union.

This year's report includes three special features. The first special feature considers the euro and the geography of the foreign exchange market amid discussions generated by Brexit on whether some financial transactions in euro conducted in the UK, notably in the City of London, would be conducted in the euro area or elsewhere in future. This special feature examines key stylised facts on the location of foreign exchange trading globally, as well as some of the theoretical determinants of these facts and evidence of their respective importance. It shows that the bulk of foreign exchange transactions in euros are initiated outside the euro area in a few large financial centres, notably in the City of London, and provides evidence that certain spatial frictions, such as distance, domestic market liquidity and restrictions on capital flows, matter significantly for the geography of foreign exchange trading. The special feature also shows that technological change, notably electronic trading, has major implications for the distribution of foreign exchange transactions across the major financial centres. The UK's advantage as a hub for trading using fibre-optic cables, combined with institutional inertia, suggest that any relocation of trading after Brexit, if at all, would likely be gradual.

The second special feature examines violations in covered interest parity (CIP), which is important for the role of the euro as an international funding currency. Since the outbreak of the global financial crisis a decade ago, CIP has broken down and has persistently been violated. These deviations, also known as the "basis" in market parlance, have remained large and negative, thereby contributing to a surge in US dollar-denominated international bond issuance in recent years. In turn, the violations have discouraged the "synthetic" issuance of US dollar bonds via vehicle currencies such as the euro. This special feature provides evidence that the move of the basis into negative territory reflects a confluence of factors, such as greater awareness among market participants about counterparty risk, regulatory reforms contributing to a reduction in the supply of US dollars in wholesale money markets and the effect of the non-standard monetary policy measures taken by major central banks. In addition, this special feature presents tentative evidence that the effect of non-standard monetary policy measures on the role of the euro as an international financing currency is ambiguous. On the one hand, these policies lower the cost of borrowing euro in money markets; on the other hand, they contribute to the widening of the basis, hence reducing the attractiveness of the euro as a unit for "synthetic" US dollar borrowing.

The third special feature turns to unofficial euroisation of loans and deposits, which is a salient feature of many EU candidate and potential candidate countries in the Western Balkans. Unofficial euroisation is determined by a host of factors, such as confidence in the domestic currency, trade relations with the euro area and

remittances. Given that unofficial euroisation may give rise to financial stability risks and constrain monetary policy decisions in the countries concerned, several countries in the region introduced measures to strengthen the use of local currencies. There are tentative signs that local currency use is progressing in the countries concerned, albeit slowly and largely restricted to loans and use of euro cash.

Table 1

The international role of the euro declined across a number of indicators

Summary data on the international role of the euro report

Indicator	Share of the euro (percentages, unless otherwise indicated)			Total outstanding amounts (at current exchange rates)			
	Latest	Comparison period	Difference (percentage points)	Latest	Comparison period	Unit	Difference (percentages)
Stock of global foreign exchange reserves with known currency composition, at constant exchange rates	19.7 *(Q4 2016)*	19.4 *(Q4 2015)*	**0.3**	10,793 *(Q4 2016)*	10,927 *(Q4 2015)*	USD billions	-1.2
Oustanding international debt securities: narrow measure, i.e. excluding home currency issuance, at constant exchange rates	22.0 *(Q4 2016)*	22.4 *(Q4 2015)*	**-0.4**	13,116 *(Q4 2016)*	12,584 *(Q4 2015)*	USD billions	4.2
Oustanding international loans: all cross-border loans, excluding interbank loans, at constant exchange rates	21.3 *(Q4 2016)*	21.5 *(Q4 2015)*	**-0.2**	6,798 *(Q4 2016)*	6,685 *(Q4 2015)*	USD billions	1.7
Oustanding international deposits all cross-border loans, excluding interbank loans, at constant exchange rates	23.4 *(Q4 2016)*	23.4 *(Q4 2015)*	**0.0**	6,957 *(Q4 2016)*	6,854 *(Q4 2015)*	USD billions	1.5
Foreign currency-denominated debt issuance at current exchange rates	20.4 *(2016)*	24.8 *(2015)*	**-4.4**	3,488 *(2016)*	2,802 *(2015)*	USD billions	24.5
Euro nominal effective exchange rate (broad measure against 38 trading partners, annual change)			**-0.3**	… …	… …		
Daily foreign exchange trading (settled by CLS), annual averages, at current exchange rates, as a percentage of foreign exchange settlement	36.1 *(2016)*	37.6 *(2015)*	**-1.5**	… …	… …		
Foreign currency-denominated loans in CESEE countries, as a percentage of total loans, at current exchange rates[1]	39.6 *(2016)*	41.2 *(2015)*	**-1.6**	163.9 *(2016)*	154.0 *(2015)*	EUR billions	-4.3
Foreign currency-denominated deposits in CESEE countries, as a percentage of total deposits, at current exchange rates[1]	32.5 *(2016)*	33.0 *(2015)*	**-0.5**	165.5 *(2016)*	174.0 *(2015)*	EUR billions	6.6
Invoicing of goods exported from the euro area to non-euro area countries, at current exchange rates	56.1 *(2016)*	57.4 *(2015)*	**-1.3**	… …	… …		… …
Invoicing of goods imported to the euro area from non-euro area countries, at current exchange rates	47.3 *(2016)*	47.5 *(2015)*	**-0.2**	… …	… …		… …
Foreign holdings of euro area debt denominated in euro (as a percentage of total euro-denominated debt)	17.1 *(Q4 2016)*	18.6 *(Q4 2015)*	**-1.5**	16,787 *(Q4 2016)*	16,673 *(Q4 2015)*	EUR billions	0.7
Cumulative net shipments of euro banknotes to destinations outside the euro area (not seasonally adjusted)	… …	… …	**…** **…**	172.8 *(Dec. 2016)*	178.3 *(Dec. 2015)*	EUR billions	-3.1

Sources: BIS, Dealogic, IMF, national sources and ECB calculations.
Notes: Outstanding amounts refer to outstanding amounts of foreign currency total amounts.

Box 1

Monetary policy effectiveness and the currency composition of external balance sheets

Empirical evidence gained from a recent analytical study

The question whether financial globalisation weakens monetary policy effectiveness has been vigorously debated since the global financial crisis from 2007 to 2009. In particular, it has been argued that financial conditions in the world's foremost financial centre, the United States, spill over to other economies through global financial cycles and override the efforts of local monetary policy to steer domestic financial conditions.[1] Due to global financial cycles, non-US central banks allegedly lose the ability to control domestic long-term interest rates, which are central in monetary policy transmission.

A recent study, however, sheds light on another aspect of financial globalisation which has been under-appreciated in this debate and which pertains to the currency composition of countries' external balance sheets.[2] In particular, along with the growth in the size of external balance sheets, economies' net foreign currency exposures have also increased. Both advanced and emerging market economies have been increasingly net long in foreign currency on their external balance sheets. This may have important economic implications. In particular, if economies are net long in foreign currency on their external balance sheets, monetary policy may impact output and subsequently inflation through valuation effects arising from exchange rate movements.[3] This echoes other studies which point to the importance of a financial channel of exchange rate changes.[4] Have global financial cycle and net foreign currency exposure effects been empirically relevant and, if so, which of these opposing forces has had a stronger impact on monetary policy effectiveness since the 1990s? To answer these questions, the aforementioned study estimates the output response to a local monetary policy shock for a sample of economies with flexible exchange rates over the period 1999-2009. It then examines whether cross-country heterogeneities in monetary policy effectiveness can be explained by differences in economies' global financial integration patterns. Notably, it considers the role of economies' external balance sheets, which reflect their susceptibility to global financial cycle effects, and the role of the currency exposures of economies' external balance sheets, which capture their susceptibility to net foreign currency exposure effects.

The study finds support for global financial cycle and net foreign currency exposure effects on monetary policy effectiveness. Economies which are more susceptible to global financial cycle effects display a weaker response of output to monetary policy. But economies which are more net long in foreign currency exhibit a stronger response of output to a monetary policy shock. To work

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[1]   See Rey, H. (2013), "Dilemma not Trilemma: the Global Financial cycle and Monetary Policy Independence", in *Economic Policy Symposium, Jackson Hole: Proceedings*, pp. 286-333. According to IMF estimates, global financial conditions account for 20% to 40% of the variation in countries' domestic financial conditions (see IMF (2017), *Global Financial Stability Report*, April).

[2]   See Georgiadis, G. and Mehl A. (2016), "Financial Globalization and Monetary Policy Effectiveness", *Journal of International Economics*, Vol.103, pp. 200-212.

[3]   In an economy whose foreign assets are denominated in foreign currency and whose foreign liabilities are denominated in domestic currency a tightening in monetary policy, followed by an exchange rate appreciation, lowers the home-currency value of the economy's foreign assets, while leaving the home-currency value of its foreign liabilities unchanged. This causes a fall in the economy's net foreign asset position and a negative wealth effect that contracts consumption and investment. Thus, even if financial globalisation weakens the interest rate channel of monetary policy through global financial cycle effects, it may strengthen the exchange rate channel through net foreign currency exposure effects.

[4]   See e.g. H. S. Shin (2015), "Exchange rates and the transmission of global liquidity", Bank of Korea-IMF conference, 15 December 2015.

out the actual historical impact that financial globalisation had on monetary policy effectiveness, the study makes use of the estimates from the cross-section model of the evolution of economies' susceptibility to global financial cycle and net foreign currency exposure effects within economies over time. The results suggest that the net impact of financial globalisation varies across regions. In particular, the trough response of euro area output to a contractionary monetary policy shock has been reduced by less than 5%. Financial globalisation has hence not markedly changed monetary policy effectiveness in the euro area since the late 1990s. In contrast, financial globalisation has amplified monetary policy effectiveness in non-euro area advanced and emerging market economies. According to the estimates, the trough output effect of monetary policy tightening has increased by 25% owing to financial globalisation.

These findings tentatively suggest that the exchange rate channel might have gained in relative importance owing to rising net foreign currency exposures on economies' external balance sheets, at least in some countries and for some periods. As a result, the exchange rate channel matters, not only because of its role for import and export prices, as the standard literature on pass-through suggests, but also because of wealth effects arising from economies' external balance sheets.

Box 2

Financial depth in the euro area and the international role of the euro

Deep and liquid domestic financial markets are widely recognised as important attributes of what draws investors to a particular security – or to a security denominated in a particular currency. It has been shown, for instance, that financial deepening was a key determinant of the rise of US dollar-denominated trade credits in the 1920s, which helped the US dollar dethrone the pound sterling as the leading international currency.[5] Early studies on the international role of the euro highlighted financial development and integration as key determinants of the single currency's international profile.[6] By way of comparison, China's domestic security markets remaining illiquid and largely closed to foreign investors is often seen as a barrier to the ascent of the Chinese renminbi as an international currency.[7]

The global financial crisis of 2007-09 and the euro area sovereign debt crisis of 2010-12 exposed the incomplete nature of Economic and Monetary Union (EMU), as well as the fragility of financial integration in the euro area,[8] and underscored the need to move to a genuine EMU. The case for this was put most clearly in the Five Presidents' Report on Completing Europe's Economic and Monetary Union.[9] Since the publication of this report, a number of steps have been taken towards a

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[5]   See Eichengreen, Barry and Flandreau, Marc (2009), "The rise and fall of the dollar (or when did the dollar replace sterling as the leading reserve currency?)", *European Review of Economic History*, Vol. 13, pp. 377-411.

[6]   See Portes, Richard and Rey, Hélène (1998), "The Emergence of the Euro as an International Currency", *Economic Policy*, Vol. 13, pp. 307-343; and Papaioannou, Elias and Portes, Richard (2008), "The international role of the euro: a status report", *European Economy: Economic Papers*, No 317, Directorate General Economic and Monetary Affairs, European Commission.

[7]   See Eichengreen, Barry (2013), "Number One Country, Number One Currency?", *The World Economy*, Vol. 36, pp. 363-374.

[8]   For a detailed account, see ECB (2013), *Financial integration in Europe*, Frankfurt am Main, April.

[9]   See the report by Jean-Claude Juncker, in close cooperation with Donald Tusk, Jeroen Dijsselbloem, Mario Draghi and Martin Schulz, entitled *Completing Europe's Economic and Monetary Union*, published on 22 June 2015.

fully-fledged banking union, which will help strengthen cross-border lending to households and companies within the euro area.[10] In September 2015 the European Commission published its Action plan on building a capital markets union, which aims to strengthen integration of capital markets within the European Union as a whole; this, in turn, should have a beneficial impact on financial integration within the euro area as it will help to strengthen cross-border holdings of productive and financial assets. In March 2017 the European Commission published its White paper on the future of Europe, which will be followed up by several reflection papers. One such papers – released in May 2017 – reflected on deepening EMU, including through completing a genuine financial union, achieving a more integrated economic and fiscal union and strengthening euro area institutions. It is expected that discussions on how to progress towards a more complete EMU will gain traction later in the year.

Moving towards a financial union consisting of a completed banking union and substantive progress towards a capital markets union can be expected to lead to deeper and better-connected European capital markets, which may contribute to the depth and liquidity of euro area financial markets and, as an indirect result, support the international role of the euro. Although strengthening the international role of the euro is not a policy objective per se, it would be a mark of the rest of the world's confidence in successful completion of EMU.

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[10] For an overview, see "Banking union and capital markets union: interaction and synergies", keynote speech by Vítor Constâncio, Vice-President of the ECB, at the joint conference of the European Commission and European Central Bank on European Financial Integration, Brussels, 19 May 2017.

2 Use of the euro as an international reserve, investment and payment currency

After having declined for six consecutive years, the share of the euro in global official holdings of foreign exchange reserves rebounded slightly in 2016, albeit from low levels. At constant exchange rates, the share of the euro in globally disclosed holdings of foreign exchange reserves increased slightly to 19.7% at the end of 2016 from 19.4% in the previous year (see **Chart 2** and **Table A1**).

Chart 2

The share of the euro in global official holdings of foreign exchange reserves rebounded slightly in 2016

Currency composition of global foreign exchange reserves

(percentages; at constant end-2016 exchange rates)

- EUR (right-hand scale)
- USD (left-hand scale)
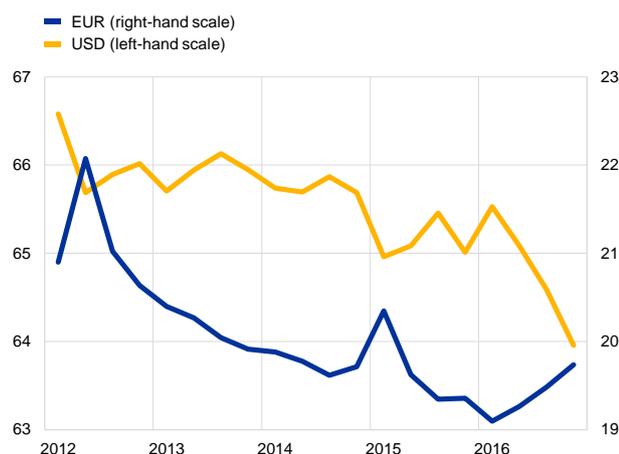
Sources: IMF and ECB calculations.
Notes: The latest observation is for the final quarter of 2016.

Chart 3

The share of non-traditional reserve currencies and of the pound sterling rose modestly

Currency composition of global foreign exchange reserves

(percentages; at constant end-2016 exchange rates)

- JPY
- other currencies
- GBP
- CNY
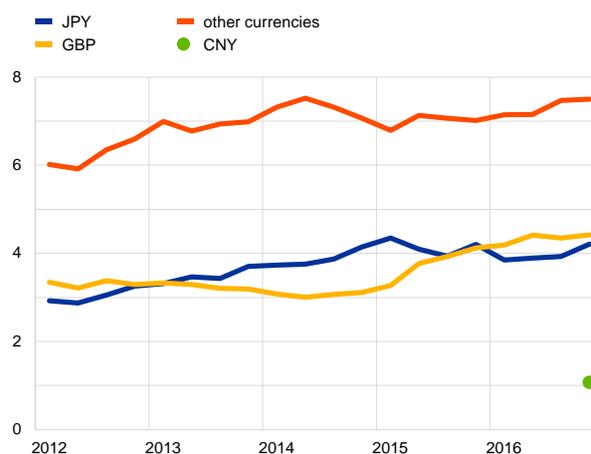
Sources: IMF and ECB calculations.
Notes: The latest observation is for the final quarter of 2016. Other currencies include all currencies other than traditional reserve currencies such as the US dollar, the euro, the yen, the pound sterling and the Swiss franc.

The stabilisation of the share of the euro in global foreign exchange reserves provides tentative evidence that the role of the euro as an official store of value remained resilient to heightened geopolitical risks and other shocks, such as the outcome of the UK referendum on EU membership, and uncertainty surrounding prospective national elections and their economic policy implications for some euro area countries. Moreover, the stabilisation suggests that the move into negative territory of the bond yields issued by some euro area sovereigns did not undermine overall the euro's status as an international reserve currency, notwithstanding evidence gleaned from surveys that negative yields were one factor considered by some official investors (see below for further details).

That being said, adjusting for exchange rate movements, the share of the euro in global foreign exchange reserves is about two percentage points lower than

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in 2008, i.e. at the onset of the global financial crisis, and more still at current exchange rates. The share of the US dollar continued to fall gradually and stood at 64% at the end of 2016, i.e. one percentage point lower than a year earlier. Moreover, the share of the US dollar at constant exchange rates is still about five percentage points lower than in 2008.

The share of non-traditional reserve currencies[11] **in global foreign exchange reserves rose further, albeit modestly, in 2016**, standing about half a percentage point higher than a year earlier (see **Chart 3**). The combined share of the Australian dollar and the Canadian dollar was broadly stable. Since the fourth quarter of 2016, the IMF separately identifies official reserve holdings denominated in renminbi given its inclusion in the Special Drawing Right (SDR) basket. These holdings stood at a low level, i.e. slightly above 1% of global foreign exchange reserves which reflects, to some extent, the fact that the Chinese currency is still not fully convertible (see **Box 3** for further information on progress towards internationalisation of the renminbi after its inclusion in the SDR basket).

Despite uncertainties raised by the UK referendum on EU membership of June 2016 and subsequent preparations for launching the formal process of withdrawing from the European Union, the pound sterling continued to gain ground in 2016 as an official store of value. After adjusting for the effect of the pound sterling's significant depreciation in the immediate aftermath of the referendum on EU membership, its share in global foreign exchange reserves increased from 4.1% to 4.4% in 2016. According to evidence gathered in a survey of 80 official reserve managers, collectively managing around half of the world's USD 12 trillion in reserves, more than 70% of the respondents indicated that Brexit had not led them to reassess their views of the pound sterling in the long run.[12]

Box 3
The internationalisation of the Chinese renminbi after its inclusion in the SDR currency basket

The international use of the Chinese renminbi has expanded over the past few years. In the foreign exchange market, average daily turnover in renminbi almost doubled over the past three years. As a result, the renminbi became the most actively traded emerging market currency according to the 2016 BIS Triennial Central Bank Survey. Moreover, holdings of renminbi reported to the IMF were disclosed for the first time at the end of 2016 and stood at 1.1% of global foreign exchange reserves (see **Chart 3**).[13]

The renminbi was included in the IMF's Special Drawing Right (SDR) basket in October 2016 along with the US dollar, the euro, the Japanese yen and the pound sterling. The Chinese currency was

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[11] In other words, all currencies other than traditional reserve units such as the US dollar, the euro, the yen, the pound sterling and the Swiss franc.

[12] See *HSBC Reserve Management Trends* 2017, published by HSBC and Central Banking publications, and the accompanying press release, available at http://www.centralbanking.com/central-banks/reserves/3222961/eurozone-instability-tops-reserve-manager-fears-survey.

[13] The share of the renminbi in global foreign exchange reserves might be underestimated if some official holders did not disclose their holdings of renminbi to the IMF, however.

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judged to meet the criteria needed for inclusion, including the fact that it is issued by a country which has had a large export market in the past five years and that it is "freely usable".[14] The inclusion in the SDR basket was seen as an important recognition of the renminbi's potential as a global currency, leading to expectations that it would accelerate the internationalisation of the renminbi.

Chart A

The share of the renminbi as an international payment currency decreased in 2016

Evolution of the renminbi's share as an international payment currency

(percentages
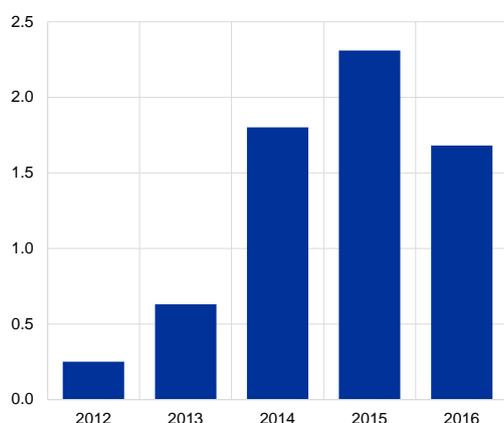
Source: SWIFT.
Notes: Inbound plus outbound traffic. Based on value.

Chart B

The "Renminbi Globalisation Index" declined in 2016

Renminbi Globalisation Index
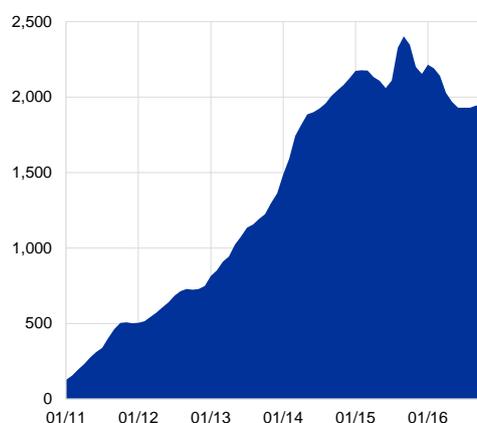
Sources: Bloomberg, Standard Chartered.
Notes: The Renminbi Globalisation Index (RGI) tracks four components with weights inversely proportional to their variance (CNY deposits; trade settlement and other international payments; "Dim Sum" bonds and certificates of deposit issued; foreign exchange turnover – all from an offshore perspective and denominated in renminbi) in several countries (Hong Kong, Singapore, Taiwan, the United States, the United Kingdom, Korea, France).

Since the Chinese currency was included in the SDR basket, however, internationalisation has stagnated. According to SWIFT, a provider of secure financial messaging services, payments values denominated in renminbi declined by almost 30% in 2016 compared to a year earlier. Moreover, the share of the renminbi as an international payment currency decreased from 2.3% in December 2015 to 1.7% in December 2016 (see **Chart A**). Declines in the share of the renminbi in China's trade settlements, in traditional trade finance, and in deposits in Hong Kong (the largest financial centre conducting offshore business in renminbi) are additional indicators of the pause in the renminbi's internationalisation in 2016.[15] In line with these developments, Standard Chartered's Renminbi Globalisation Index, which combines various indicators of renminbi internationalisation, declined in 2016 (see **Chart B**).

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[14] A "freely usable" currency is defined as a currency that the IMF determines as being widely used to make payments for international transactions and which is widely traded in the principal exchange markets.

[15] According to Standard Chartered, renminbi trade settlement of China's total goods trade fell by 36% in 2016 in absolute terms compared with the previous year, while SWIFT data shows that the renminbi usage by value in traditional trade finance has been declining since 2014, with its share decreasing from 8.7% in 2013 to 4.6% in 2016. According to the Hong Kong Monetary Authority, total renminbi deposits in Hong Kong dropped by 25% in 2016 compared with the previous year.

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Some determinants of these developments reported by market observers include China's slower economic growth and more uncertainty around the pace of the slowdown, the depreciation of the renminbi in 2016 and its impact on expectations of future renminbi appreciation along with the capital controls introduced and other measures taken by the Chinese authorities to stem capital outflows from China. Since the announcement of changes in its exchange rate regime in 2015, the renminbi has weakened by about 9% against the US dollar and 8% in nominal effective terms.[16] The depreciation reflected persistent capital outflows by Chinese residents which, after slowing down temporarily, re-accelerated in mid-2016. The People's Bank of China conducted large-scale foreign exchange interventions to stabilise the value of the renminbi. Moreover, on 29 December 2016 CFETS announced adjustments to the renminbi exchange rate index as of 1 January 2017. The new index comprises 11 additional currencies, including the Korean won. As a result of this, the weights of the US dollar and the euro declined to 22.4% and 16.3%, from 26.4% and 21.4%.

Chart 4

Survey evidence points to several concerns for reserve managers in 2017

Prospective determinants of global reserve allocations according to a central bank survey

(percentages)

Sources: HSBC and Central Banking publications.

Survey evidence indicates that central banks' reserve managers were mainly concerned about perceived instability in the euro area going forward. Qualitative evidence on some of the prospective determinants of global reserve developments can be gleaned from the aforementioned survey of central banks' managers. Over a third of the reserve managers surveyed were concerned mainly about perceived weakness or instability in the euro area stemming from political risk in 2017 (see **Chart 4**). 70% of the respondents also reported that negative interest rates in the euro area had encouraged them to reduce the allocation of their assets denominated in euro. However, insofar as the share of the euro in global foreign exchange reserve did not decline in 2016, the amounts in question might have remained limited. Another third of the respondents mentioned a major asset price correction as a key concern for 2017 due to allegedly stretched valuations. Fewer reserve managers saw divergent monetary policies or the strength of the US dollar as key risks. Moreover, survey respondents expect the rise of the renminbi as an international currency to continue in the period ahead.

The share of the euro in global payments increased last year. Data collected by SWIFT show that the share of the euro in value terms in global international payments increased from 29.3% in 2015 to 31.3% in 2016 after declining for three consecutive years (see **Chart 5**). The US dollar remained the most commonly used currency in global payments in 2016 (accounting for over 42% of the payments in question), but its share fell by about one percentage point. The lagged impact of

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[16] On 11 August 2015, market-based mechanisms in the fixing of the daily CNY/USD reference rate were strengthened.

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exchange rate valuation effects may help to explain these developments.[17] Payments in pound sterling declined in 2016 reflecting the marked depreciation of the British unit in the wake of the UK referendum on EU membership. In contrast, global use of yen payments increased. Meanwhile, the share of the renminbi fell back to below 2% of global payments in 2016, i.e. a third lower than a year earlier. Since SWIFT released data on global payments in renminbi, it is the first time that the renminbi's ascent as a currency of global international payments has paused.

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Chart 5

The share of the euro in international payments increased

Currency composition of international payments

(percentages)

- USD
- EUR
- GBP
- JPY
- CNY
- other
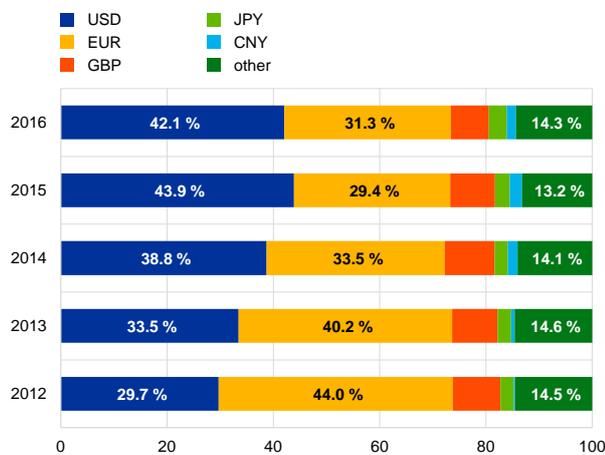
Source: SWIFT.
Notes: Inbound plus outbound traffic. Based on value.

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Chart 6

Foreign investors rebalanced their portfolios away from euro area securities

Net purchases of foreign investors

(volumes in EUR billions)

- total
- equity
- bonds (short-term)
- bonds (long-term)
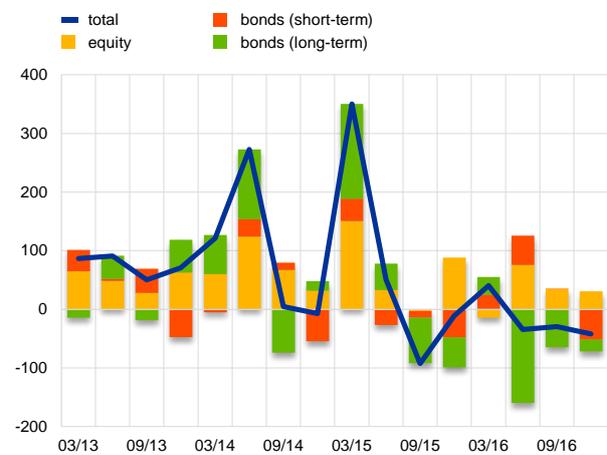
Source: Balance of Payments.
Note: The latest observation is for December 2016.

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International investments in euro area securities tended to decline overall in 2016, although developments across securities were mixed. Balance-of-payments data suggest that foreign investors rebalanced their portfolios away from euro area securities in 2016, notwithstanding strong net purchases in the first quarter of the year (see **Chart 6**). Against the background of the Eurosystem's asset purchase programme, foreigners were net sellers of approximately EUR 192 billion worth of bonds in 2016, reversing net purchases of about EUR 30 billion in the previous year. The decline in demand for euro area bonds partly reflected the low – and in some cases negative – yields prevailing in the euro area in the wake of the asset purchase programme, too, which might have discouraged investors to hold the bonds in question as stores of value. Despite retreating from bonds, foreign investors remained net purchasers of euro area equities amounting to EUR 126 billion, amid strengthening euro area growth prospects throughout the year, although this amount remains half the amount purchased in 2015 in net terms.

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[17] The nominal effective exchange rate of the euro (against the currencies of 38 major trading partners of the euro area) depreciated by about 3% in 2015, while it was broadly stable in 2016. The US dollar appreciated in nominal effective terms by about 10% in 2015 and 4% in 2016. These developments might have lowered the share of the euro in global payments in 2015 relative to 2016, while pushing the share of the US dollar up in 2015 relative to 2016.

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3 The euro in foreign exchange markets

Over the past 12 months up until April 2017 the euro exchange rate depreciated vis-à-vis the US dollar, mainly reflecting diverging monetary policies as well as changes in market expectations relating to prospective growth paths across both sides of the Atlantic. From May 2016 to April 2017 the euro depreciated by about 4% in bilateral terms against the US dollar but remained stable in nominal effective terms against the euro area's major 38 trading partners (see **Chart 7**).

Chart 7
Weaker euro exchange rate against US dollar but stable in effective terms in 2016

Euro exchange rate against US dollar and in nominal effective terms against the currencies of 38 major trading partners

- USD/EUR (left-hand scale)
- EUR effective exchange rate - NEER-38 (right-hand scale)
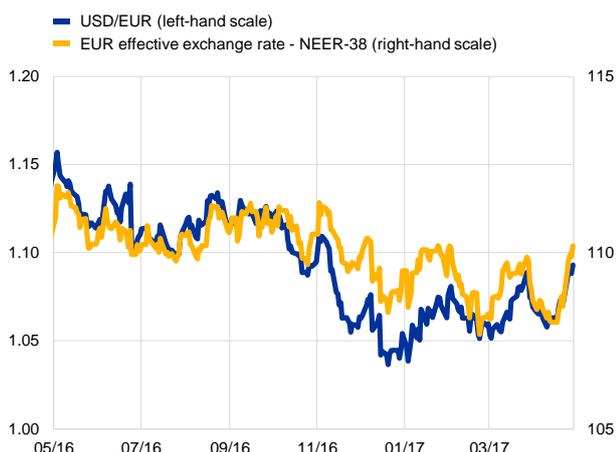
Source: ECB.
Note: The latest observation is for 28 April 2017.

Chart 8
Depreciation against the US dollar on account of diverging monetary policies

Real USD/EUR exchange rate and its UIP benchmark

(percentage deviation from sample average)

- log real exchange rate (left-hand scale)
- real long-term yield differential (right-hand scale)
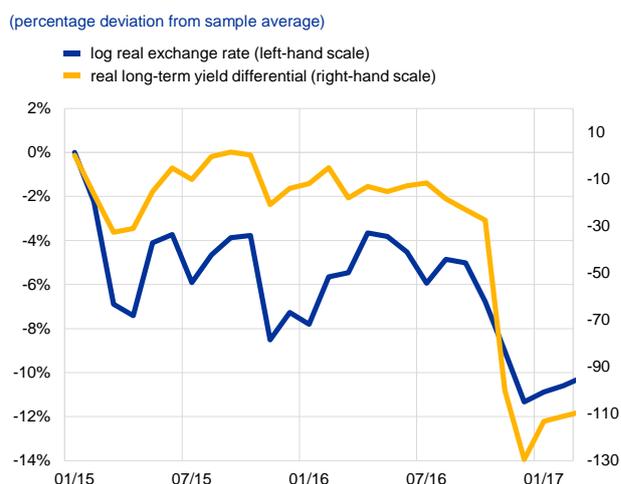
Sources: ECB, Consensus economics, ECB calculations.
Notes: The decomposition of the real bilateral exchange rate is based on the forward solution of the risk-adjusted UIP condition (see Engel and West, 2010). Expectations of long-term real rate differentials are approximated by 10-year long-term zero coupon bond yields minus inflation expectations derived from survey based long-term inflation expectations, under the expectation hypothesis. The latest observation is for March 2017.

The euro depreciated gradually against the US dollar between May and October 2016 on account of diverging monetary policies across both sides of the Atlantic. The bulk of the depreciation of the euro against the US dollar occurred in November 2016 after the US presidential election and growing market expectations of rising US inflation and fiscal expansion, which led to a substantial increase in US long-term interest rates and drove up US equity prices further. In 2017 the euro exchange rate recovered part of its earlier depreciation, allegedly because of a change in market participants' expectations about the ECB's prospective monetary policy stance and despite concerns about the prospective outcomes of national elections in some euro area countries.

The euro's depreciation against the US dollar was well in line with movements in long-term interest rate differentials, suggesting that exchange rate

developments mainly reflected changing expectations about the relative future path of monetary policy and term premia. Changes in the long-term real interest rate differential reflected two components. First, the sum of expected short-term interest rate differentials between the euro area and the United States declined, thereby suggesting that market participants expected a relatively more restrictive monetary policy stance of the US Federal Reserve System relative to the ECB. This has resulted in a depreciation of the euro exchange rate vis-à-vis the US dollar. Second, the relative term premium between the euro area and the United States increased, perhaps reflecting shifts in expectations about the future path of relative monetary policy stances, thereby creating relatively more demand for higher yielding US securities relative to euro area securities (see Section 2).[18]

Chart 9

The share of the euro in global foreign exchange turnover declined in 2016

Share of global over-the-counter foreign exchange transactions, on a net-net basis

(percentages, in April of the corresponding year shown on the x-axis)
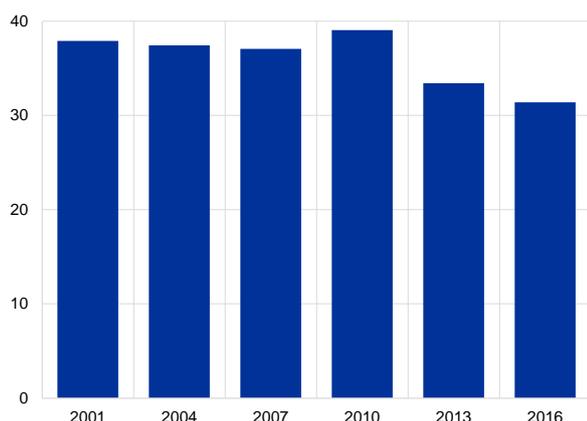
Sources: BIS and ECB calculations.
Notes: Because two currencies are involved in each transaction, the sum of the percentage shares of individual currencies totals 200% instead of 100%. Adjusted for local and cross-border inter-dealer double-counting (i.e. "net-net" basis).

The share of the euro in global foreign exchange trading declined in 2016, according to a BIS survey. The Triennial Central Bank Survey of foreign exchange and OTC derivatives markets in 2016 released by the Bank for International Settlements (BIS) indicates that trading in the foreign exchange markets totalled USD 5.1 trillion per day in April 2016, down from USD 5.4 trillion in April 2013.[19] The data further suggest that the US dollar remained the leading currency in the foreign exchange market, being involved in 88% of all transactions in April 2016. The euro held its place as the second most actively traded currency, although its share fell to 31% in April 2016, i.e. below its peak of 39% in April 2010 (see **Chart 9**). Moreover, the renminbi's share doubled to 4% and became the world's eighth most actively traded currency. The data also show that concentration of the geography of foreign exchange trading in large financial centres continues. In April 2016, five centres, namely the United Kingdom, the United States, Japan, Singapore and Hong Kong, intermediated almost 80% of foreign exchange transactions, up from about 70% in April 2010 (see **Special Feature A**).

Data on foreign exchange settlements in the continuous linked settlement (CLS) system also suggest that the share of the euro in foreign exchange transactions in spot and derivative markets declined in 2016.

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[18] The term premium reflects the compensation for investors to hold longer-term securities relative to short-term ones.

[19] Volumes in April 2013 were exceptionally large due to heightened trading activity in the Japanese yen at the time of monetary policy announcements by the Bank of Japan.

Box 4

Clearing of euro transactions outside the European Union

Significant share of euro-denominated clearing takes place outside the euro's domestic currency area

Central counterparties (CCPs) play a vital role in the financial system. By acting as intermediaries in securities and derivatives transactions, CCPs mitigate counterparty credit risk, help simplify highly complex networks of financial exposures through multilateral transaction netting and contribute to increasing the resiliency and transparency of the financial system. Their role has become even more important since the financial crisis, in part due to the introduction of mandatory clearing requirements in major jurisdictions. CCPs are therefore highly systemic, and the smooth operation of those clearing significant amounts of euro business is crucial for the fulfilment of the Eurosystem's mandate as the central bank of issue, i.e. maintaining the stability of the euro.

From a systemic perspective, a crisis affecting a CCP clearing significant euro-denominated transactions could disrupt the functioning of the euro area's financial system and impair the transmission of monetary policy. These disruptions could materialise through a number of channels, such as a partial or total freeze in certain key segments of the financial system (e.g. the euro repo markets) or the contagion of liquidity stress of euro area entities connected to the CCP. Certain CCP risk management practices, such as collateral haircuts, could have an impact on sovereign bond markets. In a particularly severe stress scenario, emergency liquidity may need to be provided. The key importance of CCPs for the fulfilment of central bank tasks and objectives has long been recognised and is evidenced by the work of the Committee on Payments and Market Infrastructures (CPMI) which, in cooperation with the International Organization of Securities Commissions (IOSCO), defines the global standards for CCP oversight and supervision.

When compared with other major currencies, a more significant share of euro-denominated clearing takes place outside the euro's domestic currency area. Approximately 99% of total cleared euro-denominated cleared interest rate swaps (IRS) transactions[20] and 50% of total cleared euro-denominated repurchase agreement (repo) transactions currently take place outside the euro area.[21] In the case of UK-based CCPs, the current EU framework for the regulation of CCPs (European Market Infrastructure Regulation – EMIR) provides the Eurosystem with tools to monitor the potential risks stemming from systemically important clearing activities. The current framework is built on a set of mechanisms guaranteed by the authority of the European Court of Justice, namely the EMIR supervisory colleges (in which the Eurosystem is represented as the central bank of issue for the euro), and a dedicated Memorandum of Understanding agreed between the ECB and the Bank of England. Following the UK's decision to leave the European Union, this framework will no longer apply[22] and new arrangements that ensure the safety and stability of the financial system and preserve the role of the Eurosystem as the central bank of issue will need to be established. In a communication published on 4 May 2017, the European Commission announced it will shortly be making legislative proposals to address systemic risk related to CCPs, including, where necessary, the potential implementation of "enhanced supervision at EU level and/or location requirements".[23] The Commission published the related proposals on 13 June 2017.

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[20] Publically available data taken from the websites of global CCPs.

[21] Source: ECB Money Market Statistical Reporting.

[22] See http://ec.europa.eu/finance/docs/law/170613-emir-proposal_en.pdf.

[23] See https://ec.europa.eu/info/sites/info/files/170504-emir-communication_en.pdf.

4 Use of the euro in international debt and loan markets

4.1 The euro in international debt markets

The share of the euro in outstanding international debt securities declined in 2016 and remained well below levels prevailing before the onset of the global financial crisis (see **Chart 10** and **Table A4**). At constant exchange rates, the share of the euro declined by 0.4 percentage points to 22.0%. Conversely, the US dollar further expanded its dominant role in international debt markets at the expense of all other currencies, with its share increasing by 1.6 percentage points to 63.0%. Since the peak of 2004, the share of the euro has declined by more than seven percentage points, while that of the US dollar has increased by close to 17 percentage points.

Chart 10
The euro's share in outstanding international debt securities declined in 2016

Currency composition of outstanding international debt securities

(percentages)
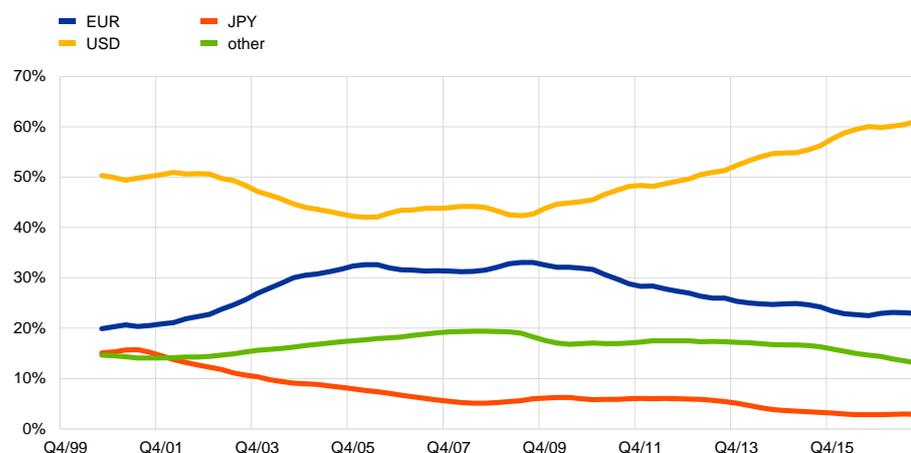
Sources: BIS and ECB calculations.
Note: The latest data are for the fourth quarter of 2016.

Developments in the issuance of foreign currency-denominated debt – which reflect more visibly recent trends in international debt markets than developments in stocks – are consistent with the gradual decline in the role of the euro in 2016 and early 2017. The euro's share dropped to 19% in the year to the first quarter of 2017, from 22% over the same period one year earlier (see **Chart 11**). The decline mainly reflected lower euro-denominated debt issuance in emerging market economies, where the euro's share in these countries' total issuance decreased from 15% to 7% (see **Chart 12**). By contrast, in advanced economies the share of the euro remained stable at 24%.

Chart 11

Share of euro in foreign currency-denominated debt issuance declined

Currency composition of foreign currency-denominated debt issuance

(percentages)
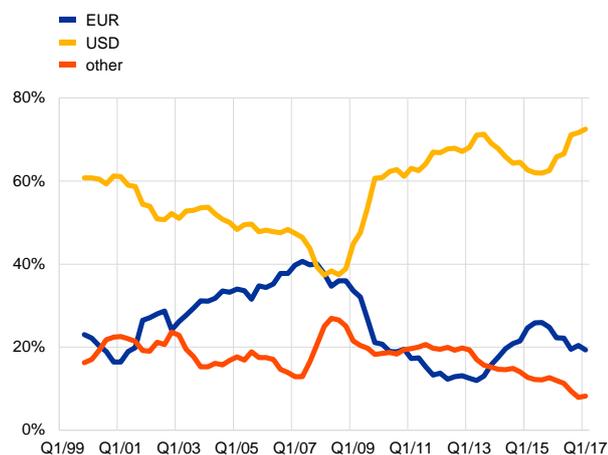
- EUR
- USD
- other

Sources: Dealogic and ECB calculations.
Notes: Currency composition of foreign currency-denominated debt issuance. The latest data are for the first quarter of 2017.

Chart 12

Markedly lower euro-denominated debt issuance in emerging market economies

Share of euro-denominated foreign currency debt issuance across advanced and emerging market economies

(percentages)
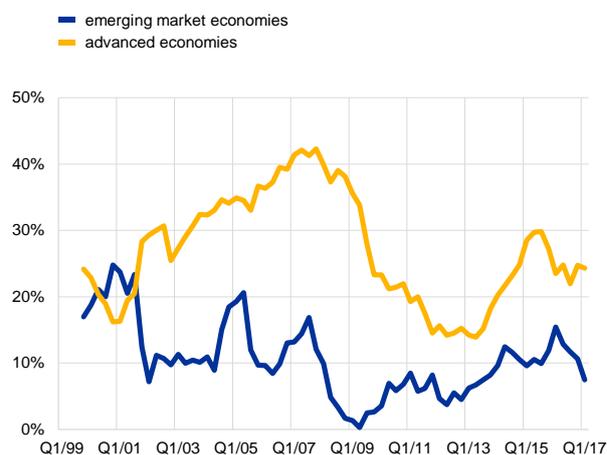
- emerging market economies
- advanced economies

Sources: Dealogic and ECB calculations.
Notes: Currency composition of foreign currency-denominated debt issuance. The latest data are for the first quarter of 2017.

Chart 13

Cross-currency basis of euro increased markedly since mid-2014, discouraging use of euro as funding currency

Cross-currency swap basis against the US dollar at the five-year maturity

(basis points)

- EUR
- GBP
- JPY
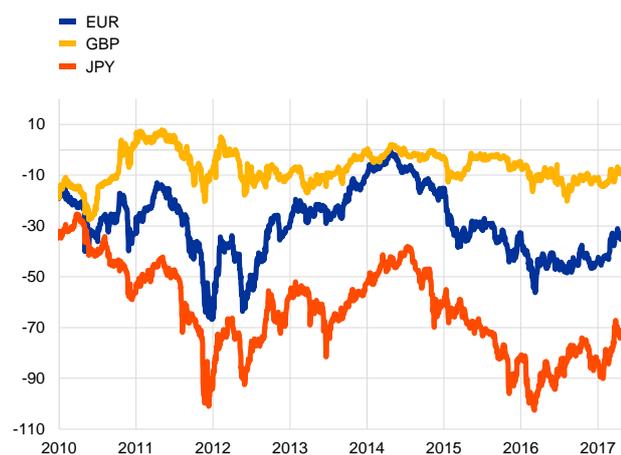
Sources: Bloomberg and ECB calculations.
Notes: The latest data are for 28 April 2017.

Heightened costs of synthetic US dollar borrowing have discouraged the use of the euro as a funding currency in international debt markets, despite historically low levels of interest rates prevailing in the euro area. Appetite for the euro as a funding currency temporarily increased in late 2014 and early 2015 in the wake of the launch of the ECB's asset purchase programme (APP) and in an environment of declining euro area interest rates. At the same time, however, the cross-currency swap basis of the euro against the US dollar, which determines the costs of synthetic US dollar borrowing in the euro on top of US LIBOR, increased from virtually zero in mid-2014 to an average of close to 50 basis points in 2016. This increase, in turn, has discouraged the use of the euro as a funding currency (see **Chart 13**). Overall, the net impact of the ECB's unconventional monetary policy measures on the use of the euro in international debt markets is estimated to be limited (see Special Feature B).

Box 5

The rebound in US dollar-denominated debt issuance and implications for risks stemming from currency mismatches in emerging market economies

Chart A

Foreign currency-denominated debt issuance in emerging market economies recovered in the review period

Currency composition of foreign currency-denominated debt issuance – emerging markets

(Volumes in US dollar trillion)
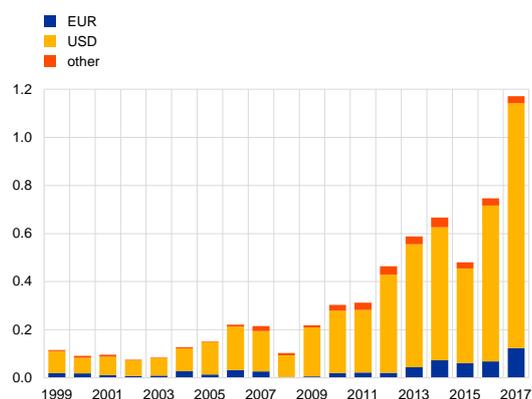
Sources: Dealogic and ECB calculations.
Notes: The latest data are for the first quarter of 2017. Volumes for 2017 are annualised.

Foreign currency-denominated debt issuance in emerging market economies recovered markedly in 2016 and early 2017 (see **Chart A**). Foreign currency-denominated debt issuance declined in 2015 in the face of the appreciation of the US dollar and growing awareness of high levels of US dollar-denominated leverage. Data for 2016 and early 2017 suggest that emerging market economies only temporarily lowered their issuance of US dollar-denominated debt. This tentatively suggests that concerns about a sustained US dollar appreciation and adverse consequences for debt servicing in local currency terms have been alleviated across some emerging market economies. Other economies, such as oil exporters, still need to tap US dollar-denominated debt markets, because falling oil prices have reduced their cash receipts.

Aggregate data suggest that the net foreign currency position of many major emerging market economies remains in positive territory, despite the increasing reliance on foreign currency, in particular US dollar-denominated funding. A number of major emerging market economies, including Brazil, India, Russia and South Africa, have accumulated large net US dollar debt liability positions over recent years (see **Chart B**). These positions are, however, in some cases matched by reserves, which tend to be mainly denominated in US dollars, and net foreign equity assets. To the extent that these positions are fungible, which might not always be the case, the economies in question may be partly shielded from a US dollar appreciation at the aggregate level. Aggregate exposures may, however, hide significant mismatches at the sectoral level. Hence a sustained US dollar appreciation may incur significant losses on the balance sheets of some emerging market issuers in certain sectors.[24]

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[24] Some emerging market central banks have sought to offer US dollar swap lines to corporates to mitigate this risk, however.

Chart B

Net foreign currency position of many emerging market economies remains in positive territory, despite large net US dollar liability positions

Composition of net foreign currency exposure as of 2015

(in percent of GDP)

- equity
- USD debt
- EUR debt
- non-USD/EUR debt
- reserves
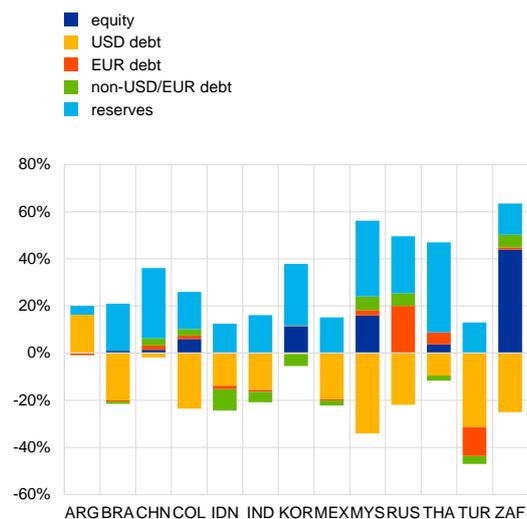
Sources: ECB calculations and updates from the Lane-Shambaugh dataset.

Chart C

The bulk of US dollar-denominated debt in 2016 has been issued by countries and/or sectors with positive net US dollar exposure

Sectoral composition of US dollar debt issuance across largest emerging market economy issuers of US dollar debt

(Volumes in US dollar billion)

- agriculture
- mining
- construction & manufacturing
- transportation & trade
- financial services & other services
- public administration
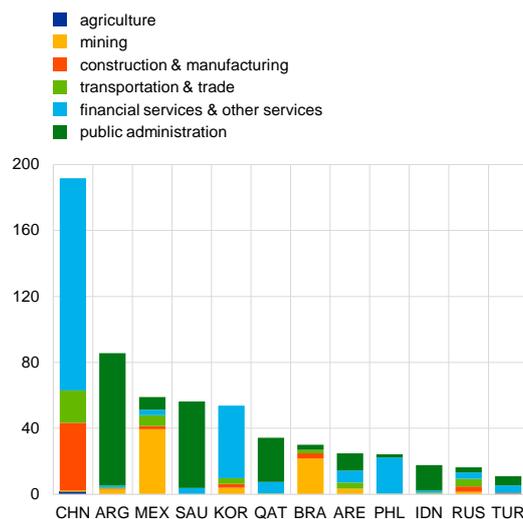
Sources: Dealogic and ECB calculations.

The bulk of US dollar-denominated debt in 2016 was issued by countries and/or sectors with positive net US dollar exposure, suggesting that the financial stability risks stemming from currency mismatches have not materially increased in 2016 despite the renewed surge in US dollar debt issuance. In 2016 China and Argentina, two economies with large positive net foreign currency asset positions, accounted for close to 50% of total international debt issuance denominated in US dollars (see **Chart C**). Among those economies with large negative net foreign currency asset positions, for instance Mexico and Brazil, the major part of US dollar debt was issued by the mining sector, which may be naturally hedged with revenues from commodity exports, which tend to be mainly denominated in US dollars.

Composition effects, in particular a shift from advanced to emerging market economies as the main issuers of foreign currency-denominated debt, are a second important factor behind the decline in the share of the euro in international debt markets. Residents in the US and non-euro area EU Member States, including the United Kingdom, have historically accounted for the bulk (around 70%) of total foreign currency debt issuance denominated in euro (see **Chart 14**). The gradual increase in the euro's share in international debt markets in the decade prior to the global financial crisis largely reflected the sharp rise in international debt issuance in these economies (see **Chart 15**). Since the global financial crisis this trend has reversed as advanced economies have largely abstained from issuing foreign currency debt. Total international debt issuance has been driven instead by other borrowers, in particular emerging market economies

with a traditional dollar orientation, which have sought to take advantage of the historically low levels of interest rates prevailing in some advanced economies. While the share of emerging market economies in euro-denominated international debt issuance has remained at around 10%, emerging market economies account for one-third of total US dollar-denominated international debt issuance, thereby playing a key role in explaining the gradual rise in the share of the US dollar as a financing currency in international debt markets.

<div style="display: flex;">
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Chart 14

US and non-euro area EU residents main issuers of euro-denominated foreign currency debt

Country composition of euro-denominated foreign currency debt issuance

(percentages)
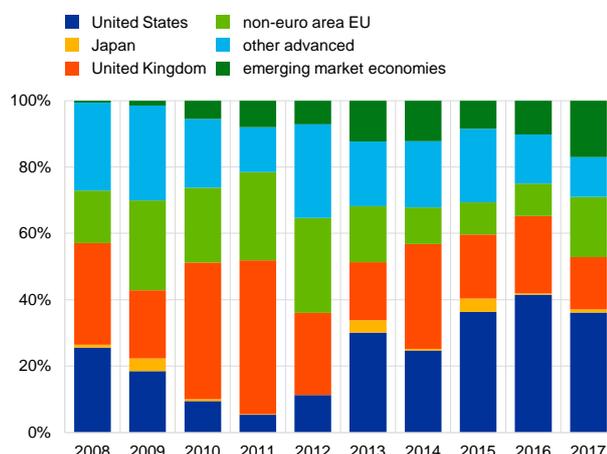
■ United States ■ non-euro area EU
■ Japan ■ other advanced
■ United Kingdom ■ emerging market economies

Sources: Dealogic and ECB calculations.
Notes: The latest data are for the first quarter of 2017.

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Chart 15

Recent rise in international debt issuance driven by residents outside the United States and the non-euro area EU Member States

Country group composition of total foreign currency-denominated debt issuance
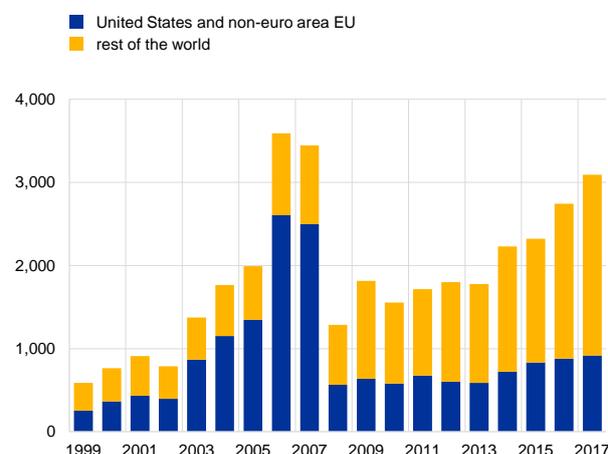
(volumes in US dollar billion)

■ United States and non-euro area EU
■ rest of the world

Sources: Dealogic and ECB calculations. Notes: The latest data are for the first quarter of 2017. Volumes for 2017 are annualised.

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The volume of euro-denominated foreign currency debt issuance remains well below the levels recorded before the onset of the global financial crisis (see **Chart 16**). In 2016 non-euro area residents issued USD 700 billion worth of euro-denominated debt, which is slightly less than half of the volume issued in 2007 (USD 1.5 trillion). US dollar-denominated debt issuance by non-US residents also sharply declined after the global financial crisis, but, in contrast to developments in the euro, quickly recovered to pre-crisis levels thereafter owing to, for example, dynamic borrowing by emerging markets. In 2016 total US dollar-denominated foreign currency debt issuance amounted to USD 2.5 trillion, an increase of 35% relative to the pre-crisis peak of 2006.

Chart 16

Euro-denominated foreign currency debt issuance remains well below levels prevailing before the financial crisis

Currency composition of foreign currency-denominated debt issuance

(Volumes in US dollar trillion)

■ EUR
■ USD
■ other
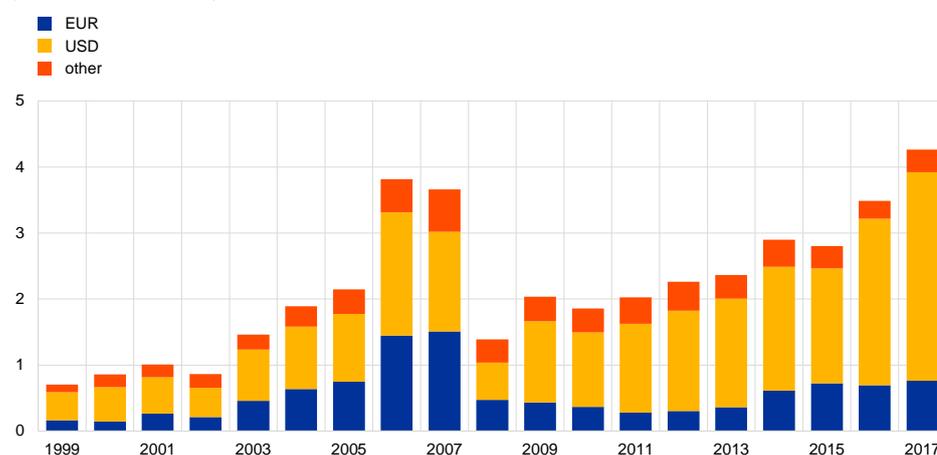
Sources: Dealogic and ECB calculations.
Notes: The latest data are for the first quarter of 2017. Volumes for 2017 are annualised.

4.2   The euro in international loan markets

The share of the euro in international loan markets also continued to decline in 2016. In contrast to developments in international debt markets, where the euro share has displayed a gradual downward path since the global financial crisis, the share of the euro in outstanding cross-border loans remained broadly stable between 2008 and 2012 (see **Chart 17 and Table A8**). The share has declined since early 2013, however, which may partly reflect the ongoing deleveraging process of euro area banks, including efforts to reduce exposures to foreign loans denominated in euro and also perhaps the European Systemic Risk Board regulation on foreign exchange lending (see **Special Feature C**).

Chart 17

Share of the euro in outstanding cross-border loans declined in 2016

Currency composition of outstanding amounts of cross-border loans

(percentages)

- EUR
- USD
- JPY
- other
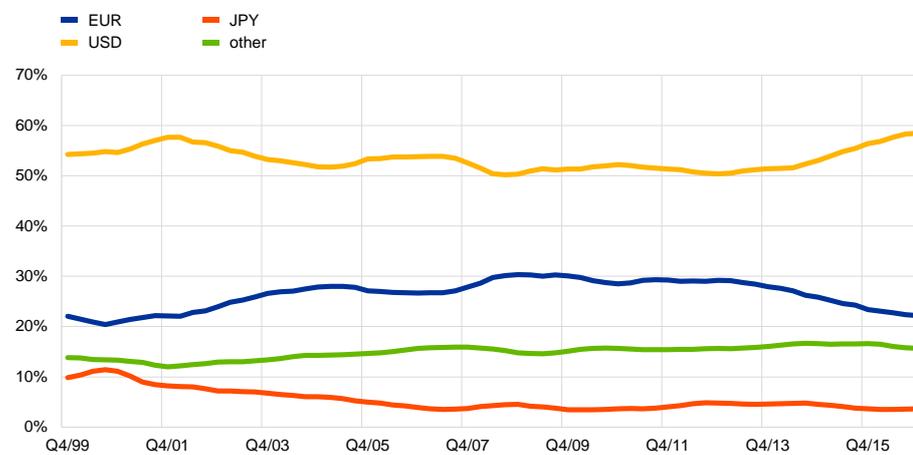
Sources: BIS and ECB calculations.
Notes: The latest data are for the fourth quarter of 2016.

5 Other indicators of the euro's international use

Chart 18

Foreign demand for euro banknotes declined in 2016

Net monthly shipments of euro banknotes to destinations outside the euro area

(EUR billions; adjusted for seasonal effects)

■ monthly shipments (left-hand scale)
━ cumulative shipments (right-hand scale)
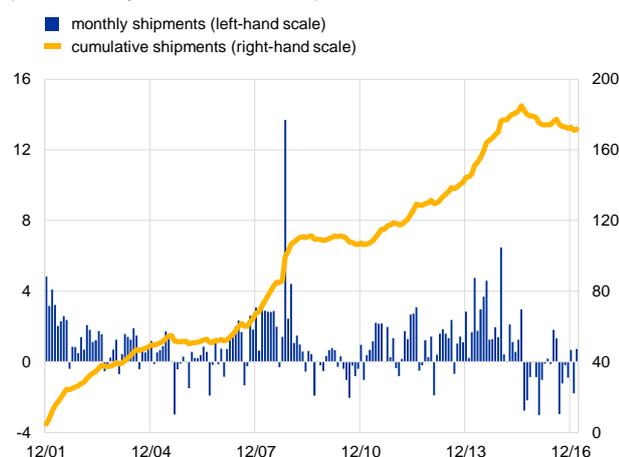
Source: Eurosystem.
Notes: Net shipments are the sum of euro banknotes sent to destinations outside the euro area minus euro banknotes received from outside the euro area. The latest observation refers to February 2017.

Net monthly shipments of euro banknotes to destinations outside the euro area suggest that foreign demand for euro banknotes declined in 2016 (see **Chart 18**). These developments possibly reflected an easing in demand for banknotes used as store of value amid receding political uncertainty in euro area neighbouring regions as well as successful unofficial de-euroisation efforts in certain countries where demand for euro cash was traditionally high (see **Box 6**). On 4 May 2016, the ECB also announced that it had decided to discontinue production and issuance of €500 banknotes. However, in view of the international role of the euro and the widespread trust in its banknotes, the €500 remains legal tender and can therefore continue to be used as a means of payment and store of value.[25] Data on official banknote shipments only capture observed cross-border flows of banknotes. An indirect estimation method, which attempts to quantify the unobserved cross-border flows of banknotes by combining observed information on domestic circulation, coin circulation and assumptions on potential factors underlying those flows, suggests that actual circulation of banknotes outside the euro area might be much higher.[26] Averaging out the estimates gained from official banknote shipments and the indirect estimation method suggests that, at the end of 2016, residents outside the euro area held approximately €341 billion in euro banknotes – a figure almost twice as high as what shipments data indicate.

The share of the euro in outstanding loans declined in several countries in central, eastern and south-eastern Europe, which may reflect local authorities' efforts to promote the use of domestic currencies to mitigate financial stability risks raised by unofficial euroisation (see **Table A12 and Special Feature C**). The share of the euro in foreign deposits in the region also declined slightly in some countries (see **Table A13**). **Box 6** below provides complementary evidence on the use of euro cash in central, eastern and south-eastern Europe.

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[25] It is difficult to identify whether the decline in net shipments is due to switches in high-denomination banknotes of currencies other than the euro, such as the Swiss franc. Increases in circulation in the banknotes in question could be due to other factors, such as negative interest rates.

[26] See the ECB press release entitled "Estimation of euro currency in circulation outside the euro area", 6 April 2017.

Lastly, the share of the euro as an invoicing or settlement currency for extra-euro area trade in goods decreased for exports, but remained broadly stable for imports (see **Table A10**).

Box 6
The use of euro cash in central, eastern and south-eastern Europe

Evidence on the use of euro cash, based on OeNB Euro Survey findings

Based on the results of the survey conducted by the Oesterreichische Nationalbank (OeNB Euro Survey), euro cash holdings are still widespread in Albania, Croatia, the Czech Republic, the former Yugoslav Republic of Macedonia and Serbia, with an average share of 27% of respondents (see **Chart A**). In the five remaining countries, around 10% of respondents report euro cash holdings.

Economic agents in the region hold euro cash for a variety of reasons. One main motive cited by respondents in most countries is that they hold euro cash for precautionary reasons. Stix (2013) observed that people in the region generally have a preference for cash over interest-bearing assets. Besides being used for hoarding, euro cash is also used as a means for domestic payments – for example, real estate and cars are frequently paid for in euro in some south-eastern European countries (Scheiber and Stern, 2016). By contrast, respondents in central and eastern Europe reported that they mainly plan to spend their euro cash abroad.

Chart A
Euro cash holdings still widespread in Albania, Croatia, the Czech Republic, the former Yugoslav Republic of Macedonia and Serbia

Euro cash holdings per country

(% of respondents)

Legend: 2007–08, 2009–10, 2011–12, 2013–14, 2015–16
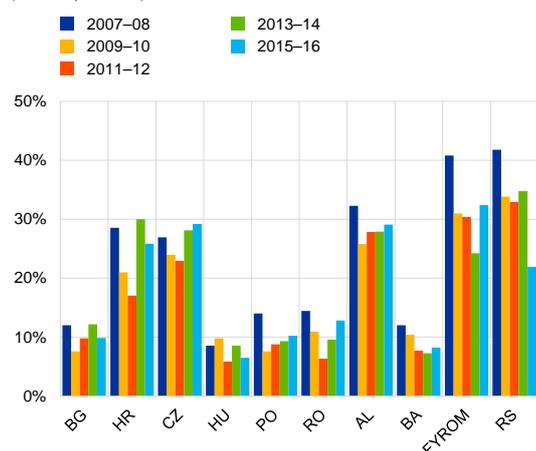
Notes: Percentages are based on pooled data from survey waves of two consecutive years as indicated in the legend; respondents answering "Don't know" or "No answer" have been excluded.

Chart B
Decreasing currency substitution in all south-eastern European countries since 2008

Currency substitution index

(percentages)

Legend: 2007–08, 2009–10, 2011–12, 2013–14, 2015–16
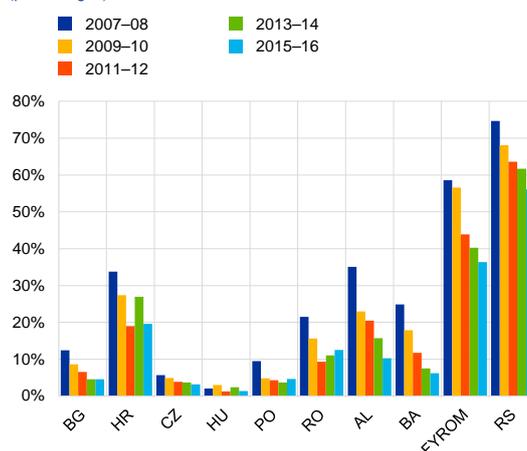
Notes: The currency substitution index is calculated as the ratio of euro cash to euro cash plus national currency in circulation. For details, see Scheiber and Stix (2009).

Results from studies suggest that agents in the region continue to prefer euro cash for reasons that are predominantly related to trust. In particular, depreciation expectations and memories of past crises are important determinants of households' decisions on whether to save or pay in euro cash. In the aftermath of the global financial crisis and the euro area sovereign debt crisis, trust in the euro declined (Beckmann and Scheiber, 2012) and the frequency of euro cash holdings decreased

by seven to ten percentage points in Albania, Croatia, the former Yugoslav Republic of Macedonia and Serbia.[27]

Self-reported euro cash amounts point to a somewhat more pronounced trend of decreasing currency substitution in all south-eastern European countries since 2008. The currency substitution index (CSI, see **Chart B**) derived from the OeNB Euro Survey relates projected per capita euro cash amounts with per capita local currency in circulation outside the banking sector. In Albania, the CSI declined to 10% in 2016. In Bulgaria and Bosnia and Herzegovina, it fell recently to below 10%, which is often regarded as a threshold for low euroisation. Declines can be identified for Croatia, the former Yugoslav Republic of Macedonia and also Serbia, yet their CSIs are still at medium to high levels at 20%, 36% and 56%, respectively.[28]

Which socio-demographic and socio-economic properties do holders of euro cash in the region have in common? **Chart C** shows the average marginal effects of a probit model regressing socio-demographic and socio-economic variables on euro cash holdings. Factors that increase the probability of holding euro cash include the completion of secondary or tertiary education, high income or self-employment, or having a bank account. Factors that are negatively associated with the probability of euro cash holdings include age, gender (female), low income and retirement.

Chart C

Completion of secondary or tertiary education, high income or self-employment and having a bank account are factors that increase the probability of holding euro cash

Who is holding euro cash? Factors associated with holding euro cash

(Average marginal effects and 95% confidence interval)
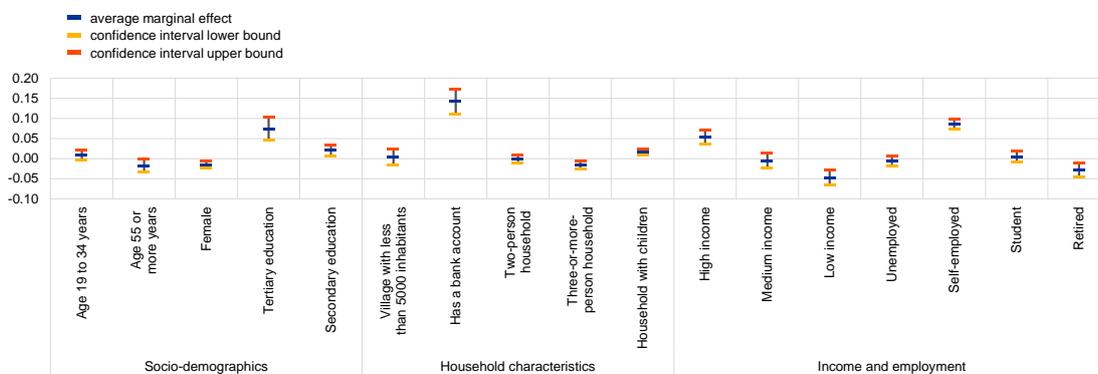
Notes: Average marginal effects from a probit model regressing socio-demographic and socio-economic variables on euro cash holdings (binary dependent variable). The probit regression includes interacted country and time fixed effects; standard errors are adjusted for potential clustering at the country level. The sample comprises Bulgaria, the Czech Republic, Croatia, Hungary, Poland and Romania as well as Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia and Serbia from 2007 to 2016. The number of observations is 138,314. The unconditional sample probability of holding euro cash is 20%. Base categories are age 35 to 54 years, primary education, single household, income "Don't know" or "No answer" and employed.

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[27] Moreover, the recent decline in euro cash holdings in Serbia may have been aided by the Serbian government's dinarisation strategy, whereas the rebound of cash holdings in the former Yugoslav Republic of Macedonia is presumably associated with domestic developments.

[28] A caveat relates to the fact that surveyed euro cash amounts are likely to suffer from underreporting because some respondents might be reluctant to reveal the true amounts; hence the true level of currency substitution might be higher in all CESEE countries than suggested by the CSI.

Special Features

A   ## The euro and the geography of the foreign exchange market

By Arnaud Mehl

The United Kingdom's decision to withdraw from membership of the European Union has prompted discussions as to whether a share of the financial market transactions in euro conducted in the United Kingdom, notably in the City of London, would be relocated to the euro area. This special feature aims to shed light on the issue by considering locations for trading in euro using the global foreign exchange market as a case study. The aim here is therefore not to discuss the location of financial centres and competitive advantages of financial centres in general; rather it is to focus on only one aspect of this issue. In so doing, this special feature examines key stylised facts on locations, as well as some theoretical determinants and empirical evidence about their respective importance. This special feature shows that the bulk of foreign exchange transactions in euro are initiated outside the euro area in a few large financial centres, notably the City of London, whose importance as a trading venue for the euro has grown since the turn of the millennium. This suggests that trading location depends on certain spatial frictions, such as distance, domestic market liquidity and restrictions on capital flows. This special feature provides evidence that the frictions matter significantly, but that their impact has been altered by technological change and the advent of electronic trading. In particular, estimates suggest that technology dampens the impact of spatial frictions by up to 80% and has economically important implications for the distribution of foreign exchange transactions across the major financial centres.

Key stylised facts on the global location of foreign exchange trading in the euro

Evidence on the location of foreign exchange trading is available from the survey of foreign exchange market activity coordinated by the Bank for International Settlements (BIS). This survey has been conducted every three years since 1989. It provides the most comprehensive and consistent information on transactions in the foreign exchange market.

The BIS defines foreign exchange turnover as the daily average of the notional amount (in US dollar equivalents) of all transactions struck in April of the year of the survey. Dealers report their transactions with other reporting dealers, financial

institutions and non-financial customers.[29] Instruments covered include spot transactions, outright and non-deliverable forwards, swaps and options. The BIS adjusts data for both local and cross-border double-counting.[30]

Foreign exchange turnover is allocated across countries according to the location of the initiating sales desk.[31] The trading desk is used to determine the location of a deal when no sales desk is involved. Discussions with foreign exchange dealers suggest that banks often aggregate and net their positions in the same location as where they trade. In other words, there are no major differences between sales and trading desks in most cases. But the distinction might be more important in the case of smaller financial centres where the sales desk might remain local, but the trading desk might be in a larger centre, such as London, New York or Tokyo. Moreover, to account for the growing use of electronic execution methods, the triennial survey of April 2016 used electronic platforms' sales contacts, who service the client (or the trading desk or the electronic matching engine), to determine the location of a deal when no sales desk was involved.

The bulk of foreign exchange transactions in euro are initiated outside the euro area, notably in the City of London. The 2016 triennial survey suggests that 84% of transactions in euro are initiated outside the euro area (see **Chart 19)**. Of the remainder, around a half are initiated in France and Germany. The fact that most transactions involving the euro are initiated offshore in financial centres located outside the euro area is a feature shared with other currencies. Most transactions in US dollars or Japanese yen and many other currencies, for instance, are initiated outside their respective jurisdiction of issuance (see **Chart 20**).[32] The fact that foreign exchange trading in euro is so concentrated in financial centres outside the euro area contributes to explaining why cross-border capital flow and the euro's exchange rate may be poorly correlated in the short to medium term.

The largest share (43%) of foreign transactions involving the euro is initiated in the United Kingdom, which demonstrates the City of London's role as the world's largest foreign exchange trading venue. The United States comes a distant second with a 19% share, reflecting New York's role for transaction of all types and Chicago's,

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[29] Each transaction is recorded once, and offsetting contracts are not netted. There is no distinction between sales and purchases. Direct cross-currency transactions (e.g. pounds sterling for Swiss francs) are counted as single transactions. Transactions that use a vehicle currency (e.g. the US dollar) are counted as two separate transactions.

[30] The former are referred to as data in "net-gross" terms and the latter as data in "net-net" terms. For instance, local inter-dealer transactions in Germany are halved to obtain the correct turnover for Germany. As another example, transactions between a reporting dealer located in the United Kingdom and a reporting dealer located in France are halved to obtain the correct estimate of global turnover.

[31] For example, when an employee of a savings bank in Berlin asks his or her foreign exchange dealer at Deutsche Bank in Frankfurt to buy JPY 50 million against euro, this transaction will be recorded as having taken place in Germany, because the sales desk is in Germany. Actual trading could take place elsewhere, for example traders at Deutsche Bank in London. The nationality of the reporting dealer is not relevant in this context. For example, when UBS in Frankfurt reports trades to the Deutsche Bundesbank, these transactions are allocated to Germany.

[32] That the US dollar and the Japanese yen are widely traded in financial centres outside the US and Japan, respectively, reflects inter alia the US dollar's vehicle role in the foreign exchange market and the yen's role as a funding currency in carry trade strategies. Several emerging market currencies are also widely traded offshore; for further details see e.g. McCauley, R. and Scatigna, M. (2011), "Foreign exchange trading in emerging currencies: more financial, more offshore", *BIS Quarterly Review,* March, pp. 67-75.

notably for futures contracts. Asian financial centres, such as Japan (Tokyo), Hong Kong and Singapore, account for much smaller shares – in the order of 3-4% each. The share of Switzerland (Zurich) is of a similar magnitude. Liquidity of the foreign exchange market in euros in China is low, with 0.3% of global turnover, which suggests that onshore trading of renminbi mainly takes place against the US dollar.

Chart 19

The bulk of foreign exchange transactions in euros are initiated outside the euro area, notably in the City of London

Share of selected countries in global foreign exchange transactions in euros, 2016

(percentages)
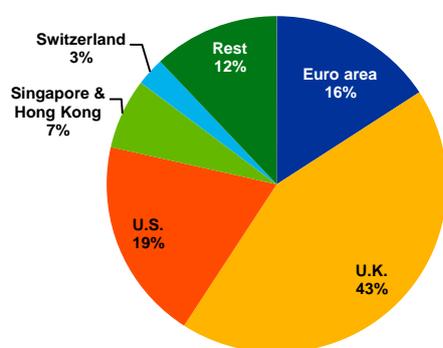
Sources: BIS and ECB staff calculations.
Note: The data include spot transactions, outright forwards, foreign exchange swaps, currency swaps, options and other products. They are adjusted for local inter-dealer double-counting and may differ slightly from national survey data owing to differences in aggregation procedures and rounding.

Chart 20

Most transactions in other currencies are also initiated outside their respective jurisdiction of issuance

Share of foreign currency trading occurring offshore, 1995-2013

(percentages)
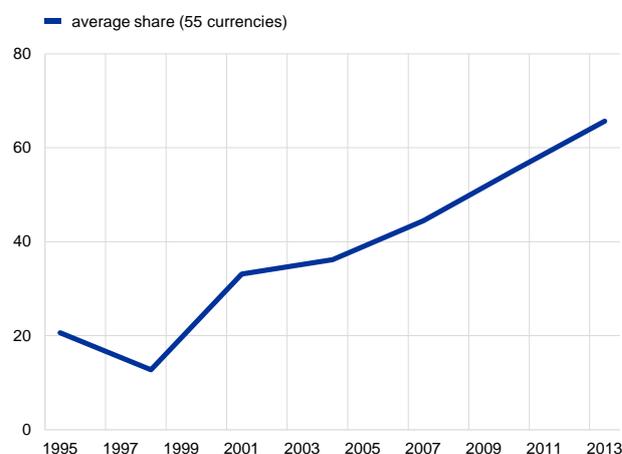
Sources: BIS and ECB staff calculations.
Note: See Chart 19. The average share reported is based on panel data available for 55 currencies. Offshore trading means here that transactions are undertaken outside the country of issuance of the currencies in question.

The importance of the City of London for foreign exchange transactions in euro is a long-standing phenomenon.[33] The BIS data further suggest that the role of the City of London as a trading venue for the euro has grown steadily in the past 15 years. Since 2001 the share of the United Kingdom in global foreign exchange transactions involving the euro has increased by almost 10 percentage points (see **Chart 21**).[34] The importance of the euro area in this specific activity has weakened with its share declining by about 11 percentage points. The share of the United States has remained broadly unchanged, hovering at around 15%.

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[33]   See the 2003 edition of the *International role of the euro* report for an earlier analysis.

[34]   2001 was the year when the BIS conducted its first triennial survey following the creation of the euro.

Chart 21

Since 2001 the share of the United Kingdom in global foreign exchange transactions involving the euro has increased by almost 10 percentage points

Evolution of the share of selected countries in global foreign exchange transactions in euro, 2001-16

(percentages)

- euro area
- United Kingdom
- United States
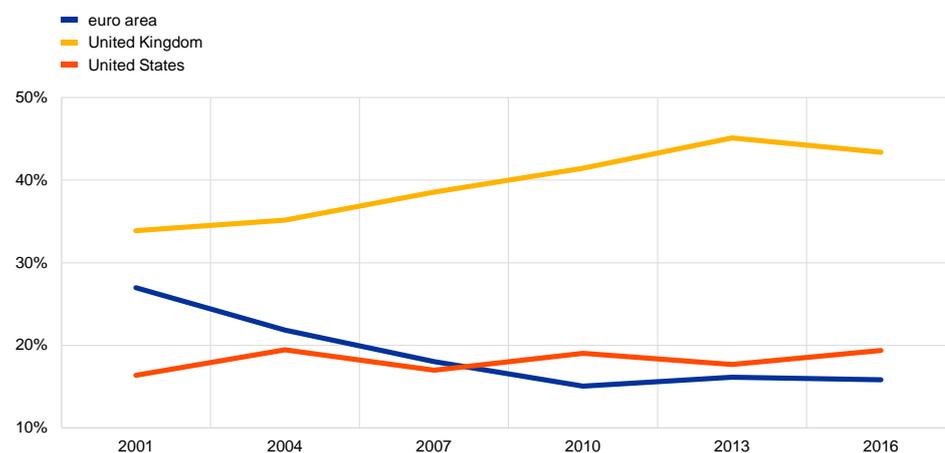
Sources: BIS and ECB staff calculations.
Note: See Chart 19.

Theoretical determinants of the location of foreign exchange trading

The fact that the location of foreign exchange trading in euro is not distributed uniformly across space, but is concentrated in a few large financial centres suggests that the location depends largely on certain spatial frictions.

One such friction is distance. One interpretation of the effect of distance is the fact that it gives rise to information asymmetries. Other things being equal, transactions tend to take place where information about the currency or currencies being traded is most easily obtained, which depends on distance, among other factors. In particular, the "local information" hypothesis posits that traders outside the country of issuance of a particular unit face an information disadvantage and trade less profitably because of culture, language and distance.[35] Put differently, trading of a currency is most likely to remain local if large financial centres are distant from its country of issuance.

Another spatial friction is domestic market liquidity. More liquid markets allow transactions to be undertaken at lower cost. Bid-ask spreads are narrower, and traders can buy and sell larger blocks without moving prices. Where local markets are small and illiquid, the appeal of large financial centres known for their depth and liquidity will be particularly strong. Conversely, where local markets are liquid, they

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[35] See the discussion in Hau, H. (2001), "Location matters: an examination of trading profits", *Journal of Finance* 56, pp. 1959-1983, in relation to the equity market.

are likely to capture a larger share of trades. This can also be rationalised by referring to models in which concentration of activity in a particular location has positive feedback effects on the advantages of further concentrating activity in that location.[36] In other words, greater market liquidity may lead to self-reinforcing effects in the concentration of suppliers of intermediate goods or specialised services, such as legal, information technology and accounting services, as well as in the availability of skilled and talented staff, which are important for foreign exchange trading.

A third set of frictions are restrictions on capital flows. Milton Friedman famously argued that taxing financial transactions onshore provides incentives for business to migrate offshore (where capital controls are equivalent in this context to a tax on purchases and sales of a foreign currency).[37] In some cases offshore markets have developed through trading in non-deliverable forward contracts, which enable investors to actively trade claims indexed to a currency despite controls maintained by the issuing country that limit their access to the underlying currency itself.[38]

An essential feature of the foreign exchange market is that it has been transformed by the advent of electronic broking and trading. Electronic trading appeared in the early 1990s and has developed ever since, owing to the availability of increasingly cheap and efficient information and communications technology. Electronic trading now dominates the foreign exchange market, with a share above 50% for all customer segments and availability for instruments and investors the world over. Two trading platforms, Electronic Broking Services (EBS) and Thomson Reuters, traditionally dominate the market, although transactions do take place on other platforms as well.[39] A widespread view is that standard geographical factors such as location and distance should no longer matter in such a ubiquitous, round-the-clock electronic foreign exchange marketplace.

Assessing the impact of technology on foreign exchange trading is not straightforward, however, because causality runs in both directions. Investments in technology can affect the geographical distribution of economic activity, but changes in the geographical distribution of economic activity also provide an incentive for investments in technology. There is, however, one specific source of exogenous change and spatial variability which can be exploited to tease out the effect of technology on the location of foreign exchange trading. This is the laying of submarine fibre-optic cables starting in the late 1980s. The majority of international communications traffic is carried by submarine cables; the remainder is carried by satellite. Cables are also the principal conduit for data transmission for the internet,

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[36] See the models and arguments of Krugman, P. and Venables, A. (1996), "Integration, specialization, and adjustment", *European Economic Review* 40, pp. 959-967.

[37] Friedman's example illustrating the power of this hypothesis was the development of the Eurodollar market in London as a response to the adoption by the US of Regulation Q in the 1960s (see Friedman, Milton (1969), "The euro-dollar market: some first principles", *Selected Papers*, No 34, Graduate School of Business, University of Chicago).

[38] See McCauley, Shu and Ma (2014).

[39] Electronic trading also takes place on multibank electronic communication networks (such as Currenex, Hotspot FX and FXall).

which is why they are often referred to as the "internet backbone". They have transformed the foreign exchange market by reducing latency and considerably increasing bandwidth, which is essential in a world where data processing needs are growing exponentially and high-frequency trading accounts for a rapidly growing share of foreign exchange trading.[40] Importantly, the existence of a cable link between two countries at a certain point in time can be regarded as exogenous to foreign exchange trading for an array of reasons.[41] Also, because cables were laid and came into use at different points in time, the network of active submarine cables provides a source of exogenous changes that vary over both space and time, which in turn allows us to identify causality.

This identification capitalises on the special role played by three large financial centres in electronic foreign exchange trading, namely London, New York and Tokyo. It is in these cities that the matching servers of EBS and Thomson Reuters, the leading platforms for electronic broking and trading, have been located since the early 1990s. In Equation 1 below, the effect of technology on spatial frictions is measured with an interactive dummy variable that equals 1 if country i is cable-connected to either the United Kingdom (for London), the United States (for New York) or Japan (for Tokyo) at time t and 0 otherwise. Connections via submarine fibre-optic cable reduce latency and increase bandwidth.

Theory suggests that the effect of technology on the share of trading occurring offshore is ambiguous. Cable connections help reduce the transportation costs of buy and sell orders involving counterparties in different locations. They help cut the costs of electronic transactions, of aggregating and matching buy and sell orders, and of processing information and data more generally. All else being equal, this should help to attenuate standard spatial frictions such as distance, domestic market liquidity and capital controls which otherwise prevent transactions from moving to large financial centres (i.e. offshore), as the standard "home market effect" suggests.[42] We therefore expect the estimated coefficients on the interactive dummy variables to be positive. All else is not equal, however. The effect could go in the opposite direction, because cable connections between local markets and matching servers in the major financial centres lower the fixed costs of trading currencies locally by easing access to financial information and increasing bandwidth. They enhance the competitiveness of local sales desks and help them keep or repatriate foreign exchange transactions domestically (i.e. onshore). Here we expect the coefficient on the direct effect of technology to be

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[40] Latency refers to the speed in milliseconds at which trading venues acknowledge an order after the order in question was sent. Bandwidth refers to the amount of data that can flow through a cable per unit of time.

[41] First, the layout of the submarine cable network is heavily influenced by geographical constraints related to the seabed topography. Second, the network is mapped over the earlier telegraph and coaxial networks of the nineteenth century and of the 1950s and 1960s, respectively. Third, the layout of submarine fibre-optic cables hinges upon safety and strategic considerations. Fourth, the cables were initially laid for general telecommunication needs, not for purposes related to the foreign exchange market. Finally, installation and maintenance costs of submarine fibre-optic cables are so high that they are usually owned by large telecommunication firm consortiums, not by financial institutions. See Eichengreen, Lafarguette and Mehl (2016) for further details and explanations.

[42] See Krugman, P. (1980), "Scale economies, product differentiation, and the pattern of trade", *American Economic Review,* Vol. 70, pp. 950-959 for more details.

negative. Which of the two effects dominates is an empirical question to which we now turn.

Empirical estimates of the determinants of the location of foreign exchange trading

These theoretical predictions are compared with the data in a recent study[43], which estimates the following equation:

$$y_{i,t} = \beta_1 Time\ Zone\ Distance_i + \beta_2 Domestic\ Market\ Liquidity_{i,t} \qquad (1)$$
$$+ \beta_3 Capital\ Controls_{i,t} + \boldsymbol{\beta'}_4\ \mathbf{X} + \vartheta_i + \lambda_t + \varepsilon_{i,t}$$

where i and t denote currency and time; y is the share of trading occurring offshore for the unit issued by country i in year t; ϑ_i are random effects; and λ_t are time-fixed effects.[44] Data for the dependent variable were provided by BIS staff for a sample of 55 currencies between 1995 and 2013. Distance is measured by the time zones between the country issuing currency i and either London, New York or Tokyo (whichever is closest).[45] Domestic market liquidity is measured by the volume of transactions in foreign currencies in country i in year t (transactions in domestic currencies are excluded from the domestic market liquidity metric to avoid spurious correlations). Restrictions on capital flows are measured by the time-varying indices of de jure capital account openness constructed by Fernandez et al. (2015). In sensitivity tests, control variables such as trade openness, financial openness, exchange rate flexibility and dollar-funded carry trades are included in Equation 1.

Table 2 reports estimates of Equation 1. **They suggest that standard spatial frictions such as distance, domestic market liquidity and, to a lesser extent, capital controls have a significant impact on the geography of the foreign exchange market.**

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[43] Eichengreen, B., Lafarguette, R. and Mehl, A. (2016), "Cables, sharks and servers: technology and the geography of the foreign exchange market", *NBER Working Paper*, No 21884, January.

[44] The share of trading occurring offshore is defined as the ratio of transactions in currency i at time t occurring outside the jurisdiction of issuance of currency i (e.g. the euro area for the euro, Japan for the yen, India for the rupee, etc.) relative to global transactions in currency i at time t.

[45] London, New York and Tokyo are taken as reference points because they are the largest foreign exchange trading venues and because they host matching servers of EBS and Reuters (see above). Hour distance is preferable to physical distance since traders in adjoining time zones will receive news more or less simultaneously, and since it allows us to take into account differences in liquidity arising from non-overlapping trading hours, which matter for computer-run algorithmic or automated trading strategies seeking to transact with sleeping agents. This choice is consequential: Johannesburg, for example, is more than 13,000 kilometres away from London but only one time zone ahead.

Table 2

Empirical estimates of the determinants of the location of foreign exchange trading

	(1) Panel tobit	(2) Panel tobit	(3) Panel GLM	(4) Panel GLM	(5) Panel tobit	(6) Panel GLM
Time zone distance	-0.120*	-0.085+	-0.257	-0.384+	-0.463***	-1.443***
	(0.064)	(0.060)	(0.263)	(0.271)	(0.127)	(0.478)
Domestic market liquidity	-0.383***	-0.388***	-1.384***	-1.342***	-1.757**	-7.746***
	(0.093)	(0.095)	(0.391)	(0.201)	(0.818)	(2.115)
Capital controls	-0.109	-0.100	-0.502	-0.525	-0.289+	-1.358+
	(0.107)	(0.106)	(0.466)	(0.476)	(0.186)	(0.845)
Trade integration		-0.091		-0.249		
		(0.071)		(0.299)		
Financial integration		0.094+		0.240		
		(0.060)		(0.281)		
Flexible exchange rate regime		0.145**		0.765**		
		(0.056)		(0.341)		
Carry trades		-0.005**		-0.032		
		(0.002)		(0.045)		
Cables					-0.305***	-1.157**
					(0.114)	(0.518)
Cables × time zone distance					0.362***	1.320***
					(0.112)	(0.486)
Cables × domestic market liquidity					1.398*	6.380***
					(0.814)	(2.104)
Cables × capital controls					0.241+	0.833
					(0.189)	(0.892)
Constant	0.119	0.124	-1.331**	-1.150**	0.453***	-0.159
	(0.100)	(0.110)	(0.547)	(0.568)	(0.133)	(0.431)
Currency effects	YES	YES	YES	YES	YES	YES
Random effects	YES	YES	YES	YES	YES	YES
Observations	252	238	252	238	252	252

Source: Eichengreen, Lafarguette and Mehl (2016).
Note: Standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$, + $p<0.2$.

The estimated effect of information asymmetries on the share of trading offshore is negative and statistically significant, which is consistent with the "local information" hypothesis. The coefficient in column 1 suggests that each hour difference in time zone relative to the United States, the United Kingdom or Japan lowers the share of offshore trading of the currency issued by the country located in the time zone in question by 12 percentage points. The estimated effect of domestic market liquidity on offshore trading is also negative, as anticipated, and significant. The coefficient estimate in column 1 implies that the share of offshore trading of a currency issued by a country where the volume of local foreign exchange transactions is USD 250 billion larger (a large amount by today's standards) is about 10 percentage points lower.[46] The effects of capital controls are statistically insignificant, in contrast. This is at variance with Milton Friedman's hypothesis that capital controls (since they are

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[46] USD 250 billion is close to the volume of offshore foreign exchange trading in Singapore or Zurich, for example, as of 2013. This result may reflect agglomeration effects arising in a self-perpetrating way, as in Krugman and Venables (1996).

equivalent to a tax) encourage foreign exchange transactions to migrate offshore. However, it may be that this result reflects omitted variable bias, in particular the effect of technology, as we show below. Furthermore, estimates controlling for trade integration, financial integration, the exchange rate regime and carry trades are broadly similar.[47]

The impact of technology on the standard spatial frictions is considered in the estimates with interacted effects reported in columns 5 and 6 of Table 2. The main findings for the standard determinants of the geography of foreign exchange trading remain broadly unchanged, with the estimated coefficients now being if anything larger in economic magnitude. In addition, the direct effect of connection to a submarine fibre-optic cable is negative and typically statistically significant. This implies that a cable connection makes it more likely that a country will be able to retain (or repatriate) trading in its currency at home, other things being equal, presumably because the costs of trading locally are lower.

But other things are not all equal in practice. The interacted effects of submarine fibre-optic connections are also statistically significant.[48] They go in the opposite direction to the direct effect of fibre optic connections. Overall, they suggest that the negative effect of distance or information asymmetries on the share of a currency traded offshore is smaller (in absolute value) in the presence of cable links. The negative effect of capital controls is again smaller (in absolute value). Thus, where the direct effect of a cable link to one of the three major centres is that a country may retain more transactions in its currency onshore, the indirect effect is the weakening of other factors (distance, local market liquidity, capital controls) which previously segmented markets and gave it a locational advantage.

Chart 22 provides evidence of the economic magnitude of these effects. It shows the predicted share of offshore foreign exchange trading in relation to the extent of information asymmetries (time zone differences) when other spatial frictions are set to zero, both with cable connections (the yellow line) and without (the blue line). For a country close to one of the financial centres, the main impact of the cable connection is direct: it allows the country to retain a larger share of trading in its currency (towards the left-hand side of the figure, the yellow line is below the blue line, indicating that a smaller share of transactions occur offshore in the presence of a cable).

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[47] Carry trades are measured as the difference between the short-term local-currency interest rate in country i and in year t and the corresponding US interest rate. The coefficient on carry trades is negative and also significant, which suggests that high local interest rates relative to the United States encourage market participants to invest in local money markets and exchange funding in dollars or yen (or another low-interest rate unit) against local currency onshore to that end.

[48] At the 20% level of confidence for capital controls using a panel tobit estimator, albeit not with a generalised linear model estimator.

Chart 22

For a country close to one of the financial centres, the main impact of the cable connection is direct

Impact of submarine fibre-optic cable connection – distance/information asymmetries

(y-axis: percentages; x-axis: hours)
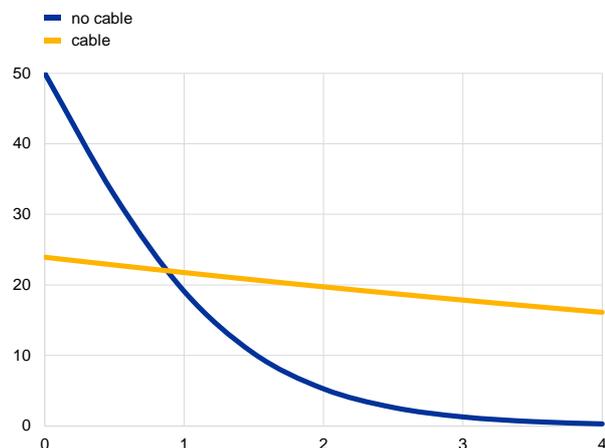
Source: Eichengreen, Lafarguette and Mehl (2016).
Note: Estimates based on column (6) of Table 1.

Chart 23

Attractions of deep and liquid domestic markets are lessened by cable connections

Impact of submarine fibre-optic cable connection – domestic market liquidity

(y-axis: percentages; x-axis: USD trillion)
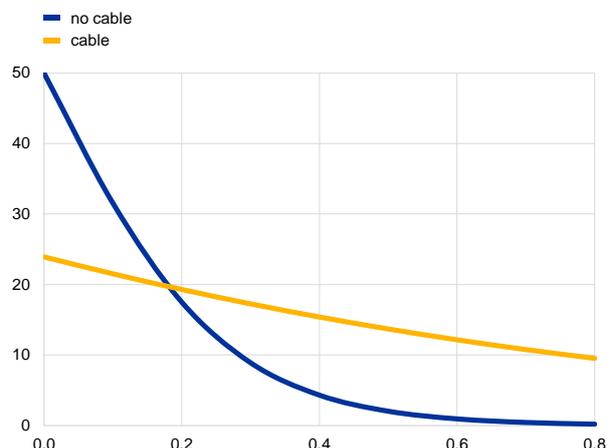
Source: Eichengreen, Lafarguette and Mehl (2016).
Note: Estimates based on column (6) of Table 1.

Conversely, for a country far from one of the large financial centres, the main impact of the cable connection is indirect: it erodes the advantages of distance, causing the country to lose a larger share of trading in its currency to offshore markets (towards the right-hand scale of the figure, the yellow line is above the blue line, indicating that a larger share of transactions occur offshore). How large is the effect on average? Taking the ratio in percentage terms of the slopes of the two lines, obtained from the tobit estimates, suggests that the effect of distance in hours on the share of foreign exchange trading occurring offshore is almost 80% lower on average in countries connected to a submarine fibre-optic cable, relative to countries that are equally distant from a major financial centre but not connected. **Chart 23** shows how the attractions of deep and liquid domestic markets are also lessened by cable connections, which points to a similar conclusion.

Overall, cable connections increase the share traded offshore for the vast majority of currencies in the BIS sample, which suggests that the dampening effect of technology on spatial frictions tends to dominate in net terms. **Technology has economically important implications for the distribution of foreign exchange transactions across financial centres, as a result.** Undersea fibre-optic cables provide a competitive advantage to financial centres located near oceans, like Singapore, because they are directly connected to the internet backbone, at the expense of landlocked cities like Zurich. By one estimate, cable connections have boosted the share in global turnover of London, the world's largest trading venue, by as much as one-third.[49]

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[49]   See Eichengreen, Lafarguette and Mehl (2016) for details on the estimates.

These findings shed light on discussions triggered by Brexit as to whether foreign exchange trading will be moving away from London if the United Kingdom does leave the European Union. Because the United Kingdom is, for the time being, an EU Member State and fully open to capital flows in the sample considered here, and because there is no financial centre rivalling the City of London in importance, we should avoid considering the findings reported here as counterfactual estimates of what the City's share of global foreign exchange turnover would be in scenarios in which it would no longer have advantages linked to being part of the single European market. However, the findings are consistent with anecdotal evidence gleaned from market participants that London's trading cables and wider pull, combined with institutional inertia, mean that any shift to mainland Europe after Brexit would be gradual.[50]

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[50] See, for example, press reports on an interview with one (New York-based) market participant who argues that because the "wires that make the trading of FX electronic are all in London", a "quick move from the UK to Europe" would be costly and "require infrastructure spending". See Faulconbridge, Guy (2015), "'Brexit' fears haunt London's roaring trade in euros", Reuters, available at http://www.reuters.com/article/2015/07/22/us-britain-eu-euro-insight-idUSKCN0PW13620150722 (accessed 12 August 2015).

B   Violations in covered interest parity and the euro's role as an international financing currency

By Johannes Gräb, Thomas Kostka and Arnaud Mehl

Prior to the global financial crisis of 2007-09, covered interest parity (CIP) was one of the most robust empirical relationships in international financial markets. CIP predicts that forward exchange rates reflect the current exchange rate as well as prevailing interest rate differences between two currencies. Sufficiently liquid markets should arbitrage away deviations from CIP, also known as the cross-currency swap (CCS) basis. The CCS basis is important for the euro's international role in global financial markets because it determines its attractiveness as an international funding currency for the synthetic issuance of US dollars. A negative CCS basis is equivalent to paying a premium for borrowing US dollars "synthetically" via another funding currency (by means of a CCS contract) over the price of US dollar borrowing in the wholesale money market (i.e. the LIBOR rate). Since the outbreak of the global financial crisis a decade ago, CIP has broken down and been persistently violated. The CCS basis has remained large and negative, albeit volatile, with important implications for global financial markets. This has contributed to a surge in US dollar-denominated international bond issuance in recent years and to discouraging synthetic US dollar issuance via currencies such as the euro. This section, the second special feature of this year's report, provides evidence that the move of the CCS basis into negative territory reflects a confluence of several factors, such as greater awareness among market participants of counterparty risk, regulatory reforms contributing to a reduction in supply of US dollars in wholesale money markets, and the effect of the non-standard monetary policy measures taken by major central banks. Moreover, acknowledging the ECB's neutral stance regarding the international use of the euro, this special feature presents tentative empirical estimates which show that the effect of the ECB's non-standard monetary policy measures on the role of the euro as an international financing currency is ambiguous. On the one hand, they lower the cost of borrowing euro in money markets but, on the other, they contribute to an increase in the CCS basis, reducing the euro's attractiveness as a unit for synthetic US dollar borrowing.

The cross-currency swap basis

The CCS basis is the premium (in excess of US LIBOR) at which synthetic US dollar funding can be obtained in the foreign exchange swap market.[51]
Synthetic US dollar funding describes a transaction in which a financial institution – due to limited supply of US dollars in wholesale money markets, for example – swaps a given (e.g. domestic) currency into US dollars for a given maturity. In addition to the CCS basis, the financial institution in question pays the US dollar

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[51]   See also Borio, C., McCauley, R.N., McGuire, P. and Sushko, V. (2016), "Covered interest rate parity lost: understanding the cross-currency basis", *BIS Quarterly Review*, September. In the following we use CCS basis as shorthand for cross-currency basis swap, which is a specific kind of cross-currency swap.

LIBOR rate and receives the domestic floating interest rate from its CCS counterpart until maturity.[52] At maturity the principal currency payment is swapped back at the spot exchange rate prevailing at the onset of the transaction. In a CCS transaction, the exchange rate risk is fully hedged. Cross-currency basis swaps are primarily used by non-US banks with limited access to US dollar deposits. They are an alternative to other sources of US dollar funding such as US dollar repo funding. In addition, foreign investors rely on them to invest in US dollar securities without being exposed to the foreign exchange risk.

Chart 24
CCS structurally negative since 2008; sharp increase since early 2014

Cross-currency swap basis of major currencies against the US dollar (three-month maturity)

(basis points)
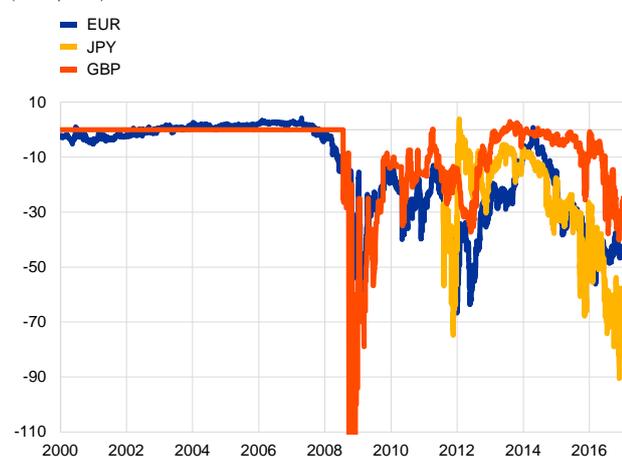
Source: Bloomberg.
Notes: The CCS basis is quoted from the perspective of the dollar-providing counterpart (which receives the basis).

In the absence of friction, the CCS basis should be close to zero. This was predominantly the case before the global financial crisis, when higher demand was immediately offset by elastic supply of US dollars in the swap market (see **Chart 24**).[53] Here, the CCS basis is quoted from the perspective of the dollar-providing counterpart (which receives the basis). Hence a more negative basis means that swapping euros, sterling or yens into dollars becomes more costly. Since the onset of the global financial crisis, the CCS basis of major currencies has consistently been negative.

Two types of agents typically need synthetic US dollar funding and use the foreign exchange swap market to hedge their foreign exchange exposures. First, non-US financial institutions may want to purchase US dollar-denominated assets without bearing the exchange rate risk.[54] One example would be a Japanese bank obtaining US dollars through a CCS contract in order to grant a dollar loan to an international borrower. Another example would be a euro area-based pension fund using a currency swap to hedge a US dollar bond investment. The second type of agent is non-financial corporates with genuine financing needs in US dollars. These agents may issue bonds denominated in a currency other than US dollars, like the euro, and swap the proceeds into US dollars, thereby hedging against the foreign exchange risk. Examples are "reverse yankee" bonds, which have been popular in recent years, in particular among non-financial corporations. These are euro-denominated bonds issued by US companies where the euro proceeds are exchanged immediately into US dollars by means of CCS in order to hedge the US companies' foreign currency exposure.

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[52] Because the financial institution has borrowed in domestic currency in the domestic money market, the total cost of US dollar funding in this transaction is US dollar LIBOR + CCS basis.

[53] Different developments in the basis for the different currencies reflect idiosyncratic factors, for instance the European sovereign debt crisis around 2012 for the euro, which led to heightened counterparty risk and diverging monetary policy stances from 2014 onwards for the euro and the Japanese yen. For some currencies, such as the Australian dollar, the basis has not become negative.

[54] By funding and investing in US dollars, these financial institutions avoid currency mismatches on their balance sheets.

Drivers of recent developments in the CCS basis

The rise in the CCS basis up to 2016 can be explained by an array of factors. Such factors include greater awareness of counterparty risk, changes in regulation, consideration of balance sheet costs and limits to arbitrage, which have structurally reduced the availability of US dollar funding, pushing the CCS basis into negative territory. Another factor is that increasing interest rate differentials across major currencies have stimulated demand for assets denominated in higher-yielding currencies (the US dollar) and for liabilities denominated in currencies with lower funding costs (the yen and the euro).

In particular, in reaction to the global financial crisis, arbitrageurs have become increasingly aware of counterparty risk, which has pushed the CCS basis deep into negative territory. Reflecting this, there is evidence that the CCS basis is correlated with domestic bank credit risk, as measured by bank credit default swap (CDS) spreads (see **Charts 25 and 26**).[55]

Chart 25

Arbitrageurs have become increasingly aware of counterparty risk, which has pushed the CCS basis deep into negative territory for the euro…

Euro CCS basis and bank credit risk of euro area banks

(basis points)
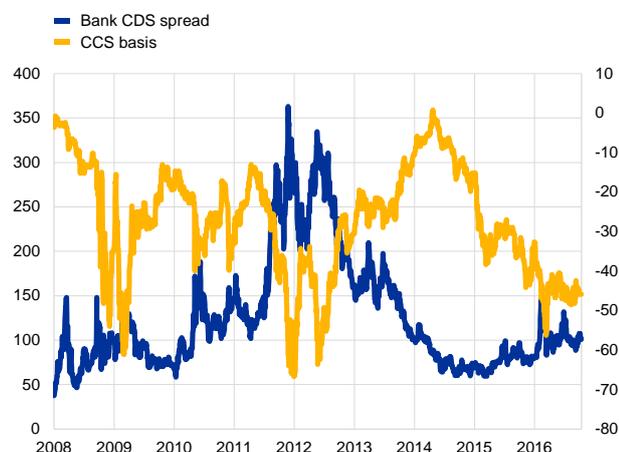
Sources: Bloomberg, Datastream.

Chart 26

… and for the Japanese yen

Japanese yen CCS basis and bank credit risk of Japanese banks

(basis points)
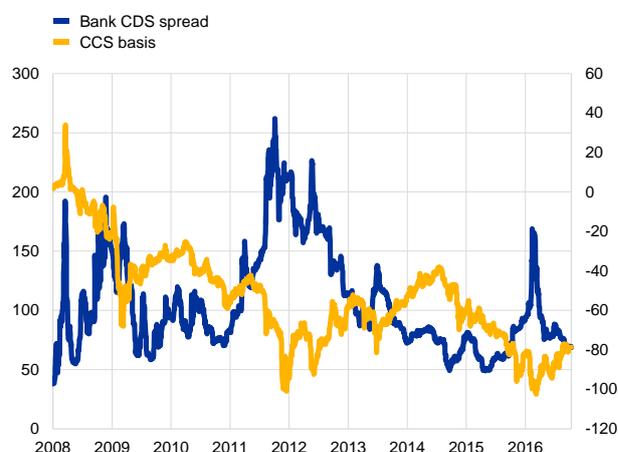
Sources: Bloomberg, Datastream.

Recent adjustments to US money market fund (MMF) regulations are yet another factor. The adjustments in question have reduced the availability of US dollar liquidity in US wholesale markets, thereby putting further downward pressure on the CCS basis. US MMFs have been increasingly discouraged from lending to

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[55] Before the crisis, the CCS basis was virtually zero and moved independently from bank credit risk. This suggests that the sensitivity of the CCS basis with respect to credit risk has increased since 2008, but not necessarily that bank credit risk per se has increased.

non-sovereign borrowers, in accordance with domestic regulations.[56] As a result, funds migrated from US prime MMFs (i.e. funds that invest mainly in private securities) to government MMFs (i.e. funds that invest mainly in government securities; see **Chart 27**). This has pushed global banks, which had previously tapped the US dollar wholesale market, into other markets (including the currency swap market) to cater for their US dollar funding needs. In mid-2015, the CCS basis started to go further into negative territory as money market funds presumably prepared for the entry into force of regulatory reforms in October 2016. Further mirroring the reduced supply of dollar liquidity via traditional channels on the US money markets, unsecured US money market rates (e.g. US LIBOR rates) increased significantly above Treasury bill rates of comparable maturities.

Chart 27

Assets under management migrated from US prime MMFs to government MMFs

Assets under the management of US money market funds

(USD billions)
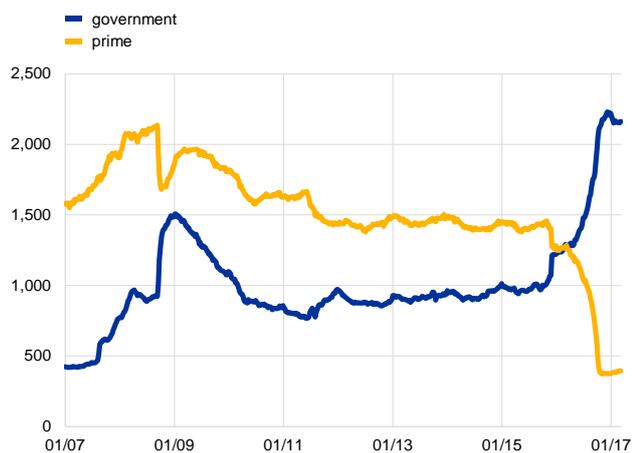
Source: ICI.
Notes: Money market fund assets by fund type. The most recent observation is for March 2017.

The official sector's investment has compensated for the reduced supply of US dollar liquidity, but only partly. Reports suggest that some central banks have recently allocated parts of their US dollar reserves to CCS contracts to earn the CCS basis, which is an attractive investment in an environment of historically low interest rates.[57] Moreover, state agencies have reportedly exploited their top credit rating status to issue at close to risk-free rates in US dollars and swap those US dollars for euro or other currencies while earning the CCS basis.[58],[59]

On the demand side, monetary policy divergence between the United States and some other major advanced economies has stimulated the appetite for investing in higher-yielding dollar assets and issuing in lower-yielding currencies, contributing to a further widening in the CCS basis. Accommodative monetary policy measures taken by major central banks in the euro area, Japan and Switzerland have led to rising interest rate differentials vis-à-vis the United States. This has spurred demand for CCS contracts for two distinct reasons. First, relatively high yields on US dollar assets incentivise investments in US dollar assets together with purchases of CCS contracts to hedge the resulting exposures to

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[56] In contrast to MMFs invested in short-term sovereign paper, MMFs invested in short-term bank debt (e.g. commercial paper) were required to adopt a floating net present value (NAV) system as of 14 October 2016. As a consequence, many MMFs have shifted large portfolio shares from US dollar-denominated commercial paper to US Treasury bills. There is also anecdotal evidence that Japanese banks replaced commercial paper and certificates of deposits denominated in US dollars with US dollar deposits, and less long-term currency swaps.

[57] On this side of the CCS contract, the US dollar reserve manager is hedged against depreciations in the other currency (e.g. yen). It has been argued that there have been alternative US dollar providers for swaps involving the Japanese yen and the US dollar, in particular in emerging market economies.

[58] This strategy amounts to the inverse of US corporates issuing and hedging euro-denominated bonds described above.

[59] Since mid-2015 assets under the management of US prime MMFs have declined by about USD 1.5 trillion. By comparison, outstanding official central bank reserves of US dollars amount to USD 4.5 trillion, and total US dollar-denominated issuance by European state agencies in 2015 amounted to USD 0.1 trillion.

foreign exchange risk. Second, relatively low interest rates in the euro area, Japan and Switzerland encourage synthetic dollar issuance and, in turn, purchases of CCS contracts to swap foreign currency proceeds into US dollars to hedge the foreign currency exposure.

Impact of the ECB's non-standard monetary policy measures

It is in this context that empirical evidence for the impact of the ECB's non-standard monetary policy measures on international bond issuances in euro and violations from CIP can be considered.

Chart 28

Two-year sovereign yield differential widens

Impulse response of two-year interest rate differential (euro area-United States)

(y-axis: percentage; x-axis: weeks)
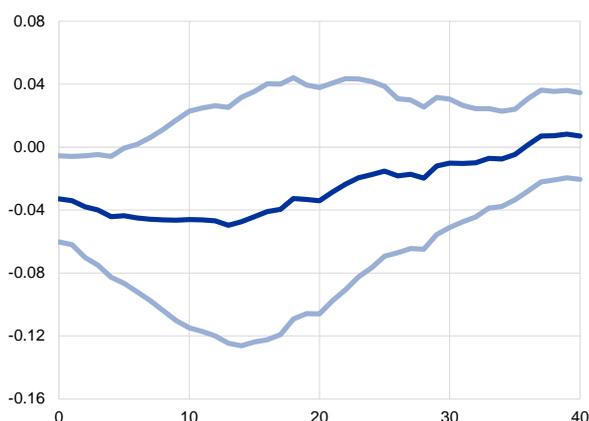
Sources: Haver, Dealogic and ECB staff estimates.
Notes: The light blue lines indicate 90% confidence bands.

Four theoretical channels – which possibly offset each other – need to be looked at to gauge the full effect of the ECB's non-standard measures. The first channel is that these non-standard monetary policy measures lower interest rates in money markets in the euro area. These lower money market rates encourage, on the one hand, euro area residents to invest in relatively high-yielding US dollar assets and, on the other hand, synthetic US dollar issuance in which the euro is used as a funding currency. These two types of financial behaviour, the second and third channels, strengthen demand for hedging the resulting foreign exchange exposures in the guise of CCS contracts, which widens the basis. The final channel is that the wider basis in turn makes issuance of international bonds in euro more costly, which discourages the use of the euro as an international financing currency. Overall, the net effect of the ECB's non-standard monetary policy measures on international issuances in euro is a priori ambiguous. If the effect on money markets (lower interest rates) dominates the effect on the CCS basis (higher swap costs), then the net effect on international issuance in euro should be positive. If the latter effect dominates the former, the net effect should be negative.

The empirical evidence suggests that the effects, in fact, broadly offset each other. The net impact of ECB non-standard measures on international bond issuances in euro is therefore limited. In a recent study, Dedola et al. (2017) aim to estimate the impact of central bank balance sheet policies on exchange rates, interest rates, risk premia and deviations from CIP.[60] They use announcements of non-standard monetary policy measures as instruments to identify innovations in central bank balance sheets due to liquidity supply shocks. They use a statistical method known as local projections to obtain the response of the aforementioned variables to a liquidity supply shock over the medium term. One preliminary finding of

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[60] See Dedola, L., Georgiadis, G., Gräb, J. and Mehl, A. (2017), "Does a big bazooka matter? Central bank balance sheet policies and exchange rates", ECB mimeo, April.

their study is that, in response to an average liquidity supply shock arising from the ECB's non-standard measures, euro area interest rates would decline significantly, which should contribute a priori to stimulating international issuances in euro (see **Chart 28**). According to the study's estimates, a 1% increase in the ECB's balance sheet relative to the Federal Reserve System's balance sheet would lower euro area interest rates by around 5 basis points (at the two-year maturity). At the same time, the same average liquidity supply shock arising from the ECB's non-standard measures would lead to significantly wider deviations from CIP (i.e. to a more negative basis), which discourages international issuances in euro (see **Chart 29**). According to the estimates, a 1% increase in the ECB's balance sheet relative to the Federal Reserve System's would widen the deviations from CIP for the USD/EUR by about 10 basis points. By and large, the two effects tend to offset each other, as suggested by the statistically insignificant response of international bond issuances in euro to an average liquidity supply shock arising from the ECB's non-standard measures (see **Chart 30**).[61]

Chart 29

Deviations from CIP widen

Impulse response of deviations from CIP at the two-year maturity

(y-axis: percentage; x-axis: weeks)
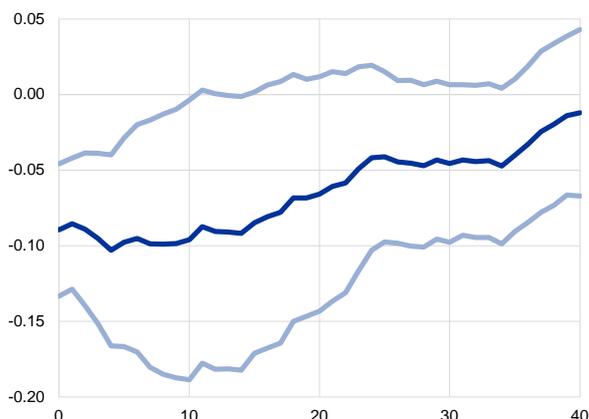
Sources: Haver, Dealogic and ECB staff estimates.
Note: The light blue lines indicate 90% confidence bands.

Chart 30

Muted impact on international bond issuance in euro

Impulse response of issuance of euro-denominated international bonds

(y-axis: USD millions; x-axis: weeks)
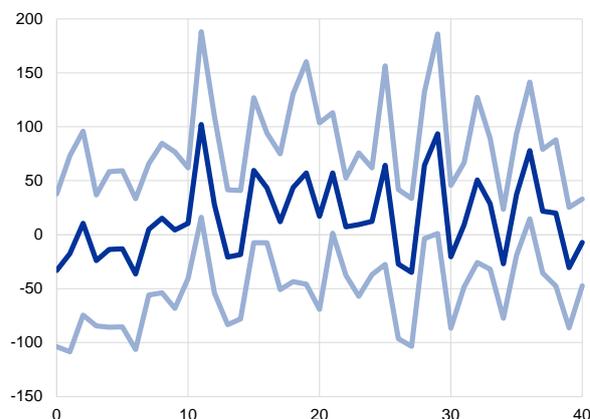
Sources: Haver, Dealogic and ECB staff estimates.
Note: The light blue lines indicate 90% confidence bands.

In any case, the ECB stance vis-à-vis the international role of the euro is neutral in this domain, i.e. the ECB's non-standard monetary policy measures are not aimed at influencing euro-denominated international bond issuance.

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[61] The results are qualitatively unchanged when using the share of the euro in outstanding international debt securities as the dependent variable.

C   Unofficial euroisation in CESEE countries

By Katalin Polgar and Li Savelin

Currency substitution is a widespread phenomenon in emerging and developing economies, whereby a foreign entity's currency replaces the local legal tender in some of the main functions of money (most prominently as a store of value, but also as a medium of exchange and even as a unit of account). The euro is used for this purpose in some central, eastern and south-eastern European countries, particularly in the Western Balkans. Unofficial euroisation is a salient feature of the banking systems in most EU candidate and potential candidate countries, in particular Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia and Serbia.[62] It is also present in Turkey, but with a lower degree of currency substitution, and, because the US dollar also plays a role, unofficial euroisation is much less prominent there.

This section, the third special feature, briefly reviews the driving factors behind this phenomenon in these countries, its main drawbacks as well as measures taken to address these, and progress in strengthening the use of local currencies. The special feature shows that unofficial euroisation of loans and deposits is determined by a host of factors, such as confidence in the domestic currency, trade relations with the euro area and remittances. Because unofficial euroisation may give rise to financial stability risks and constrain the effectiveness of monetary policy decisions, several countries in the region have introduced measures to encourage the use of local currencies. The special feature shows that there are tentative signs that local currency use is progressing in the countries concerned, albeit slowly and largely restricted to loans.[63]

Drivers of unofficial euroisation and related risks

An important factor in unofficial euroisation is often the lack of confidence in the domestic currency. Memories of macroeconomic instability in the not-so-distant past, such as periods of high or even hyperinflation (see **Chart 31**), or substantial depreciation of the local currency implying a major loss in the value of savings (see **Chart 32**), mostly coupled with a very short and/or poor track record of monetary policy and the general institutional environment, reduce confidence in the domestic currency. This low confidence in turn prompts economic agents to use the currency of a foreign entity for the various functions of money, in parallel to (and often dominating) the domestic currency.

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[62]   Being officially euroised entities with an EU candidate or potential candidate status, Montenegro and Kosovo (this designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the International Court of Justice's Advisory Opinion on Kosovo's declaration of independence) are not discussed here.

[63]   On related issues, see also Box 6 on the use of euro cash in the region as well as Beckmann, E. (2017), "How does foreign currency debt relief affect households' loan demand? Evidence from the OeNB Euro Survey in CESEE", *Focus on European Economic Integration*, 1, pp. 8-32.

Chart 31

Confidence in the domestic currency lowered by memories of high inflation…

CPI inflation

(year-on-year changes, 1992-2016)

- Albania
- Bosnia and Herzegovina
- FYR Macedonia
- Serbia
- Turkey
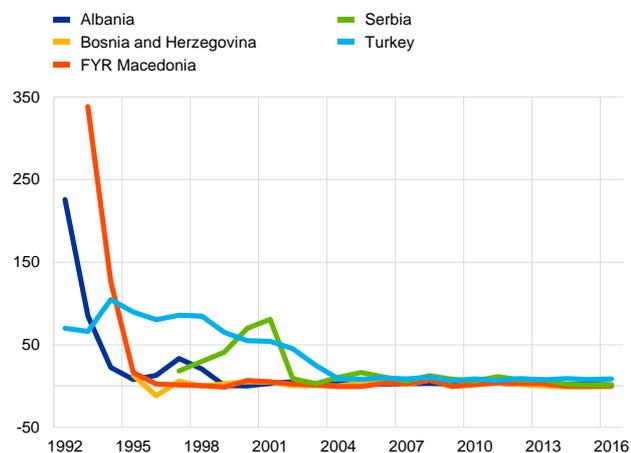
Sources: IMF World Economic Outlook and ECB staff calculations.

Chart 32

…as well as substantial depreciation of the local currency

Exchange rates

(national currency to the euro: average 2002 = 100)

- Albania
- Bosnia and Herzegovina
- FYR Macedonia
- Serbia
- Turkey
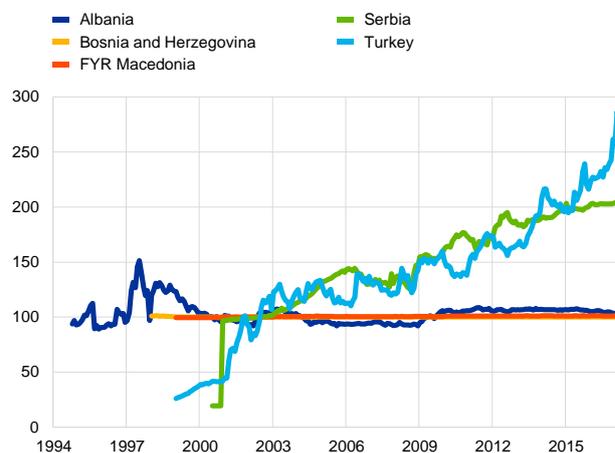
Sources: Haver Analytics, national authorities, Thomson Reuters and ECB staff calculations.

Low confidence and high uncertainty are also reflected in a higher risk premium associated with the domestic currency. The factors listed above give rise to higher country risk and thus a higher risk premium priced in for domestic currency assets and liabilities. As a result, interest rates are higher in the countries concerned than in advanced economies, providing an incentive to seek funding in foreign currency. The high share of banks' liabilities denominated in foreign currency in turn provides a stable source of funding, and an incentive to hedge on the asset side, thus affecting lending as well. The difference between foreign exchange and domestic lending rates is thus supportive of foreign currency-denominated or indexed lending, although the spread has declined in most countries, especially in Serbia (from 11 percentage points in 2013 to 5 percentage points in 2016, which remains the highest in the Western Balkans). In Turkey, the spread increased during the same period, and, at 11 percentage points in 2016, continues to be wide.

Strong integration via trade, migration, remittances and financial channels also supports the role of the euro in prospective EU countries. Trade integration is aided by several factors, including geographical proximity, historical ties and the European Union's Stabilisation and Association Process that inter alia aims to reduce trade barriers between the European Union and its partners. Trade with the euro area constitutes on average 51% of total merchandise trade in the four Western Balkan economies discussed here, while it is lower in Turkey at 29% (2015 figures). In addition, labour migration to the euro area is driven by persistently high unemployment rates in many EU candidate and potential candidate countries, which make remittances (mostly denominated in euro) an important source of income in the region. Financial channels such as high foreign bank ownership also reinforce integration with the European Union, in particular in the four Western Balkan countries under review. This is evidenced by the high share of banking sector assets

controlled by euro area-headquartered entities in these countries, which was 61% on average in 2016.

Unofficial euroisation is a financial stability risk in the event of sudden and substantial exchange rate fluctuations and limits monetary policy's room for manoeuvre. From the perspective of financial stability, unofficial euroisation, in particular the high share of foreign currency lending, constitutes a risk. In the event of exchange rate depreciation, unhedged borrowers will find it difficult to repay their loans denominated in or indexed to foreign currencies, implying that borrowers' exchange rate risk translates into a credit risk for banks. Monetary policy frameworks have mitigated such risk by providing nominal exchange rate stability (in the former Yugoslav Republic of Macedonia) or even by adopting a currency board arrangement (in Bosnia and Herzegovina). However, widespread loan euroisation still constrains policy choices and limits the degree of freedom for monetary policy. This holds true even in the case of inflation-targeting frameworks (in Albania and Serbia), where exchange rate flexibility remains relatively limited, as financial stability risks may materialise in the case of strong downward nominal exchange rate adjustments when major shocks occur. Furthermore, euroisation impedes the transmission of monetary policy impulses and thus limits its effectiveness.

Recent trends and progress in strengthening the use of local currencies

Most EU candidate and potential candidate countries have recognised the risks and constraints related to a high degree of unofficial euroisation, and are making efforts to promote the use of the local currency. This is a long-term challenge and progress crucially hinges upon preserving macroeconomic and financial stability for a prolonged period of time. While this is a necessary condition, it may not be sufficient, as suggested by similar experiences in other regions.[64] Macroeconomic stability can be complemented by other (primarily prudential) measures as well as the development of local capital markets, embedded in a carefully designed concerted strategy involving all relevant stakeholders.[65] In its interactions with the EU candidate and potential candidate countries as part of the pre-accession EU surveillance process, the ECB recommends the adoption of such strategies. This reflects the aforementioned specific risks and drawbacks of the high degree of unofficial euroisation in this group of countries and the need for sustainable convergence with the European Union. It does not entail a deviation from the neutral stance as regards the international role of the euro, even though recommending de-euroisation may entail a reduction in the international role of the euro in the region.

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[64] See Windischbauer, U. (2016), "Strengthening the role of local currencies in EU candidate and potential candidate countries", *Occasional Paper Series*, No 170, ECB, April.

[65] G20 leaders have welcomed the actions undertaken by international financial organisations to support the development of local currency bond markets, including intensifying efforts to support low-income countries (see G20 Leaders' Communiqué at the Hangzhou Summit, 4-5 September 2016).

Some countries have already adopted or are considering adopting comprehensive strategies aiming to promote the use of the local currency, and others are also applying measures of which this is a desired (side-)effect. Authorities in Serbia adopted a "dinarisation" strategy in 2012, in which both the central bank and the government committed to a macroeconomic environment supporting the use of the local currency. In Albania, a similar strategy is currently being developed. Prudential measures applied either in these strategies or elsewhere generally include lower reserve requirements for domestic currency liabilities compared with foreign exchange liabilities, more favourable remuneration of reserve requirements in local currencies than in foreign currencies, banning of foreign currency loans not denominated in euro, mandatory down-payments for foreign currency loans, loan-to-value limits applied exclusively for foreign currency-denominated mortgage loans, higher risk weights for foreign currency lending to unhedged borrowers and creating incentives for banks to attract domestic currency deposits. Moreover, as part of Serbia's "dinarisation" strategy, the government aims to issue dinar-denominated debt and applies preferential tax and subsidy policies. Prudential measures are also accompanied by efforts to develop primary and secondary bond markets for local currency securities, and by educational activities which aim to increase awareness both of the risks involved and of hedging possibilities.

As a result, there are encouraging signs of progress in de-euroisation in the countries concerned, although this progress remains slow and is largely concentrated on the lending side. Foreign exchange-denominated and indexed lending as a share of total loans has declined in the last few years in all four Western Balkan countries concerned (see **Chart 33**).[66] In 2013, for instance, this share ranged between 52% (in the former Yugoslav Republic of Macedonia) and 73% (in Serbia), but in 2016 the range for these same countries was 45% to 69%. In these countries, foreign exchange loans are predominantly denominated in euro, and, accordingly, the share of euro-denominated loans was lower in 2016 than in 2013 in all of the countries concerned. The compression of the spreads between foreign exchange and domestic lending rates also contributed to this fall. Notwithstanding this trend, the share of euro lending in total lending remains high in the four countries concerned (on average 53% at end-2016). Lending to the corporate sector remains in most cases the main driver of loan euroisation, which may limit vulnerabilities to financial stability because hedging against exchange rate risks and a higher share of income in foreign currencies is presumably more frequent among corporations than households. In Turkey, the whole foreign currency loan portfolio is from the corporate sector, due to regulatory provisions prohibiting foreign exchange borrowing by households.

Progress on the deposit side remains so far more limited or absent. On average, in the four Western Balkan countries concerned, foreign currency-denominated or indexed deposits as a share of total deposits declined by about

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[66] In Turkey, foreign currency-denominated or indexed loans as a share of total loans increased during the same period, but remain below the shares of other prospective EU countries analysed here. Moreover, due to the greater role of the US dollar, euro-denominated lending as a share of total lending was only 16% in 2016.

3 percentage points to 50% between 2013 and end-2016, mainly driven by Serbia (see **Chart 34**). From the point of view of the banks, ample foreign currency deposits mitigate their exposure to direct exchange rate risks. However, they also provide a stable source of funding for foreign currency lending, which suggests that strengthening the use of local currency is not possible without significantly reducing the incentives to save in foreign currency.

Chart 33

Foreign exchange-denominated and indexed lending as a share of total loans has declined

Foreign currency loans (outright or indexed) as percentage of total loans
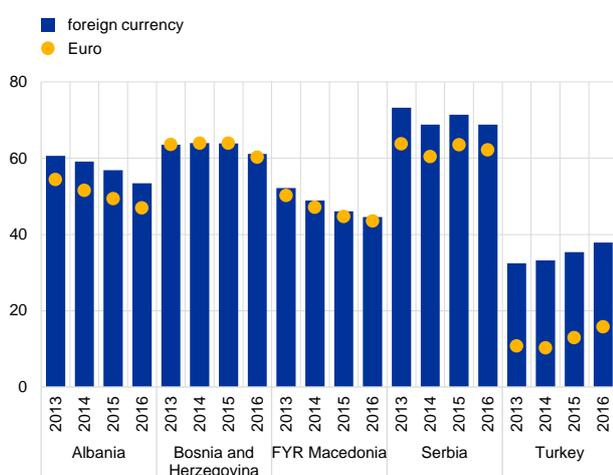
Sources: Haver Analytics, national central banks and ECB staff calculations.
Notes: Foreign currency-denominated and foreign currency-indexed lending to households and non-financial corporations (private and public). Lending to total economy in the case of Bosnia and Herzegovina due to lack of data.

Chart 34

Progress on the deposit side remains so far more limited or absent

Foreign currency deposits (outright or indexed) as percentage of total deposits
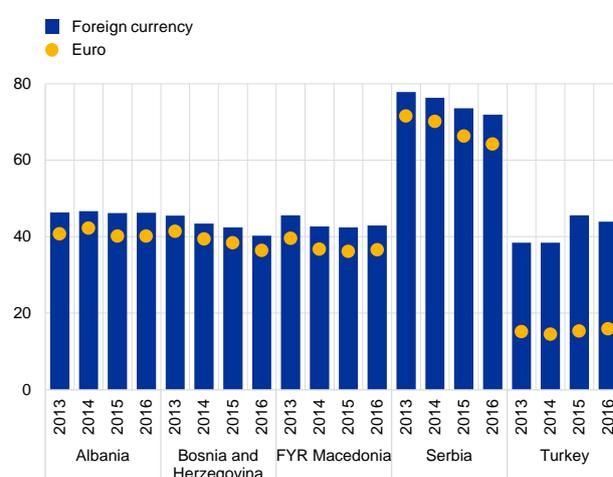
Sources: Haver Analytics, national authorities and ECB staff calculations.

Notes: Foreign currency-denominated and foreign currency-indexed deposits from households and non-financial corporations (private and public). Deposits from total economy in the case of Bosnia and Herzegovina and time deposits for Albania due to lack of data

Looking ahead, successful strategies will have to build on the support of all relevant stakeholders. In addition to preserving or achieving macroeconomic stability, emphasis will need to be placed on developing local capital markets while including measures targeting the deposit side as well. The development of local capital markets is an important prerequisite to support the use of the local currency. Issuance of debt in the local currency is an important part of this, coupled with the development of primary and secondary bond markets.[67] For a successful reduction of foreign currency lending, it is also necessary to reduce the share of foreign exchange-denominated deposits. This is an area in which progress has so far remained more limited. Measures targeting deposits, therefore, such as differentiated reserve requirements, should also be applied as part of a strategy to strengthen the use of local currencies. In addition, it is important to raise public awareness of exchange rate risks as part of educational efforts related to this strategy.

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[67] Limited economic size and small local investor and issuer bases are likely to hamper the development of deep and liquid local currency bond markets in the region, however.

Statistical Annex

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

Table A 1

Global holdings of foreign exchange reserves

Outstanding amounts (in USD billions, at current exchange rates)

	Total holdings of foreign reserves[1]	Allocated reserves	EUR	USD	JPY	GBP	CHF	AUD	CAD	CNY	Other[2]	Unallocated reserves
2003	3,025	2,223	556	1,455	98	64	5	.	.	.	45	802
2004	3,748	2,655	655	1,739	114	93	4	.	.	.	50	1,093
2005	4,320	2,844	679	1,891	113	107	4	.	.	.	50	1,476
2006	5,253	3,315	827	2,158	115	150	6	.	.	.	60	1,938
2007	6,704	4,119	1,076	2,631	131	199	6	.	.	.	76	2,585
2008	7,346	4,210	1,104	2,685	146	178	6	.	.	.	93	3,136
2009	8,165	4,590	1,270	2,848	133	195	5	.	.	.	139	3,575
2010	9,265	5,163	1,343	3,193	189	203	7	.	.	.	229	4,102
2011	10,206	5,652	1,394	3,525	204	217	4	.	.	.	308	4,553
2012	10,952	6,086	1,474	3,731	249	246	13	89	87	.	197	4,867
2013	11,674	6,221	1,521	3,806	245	249	13	100	109	.	179	5,453
2014	11,591	6,085	1,347	3,839	237	231	16	108	115	.	192	5,506
2015	10,927	6,817	1,345	4,374	275	331	20	131	128	.	213	4,110
2016Q1	11,009	7,194	1,449	4,604	281	343	15	134	136	.	232	3,815
Q2	11,038	7,502	1,494	4,792	326	349	14	137	144	.	246	3,536
Q3	11,059	7,801	1,578	4,940	347	351	15	150	156	.	265	3,258
Q4	10,793	7,901	1,559	5,053	333	349	14	146	161	85	201	2,893

Currency shares in foreign exchange reserves with disclosed currency composition (at constant exchange rates)

	Total holdings of foreign reserves[1]	Allocated reserves	EUR	USD	JPY	GBP	CHF	AUD	CAD	CNY	Other[2]	Unallocated reserves
2003	.	.	22.1	69.2	4.3	2.1	0.3	.	.	.	2.1	.
2004	.	.	20.6	70.7	4.1	2.4	0.2	.	.	.	2.0	.
2005	.	.	22.1	69.0	4.1	2.8	0.2	.	.	.	1.8	.
2006	.	.	21.4	69.7	3.8	3.0	0.2	.	.	.	1.9	.
2007	.	.	20.6	70.5	3.4	3.3	0.2	.	.	.	2.0	.
2008	.	.	21.5	69.2	2.9	3.9	0.2	.	.	.	2.4	.
2009	.	.	22.3	68.2	2.5	3.5	0.1	.	.	.	3.3	.
2010	.	.	22.2	66.8	2.7	3.4	0.1	.	.	.	4.8	.
2011	.	.	21.5	66.8	2.6	3.3	0.1	.	.	.	5.8	.
2012	.	.	21.0	66.5	3.3	3.3	0.2	1.1	1.1	.	3.5	.
2013	.	.	20.3	66.4	3.8	3.2	0.2	1.4	1.5	.	3.1	.
2014	.	.	20.0	65.8	4.2	3.1	0.3	1.6	1.7	.	3.3	.
2015	.	.	19.4	65.0	4.2	4.1	0.3	1.9	2.0	.	3.2	.
2016 Q1	.	.	19.1	65.7	3.8	4.2	0.2	1.8	1.9	.	3.3	.
Q2	.	.	19.3	65.2	3.9	4.4	0.2	1.8	1.9	.	3.3	.
Q3	.	.	19.5	64.7	3.9	4.4	0.2	1.9	2.0	.	3.5	.
Q4	.	.	19.7	64.0	4.2	4.4	0.2	1.8	2.0	1.1	2.5	.

Currency shares in foreign exchange reserves with disclosed currency composition (at current exchange rates)

	Total holdings of foreign reserves[1]	Allocated reserves	EUR	USD	JPY	GBP	CHF	AUD	CAD	CNY	Other[2]	Unallocated reserves
2005	.	65.8	23.9	66.5	4.0	3.7	0.1	.	.	.	1.7	34.2
2006	.	63.1	25.0	65.1	3.5	4.5	0.2	.	.	.	1.8	36.9
2007	.	61.4	26.1	63.9	3.2	4.8	0.2	.	.	.	1.8	38.6
2008	.	57.3	26.2	63.8	3.5	4.2	0.1	.	.	.	2.2	42.7
2009	.	56.2	27.7	62.0	2.9	4.2	0.1	.	.	.	3.0	43.8
2010	.	55.7	26.0	61.8	3.7	3.9	0.1	.	.	.	4.4	44.3
2011	.	55.4	24.7	62.4	3.6	3.8	0.1	.	.	.	5.5	44.6
2012	.	55.6	24.2	61.3	4.1	4.0	0.2	1.5	1.4	.	3.2	44.4
2013	.	53.3	24.4	61.2	3.9	4.0	0.2	1.6	1.7	.	2.9	46.7
2014	.	52.5	22.1	63.1	3.9	3.8	0.3	1.8	1.9	.	3.2	47.5
2015	.	62.4	19.7	64.2	4.0	4.9	0.3	1.9	1.9	.	3.1	37.6
2016 Q1	.	65.3	20.1	64.0	3.9	4.8	0.2	1.9	1.9	.	3.2	34.7
Q2	.	68.0	19.9	63.9	4.3	4.7	0.2	1.8	1.9	.	3.3	32.0
Q3	.	70.5	20.2	63.3	4.4	4.5	0.2	1.9	2.0	.	3.4	29.5
Q4	.	73.2	19.7	64.0	4.2	4.4	0.2	1.8	2.0	1.1	2.5	26.8

Sources: IMF and ECB calculations.
Notes:
1) The total includes unallocated reserves, i.e. reserves with undisclosed currency composition, as well as allocated reserves with disclosed currency composition.
2) The category "other" includes all allocated reserves with disclosed currency composition not explicitly mentioned in the table.

Table A 2

Currency composition of foreign exchange reserves for selected countries

(percentage share of the euro in foreign exchange reserve holdings, at current exchange rates)

	2011	2012	2013	2014	2015	2016
Non-euro area EU Member States						
Bulgaria	99.9	99.9	100.0	93.2	99.5	99.5
Croatia	75.9	80.3	68.7	79.8	78.9	83.1
Czech Republic	60.1	58.7	69.5	52.6	51.2	53.8
Denmark	68.9	69.8	71.3	68.6	59.7	74.1
Poland	30.4	30.9	30.7	33.1	28.3	27.3
Romania	77.8	73.0	65.9	75.0	79.5	77.9
Sweden	37.0	37.1	37.0	33.9	34.1	33.3
United Kingdom	59.1	60.4	59.6	55.1	50.7	43.9
Other industrial countries						
Canada	37.0	34.9	31.9	26.8	22.5	19.7
Russia	42.1	26.2	41.5	46.1	40.1	39.9
Norway	25.5	26.2	27.0	27.8	26.6	27.0
Switzerland	57.0	50.1	49.2	46.3	42.9	44.4
United States	53.5	57.0	62.8	62.9	60.4	59.0
Latin American countries						
Chile	31.5	19.8	19.6	20.3	15.0	14.1
Peru	40.1	30.2	30.9	27.1	9.5	6.3

Sources: National central banks and ECB calculations.
Notes:
Calculations are, in general, based on international reserve and foreign currency liquidity statistics. Please note the following on country-specific sources of data or calculation methods.
Bulgaria: currency compositions published in the annual reports of the central bank.
United Kingdom: combined currency share of the Bank of England and the UK Government (including other foreign currency assets such as claims vis-à-vis residents).
Norway: currency shares are calculated using the total foreign exchange reserves of Norges Bank, comprising equity, fixed income and the petroleum buffer portfolio.
Switzerland: combined currency share as published by the Swiss National Bank, including government bonds, other bonds and equities.
United States: combined currency shares for the System Open Market Account (SOMA) at the Federal Reserve System and the US Treasury Exchange Stabilization Fund (ESF); reciprocal currency arrangements are not included.
Chile: combined currency shares in the liquidity and the investment portfolio of the central bank.
Peru: reserve assets denominated in currencies other than the US dollar. According to the Central Reserve Bank of Peru, these are mostly euro-denominated assets. It is assumed that the composition of the gross international reserves is the same as that of the net international position, with adjustments made to account for the exclusion of gold.

Table A 3

Countries and territories with exchange rate regimes linked to the euro

(as at end-April 2017)

Region	Exchange rate regimes	Countries	Monetary policy framework
EU (non-euro area)	ERM II	Denmark	Exchange rate anchor
	Euro-based currency boards	Bulgaria	Exchange rate anchor
	Tightly managed floating regimes	Croatia	Exchange rate anchor
	Managed floating regimes with the euro as reference currency	Romania, Czech Republic	Inflation targeting framework
	Pro memoria: free floating regimes with an inflation target	Hungary, Poland, Sweden, United Kingdom	Inflation targeting framework
EU candidate and potential candidate countries	Unilateral euroisation (no separate legal tender)	Kosovo[1], Montenegro	Exchange rate anchor
	Euro-based currency boards	Bosnia and Herzegovina	Exchange rate anchor
	Stabilised arrangements with euro as a reference currency	Former Yugoslav Republic of Macedonia	Exchange rate anchor
	Floating or managed floating regimes	Albania, Serbia, Turkey	Inflation targeting framework
Others[2]	Euroisation	European microstates, some French overseas collectivities	Exchange rate anchor
	Pegs based on the euro	CFA franc zone, CFP franc zone, Cabo Verde, Comoros, São Tomé and Príncipe	Exchange rate anchor
	Stabilised arrangements with basket involving the euro	Singapore	Exchange rate anchor
	Crawling pegs or crawl-like arrangements involving the euro	Botswana, Iran	Exchange rate anchor
		Tunisia	Other[3]
	Pegs and managed floats based on the SDR or other currency baskets involving the euro	Algeria, Belarus, China (CNY)	Monetary aggregate target
		Fiji, Kuwait, Lybia, Morocco, Samoa, Syria	Exchange rate anchor
		Azerbaijan, Switzerland, Vanuatu	Other[3]

1) This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence
2) Classification is based on the Annual Report on Exchange Arrangements and Exchange Restrictions 2016 by the IMF
3) No nominal anchor; different indicators are taken into account to implement the monetary policy
Sources: national central banks, IMF and ECB.
Notes:
Denmark: participates in ERM II with a +/-2.25% margin of fluctuation.
Bulgaria: maintains a fixed exchange rate to the euro within the framework of a currency board arrangement.
Czech Republic: the de jure exchange rate arrangement is floating. In April 2017 Česká národní banka announced that it will stop foreign exchange interventions, but is prepared to intervene to reduce excess foreign exchange volatility. The de facto exchange rate arrangement was reclassified from a stabilised arrangement to a managed floating regime.
Croatia: managed floating regime with no pre-announced path for the exchange rate. Hrvatska narodna banka conducts foreign exchange auctions on a discretionary basis to ensure the stability of the kuna and provide liquidity for payments domestically and abroad.
Romania: Banca Naţională a României may intervene to smooth excessive exchange rate fluctuations, although this concept is not formally defined. The de facto exchange rate arrangement is classified as a managed floating arrangement.
European microstates: Republic of San Marino, Vatican City, Principality of Monaco and Andorra are entitled to use the euro as their official currency. Liechtenstein uses the Swiss franc as its official currency.
French overseas collectivities: Saint Barthélémy, Saint Martin and Saint-Pierre and Miquelon use the euro as their official currency.
CFA franc zone: WAEMU (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo) and CEMAC (Cameroon, Central African Republic, Chad, Republic of Congo, Equatorial Guinea and Gabon).
CFP franc zone: New Caledonia and the French overseas collectivities of French Polynesia and Wallis and Futuna. The CFP Franc has had a fixed exchange rate against the euro since its introduction in 1999.
Singapore: the Singapore dollar is allowed to fluctuate within a targeted policy band and is managed against a basket of the currencies of the country's major trading partners and competitors.
Botswana: weighted basket of currencies comprising the Special Drawing Rights (SDR) basket and the South African rand (crawling peg since 2005).
Iran: has maintained de jure a managed floating arrangement against a basket of currencies including the euro, US dollar and Japanese yen since 2002. The exact composition has not been disclosed.
Belarus: the central bank intervenes to reduce the daily volatility of the exchange rate against a basket of currencies (US dollar, euro and Russian rouble). Consequently, the de facto exchange rate arrangement is classified as an "other managed" arrangement.
China: the de facto exchange rate arrangement is classified as an "other managed" arrangement (classification refers to the onshore renminbi).
Fiji: the currency was pegged to a basket of international currencies in May 2007. The external value of the Fiji dollar is officially determined on the basis of a weighted basket of currencies comprising the Australian dollar, Japanese yen, New Zealand dollar, euro and US dollar.
Kuwait: the de jure exchange rate arrangement is a conventional peg vis-à-vis a currency composite. The composition has been undisclosed since May 2015.
Libya: the de facto exchange rate arrangement was reclassified from a crawl-like arrangement to a conventional peg vis-à-vis the SDR in 2015.
Morocco: bi-currency basket comprising the euro and US dollar. In April 2015 the national central bank reduced the euro's share from 80% to 60% and increased the dollar's share from 20% to 40%.
Samoa: the central bank maintains an exchange rate peg based on a basket of currencies that includes the euro.
Syria: the de jure exchange rate arrangement is a pegged exchange rate managed within horizontal bands.
Azerbaijan: the central bank implemented an exchange rate policy based on a currency basket comprising the US dollar and the euro in 2015. Consequently, the de facto exchange rate arrangement was reclassified to an "other managed" arrangement.
Switzerland: the de facto exchange rate regime was reclassified from a crawl-like arrangement to a managed floating arrangement with the euro as reference currency after the lifting of the exchange rate control in mid-January 2015.
Vanuatu: the exchange rate of the vatu is currently linked to a transaction-weighted basket of currencies.

B   The euro in international debt markets

Table A 4

Outstanding international debt securities by currency

Outstanding amounts (in USD billions, at current exchange rates, end of period)

	Narrow measure					Broad measure					Memo item: BIS broad measure	
	Total	**EUR**	**USD**	**JPY**	**Other**	**Total**	**EUR**	**USD**	**JPY**	**Other**	**Total**	**EUR**
2003	4,931	1,549	2,121	438	824	8,471	2,926	3,677	500	1,368	9,676	4,131
2004	5,812	1,953	2,378	454	1,027	9,988	3,749	3,971	538	1,730	11,478	5,239
2005	6,132	1,909	2,699	398	1,127	10,495	3,851	4,259	474	1,910	11,909	5,266
2006	7,793	2,435	3,442	410	1,505	13,185	5,193	4,966	492	2,534	15,044	7,052
2007	9,618	3,099	4,166	506	1,848	16,018	6,650	5,671	603	3,095	18,413	9,044
2008	9,560	3,092	4,262	647	1,559	16,403	6,874	5,746	768	3,016	18,877	9,347
2009	10,297	3,254	4,705	591	1,746	18,288	7,818	6,217	699	3,553	20,874	10,405
2010	10,525	2,914	5,112	657	1,843	18,452	7,446	6,599	770	3,637	20,857	9,851
2011	10,877	2,798	5,523	665	1,892	18,623	7,306	6,901	761	3,655	20,973	9,656
2012	11,756	3,015	6,142	579	2,021	19,455	7,457	7,532	659	3,808	21,897	9,899
2013	12,402	3,130	6,803	431	2,038	20,198	7,684	8,175	496	3,842	22,712	10,199
2014	12,560	2,941	7,308	366	1,945	19,723	6,891	8,810	426	3,596	21,791	8,959
2015	12,584	2,858	7,593	347	1,787	19,238	6,312	9,222	403	3,301	21,081	8,155
2016Q1	12,946	3,060	7,712	371	1,803	19,749	6,660	9,358	433	3,299	21,699	8,610
Q2	13,101	3,030	7,937	406	1,729	19,765	6,550	9,593	474	3,149	21,654	8,438
Q3	13,309	3,049	8,150	410	1,700	19,995	6,587	9,833	478	3,096	21,873	8,466
Q4	13,116	2,889	8,268	345	1,614	19,516	6,235	9,928	403	2,949	21,285	8,005

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

	Narrow measure					Broad measure					Memo item: BIS broad measure	
	Total	**EUR**	**USD**	**JPY**	**Other**	**Total**	**EUR**	**USD**	**JPY**	**Other**	**Total**	**EUR**
2003	100.0	28.4	46.6	8.8	16.2	100.0	31.6	47.6	5.9	14.9	100.0	39.5
2004	100.0	29.3	46.1	7.7	16.8	100.0	33.3	45.6	5.4	15.7	100.0	41.1
2005	100.0	29.2	46.2	6.8	17.7	100.0	35.1	43.4	4.9	16.7	100.0	42.5
2006	100.0	27.5	48.6	5.9	18.0	100.0	35.8	42.7	4.3	17.2	100.0	43.1
2007	100.0	26.4	49.6	5.8	18.3	100.0	35.5	42.3	4.3	18.0	100.0	42.8
2008	100.0	27.3	49.7	5.8	17.2	100.0	36.4	40.2	4.2	19.2	100.0	43.8
2009	100.0	26.1	51.6	5.1	17.2	100.0	36.9	40.0	3.6	19.5	100.0	43.7
2010	100.0	24.1	53.7	4.8	17.4	100.0	36.3	40.8	3.3	19.6	100.0	43.0
2011	100.0	22.9	55.5	4.4	17.2	100.0	35.9	41.7	3.0	19.4	100.0	42.6
2012	100.0	22.4	57.0	4.0	16.7	100.0	34.5	43.7	2.8	19.0	100.0	41.2
2013	100.0	21.1	59.9	3.4	15.6	100.0	33.1	46.1	2.5	18.3	100.0	39.7
2014	100.0	21.3	60.9	3.1	14.7	100.0	32.6	47.9	2.4	17.1	100.0	38.6
2015	100.0	22.4	61.4	2.9	13.3	100.0	32.7	49.3	2.2	15.8	100.0	38.5
2016Q1	100.0	22.5	61.3	2.8	13.3	100.0	32.6	49.4	2.2	15.8	100.0	38.4
Q2	100.0	22.4	61.9	2.8	12.9	100.0	32.4	49.9	2.2	15.5	100.0	38.1
Q3	100.0	22.1	62.5	2.7	12.7	100.0	32.0	50.5	2.1	15.4	100.0	37.6
Q4	100.0	22.0	63.0	2.6	12.3	100.0	32.0	50.9	2.1	15.1	100.0	37.6

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

	Narrow measure				Broad measure					Memo item: BIS broad measure	
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other	Total	EUR
2003	100.0	31.4	43.0	8.9	16.7	100.0	34.5	43.4	5.9	16.1	100.0	42.7
2004	100.0	33.6	40.9	7.8	17.7	100.0	37.5	39.8	5.4	17.3	100.0	45.6
2005	100.0	31.1	44.0	6.5	18.4	100.0	36.7	40.6	4.5	18.2	100.0	44.2
2006	100.0	31.2	44.2	5.3	19.3	100.0	39.4	37.7	3.7	19.2	100.0	46.9
2007	100.0	32.2	43.3	5.3	19.2	100.0	41.5	35.4	3.8	19.3	100.0	49.1
2008	100.0	32.3	44.6	6.8	16.3	100.0	41.9	35.0	4.7	18.4	100.0	49.5
2009	100.0	31.6	45.7	5.7	17.0	100.0	42.8	34.0	3.8	19.4	100.0	49.8
2010	100.0	27.7	48.6	6.2	17.5	100.0	40.4	35.8	4.2	19.7	100.0	47.2
2011	100.0	25.7	50.8	6.1	17.4	100.0	39.2	37.1	4.1	19.6	100.0	46.0
2012	100.0	25.6	52.2	4.9	17.2	100.0	38.3	38.7	3.4	19.6	100.0	45.2
2013	100.0	25.2	54.9	3.5	16.4	100.0	38.0	40.5	2.5	19.0	100.0	44.9
2014	100.0	23.4	58.2	2.9	15.5	100.0	34.9	44.7	2.2	18.2	100.0	41.1
2015	100.0	22.7	60.3	2.8	14.2	100.0	32.8	47.9	2.1	17.2	100.0	38.7
2016Q1	100.0	23.6	59.6	2.9	13.9	100.0	33.7	47.4	2.2	16.7	100.0	39.7
Q2	100.0	23.1	60.6	3.1	13.2	100.0	33.1	48.5	2.4	15.9	100.0	39.0
Q3	100.0	22.9	61.2	3.1	12.8	100.0	32.9	49.2	2.4	15.5	100.0	38.7
Q4	100.0	22.0	63.0	2.6	12.3	100.0	32.0	50.9	2.1	15.1	100.0	37.6

Sources: BIS and ECB calculations.

Table A 5

Outstanding international bonds and notes, by currency and by sector

(Outstanding amounts in USD billions, end of period)

	EUR				USD				JPY			
	Sove-reigns	Other public entities	Financial institu-tions	Interna-tional organisa-tions	Sove-reigns	Other public entities	Financial institu-tions	Interna-tional organi-sations	Sove-reigns	Other public entities	Financial institu-tions	Interna-tional organi-sations
1999	89	21	225	127	357	73	445	116	85	26	222	41
2000	91	18	285	111	396	71	510	132	75	21	217	32
2001	87	17	366	100	395	72	584	154	61	15	210	27
2002	102	18	518	119	419	75	649	169	60	16	217	31
2003	129	21	758	148	431	86	788	177	59	17	244	35
2004	145	22	1,095	168	460	104	935	183	52	16	267	35
2005	134	17	1,152	148	465	132	1,198	184	37	13	247	32
2006	153	19	1,561	167	462	148	1,772	180	31	13	261	31
2007	170	22	2,090	187	459	170	2,299	188	29	16	328	36
2008	156	19	2,132	181	447	198	2,365	217	33	24	428	45
2009	180	19	2,187	243	530	269	2,464	278	30	29	393	44
2010	179	17	1,935	247	584	307	2,625	318	36	34	428	49
2011	166	14	1,783	328	635	327	2,778	348	39	33	436	51
2012	183	15	1,737	571	701	377	2,912	379	35	30	383	44
2013	195	17	1,673	668	770	452	3,101	422	29	25	280	31
2014	178	18	1,461	658	810	509	3,243	465	26	23	242	22
2015	175	21	1,358	627	814	546	3,341	505	23	24	231	18
2016Q1	188	22	1,447	671	824	556	3,385	532	25	25	249	20
Q2	190	20	1,409	672	872	567	3,449	538	29	28	272	22
Q3	190	20	1,417	676	882	580	3,521	541	29	28	276	23
Q4	186	21	1,320	636	935	587	3,565	536	23	25	233	19

(Percentages of outstanding amounts, end of period)

	EUR				USD				JPY			
	Sovereigns	Other public entities	Financial institutions	International organisations	Sovereigns	Other public entities	Financial institutions	International organisations	Sovereigns	Other public entities	Financial institutions	International organisations
1999	19.2	4.5	48.7	27.6	36.0	7.4	44.9	11.7	22.8	6.8	59.5	10.9
2000	18.0	3.6	56.4	22.0	35.7	6.4	46.0	11.9	21.7	6.1	62.9	9.4
2001	15.2	3.0	64.2	17.5	32.8	6.0	48.4	12.8	19.4	4.7	67.1	8.8
2002	13.5	2.4	68.3	15.7	31.9	5.7	49.5	12.9	18.5	4.8	67.2	9.5
2003	12.2	2.0	71.7	14.0	29.1	5.8	53.1	12.0	16.6	4.7	68.7	10.0
2004	10.2	1.5	76.6	11.8	27.3	6.2	55.6	10.9	14.1	4.2	72.1	9.6
2005	9.2	1.2	79.4	10.2	23.5	6.7	60.5	9.3	11.3	4.0	74.9	9.8
2006	8.0	1.0	82.1	8.8	18.0	5.8	69.2	7.0	9.3	3.8	77.7	9.3
2007	6.9	0.9	84.7	7.6	14.7	5.5	73.8	6.0	7.0	4.0	80.3	8.7
2008	6.3	0.8	85.7	7.3	13.9	6.1	73.3	6.7	6.2	4.5	80.8	8.6
2009	6.9	0.7	83.2	9.2	15.0	7.6	69.6	7.9	6.1	5.8	79.2	9.0
2010	7.5	0.7	81.4	10.4	15.2	8.0	68.5	8.3	6.6	6.2	78.1	9.0
2011	7.3	0.6	77.8	14.3	15.5	8.0	68.0	8.5	7.0	5.9	77.9	9.2
2012	7.3	0.6	69.3	22.8	16.1	8.6	66.6	8.7	7.2	6.0	77.8	8.9
2013	7.6	0.7	65.5	26.2	16.2	9.5	65.3	8.9	8.0	7.0	76.6	8.4
2014	7.7	0.8	63.1	28.4	16.1	10.1	64.5	9.2	8.5	7.4	77.2	7.0
2015	8.0	1.0	62.3	28.8	15.6	10.5	64.2	9.7	7.9	8.0	78.0	6.1
2016Q1	8.1	0.9	62.2	28.8	15.6	10.5	63.9	10.0	7.8	8.0	78.1	6.2
Q2	8.3	0.9	61.5	29.3	16.1	10.5	63.6	9.9	8.3	8.1	77.3	6.3
Q3	8.2	0.9	61.5	29.4	16.0	10.5	63.7	9.8	8.1	8.0	77.6	6.3
Q4	8.6	1.0	61.0	29.4	16.6	10.4	63.4	9.5	7.8	8.4	77.5	6.3

Sources: BIS and ECB calculations.

Table A6

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

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

	Total amounts outstanding (USD billions)	US dollar (%)	euro (%)	Japanese yen (%)	Other currencies (%)
Africa	83	86.3	8.1	3.3	2.4
Asia and Pacific	1,418	70.5	14.6	2.7	12.1
of which:					
Japan	241	88.6	7.7	…	3.6
Europe	5,640	53.2	25.4	4.4	17.0
of which:					
Euro area	2,535	65.5	…	5.6	28.8
Denmark, Sweden, United Kingdom	2,472	43.3	46.4	3.2	7.2
Other non-euro area EU Member States	190	31.6	62.1	3.0	3.2
EU28	5,198	53.6	24.5	4.4	17.6
Non-EU developed Europe[1]	331	35.0	45.8	7.1	12.1
Non-EU developing Europe	111	86.9	9.1	0.0	4.1
International organisations	1,654	32.5	45.9	1.7	19.9
Latin America	722	83.9	12.0	1.5	2.5
Middle East	351	88.9	7.0	2.2	1.8
North America	1,659	34.2	40.8	3.8	21.2
of which:					
Canada	851	66.6	17.2	0.5	15.8
United States	808	…	65.8	7.2	27.0
Offshore centres	2,116	82.3	5.3	4.7	7.7
Total	**13,644**	**57.4**	**24.2**	**3.7**	**14.7**

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

Table A 7

International dimensions of euro-denominated debt securities

(in EUR billions and as a percentage of total)

	end-Dec 2016			end-Dec 2015		
	held by residents	held by non-residents	total	held by residents	held by non-residents	total
Issued by residents	11,154	2,867	14,020	10,923	3,108	14,031
	66%	17%	84%	66%	19%	84%
Issued by non-residents	1,729	1,037	2,767	1,580	1,062	2,642
	10%	6%	16%	9%	6%	16%
Total	12,883	3,904	16,787	12,503	4,170	16,673
	77%	23%	100%	75%	25%	100%

Source: ECB.

Chart A 1

Debt securities issued by euro area countries, by holder

(percentages of total outstanding amounts, as at end-2015)

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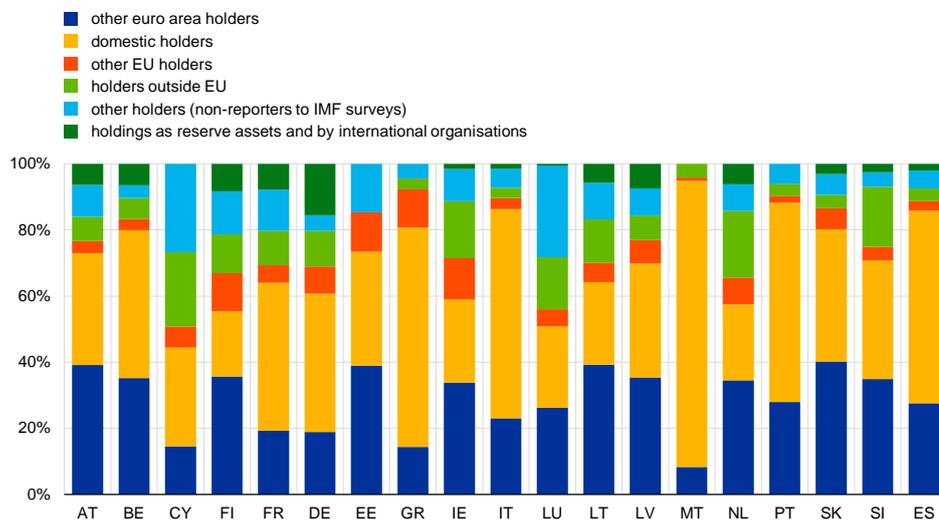
Sources: ECB calculations, IMF (CPIS, SEFER and SSIO surveys) and national sources (national accounts and i.i.p. data).
Notes: i.i.p. figures for Cyprus and the Netherlands include "special financial institutions". Reserve assets and holdings of international organisations cannot be allocated to reporting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

Chart A 2

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

(as a percentage of total debt securities held as portfolio investment assets, as at end-2015)
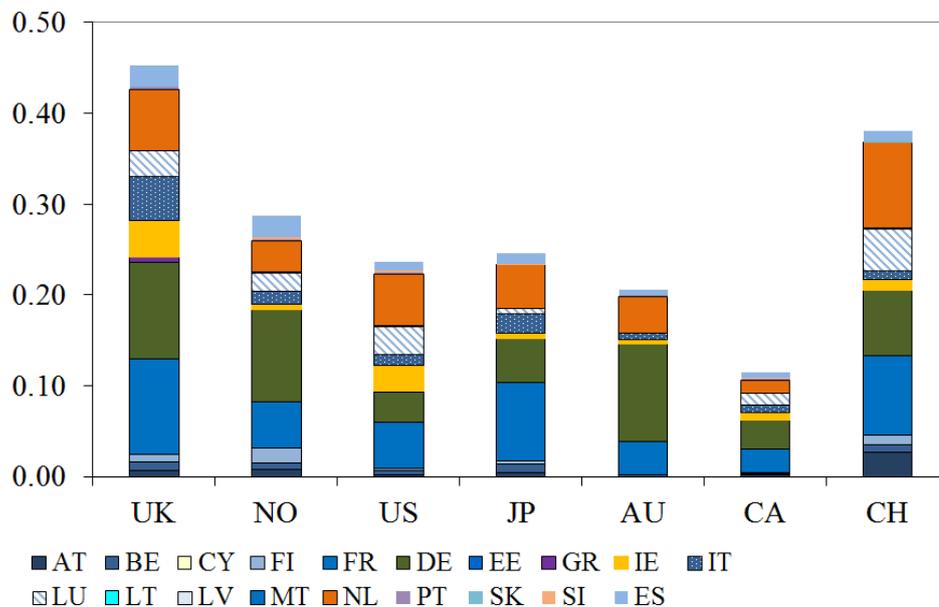
Sources: ECB and IMF.

C   The euro in international loan and deposit markets

Table A 8

Outstanding international loans, by currency

Outstanding amounts (in USD billions, at current exchange rates, end of period)

	All cross-border loans[1]					Loans by banks outside the euro area to borrowers outside the euro area[2]				
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
2003	2,982	832	1,541	182	428	269	108	83	28	49
2004	3,474	1,025	1,732	212	505	349	158	113	23	56
2005	3,832	1,020	2,051	187	574	446	144	193	41	69
2006	5,063	1,334	2,727	187	815	611	173	270	34	134
2007	6,417	1,899	3,213	269	1,036	939	299	379	54	208
2008	6,260	1,909	3,166	281	904	941	229	454	48	210
2009	5,960	1,762	3,057	203	937	996	215	488	34	258
2010	6,303	1,793	3,292	244	974	1,075	305	557	36	178
2011	6,615	1,859	3,403	320	1,032	1,206	234	635	49	288
2012	6,708	1,940	3,408	296	1,064	1,255	220	724	32	279
2013	6,792	1,839	3,507	326	1,120	1,447	233	866	43	306
2014	6,472	1,650	3,513	255	1,054	1,399	224	872	6	297
2015	6,685	1,475	3,889	225	1,096	1,696	200	1,142	15	338
2016 Q1	7,002	1,624	4,038	242	1,097	1,666	217	1,089	16	343
Q2	7,034	1,572	4,116	256	1,091	1,652	205	1,091	17	338
Q3	7,193	1,572	4,218	283	1,120	1,596	214	1,048	19	315
Q4	6,798	1,449	4,015	246	1,088	1,672	236	1,099	17	320

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

	All cross-border loans [1]					Loans by banks outside the euro area to borrowers outside the euro area [2]				
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
2003	100.0	24.5	54.5	5.9	15.1	100.0	36.3	33.5	10.2	19.9
2004	100.0	24.7	53.9	5.8	15.7	100.0	39.3	36.3	6.5	18.0
2005	100.0	24.5	55.1	5.0	15.4	100.0	29.7	44.8	9.6	15.9
2006	100.0	22.2	56.8	4.0	17.0	100.0	23.9	46.8	6.0	23.2
2007	100.0	23.2	54.8	4.4	17.7	100.0	25.1	44.5	6.0	24.4
2008	100.0	25.2	55.2	3.8	15.8	100.0	19.8	51.9	4.2	24.0
2009	100.0	23.7	56.2	2.9	17.2	100.0	16.9	52.4	2.9	27.7
2010	100.0	24.2	56.3	2.9	16.7	100.0	24.1	55.7	2.5	17.8
2011	100.0	24.6	55.2	3.4	16.7	100.0	16.6	55.4	2.8	25.1
2012	100.0	24.8	54.6	3.5	17.1	100.0	14.6	60.3	1.9	23.2
2013	100.0	22.2	55.4	4.6	17.7	100.0	12.8	62.4	2.8	22.0
2014	100.0	22.9	56.1	4.2	16.8	100.0	14.2	63.7	0.4	21.7
2015	100.0	21.5	58.5	3.5	16.5	100.0	11.5	67.6	0.9	20.0
2016 Q1	100.0	21.9	58.8	3.4	16.0	100.0	12.2	66.1	0.9	20.8
Q2	100.0	21.6	59.4	3.2	15.8	100.0	11.9	66.6	0.9	20.6
Q3	100.0	21.0	59.7	3.5	15.8	100.0	12.8	66.2	1.0	19.9
Q4	100.0	21.3	59.1	3.6	16.0	100.0	14.1	65.7	1.0	19.2

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

	All cross-border loans [1]					Loans by banks outside the euro area to borrowers outside the euro area [2]				
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
2003	100.0	27.9	51.7	6.1	14.3	100.0	40.3	31.0	10.4	18.4
2004	100.0	29.5	49.9	6.1	14.5	100.0	45.1	32.3	6.6	16.0
2005	100.0	26.6	53.5	4.9	15.0	100.0	32.2	43.3	9.2	15.4
2006	100.0	26.3	53.9	3.7	16.1	100.0	28.3	44.2	5.6	21.9
2007	100.0	29.6	50.1	4.2	16.1	100.0	31.8	40.4	5.7	22.1
2008	100.0	30.5	50.6	4.5	14.4	100.0	24.3	48.3	5.1	22.3
2009	100.0	29.6	51.3	3.4	15.7	100.0	21.6	49.0	3.4	25.9
2010	100.0	28.4	52.2	3.9	15.5	100.0	28.4	51.8	3.3	16.5
2011	100.0	28.1	51.4	4.8	15.6	100.0	19.4	52.7	4.0	23.9
2012	100.0	28.9	50.8	4.4	15.9	100.0	17.5	57.7	2.5	22.2
2013	100.0	27.1	51.6	4.8	16.5	100.0	16.1	59.8	3.0	21.1
2014	100.0	25.5	54.3	3.9	16.3	100.0	16.0	62.3	0.4	21.2
2015	100.0	22.1	58.2	3.4	16.4	100.0	11.8	67.4	0.9	19.9
2016 Q1	100.0	23.2	57.7	3.5	15.7	100.0	13.0	65.4	1.0	20.6
Q2	100.0	22.3	58.5	3.6	15.5	100.0	12.4	66.1	1.0	20.5
Q3	100.0	21.8	58.6	3.9	15.6	100.0	13.4	65.6	1.2	19.8
Q4	100.0	21.3	59.1	3.6	16.0	100.0	14.1	65.7	1.0	19.2

Sources: BIS and ECB calculations.
Notes:
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 A 9

Outstanding international deposits, by currency

Outstanding amounts (in USD billions, at current exchange rates, end of period)

	All cross-border deposits [1]				Deposits by banks outside the euro area to borrowers outside the euro area [2]				
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
2003	3,803	1,171	1,906	126	600	700	182	357	28	132
2004	4,500	1,411	2,234	160	696	756	228	364	22	141
2005	4,619	1,298	2,434	160	728	909	239	485	41	145
2006	5,862	1,587	3,160	176	939	1,147	290	634	27	195
2007	7,339	1,980	3,985	200	1,174	1,519	431	813	21	255
2008	6,877	1,867	3,828	211	971	1,378	391	740	32	215
2009	6,486	1,821	3,483	164	1,019	1,455	403	770	23	260
2010	6,898	1,892	3,857	167	983	1,508	428	832	14	234
2011	6,855	1,884	3,789	192	991	1,576	360	899	32	285
2012	7,116	1,941	3,858	178	1,140	1,578	348	885	35	310
2013	7,495	2,093	3,987	218	1,196	1,628	392	855	59	322
2014	7,090	1,884	3,804	232	1,170	1,672	389	880	30	373
2015	6,854	1,646	3,762	211	1,235	1,869	315	1,017	19	518
2016 Q1	7,199	1,818	3,908	232	1,241	1,849	328	986	20	516
Q2	7,407	1,817	4,144	243	1,203	1,854	342	996	24	492
Q3	7,457	1,792	4,183	257	1,225	1,838	362	957	4	515
Q4	6,957	1,630	3,936	234	1,157	1,865	387	979	15	484

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

	All cross-border deposits [1]				Deposits by banks outside the euro area to borrowers outside the euro area [2]				
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
2003	100.0	27.2	53.0	3.2	16.7	100.0	22.7	53.6	3.9	19.8
2004	100.0	26.2	53.7	3.4	16.7	100.0	25.1	52.0	2.7	20.2
2005	100.0	25.9	54.3	3.6	16.2	100.0	24.1	54.8	4.6	16.4
2006	100.0	22.9	57.0	3.2	16.9	100.0	21.3	58.2	2.5	17.9
2007	100.0	20.9	58.9	2.8	17.3	100.0	22.1	58.3	1.4	18.3
2008	100.0	22.2	60.0	2.6	15.2	100.0	23.2	57.9	2.0	16.8
2009	100.0	22.3	58.4	2.2	17.1	100.0	21.9	57.3	1.4	19.4
2010	100.0	23.1	59.8	1.8	15.2	100.0	23.9	58.9	0.7	16.5
2011	100.0	23.8	58.8	2.0	15.4	100.0	19.6	60.0	1.4	19.0
2012	100.0	23.2	57.8	2.0	17.1	100.0	18.5	59.0	1.7	20.7
2013	100.0	22.9	57.1	2.8	17.1	100.0	19.6	55.9	3.5	21.1
2014	100.0	23.9	55.6	3.5	17.1	100.0	20.8	54.3	1.9	23.0
2015	100.0	23.4	55.3	3.2	18.1	100.0	16.4	54.7	1.0	27.9
2016 Q1	100.0	23.9	55.4	3.2	17.6	100.0	16.6	54.0	1.1	28.3
Q2	100.0	23.7	56.9	2.9	16.5	100.0	17.7	54.3	1.1	26.8
Q3	100.0	23.1	57.1	3.0	16.7	100.0	18.8	52.7	0.2	28.3
Q4	100.0	23.4	56.6	3.4	16.6	100.0	20.8	52.5	0.8	26.0

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

	All cross-border deposits [1]				Deposits by banks outside the euro area to borrowers outside the euro area [2]				
	Total	EUR	USD	JPY	Other	Total	EUR	USD	JPY	Other
2003	100.0	30.8	50.1	3.3	15.8	100.0	26.0	51.1	4.1	18.9
2004	100.0	31.4	49.6	3.5	15.5	100.0	30.2	48.2	2.9	18.7
2005	100.0	28.1	52.7	3.5	15.8	100.0	26.2	53.3	4.5	16.0
2006	100.0	27.1	53.9	3.0	16.0	100.0	25.3	55.3	2.4	17.0
2007	100.0	27.0	54.3	2.7	16.0	100.0	28.3	53.5	1.4	16.8
2008	100.0	27.1	55.7	3.1	14.1	100.0	28.4	53.6	2.4	15.6
2009	100.0	28.1	53.7	2.5	15.7	100.0	27.7	52.9	1.6	17.8
2010	100.0	27.4	55.9	2.4	14.2	100.0	28.4	55.2	0.9	15.5
2011	100.0	27.5	55.3	2.8	14.5	100.0	22.9	57.0	2.0	18.1
2012	100.0	27.3	54.2	2.5	16.0	100.0	22.0	56.1	2.2	19.7
2013	100.0	27.9	53.2	2.9	16.0	100.0	24.1	52.5	3.6	19.8
2014	100.0	26.6	53.7	3.3	16.5	100.0	23.3	52.6	1.8	22.3
2015	100.0	24.0	54.9	3.1	18.0	100.0	16.9	54.4	1.0	27.7
2016 Q1	100.0	25.3	54.3	3.2	17.2	100.0	17.7	53.3	1.1	27.9
Q2	100.0	24.5	55.9	3.3	16.2	100.0	18.4	53.7	1.3	26.5
Q3	100.0	24.0	56.1	3.4	16.4	100.0	19.7	52.1	0.2	28.0
Q4	100.0	23.4	56.6	3.4	16.6	100.0	20.8	52.5	0.8	26.0

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

D The euro in international trade in goods and services

Table A 10

Use of the euro as a settlement/invoicing currency in extra-euro area exports and imports of goods and services by selected euro area countries

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

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Exports										
Euro area	59.6	63.6	64.1	63.4	69.9	66.7	60.0	58.9	57.4	56.1
Belgium	52.8	56.2	57.4	52.3	55.3	56.6	-	57.4	56.0	55.9
France	51.5	49.3	52.3	51.8	52.4	49.3	48.9	48.3	46.0	46.4
Italy	64.3	68.7	69.2	67.4	-	-	-	-	-	-
Greece	35.5	32.6	36.3	33.7	35.5	32.3	31.1	48.3	53.3	57.8
Spain	65.2	60.6	62.8	59.6	52.5	56.2	59.3	-	-	-
Cyprus	2.8	21.2	24.3	25.9	49.1	-	-	-	-	-
Latvia	-	-	-	82.5	79.7	78.6	81.2	79.2	79.9	82.6
Lithuania	-	-	-	-	-	-	-	62.2	66.8	68.5
Luxembourg	59.2	51.9	50.3	63.2	55.3	-	-	-	-	-
Portugal	61.4	63.1	64.2	63.4	62.1	59.3	55.9	58.1	59.6	64.5
Slovenia	79.0	79.4	84.7	82.7	83.5	81.6	80.8	-	-	-
Slovakia	-	96.5	94.8	94.4	96.0	96.5	96.0	94.9	93.4	94.5
Estonia	-	-	50.8	46.2	66.1	67.9	76.4	76.0	78.4	75.8
Imports										
Euro area	47.9	47.5	45.2	49.4	52.2	51.3	47.1	47.5	47.5	47.3
Belgium	56.1	56.4	57.7	53.0	55.7	57.3	-	75.3	71.4	68.0
France	44.8	44.2	44.3	44.4	40.6	39.9	40.0	42.0	42.4	43.5
Italy	44.3	47.8	49.7	46.9	-	-	-	-	-	-
Greece	33.6	37.3	37.9	30.8	32.9	23.6	23.4	32.3	41.7	47.4
Spain	56.7	58.8	61.7	59.5	51.7	52.0	47.9	-	-	-
Cyprus	1.7	9.8	12.7	11.6	41.1	-	-	-	-	-
Latvia	-	-	-	78.8	79.3	83.6	80.5	80.9	82.8	84.1
Lithuania	-	-	-	-	-	-	-	49.2	54.6	58.0
Luxembourg	37.9	38.8	55.3	55.0	48.8	-	-	-	-	-
Portugal	51.8	53.7	56.6	51.4	45.9	39.8	37.5	42.7	47.1	52.9
Slovenia	73.1	75.0	69.9	61.9	64.2	54.1	59.0	-	-	-
Slovakia	-	82.1	77.8	76.5	69.2	67.6	65.5	68.5	66.8	67.9
Estonia	-	-	43.7	42.4	55.9	61.6	68.2	67.3	69.0	70.0

Sources: National central banks, Eurostat and ECB calculations.
Notes:
1) Data for Greece, Cyprus, Slovenia, Spain, Italy(goods until 2010), Portugal and Luxembourg refer to the currency of settlement.
2) Data from 2013 may show a break due to the implementation of the updated balance of payments international standards (BPM6).

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

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Exports										
Euro area	54.5	55.5	53.4	52.7	55.0	49.6	62.9	63.2	62.7	62.9
Belgium	74.2	73.9	75.9	74.8	75.1	72.8	79.9	84.5	82.3	81.5
France	49.0	39.9	35.5	31.4	59.0	59.8	63.6	62.8	61.2	59.2
Italy	59.3	80.4	75.7	77.1	74.0	74.7	79.4	83.2	81.8	83.4
Greece	13.3	15.5	19.0	19.2	25.2	27.8	29.1	28.4	36.0	52.2
Spain	71.8	71.2	70.0	72.3	73.9	62.0	51.4	-	-	-
Cyprus	40.0	39.9	37.7	38.9	45.0	54.2	56.5	35.0	23.3	21.3
Latvia	-	-	-	58.3	59.0	61.3	63.0	65.9	72.7	72.5
Lithuania	-	-	-	-	-	-	-	42.9	47.8	49.6
Luxembourg	48.4	46.6	47.3	45.7	48.3	-	-	-	-	-
Portugal	59.9	65.8	68.1	62.1	65.1	63.6	67.3	67.8	70.2	73.4
Slovenia	80.8	83.2	82.7	80.1	85.4	85.8	90.7	-	-	-
Slovakia	-	-	-	-	-	-	-	85.7	91.5	92.2
Estonia	-	-	43.5	44.4	57.1	61.4	65.9	69.6	64.3	65.0
Imports										
Euro area	55.7	57.7	56.1	56.9	60.5	55.9	51.7	52.7	52.4	52.3
Belgium	72.4	74.0	71.1	72.2	70.2	67.9	72.9	76.4	74.0	73.4
France	54.8	54.9	49.4	49.8	35.7	36.0	37.2	38.5	39.0	38.0
Italy	59.1	65.6	62.7	64.4	64.3	61.8	61.0	63.9	61.6	61.4
Greece	27.5	28.9	34.4	28.5	31.7	33.7	39.6	40.4	49.7	58.6
Spain	60.7	61.5	61.8	61.8	62.6	63.3	64.7	-	-	-
Cyprus	27.9	13.3	50.9	51.2	45.7	58.2	51.2	37.0	17.2	19.6
Latvia	-	-	-	42.5	42.1	38.6	45.0	40.4	43.6	43.4
Lithuania	-	-	-	-	-	-	-	47.1	50.0	53.6
Luxembourg	34.0	38.4	41.2	48.0	45.8	-	-	-	-	-
Portugal	72.6	73.3	72.7	71.3	73.9	73.2	73.5	71.3	71.1	71.5
Slovenia	57.2	58.1	64.8	67.1	69.2	66.4	67.9	-	-	-
Slovakia	-	-	-	-	-	-	-	72.6	83.1	84.1
Estonia	-	-	43.0	43.9	53.3	57.8	60.7	62.0	56.1	56.5

Sources: National central banks, Eurostat and ECB calculations.
Notes:
1) Data for Estonia (services), Greece, Cyprus, Slovenia, Spain, Italy (goods until 2010), Portugal and Luxembourg refer to the currency of settlement.
2) Services data for Greece, Cyprus, Spain, Italy (after 2008) exclude travel items.
3) Data from 2013 may show a break due to the implementation of the updated balance of payments international standards (BPM6).

Table A 11

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

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

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Exports										
Bulgaria	60.5	61.5	68.6	56.1	52.9	48.6	55.9	57.9	59.7	65.4
Czech Republic	72.0	73.6	76.0	76.4	77.0	77.2	79.1	78.4	78.5	78.7
Croatia	-	-	-	-	-	81.0	80.0	-	-	-
Poland	69.8	68.2	66.1	-	-	-	-	-	-	-
Romania	67.7	68.5	75.9	71.3	67.1	70.1	73.2	77.0	76.9	76.3
Sweden	-	-	-	22.0	22.0	23.4	23.4	20.6	20.6	16.8
Imports										
Bulgaria	60.2	65.7	70.9	46.2	45.4	46.5	44.6	51.7	53.9	59.6
Czech Republic	68.0	68.3	68.9	68.5	68.0	68.0	68.9	68.4	68.0	67.9
Croatia	-	-	-	-	-	70.4	70.6	-	-	-
Poland	59.1	56.4	54.8	-	-	-	-	-	-	-
Romania	71.5	70.9	73.2	66.8	64.2	60.5	64.0	64.2	68.6	71.0
Sweden	-	-	-	18.8	18.5	17.3	19.0	20.4	21.7	23.0

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

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Exports										
Bulgaria	76.3	77.9	79.0	82.5	76.5	76.9	80.1	76.8	72.8	66.9
Czech Republic	67.2	72.3	76.0	76.9	78.5	80.5	75.9	70.8	69.9	67.3
Poland	69.8	68.2	66.1	-	-	-	-	-	-	-
Romania	71.2	75.2	73.8	62.2	67.0	65.1	66.3	61.8	64.5	73.8
Imports										
Bulgaria	77.1	77.1	80.8	66.5	65.2	66.4	66.5	63.0	55.4	52.0
Czech Republic	61.3	69.3	78.4	75.6	75.3	77.3	74.6	73.5	74.9	75.9
Poland	54.0	54.0	58.9	-	-	-	-	-	-	-
Romania	74.6	74.5	78.6	69.4	69.5	63.7	67.7	57.3	48.5	49.7

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

E   The euro as a parallel currency: the use of euro-denominated bank loans and deposits in countries outside the euro area

Table A 12

Outstanding euro-denominated bank loans in selected countries

	Outstanding amounts of euro-denominated loans (in EUR millions)		As a percentage of total loans		As a percentage of foreign currency loans		Outstanding amounts of foreign currency denominated loans (in EUR millions)	
	Dec-15	Dec-16	Dec-15	Dec-16	Dec-15	Dec-16	Dec-15	Dec-16
Non-euro area EU Member States								
Bulgaria	12,353	11,159	48.3	42.9	96.7	96.7	12,769	11,540
Croatia	16,237	15,974	57.0	58.1	85.5	96.7	18,992	16,515
Czech Republic	9,209	11,957	10.3	12.3	95.0	95.0	9,697	12,586
Hungary	8,420	8,159	20.6	19.8	84.7	88.4	9,937	9,229
Poland	25,074	25,644	10.7	10.8	39.9	41.9	62,772	61,177
Romania	21,156	18,816	44.0	38.8	89.2	90.7	23,726	20,737
EU candidate and potential candidate countries								
Albania	1,903	1,844	49.3	47.0	86.7	87.9	2,196	2,097
Bosnia and Herzegovina	5,510	5,297	63.9	60.2	97.0	98.6	5,681	5,372
FYR Macedonia	1,990	1,967	44.7	43.5	97.1	97.8	2,049	2,012
Serbia	10,024	9,897	63.5	62.2	89.0	90.4	11,265	10,953
Turkey	56,055	67,951	12.9	15.7	36.4	41.5	154,048	163,904

Sources: ECB, Haver Analytics, national central banks and ECB staff calculations.
Notes: Loans to households and non-financial corporations (total economy in the case of Bosnia and Herzegovina due to lack of data). Definitions of loans may vary across countries. Outstanding amounts as of December each year. Data may have been subject to revisions compared with previous issues of this report owing to methodological changes or updates. Where applicable, foreign exchange-indexed loans are included. Figures for loans indexed to foreign currency (and the euro) are estimates in the case of FYR Macedonia. Montenegro and Kosovo (this designation is without prejudice to position on status, and is in line with UN Security Council Resolution 1244/99 and the International Court of Justice Opinion on the Kosovo declaration of independence) are excluded since they are unilaterally euroised economies.

Table A 13

Outstanding euro-denominated bank deposits in selected countries

	Outstanding amounts of euro-denominated deposits (in EUR millions)		As a percentage of total deposits		As a percentage of foreign currency deposits		Outstanding amounts of foreign currency deposits (in EUR millions)	
	Dec-15	Dec-16	Dec-15	Dec-16	Dec-15	Dec-16	Dec-15	Dec-16
Non-euro area EU Member States								
Bulgaria	10,656	11,109	32.7	31.9	79.0	80.3	13,480	13,838
Croatia	19,928	19,876	59.4	56.7	88.3	88.3	22,579	22,519
Czech Republic	9,202	8,930	7.8	7.2	75.5	76.2	12,184	11,720
Hungary	7,294	9,725	15.0	18.3	75.7	79.0	9,639	12,315
Poland	14,748	17,346	6.3	7.1	65.3	66.5	22,601	26,100
Romania	15,394	16,006	27.5	26.5	84.8	84.7	18,162	18,902
EU candidate and potential candidate countries								
Albania	1,986	1,896	40.1	40.1	86.9	86.8	2,287	2,186
Bosnia and Herzegovina	3,245	3,302	38.4	36.4	90.4	90.4	3,588	3,653
FYR Macedonia	1,735	1,854	36.2	36.6	85.3	85.2	2,035	2,176
Serbia	9,388	9,991	66.3	64.2	90.5	89.7	10,378	11,142
Turkey	58,411	59,854	15.3	15.9	33.6	36.2	173,999	165,487

Sources: ECB, Haver Analytics, national central banks and ECB staff calculations.
Notes: Deposits from households and non-financial corporations (total economy in the case of Bosnia and Herzegovina and time deposits for Albania due to lack of data). Definitions of deposits may vary across countries. Outstanding amounts as of December each year. Data may have been subject to revisions compared with previous issues of this report owing to methodological changes or updates. Where applicable, foreign exchange-indexed deposits are included. For FYR Macedonia, euro-denominated and euro-indexed deposits are estimates. Montenegro and Kosovo (this designation is without prejudice to position on status, and is in line with UN Security Council Resolution 1244/99 and the International Court of Justice Opinion on the Kosovo declaration of independence) are excluded since they are unilaterally euroised economies.

Abbreviations

Countries

BE	Belgium	**HR**	Croatia	**AT**	Austria
BG	Bulgaria	**IT**	Italy	**PL**	Poland
CZ	Czech Republic	**CY**	Cyprus	**PT**	Portugal
DK	Denmark	**CH**	Switzerland	**RO**	Romania
DE	Germany	**LV**	Latvia	**SI**	Slovenia
EE	Estonia	**LT**	Lithuania	**SK**	Slovakia
IE	Ireland	**LU**	Luxembourg	**FI**	Finland
GR	Greece	**HU**	Hungary	**SE**	Sweden
ES	Spain	**MT**	Malta	**UK**	United Kingdom
FR	France	**NL**	Netherlands	**US**	United States

In accordance with EU practice, the EU Member States are listed in this report using the alphabetical order of the country names in the national languages.

Others

BIS	Bank for International Settlements	IMF	International Monetary Fund
CCS	Cross currency swap	UIP	Uncovered interest rate parity
CESEE	central, eastern and south-eastern Europe	SDR	Special drawing rights
CLS	continuous linked settlement system		
CPI	Consumer Price Index		
ECB	European Central Bank		
EU	European Union		
GDP	Gross domestic product		

Conventions used in the tables

"-"data do not exist/data are not applicable
"."data are not yet available