Philip R. Lane

Member of the Executive Board

Policy Frameworks and Strategies for an Open Economy

Bank of England Workshop: The Future of Inflation Targeting
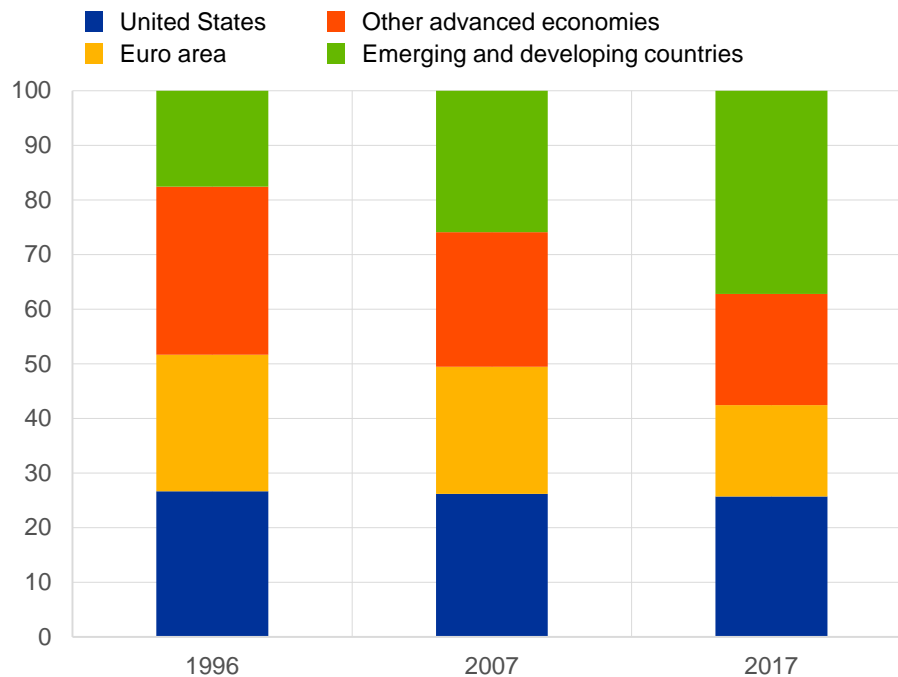
9 January 2020

Some Issues

- Increased dispersion in distribution of global output

- Trade/finance/technology/organisations/migration/sentiment

- (Climate change)

- (Geopolitics and global security)

- Tradables/non-tradables

- Domestic/foreign; global system

- Modelling: pricing; balance sheets; international financial adjustment

- (Measurement)

- Net balances: current account; NIIP

Monetary Policy Frameworks

- International dimension: global shocks; external shocks; external sector as a hedge against domestic shocks; international transmission of monetary policy

- Choice of price index; time horizon for inflation target

- Single country view; global view

- International benchmarks; interdependence in framework choices

Evolution of distribution of world GDP in USD
(percentage shares of world GDP)

Legend:
- United States (blue)
- Euro area (yellow)
- Other advanced economies (orange)
- Emerging and developing countries (green)

Years: 1996, 2007, 2017

Sources: IMF World Development Indicators and Haver Analytics.

Share of services in gross value added
(percentages)
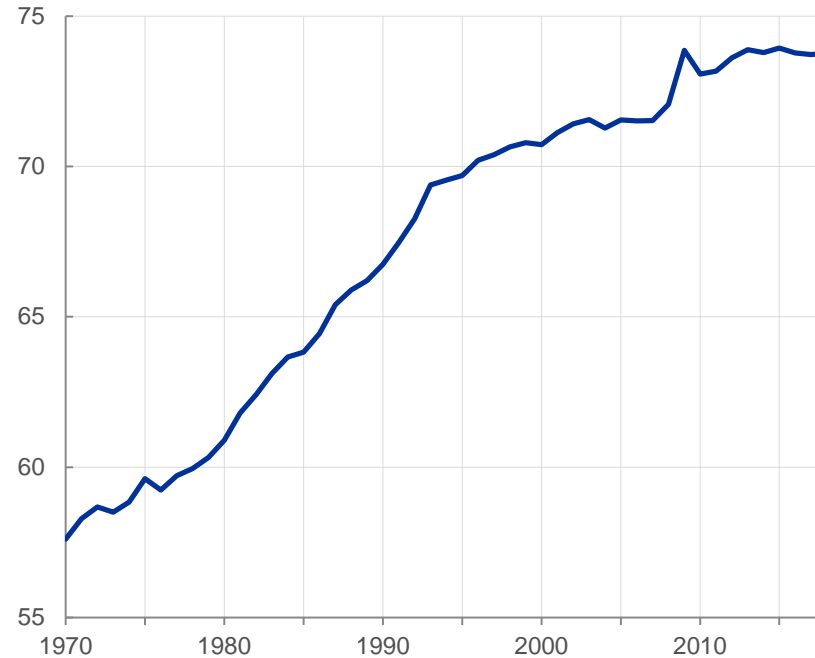
Euro area trade
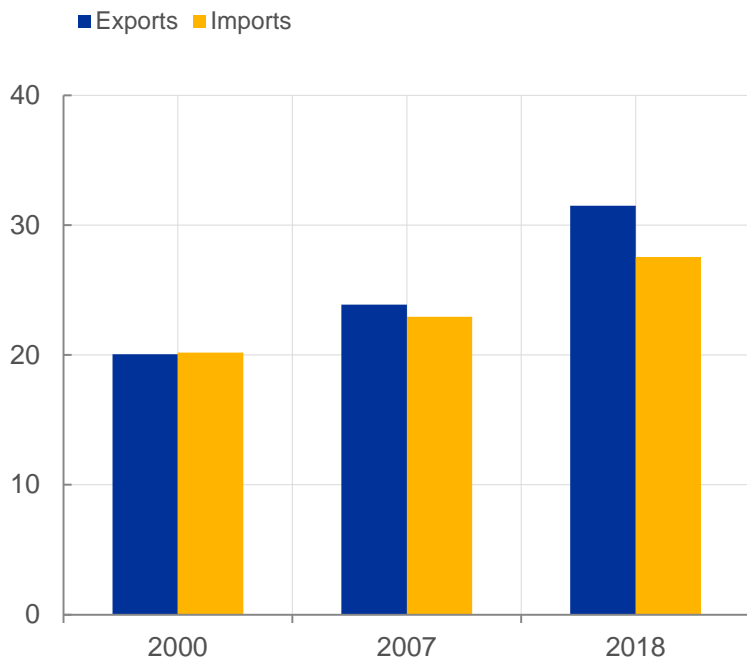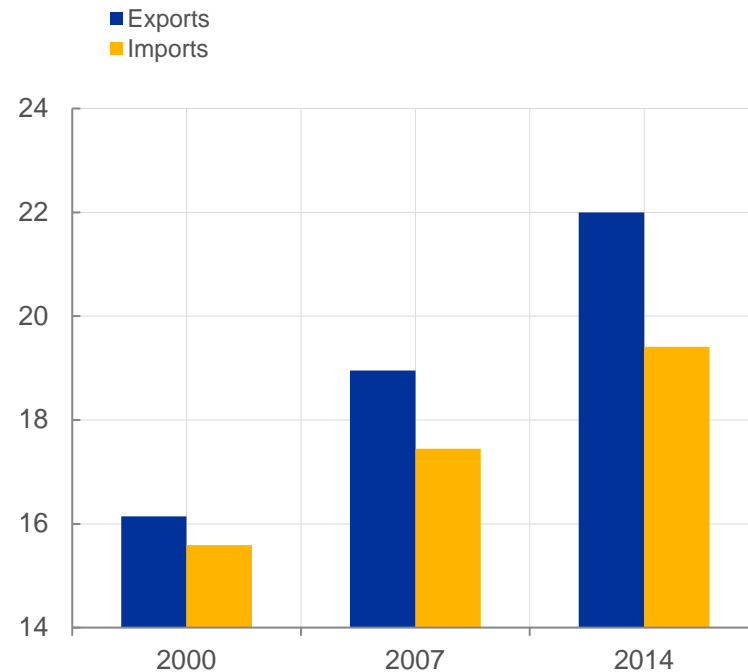(percentages, share of value added)

Source: Eurostat.
Notes: Exports and imports as a share of euro area value added.

## Domestic value added in exports and RoW value added in imports, EA
(percentages, share of value added)

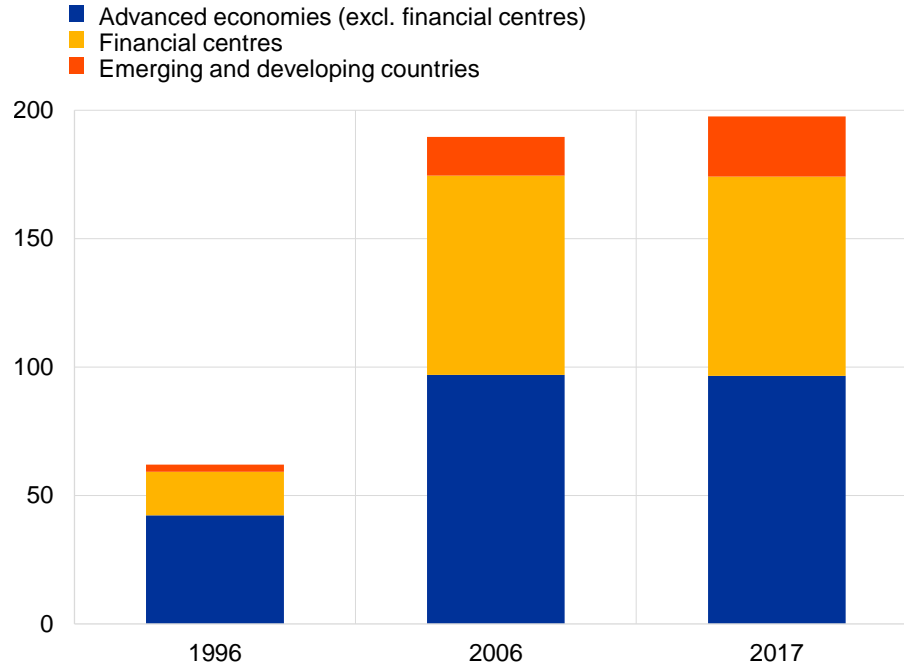Sources: WIOD and Wang, Wei and Zhu (2013).
Notes: Exports and imports as a share of euro area value added. Exports consider euro area domestic value added in euro area exports. Imports consider foreign value added imported by the euro area and hence exclude euro area's value added and double-counted items. The euro area aggregate excludes intra-euro area flows.

Import content of HICP components
(percentages)
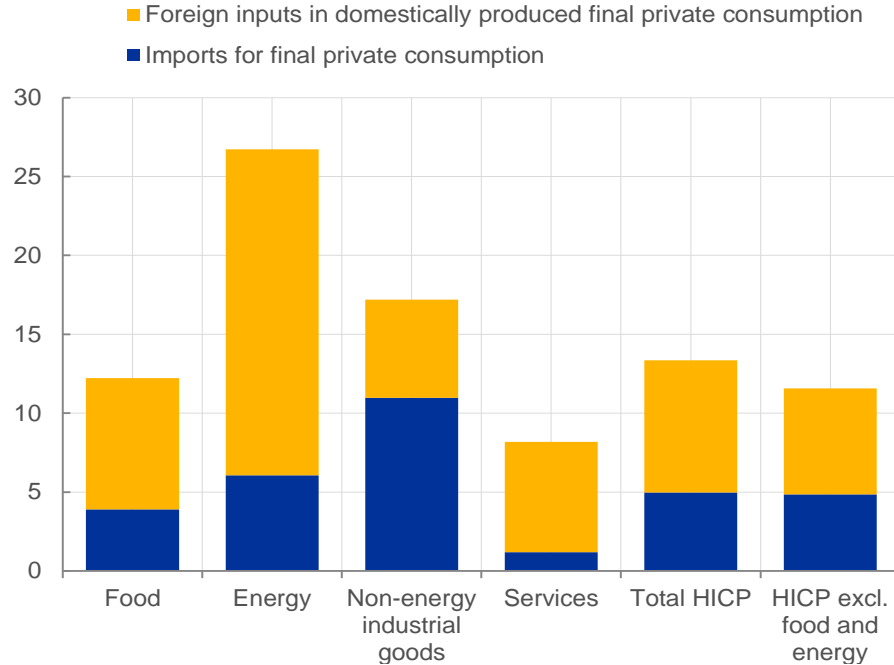
Source: ECB estimates based on Eurostat input-output tables for the euro area (with extra-euro area imports).
Notes: Methodology for calculating foreign input share in final private consumption is based on the Leontief matrix.
The breakdown of final private consumption according to the main HICP components is estimated on the basis of
the NACE product classes and is hence an approximation.

Evolution of external assets

(percentage shares of world GDP)

■ Advanced economies (excl. financial centres)
■ Financial centres
■ Emerging and developing countries

Sources: External Wealth of Nations database (Lane and Milesi-Ferretti) and ECB staff calculations.
Notes: Aggregates for advanced economies, financial centres and emerging and developing countries are defined as in Lane, P.R. and Milesi-Ferretti, G.M. (2018), "The External Wealth of Nations Revisited: International Financial Integration in the Aftermath of the Global Financial Crisis", *IMF Economic Review*, 66(1), pp. 189-222.
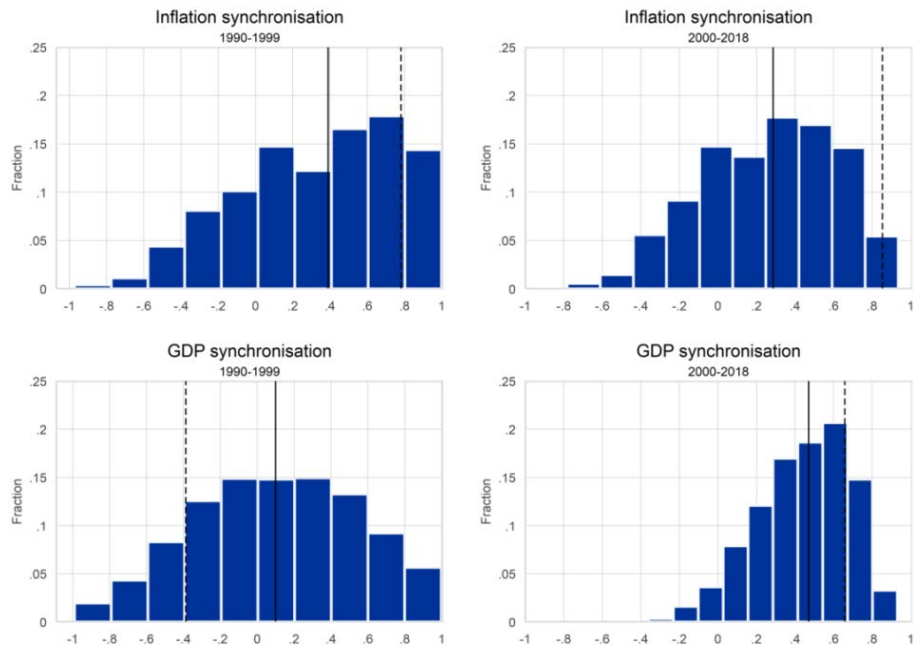
Euro area and US long-term yields
(percentages)
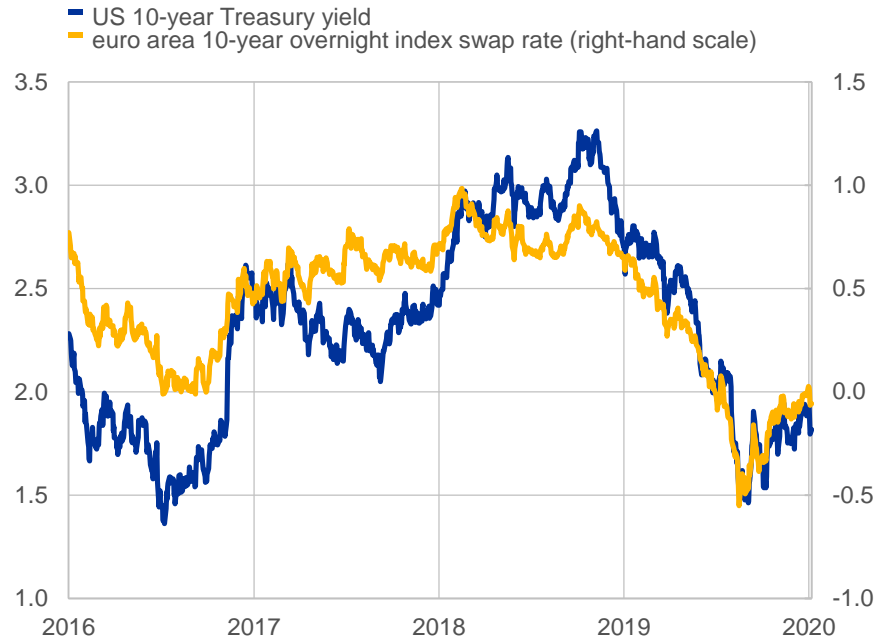
Sources: Bloomberg and ECB staff calculations.
Latest observation: 6 January 2020.

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Distribution of pairwise cross-country correlations of selected real and financial variables

(y-axis: fraction; x-axis: correlation coefficient)

Sources: Ca' Zorzi, M., Dedola, L., Georgiadis, G., Jarociński, M., Stracca, L. and Strasser, G. (forthcoming), "Monetary Policy and its Transmission in a Globalised World", ECB discussion paper; IMF World Development Indicators, Bloomberg and IMF Global Financial Stability Report.
Notes: The data cover 53 advanced and emerging economies at annual frequency. The solid line indicates the median and the dashed line indicates the correlation between the United States and the euro area.

Evolution of global current account balances
(percent of world nominal GDP)
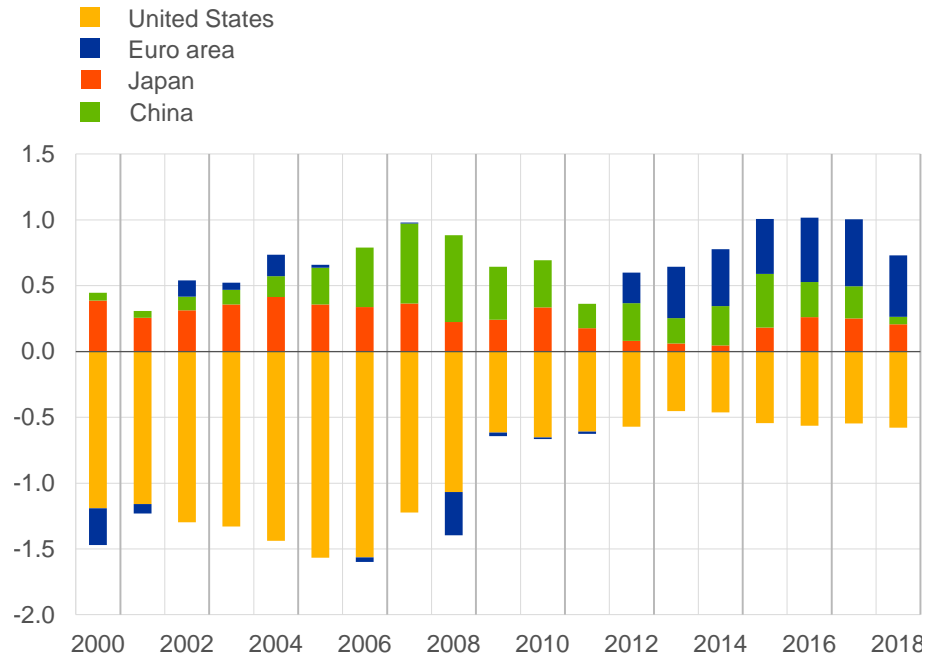
Sources: IMF World Economic Outlook Database, ECB staff calculations.

Euro area: current account balance and trade balance
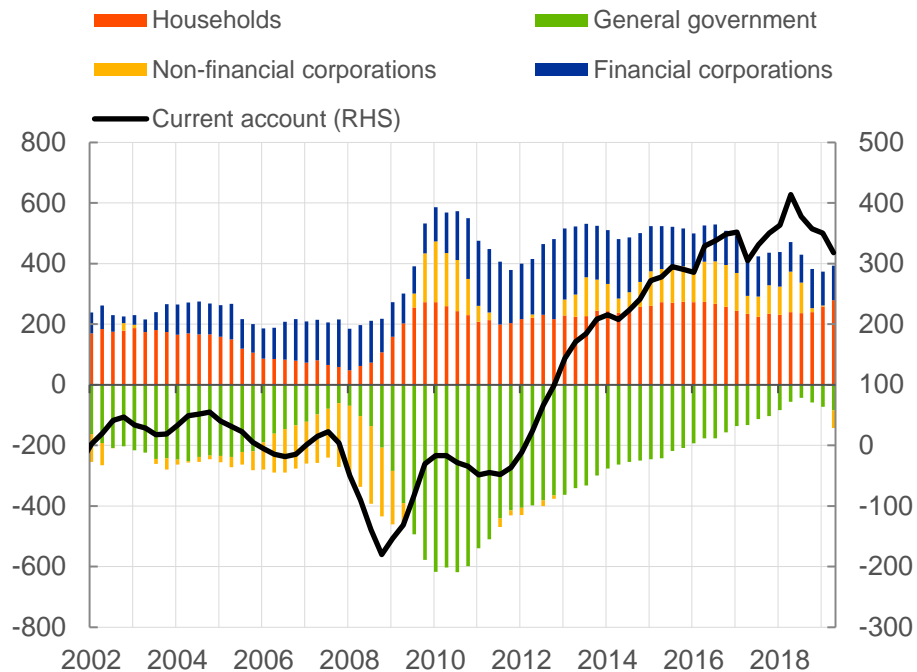
(percent of GDP, 12-month cumulated data)
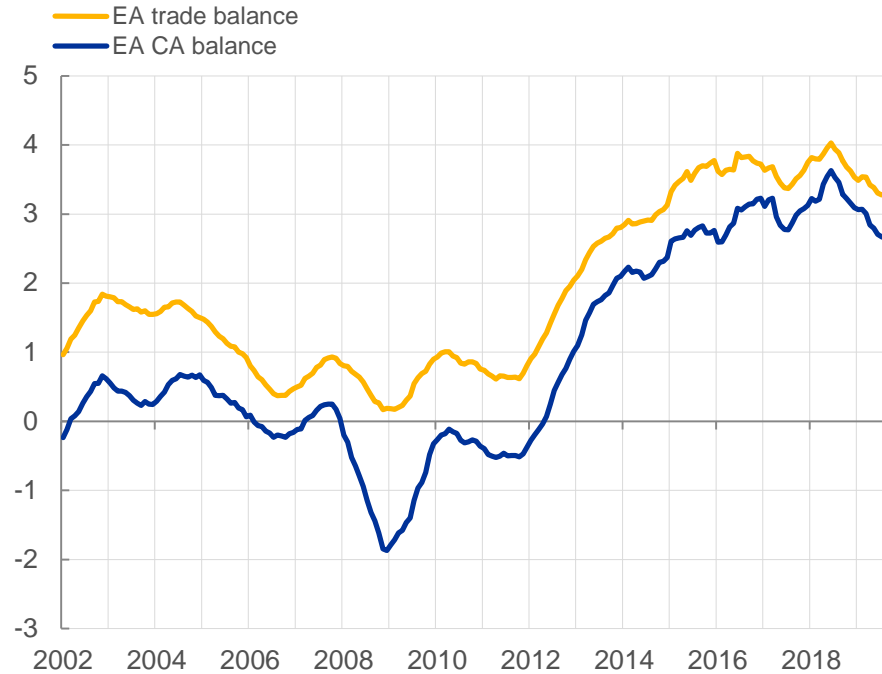
Source: ECB.
Latest observation: October 2019.

Euro area: current account and sectoral net lending
## (EUR billions; four-quarter moving sums)

Sources: Eurostat and ECB calculations. See also Galstyan, V. (2019), "Understanding the Euro Area Current Account", *Central Bank of Ireland Economic Letter*, 7.
Notes: The figure shows the euro area current account and net lending broken down by sectors. All components capture moving sums over four quarters in billions of euro.

Cumulative sectoral flows: current account and across domestic sectors
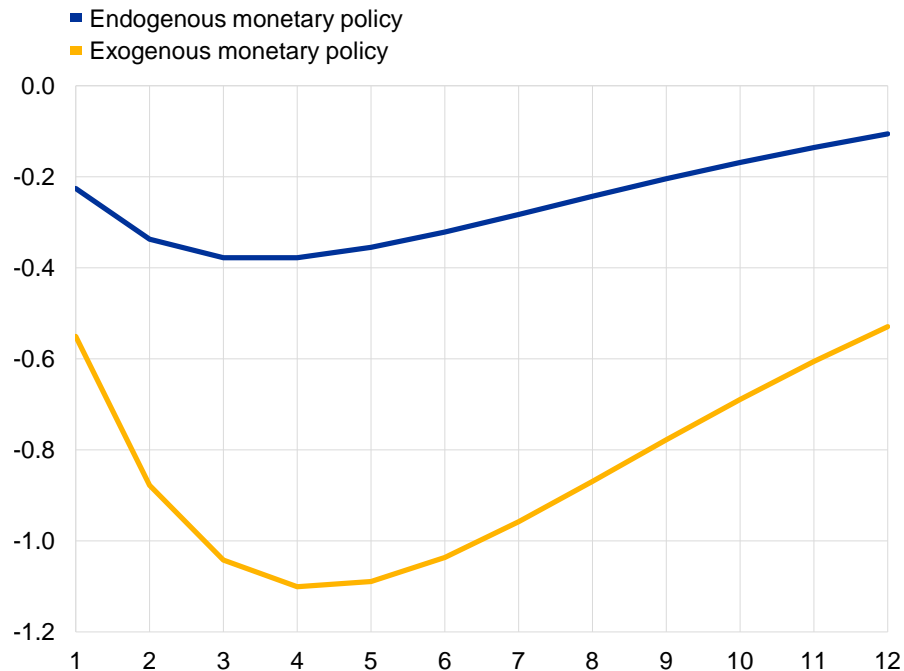## (percent of GDP)
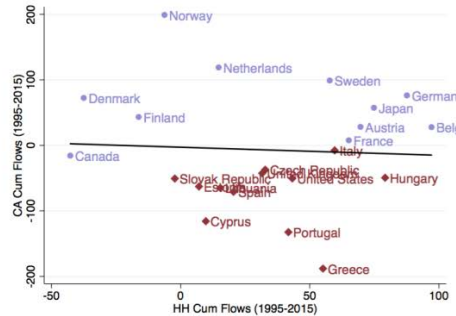
◇ HH
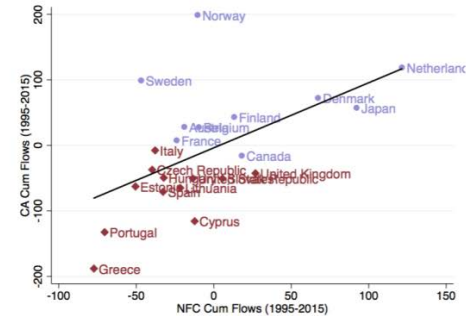
◇ NFC
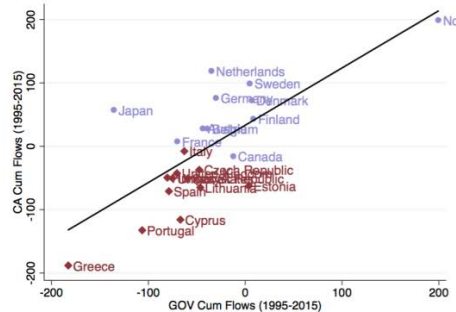
◇ GOV
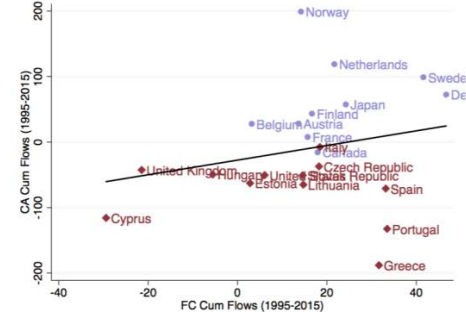
◇ FC

Source: Allen, C. (2019), "Revisiting external imbalances: Insights from sectoral accounts", *Journal of International Money and Finance*, 96, pp. 67-101.

Notes: HH: Households, NFC: Non-financial corporations, GOV: Government, FC: Financial corporations. Cumulated net financial flows of each sector between 1995 and 2015 against the cumulated current account balance. In percent of 2015 GDP.
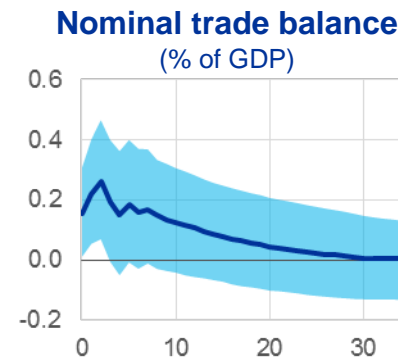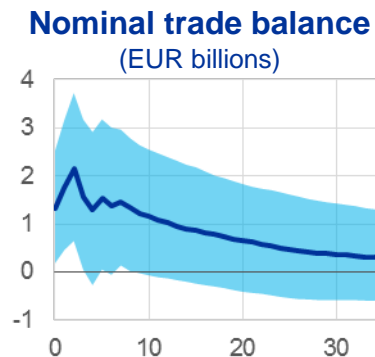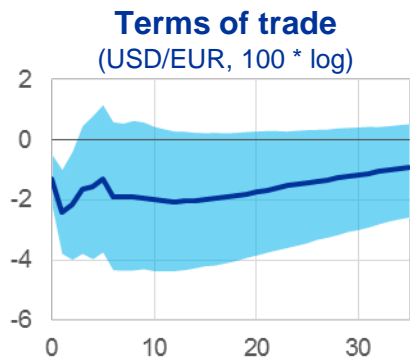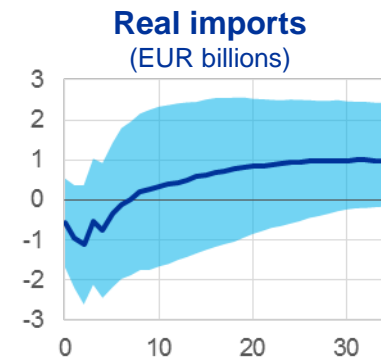
Effects of an export demand shock on euro area GDP
(percentage deviation from trend/steady state)

Legend:
- Endogenous monetary policy
- Exogenous monetary policy

Impulse responses to an accommodative monetary policy shock – trade balance

Exchange rate
(USD/EUR, 100 * log)

Real exports
(EUR billions)

Real imports
(EUR billions)

Terms of trade
(USD/EUR, 100 * log)

Nominal trade balance
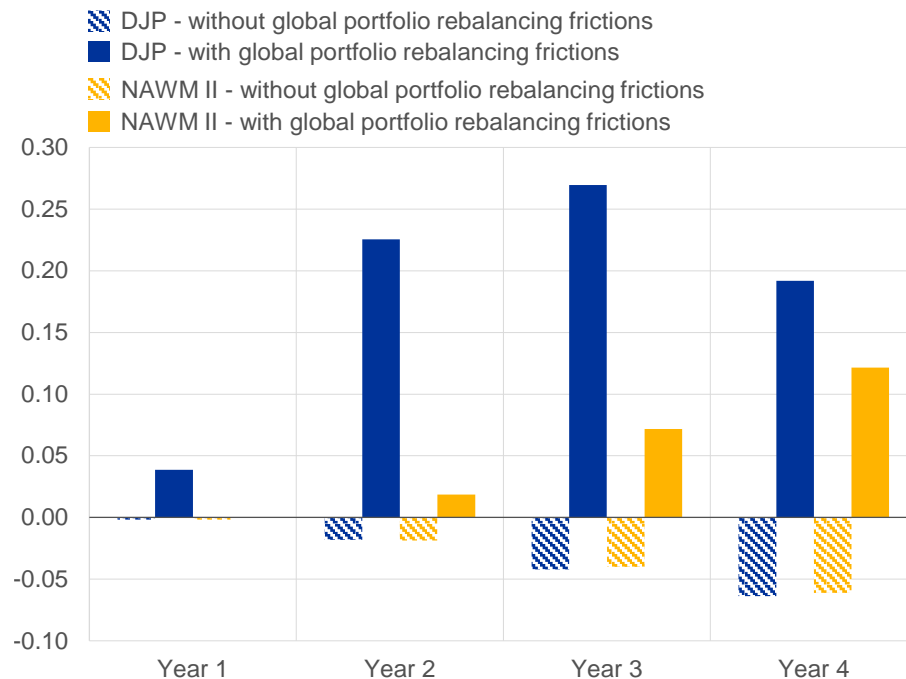(EUR billions)

Nominal trade balance
(% of GDP)
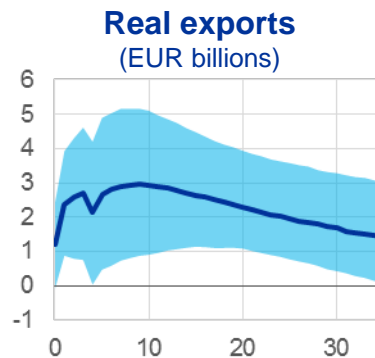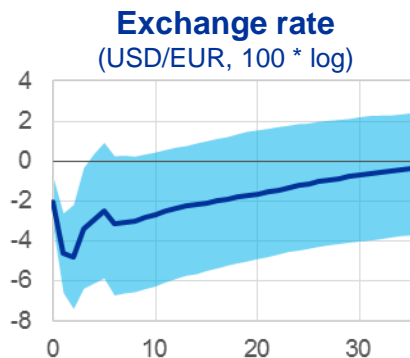
Source: ECB.
Notes: Trade in oil-related products and their respective prices are excluded from all applicable series. Estimates are obtained with a VAR(6) model on monthly observations over the period from January 2000 to December 2018, including one-year Bund interest rates, euro area stock prices, corporate bond spreads, industrial production and consumer price indices where the monetary policy shock is identified using the high-frequency response of financial asset prices shortly after ECB monetary policy meetings in the spirit of Jarocinski, M. and Karadi, P. (2019), "Deconstructing Monetary Policy Surprises - The Role of Information Shocks", *AEJ Macroeconomics*, forthcoming. The shock is re-scaled to correspond to a 25 basis point decline in the one-year Bund on impact.

Euro area effects of a government bond purchase programme with a total purchase volume of slightly above 10 percent of GDP

(trade-balance-to-GDP ratio, deviation from baseline in percentage points)

Legend:
- DJP - without global portfolio rebalancing frictions
- DJP - with global portfolio rebalancing frictions
- NAWM II - without global portfolio rebalancing frictions
- NAWM II - with global portfolio rebalancing frictions

Estimated effect on the EUR/USD exchange rate of a negative 10 basis point "rate expectations" vs. "term premium" monetary policy shock
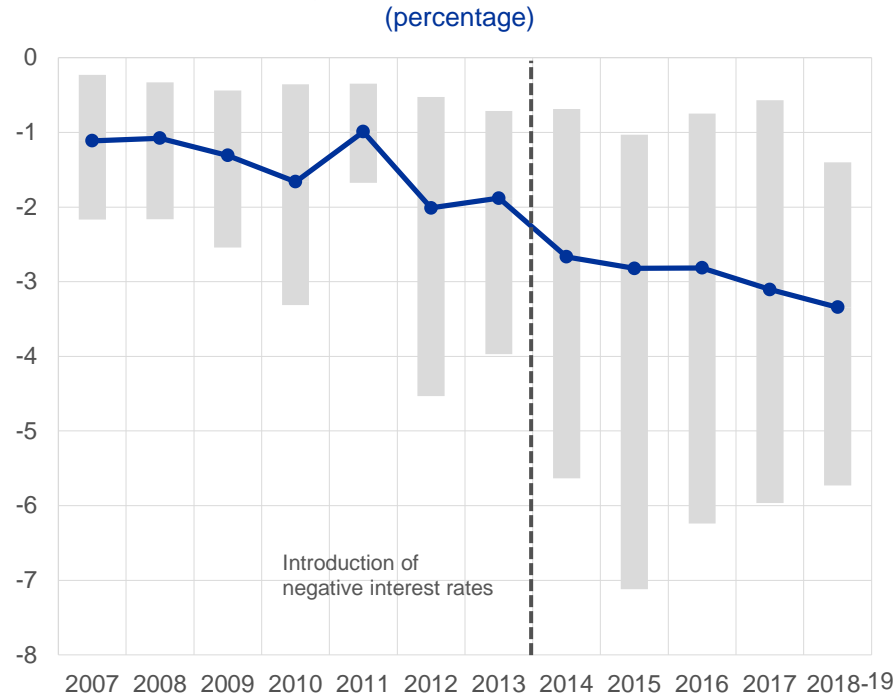
(percentage)
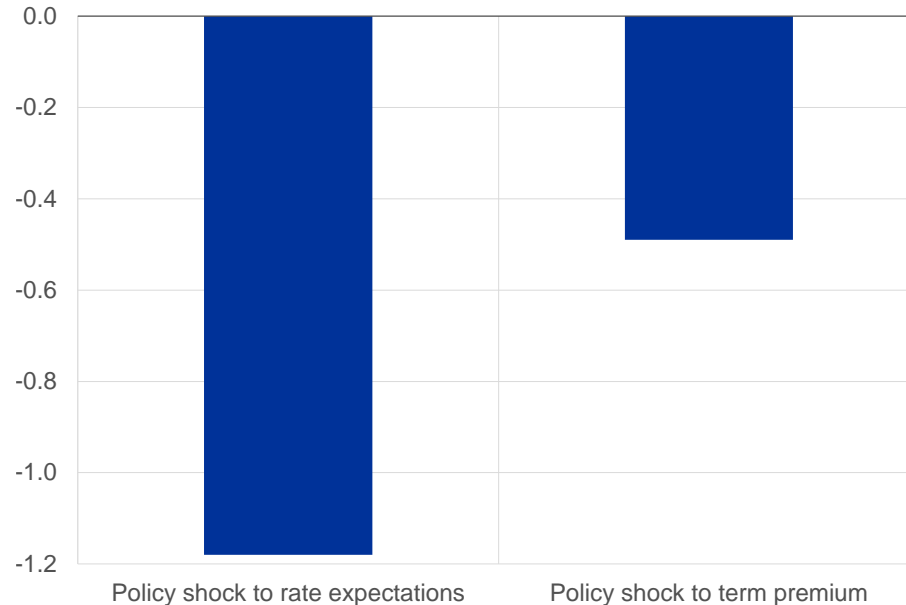
Time-varying effect on the EUR/USD exchange rate following a 10 basis point policy-induced decline in rate expectations

(percentage)

Relative balance sheet and QE announcements
(percentages)
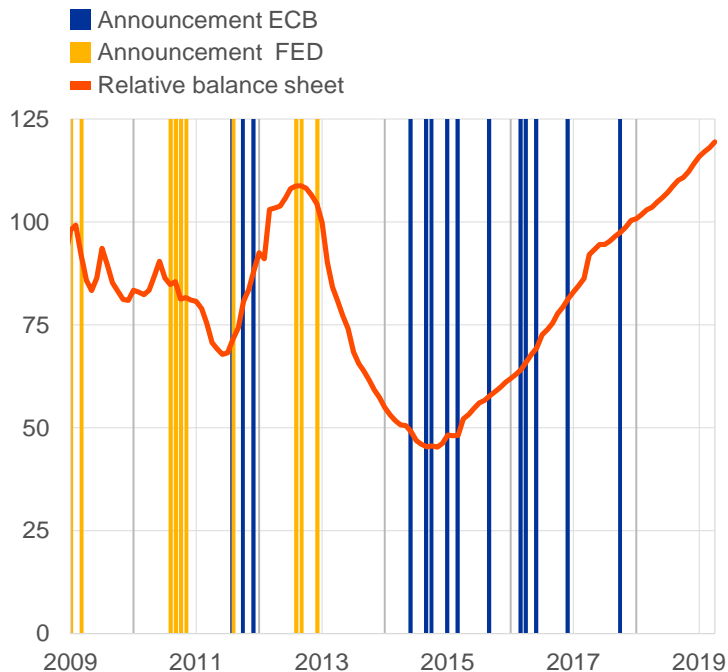
Legend:
- Announcement ECB
- Announcement FED
- Relative balance sheet

The dollar-euro exchange and QE announcements
(USD/EUR)
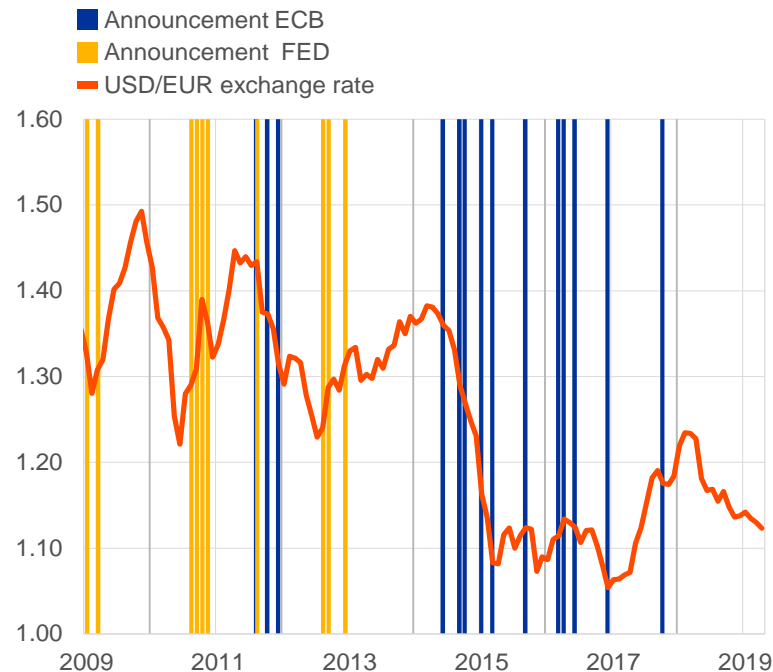
Legend:
- Announcement ECB
- Announcement FED
- USD/EUR exchange rate

Impulse response to a relative ECB-Federal Reserve QE shock

Nominal exchange rate
(percentages)

Real exchange rate
(percentages)

ECB "time-to-lift-off"
(months to lift-off)
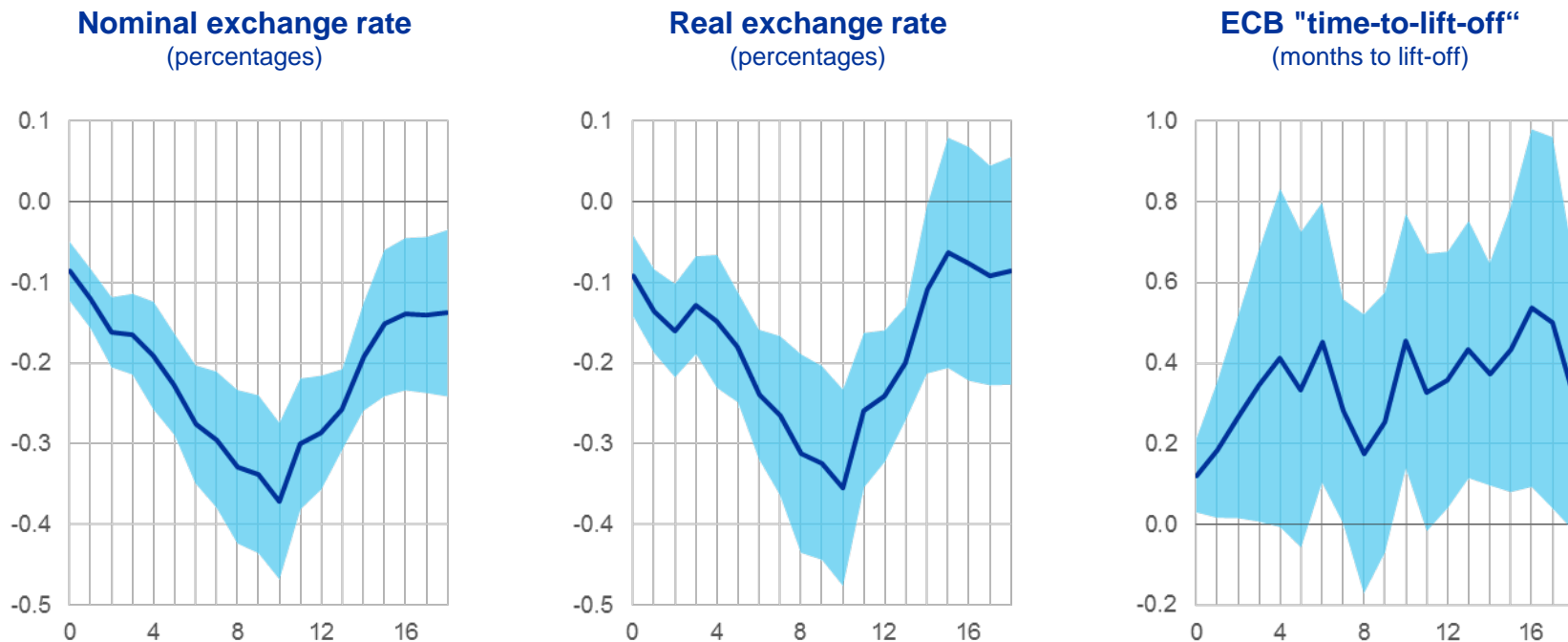
Source: Dedola, L., Georgiadis, G., Gräb, J. and Mehl, A. (2018).
Notes: The charts present estimates of the response of the US dollar-euro nominal bilateral
exchange rate to the relative QE shock that expands the ECB balance sheet relative to that of the
Federal Reserve. The estimates are obtained from the two-stage least squares local projection
regression. The shaded area represents 90% confidence bands based on robust standard errors.

Decomposition of exchange rate response to a relative ECB-Federal Reserve QE shock
(percentages)
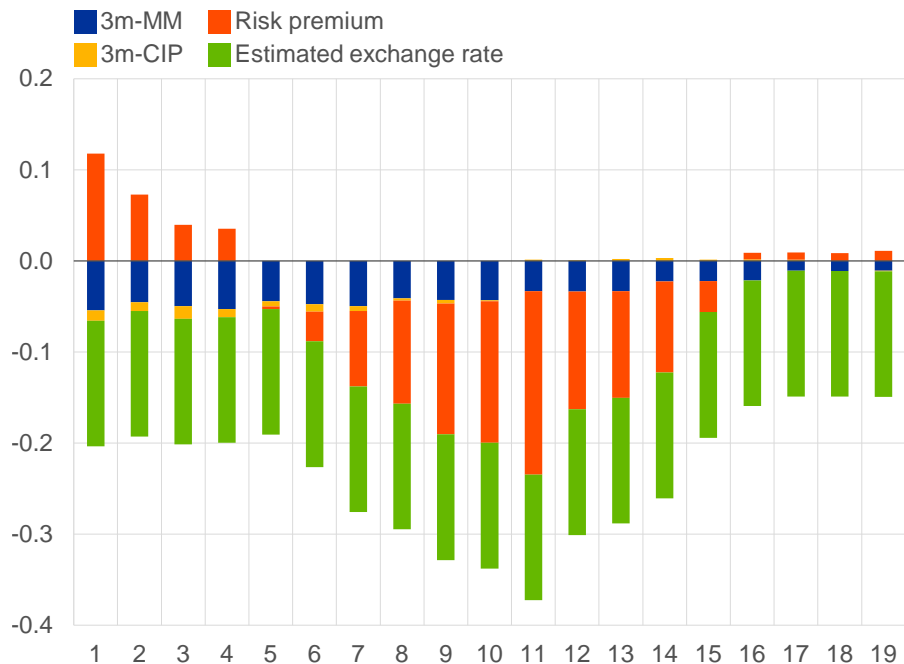
Source: Dedola, L., Georgiadis, G., Gräb, J. and Mehl, A. (2018).
Notes: The figure presents the decomposition of the exchange rate response to a relative QE shock that increases the difference between the growth rates of the ECB's and the Federal Reserve's balance sheets by 1 percentage point into the UIP contributions accounted for by the response of the euro-dollar three-month money market rate differential (3m-MM), the three-month CIP deviation (3m-CIP) as well as the estimated exchange rate at each forecast horizon (Expected exchange rate), according to a model discussed in Dedola et al. (2018). The risk premium corresponds to the unexplained part, i.e. the residual.

Breakdown of euro area net portfolio investment flows

(EUR billions; twelve-month moving sums)
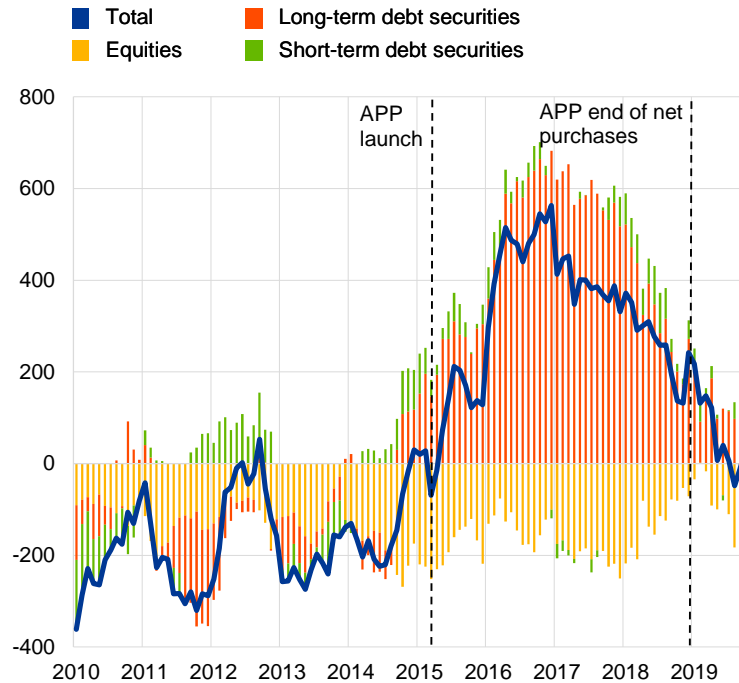
Source: ECB.
Notes: A positive (negative) number indicates net outflows (inflows) from (into) the euro area. Equity includes investment fund shares. APP stands for asset purchase programme.
Latest observation: October 2019.

Geographical breakdown of euro area investors' net purchases of non-euro area debt securities

(percentage of euro area GDP; four-quarter moving averages)

Legend:
- Total
- UK
- Other EU
- United States
- BRIC
- Switzerland
- Japan
- Offshore centres
- Canada
- Other countries
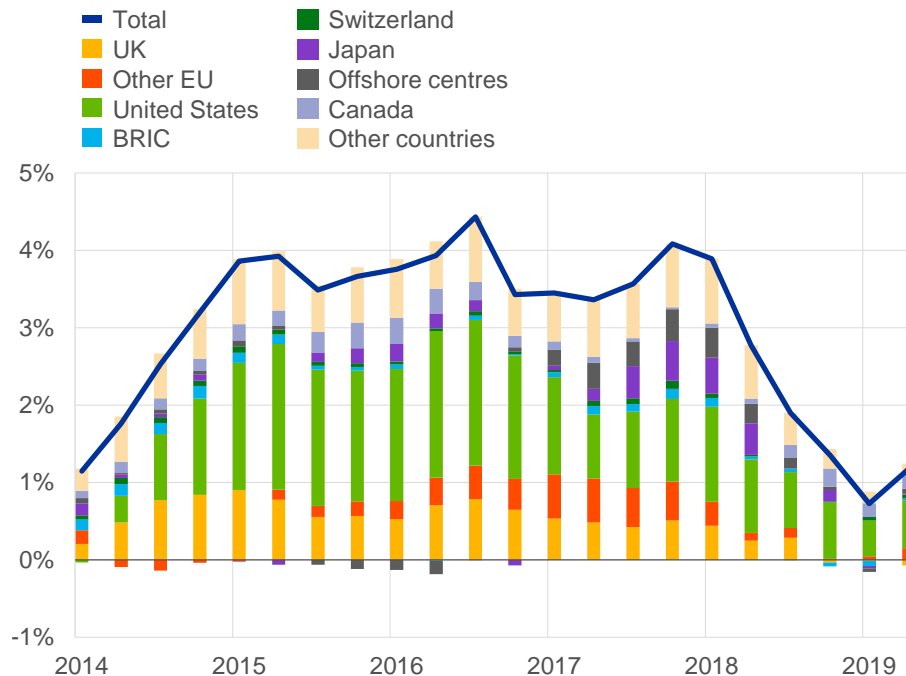
Sources: ECB and Eurostat.
Notes: A positive (negative) number indicates net purchases (sales) of foreign debt securities by euro area investors. "BRICs" comprises Brazil, Russia, India and China; "other EU" comprises EU Member States outside the euro area, excluding the United Kingdom.
Latest observation: Q2 2019.

Foreign portfolio investment in the euro area
(EUR billions; twelve-month moving sums)

Legend:
- Total (blue)
- Long-term debt securities (red)
- Equities (yellow)
- Short-term debt securities (green)

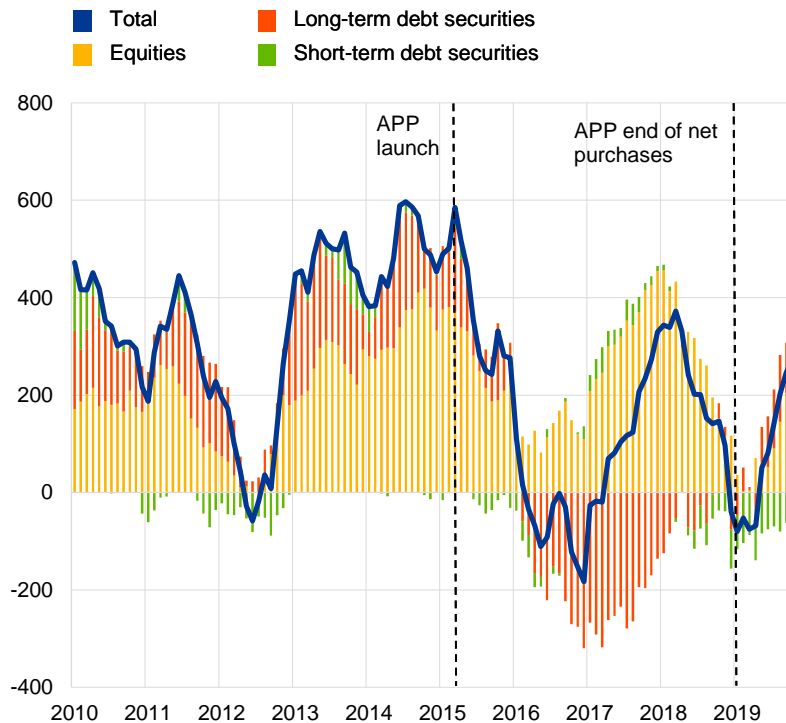Chart annotations: "APP launch", "APP end of net purchases"
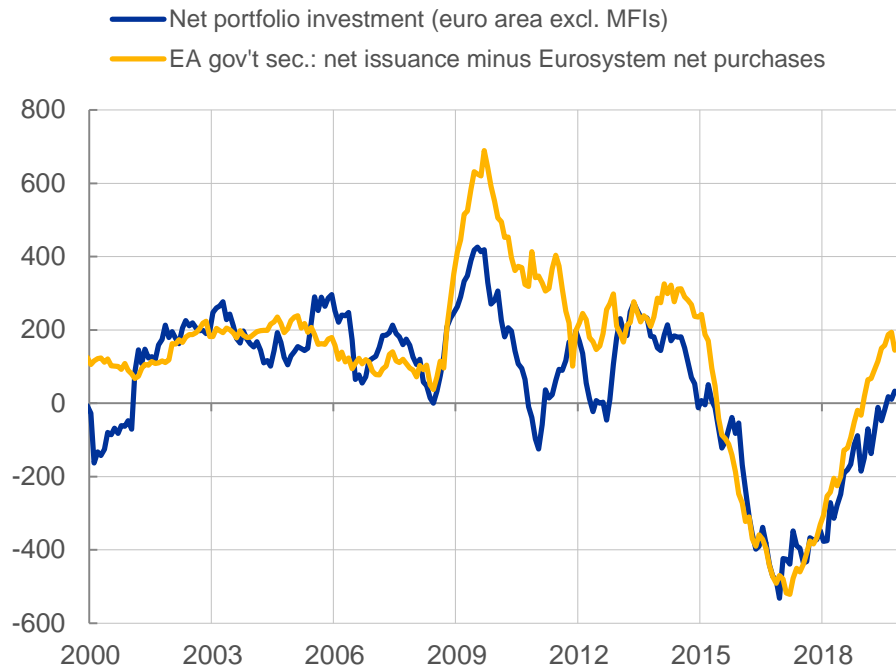
Source: ECB.
Notes: A positive (negative) number indicates net purchases (sales) of euro area securities by non-euro area investors. Equity includes investment fund shares. APP stands for asset purchase programme.
Latest observation: October 2019.

Eurosystem purchases of government securities and cross-border portfolio flows
(12-month flows in EUR billions)

Net portfolio investment (euro area excl. MFIs)

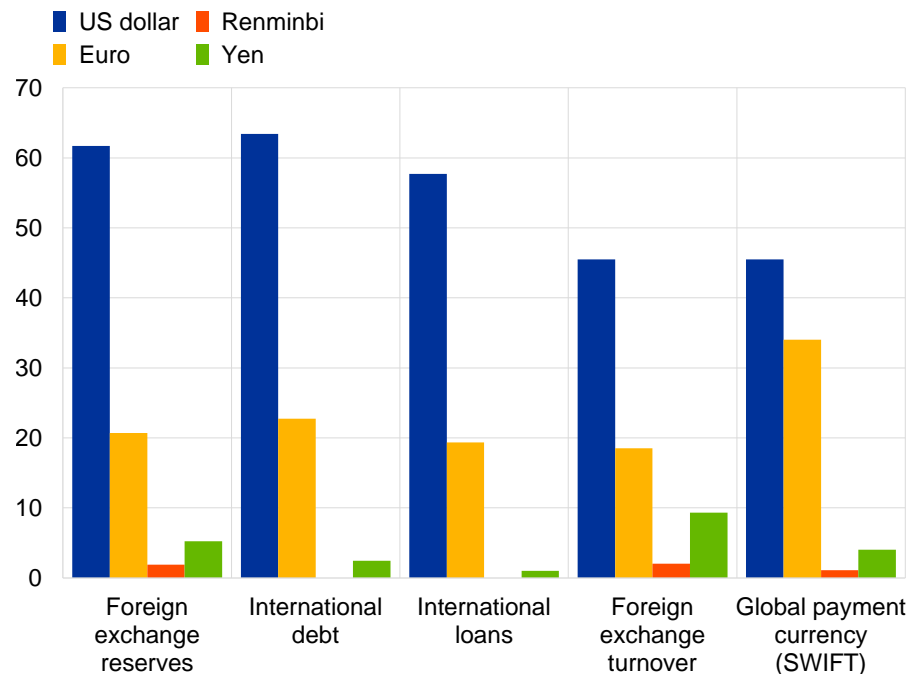EA gov't sec.: net issuance minus Eurosystem net purchases

Source: ECB.
Notes: Net portfolio investment is inverted.
Latest observation: October 2019.

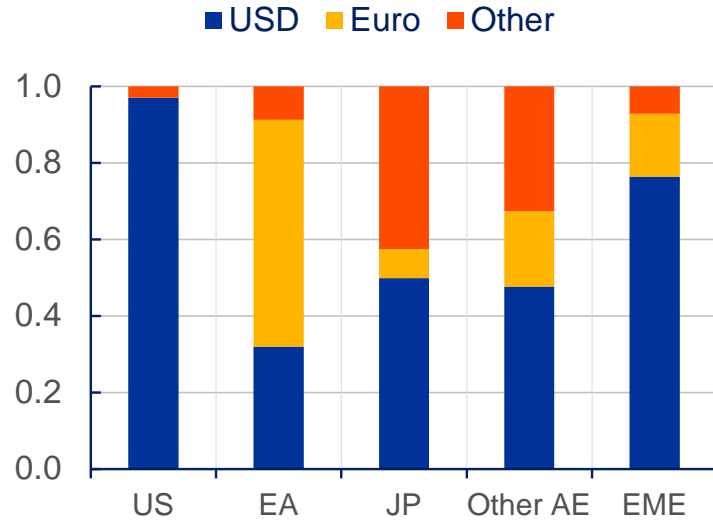# Snapshot of the international monetary system
(percentages)

Sources: BIS, CLS Bank International, IMF, SWIFT and ECB calculations. See also ECB (2019).
Note: The latest data are for the fourth quarter of 2018 or the latest available.
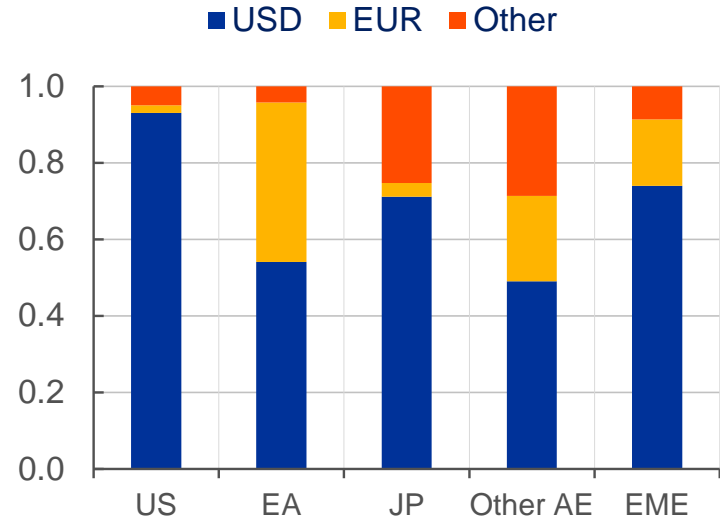
Currency invoicing patterns

(shares)

Exports

Imports

Sources: Gopinath, G. (2016), "The International Price System", Jackson Hole Symposium Proceedings, Eurostat and ECB staff calculations.
Notes: The data generally cover the time period from 1995 to 2012. AE stands for advanced economies and EME for emerging market economies.

Import and export growth responsiveness to USD and REER changes

	Import growth		Export growth	
	(1) AEs	(2) EMEs	(3) AEs	(4) EMEs
Change in local REER (+ local appreciation)	0.109*** (0.00)	0.126** (0.02)	-0.165** (0.02)	-0.036 (0.37)
Change in USD REER (+ USD appreciation)	-0.160 (0.21)	-0.259** (0.03)	0.010 (0.83)	-0.150** (0.01)
Real GDP growth	1.702*** (0.00)	1.596*** (0.00)		
Trading-partner real GDP growth			2.550*** (0.00)	1.668*** (0.00)
R-squared (within)	0.45	0.29	0.50	0.14
Observations	430	1076	434	1156
Countries	23	72	23	72

Driscoll-Kraay robust standard errors.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Exchange rate pass-through to import prices

(y-axis: coefficient estimates with 90% confidence bands; x-axis: years)

■ Nominal effective exchange rate (NEER) excluding US dollar
■ US dollar
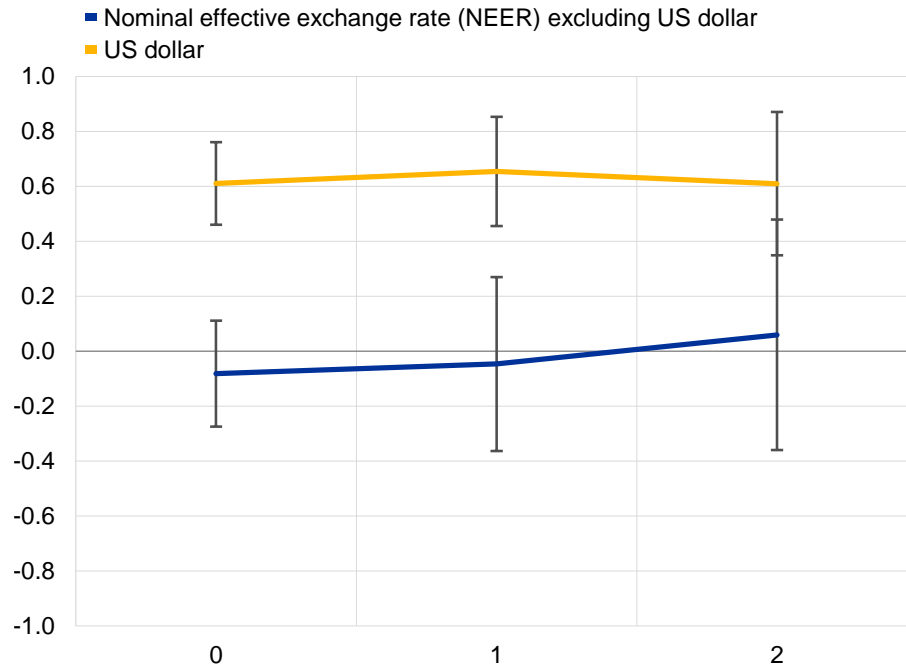
Sources: BIS, OECD and ECB staff calculations.
Notes: The chart is based on coefficients estimated in a regression of the changes in import prices on the changes in exchange rates and other controls using quarterly data and including country and time-fixed effects. All variables are in logs. Import and export prices are calculated as unit value indices and include trade in both goods and services. Exchange rates are defined such that an increase implies a depreciation of the domestic currency (in effective terms or against the US dollar). The NEER excluding the US dollar is obtained as the residual from a country-by-country regression of the NEER on the bilateral exchange rate with the US dollar.

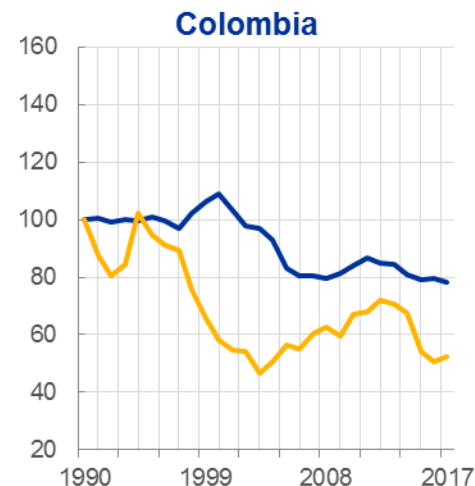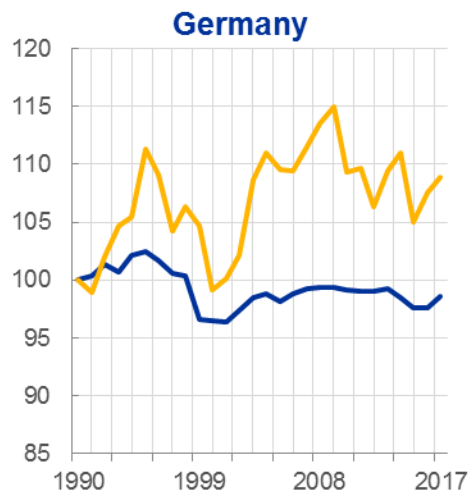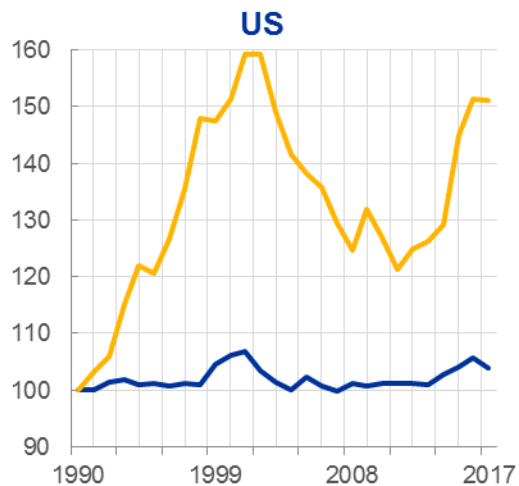# Cumulative distribution of net foreign-currency exposures
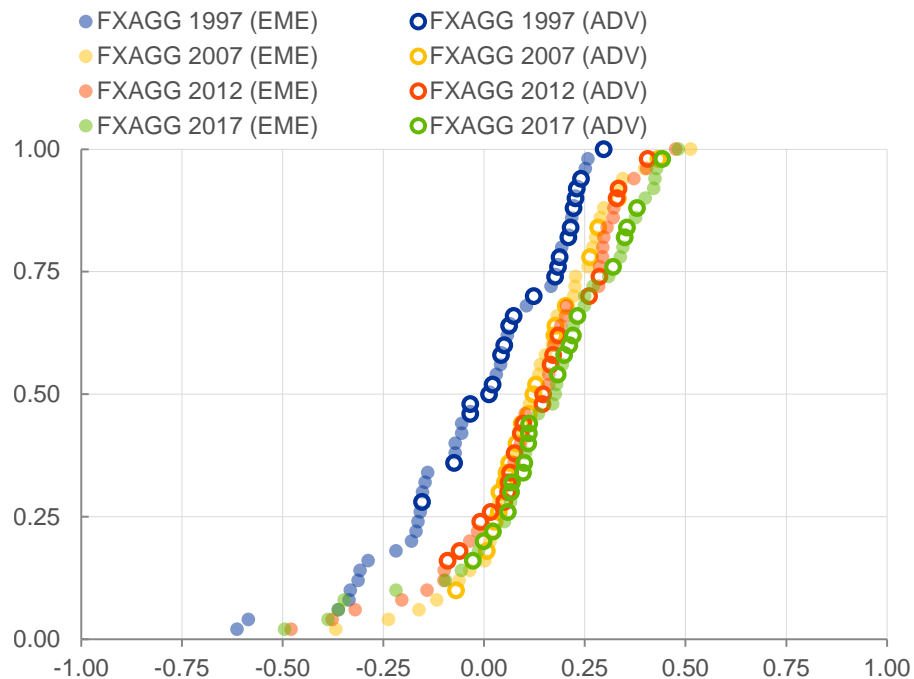
Source: Bénétrix, A., Gautam. D., Juvenal, L. and Schmitz, M. (2019), , "Cross-Border Currency Exposures", *IMF Working Paper* No. 19/299.
Notes: Net foreign-currency exposures shown on the horizontal axis range between -1 and 1. The vertical axis presents the cumulative distribution (the proportion of countries) below each value on the horizontal axis for 1997, 2007, 2012 and 2017. The sample includes 50 advanced (ADV) and emerging (EME) countries.

Financial and trade-weighted nominal effective exchange rates

(indices; 1990=100)

Source: Bénétrix, A., Gautam. D., Juvenal, L. and Schmitz, M. (2019) op. cit.
Notes: The financial exchange rate index is calculated using weights of the US dollar, euro, pound sterling, Japanese yen and domestic currency. The trade-weighted nominal exchange rate is sourced from the IMF.

Final Remarks

- International dimension: increasingly important in conjunctural assessment and policy transmission

- Importance of collaboration within international policy system, with option of joint action when required

- Monetary policy frameworks: spillovers