

Philip R. Lane
Member of the Executive Board

The euro area: a laboratory for international macroeconomic research

CEBRA/CEPR/Sveriges Riksbank conference on
“Exchange rates and monetary policy”

1 October 2020

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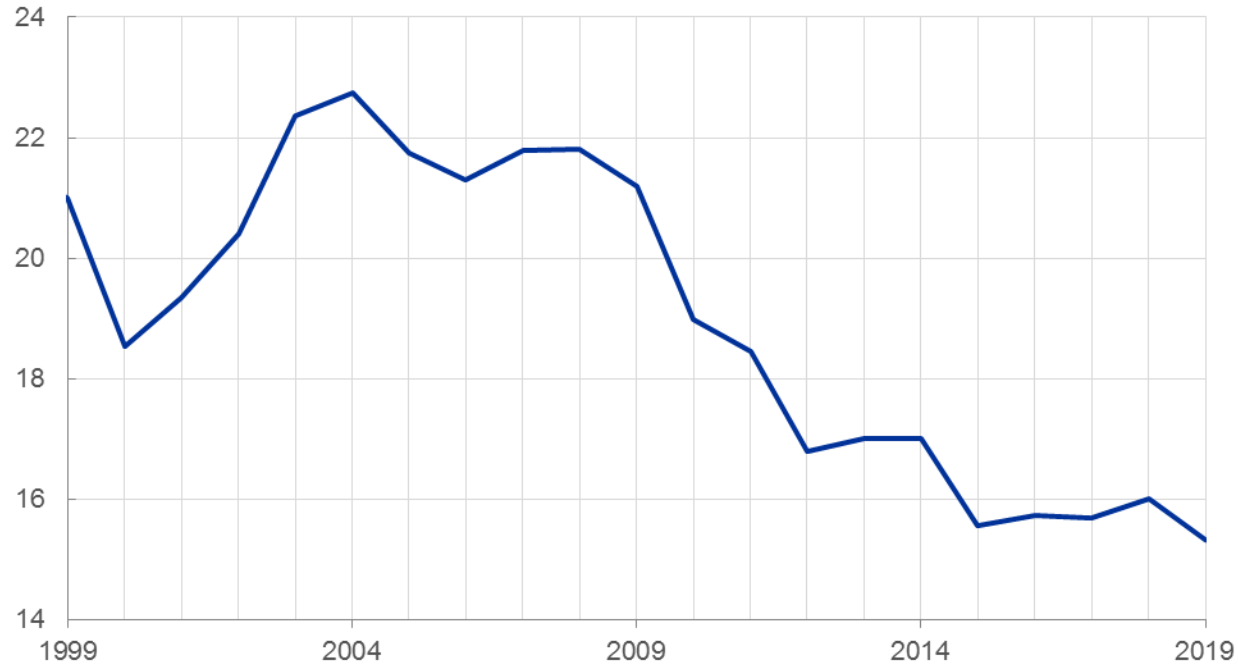
The euro area and the world economy

2

The euro area: country dynamics and cross-border dynamics

- The euro area and the world economy: two-way spillovers (trade, finance)
- The role of the euro in international trade
- The role of the euro in international finance
- The euro area: net external balance
- The ECB - global model

Euro area share of global GDP (percentage of world nominal GDP)

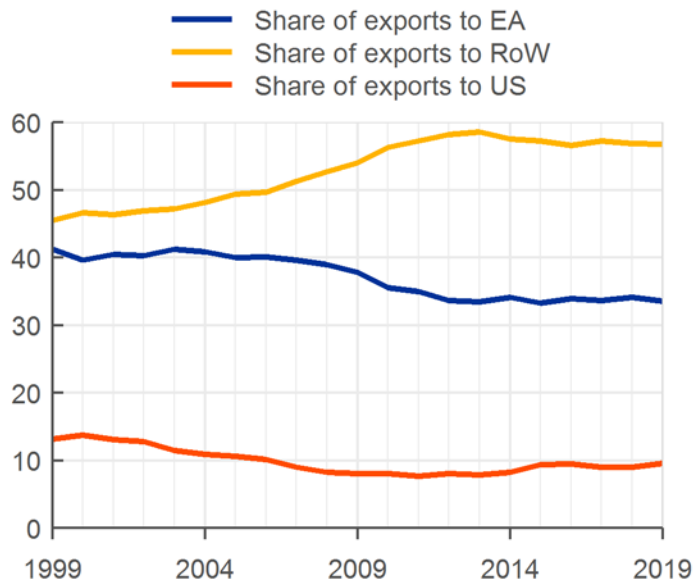


Source: IMF WEO.
Latest observation: 2019.

Global trade and invoicing currency shares over time (exports side)

Exports

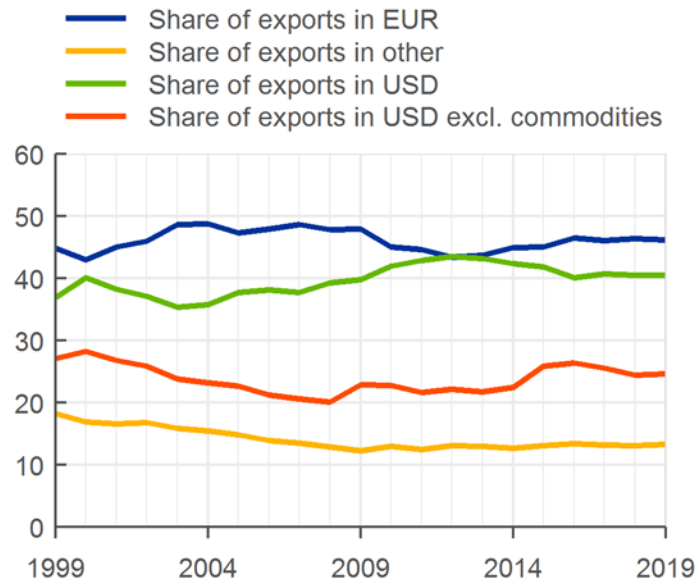
(percentage shares)



Source: Data based on Boz et al. (2020).
Latest observation: 2019.

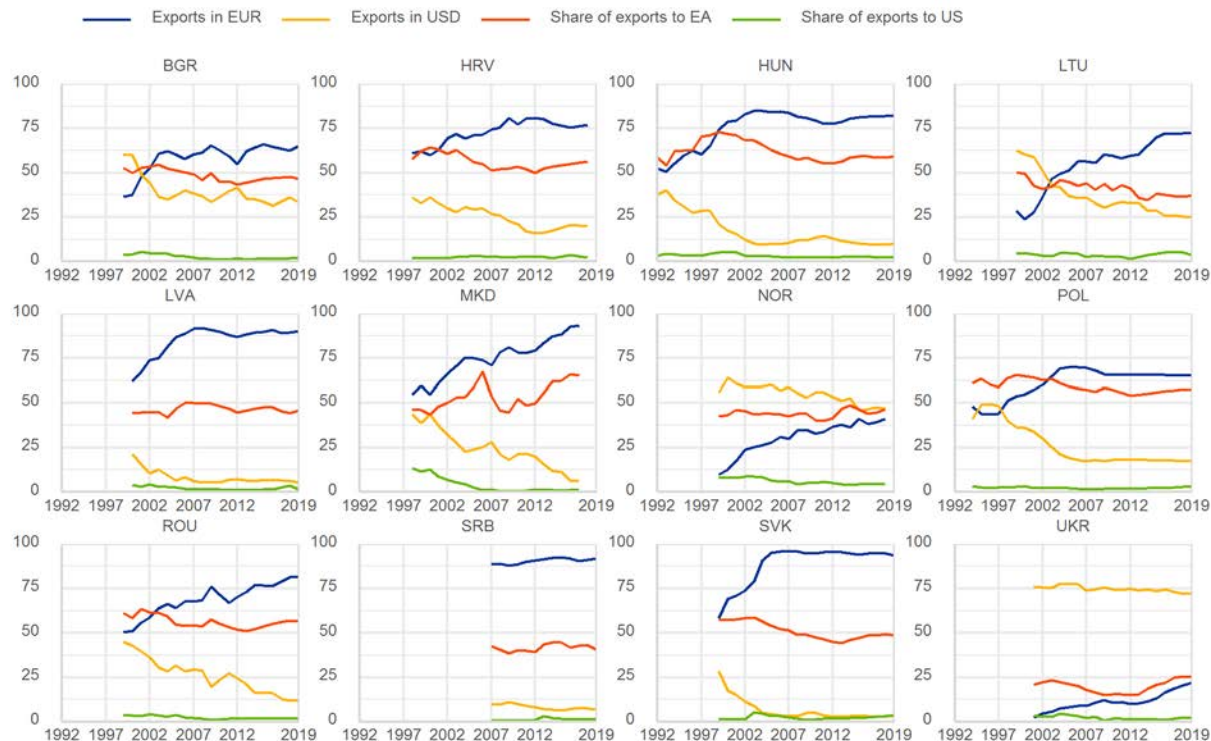
Invoicing currency

(percentage shares)



Source: Data based on Boz et al. (2020).
Latest observation: 2019.

Evolution of invoicing and export shares for selected European countries (percentage shares)



Source: Data based on Boz et al. (2020).

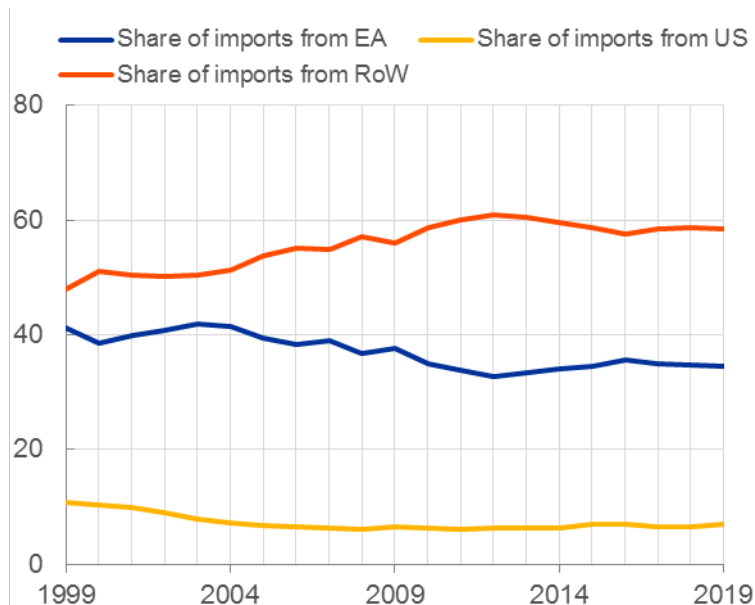
Notes: The data are not systematically available for BGR, POL, UKR. For missing data points the data are linearly interpolated.

Latest observation: 2019.

Global trade and invoicing currency shares over time (imports side)

Imports

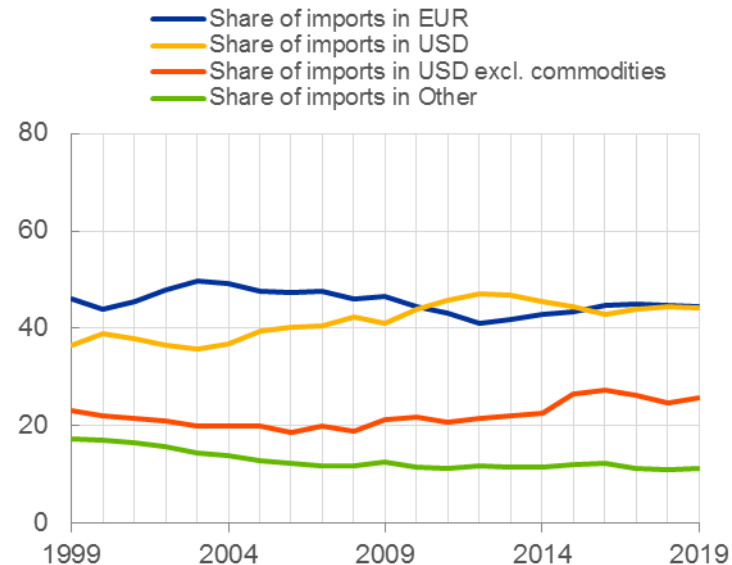
(percentage shares)



Source: Data based on Boz et al. (2020).
Latest observation: 2019.

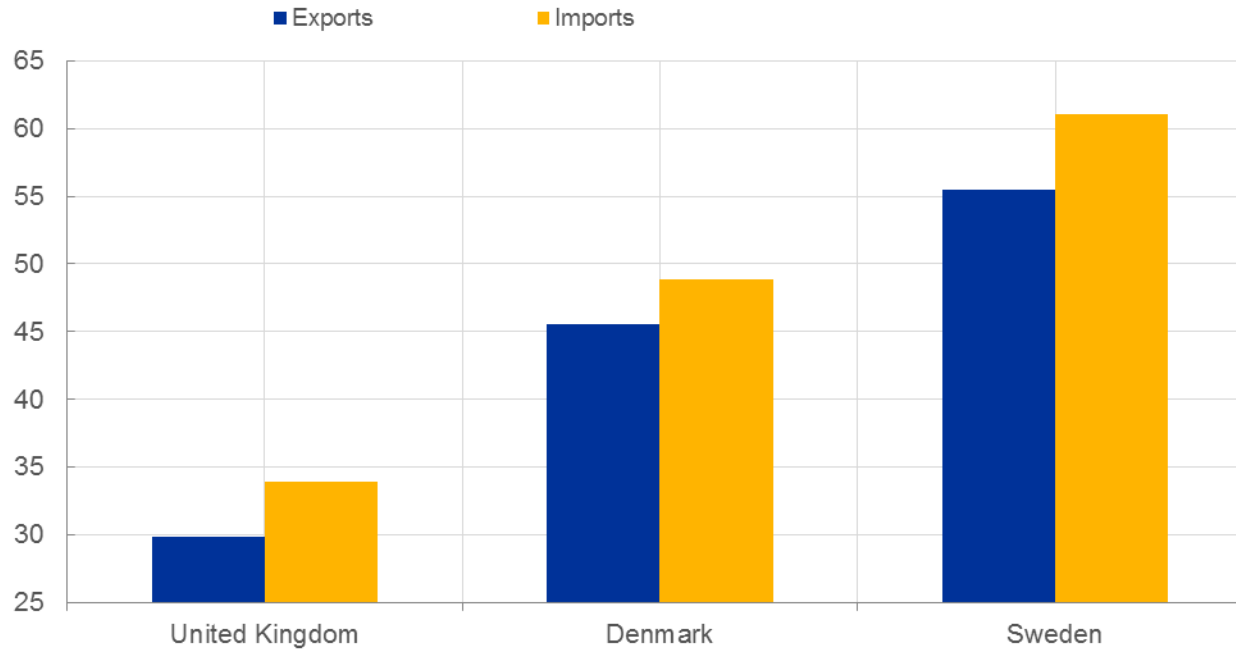
Invoicing currency

(percentage shares)



Source: Data based on Boz et al. (2020).
Latest observation: 2019.

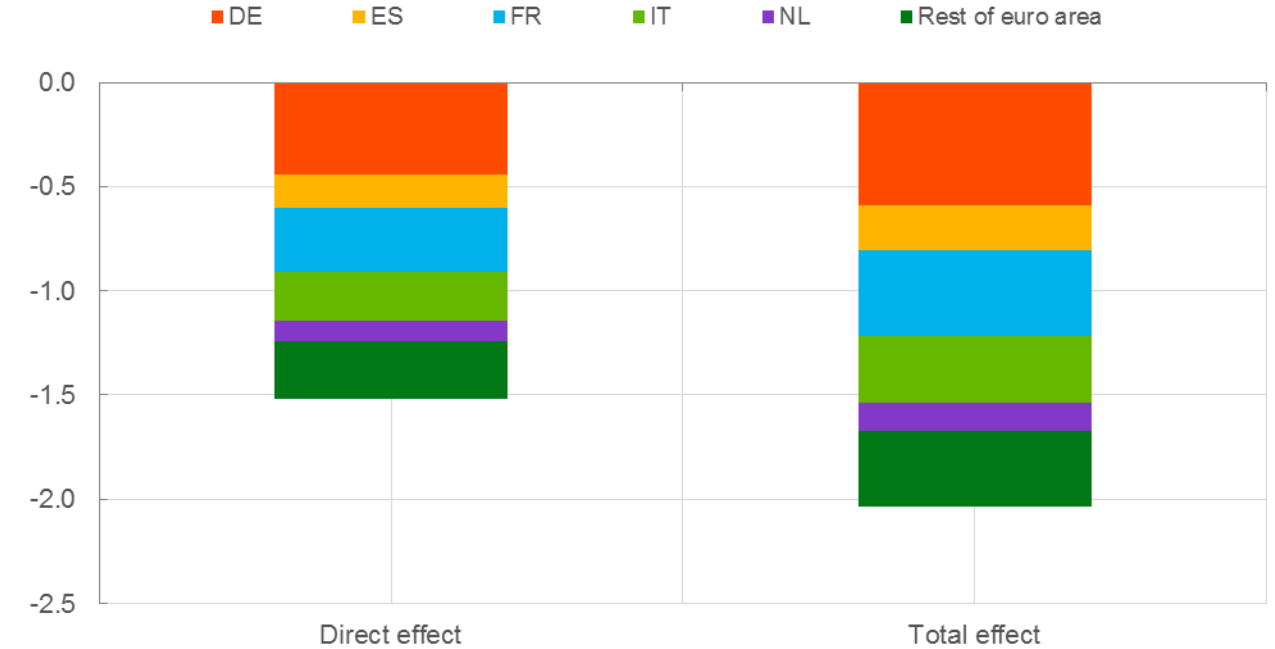
Share of trade invoicing in euro in selected non-euro area European economies (percentage shares)



Source: Data based on Boz et al. (2020).

Note: The chart shows the percentage share of euro-denominated exports from and imports to the United Kingdom, Denmark and Sweden in 2018.

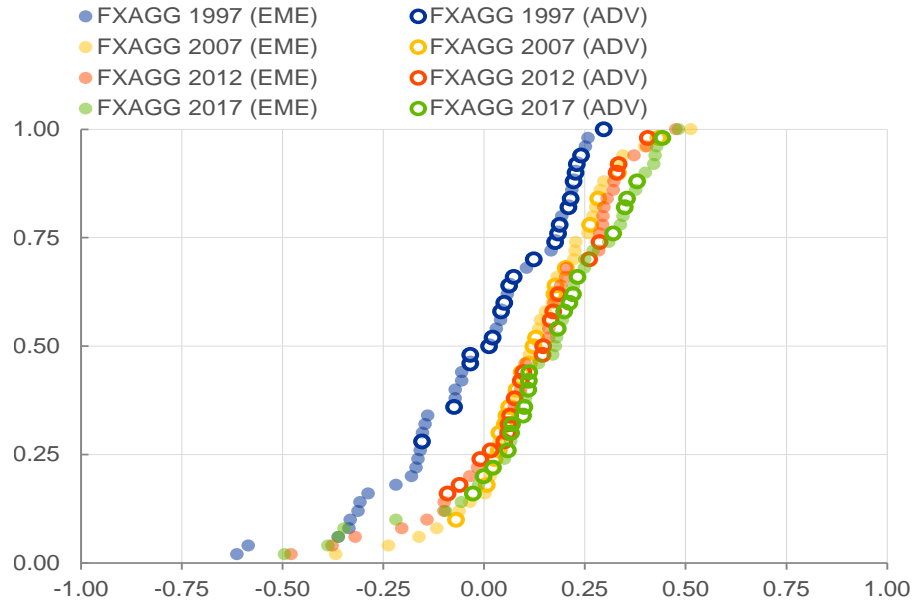
Negative foreign demand shock (percentages)



Sources: MRIO-ADB 2018 and author calculations, based on Di Nino, V. and Veltri, B. (2020), "The viral effects of foreign trade and production network in the euro area".
Notes: The calibration of domestic shocks in the five largest euro area economies is based on projections for GDP in the June 2020 Broad Macroeconomic Projection Exercise. Shocks are indexed to the smallest shock in terms of euro area GDP (the Netherlands), which is set to 1; the other aggregate shocks are multiples of this. For instance, the initial shock to Germany takes on the value of 5 because the weight of Germany in euro area GDP is five times as large. The calibration of foreign demand shock (-9.7%) is based on the July 2020 IMF (World Economic Outlook) projections of the GDP contraction in non-euro area countries in 2020. The size of the shock is the weighted average of single country projections, with weights equal to the bilateral share of each country in total extra-EA exports.

Cumulative distribution of net foreign currency exposures

(y-axis: cumulative distribution; x-axis: units of net foreign currency exposure measure)

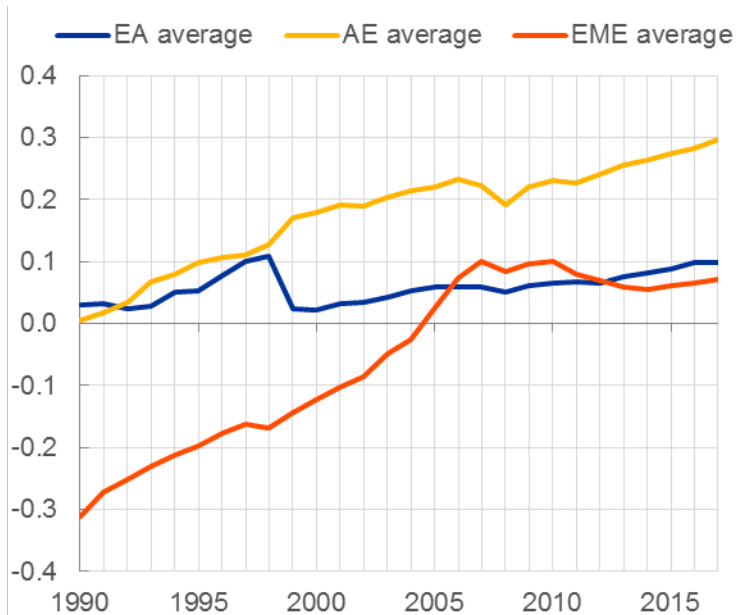


Source: Bénétrix, A., Gautam, D., Juvenal, L. and Schmitz, M. (2020), "Cross-border currency exposures: new evidence based on an enhanced and updated dataset", ECB Working Paper No 2417.

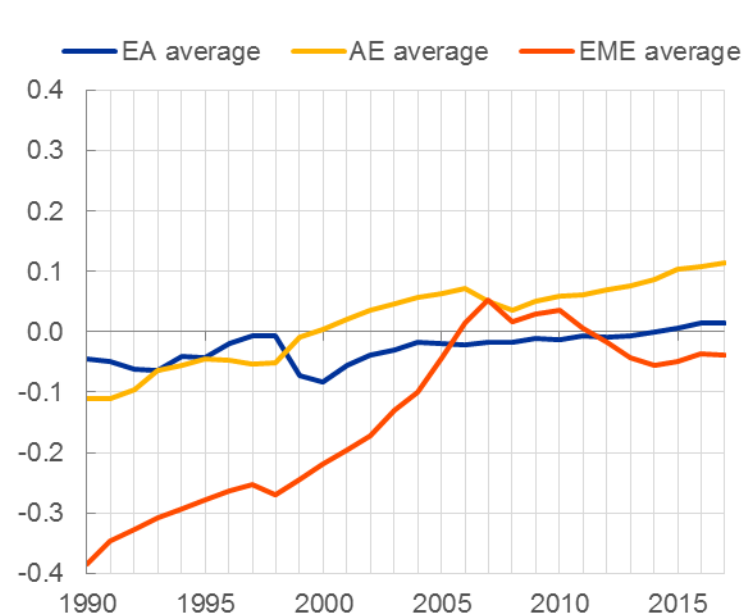
Notes: Net foreign currency exposures shown on the horizontal axis can range between -1 and 1. The vertical axis presents the cumulative distribution (the proportion of countries) below each value on the horizontal axis for 1997, 2007, 2012 and 2017. The sample includes 50 advanced (ADV) and emerging (EME) countries.

Aggregate net foreign currency exposure

Total (index)



Debt instruments (index)



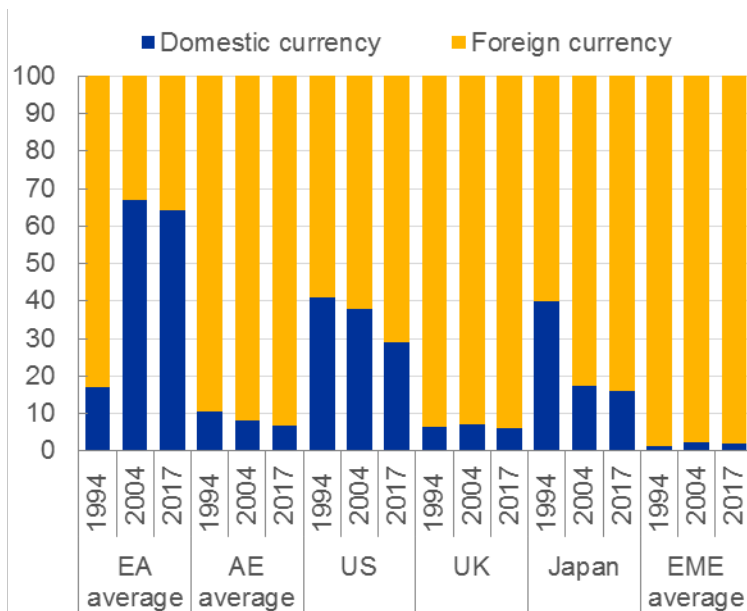
Sources: Bénétrix, A., Gautam, D., Juvenal, L. and Schmitz, M. (2020), "Cross-border currency exposures: new evidence based on an enhanced and updated dataset", ECB Working Paper No 2417 and ECB staff calculations.

Notes: Net foreign currency exposures can range between -1 and 1. EA average includes Austria, Belgium, France, Finland, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. AE average includes Australia, Canada, Czech Republic, Denmark, Hong Kong, Israel, Japan, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland, United States and United Kingdom. EME average includes Argentina, Brazil, Chile, China, Colombia, Egypt, Guatemala, Hungary, India, Indonesia, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Sri Lanka, Thailand, Tunisia, Turkey and Uruguay. Country groups follow the IMF classification.

Currency composition of international investment positions (all instruments)

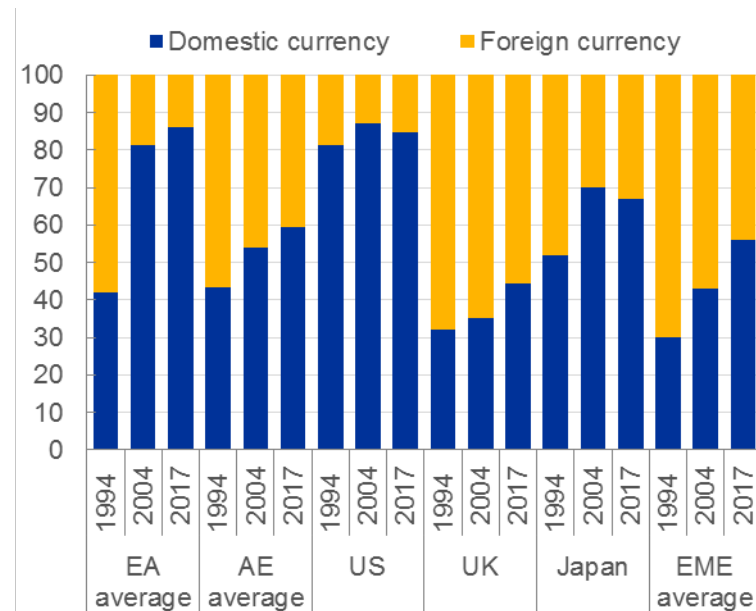
Assets

(percentage of total exposure)



Liabilities

(percentage of total exposure)



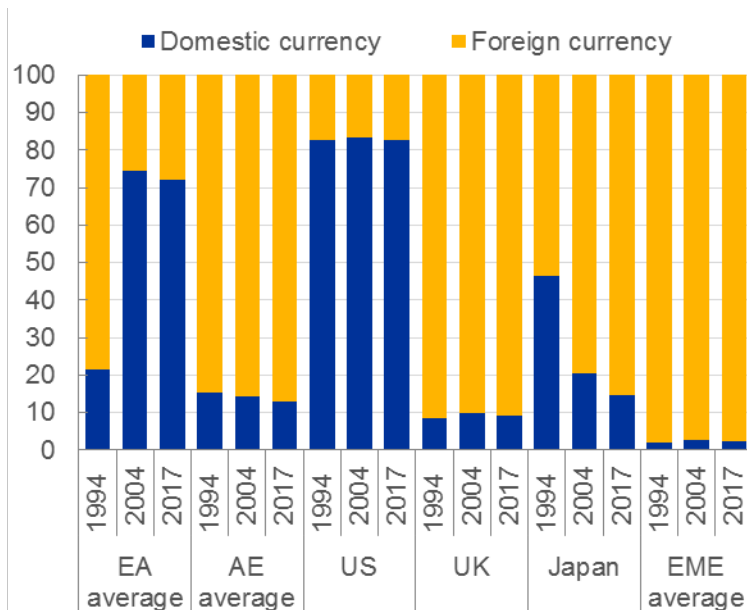
Sources: Bénétrix, A., Gautam, D., Juvenal, L. and Schmitz, M. (2020), "Cross-border currency exposures: new evidence based on an enhanced and updated dataset", ECB Working Paper No 2417 and ECB staff calculations.

Notes: EA average includes Austria, Belgium, France, Finland, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. AE average includes Australia, Canada, Czech Republic, Denmark, Hong Kong, Israel, Japan, New Zealand, Norway, Singapore, South Korea, Sweden, Switzerland, United States and United Kingdom. EME average includes Argentina, Brazil, Chile, China, Colombia, Egypt, Guatemala, Hungary, India, Indonesia, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Sri Lanka, Thailand, Tunisia, Turkey and Uruguay. Country groups follow the IMF classification.

Currency composition of international investment positions (debt instruments)

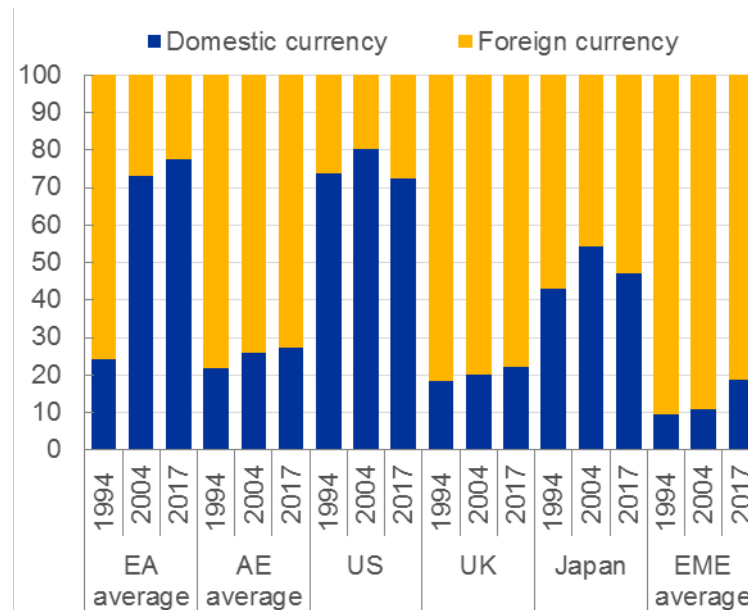
Assets

(percentage of total exposure)



Liabilities

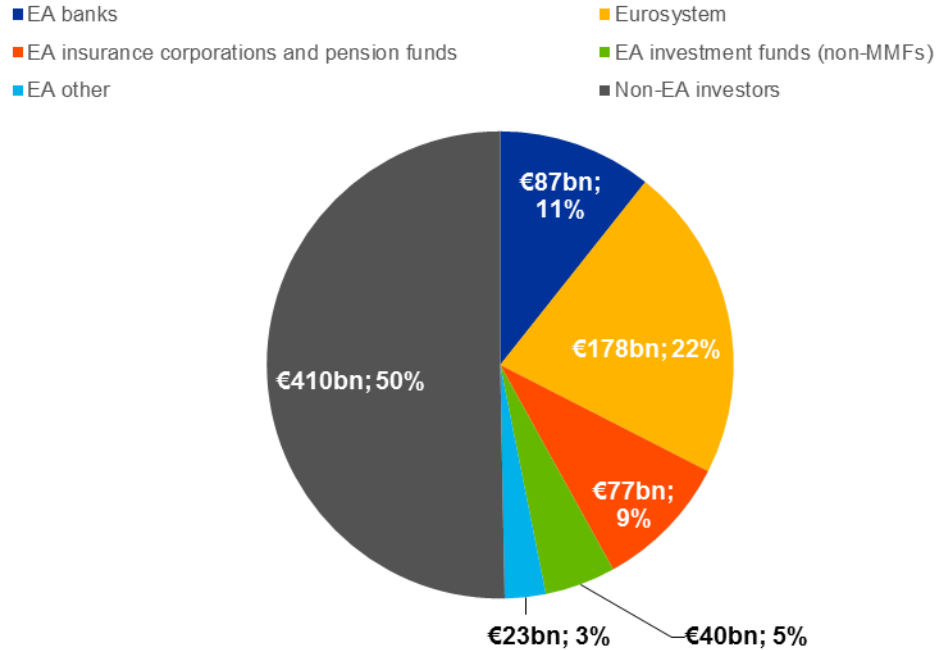
(percentage of total exposure)



Sources: Bénétrix, A., Gautam, D., Juvenal, L. and Schmitz, M. (2020), "Cross-border currency exposures: new evidence based on an enhanced and updated dataset", ECB Working Paper No 2417 and ECB staff calculations.

Notes: EA average includes Austria, Belgium, France, Finland, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. AE average includes Australia, Canada, Czech Republic, Denmark, Hong Kong, Israel, Japan, New Zealand, Norway, Singapore, South Korea, Sweden, Switzerland, United States and United Kingdom. EME average includes Argentina, Brazil, Chile, China, Colombia, Egypt, Guatemala, Hungary, India, Indonesia, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Sri Lanka, Thailand, Tunisia, Turkey and Uruguay. Country groups follow the IMF classification.

Holdings of European supranational debt securities by sector in Q2 2017

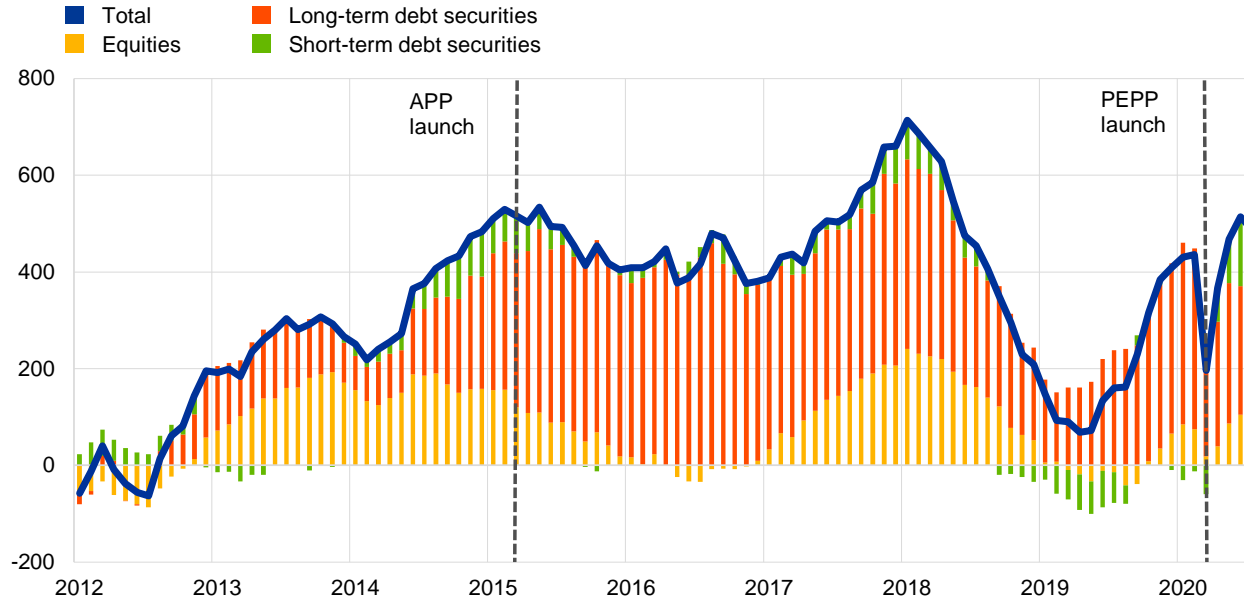


Source: ECB.

Notes: The chart shows the breakdown by sector of holdings of European supranational debt securities as at Q2 2017. This includes securities issued by the European Investment Bank, the European Financial Stability Facility, the European Stability Mechanism, the European Union, the Nordic Investment Bank and the Council of Europe (which are backed by a number of countries outside of the EU, but represent only 2.5% of total European supranational debt securities). "EA" refers to the euro area; "MMF" refers to money-market funds.

Euro area portfolio investment abroad

(EUR billions; twelve-month moving sums)



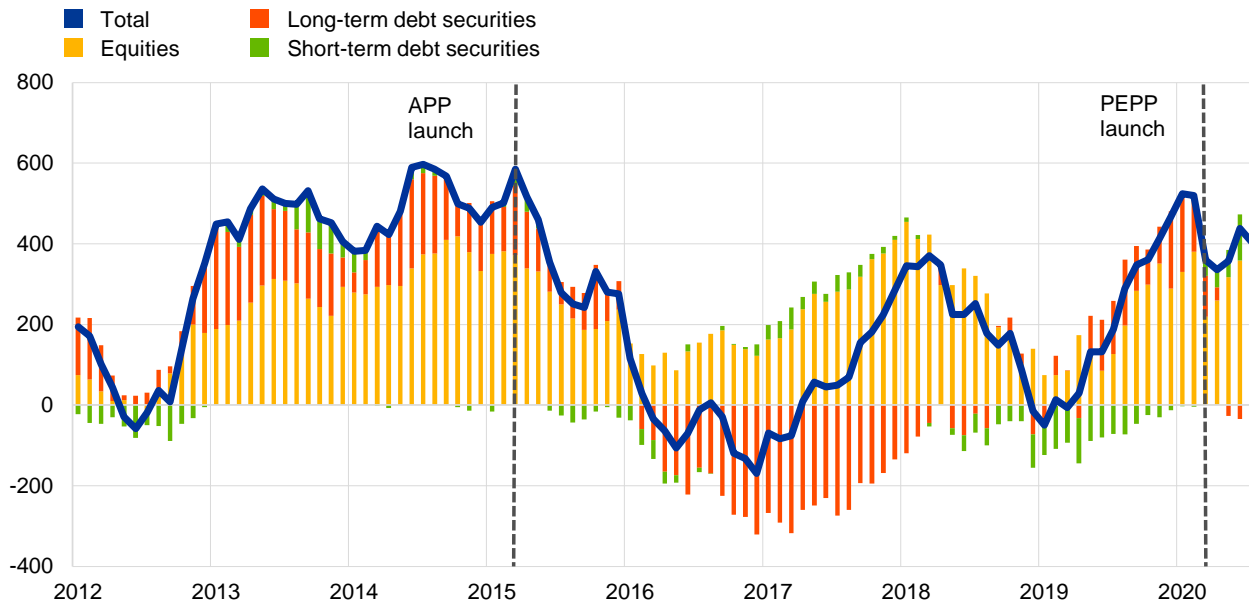
Source: ECB.

Notes: A positive (negative) number indicates net purchases (sales) of non-euro area securities by euro area investors. APP stands for asset purchase programme; PEPP stands for pandemic emergency purchase programme.

Latest observation: July 2020.

Foreign portfolio investment in the euro area

(EUR billions; twelve-month moving sums)

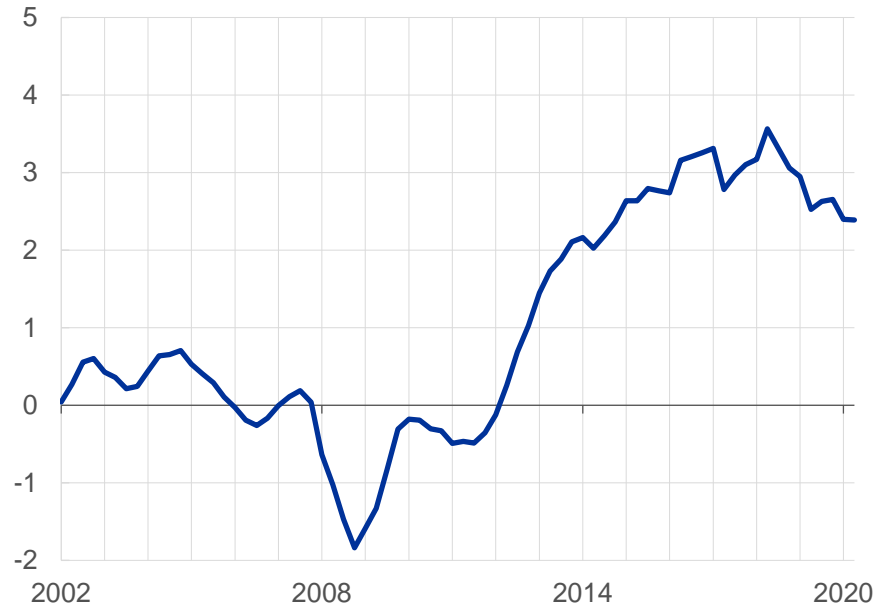


Source: ECB.

Notes : A positive (negative) number indicates net purchases (sales) of euro area securities by non-euro area investors. APP stands for asset purchase programme; PEPP stands for pandemic emergency purchase programme.

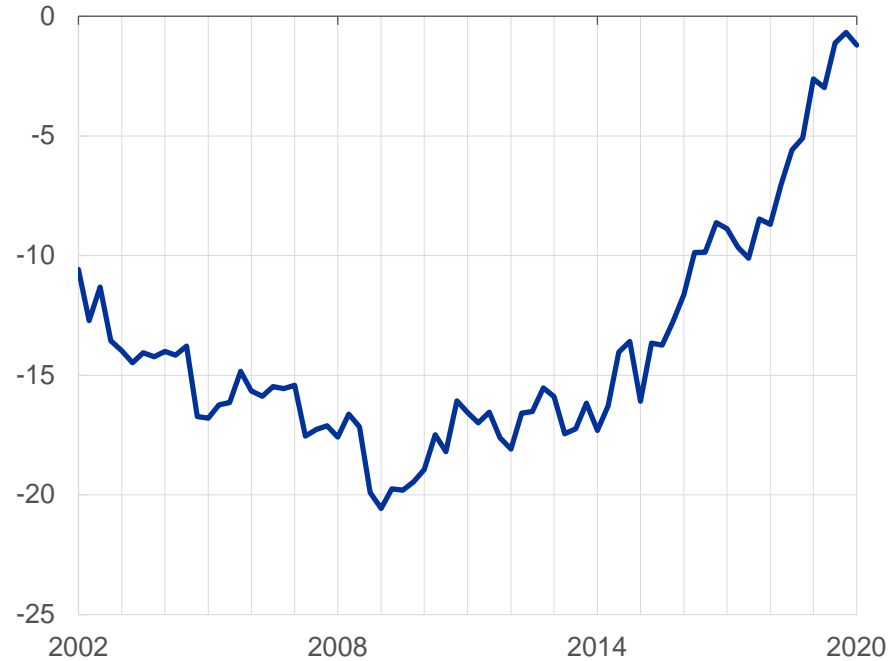
Latest observation: July 2020.

Euro area current account balance (four-quarter moving sums as a percentage of GDP)



Sources: ECB and Eurostat.
Latest observation: Q2 2020.

Euro area net international investment position (percentage of GDP)

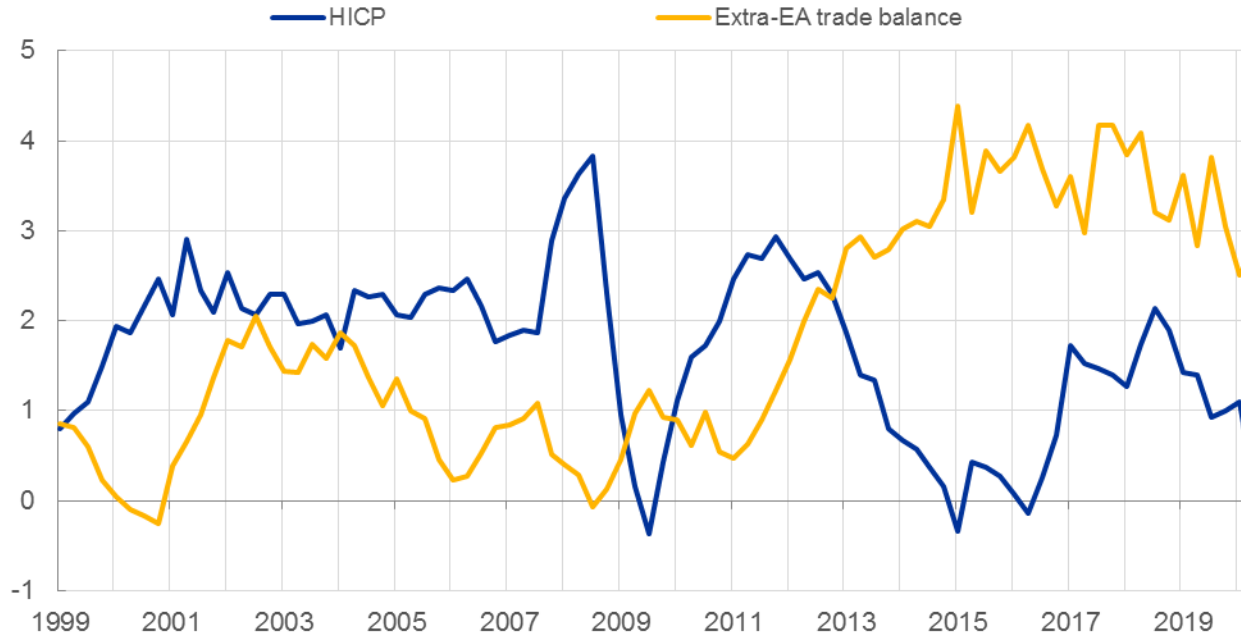


Sources: ECB and Eurostat.

Latest observation: Q1 2020.

Notes: The euro area net international investment position reflects end-of-period amounts. GDP is calculated as four-quarter moving sums.

Inflation and trade balance in the euro area (annual percentage changes; percentage of GDP)

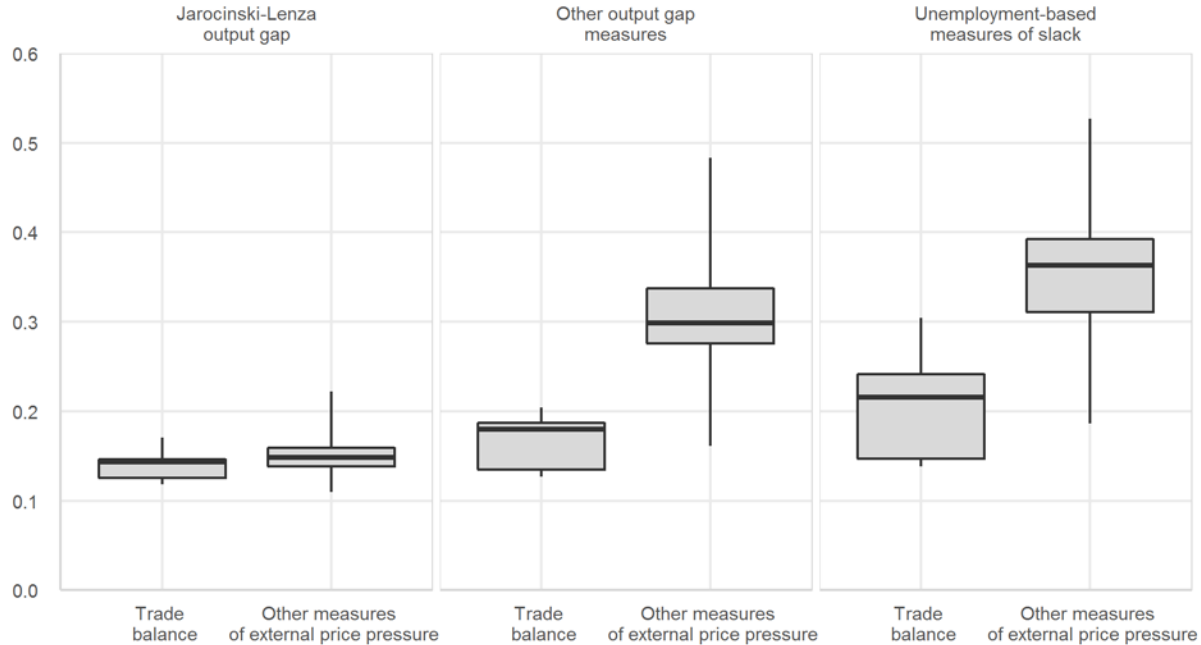


Sources: ECB and Eurostat.

Latest observation: Q2 2020 for Extra-EA trade balance and Q3 2020 for HICP.

Note: Q3 2020 for HICP is calculated as the average between July and August 2020.

Thick modelling: root mean squared forecast error over 2018-19 (percentage points)



Sources: European Commission, Eurostat, IMF, OECD and ECB staff calculations.

Notes: The figure shows the root mean squared forecast errors for a representative subset of the models discussed in Eser, F., Karadi, P., Lane, P.R., Moretti, L. and Osbat, C. (2020), "The Phillips Curve at the ECB".

Estimation sample: Q1 1999 to Q4 2017 for specifications that include survey measures of expectations, Q2 2005 to Q4 2017 for specifications that include market-based measures.

1 The euro area and the world economy

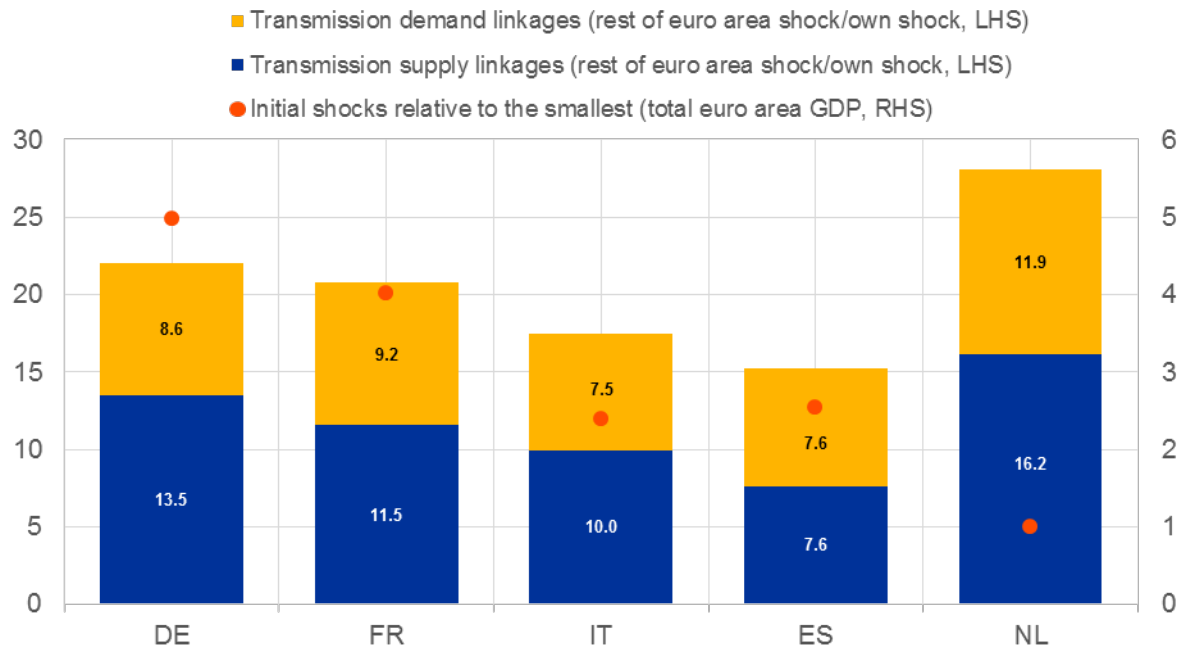
2 The euro area: country dynamics and cross-border dynamics

- Regional macroeconomics (US states, etc.)
- Modelling and conceptual frameworks
 - Martin and Philippon (2017)
 - Brunnermeier and Reis (2019)
 - Bianchi and Mondragon (2019)
 - Gourinchas, Martin and Messer (2020)
- Empirics: elimination of national currencies and national monetary policies
 - Berka, Devereux and Engel (2018)
 - Lane and Stracca (2018)

Shock transmission via trade within the euro area

Negative supply shocks originating in large EA countries

(left-hand scale: percentages; right-hand scale: multiples of the smallest shock)

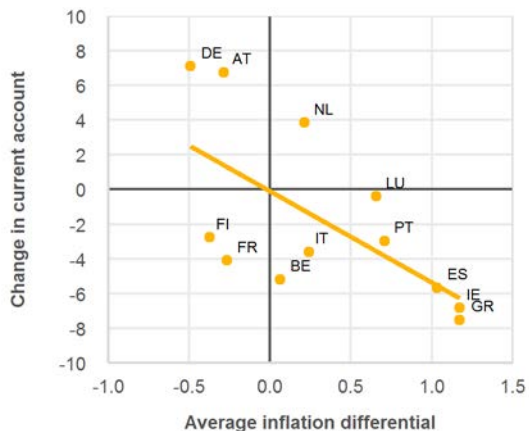


Sources: MRIO-ADB 2018 and author calculations, based on Di Nino, V. and Veltri, B. (2020), "The viral effects of foreign trade and production network in the euro area".

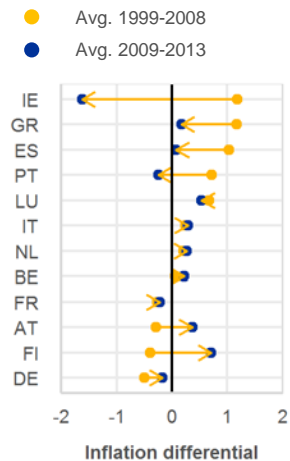
Notes: The calibration of domestic shocks in the five largest euro area economies is based on the predictions for GDP in 2020 given in the June 2020 Broad Macroeconomic Projection Exercise. Shocks are indexed to the smallest shock in terms of euro area GDP (the Netherlands), which is set to 1; the other aggregate shocks are multiples of this. For instance, the initial shock to Germany takes on the value of 5 because it has five times more weighting in euro area GDP. The calibration of foreign demand shock (-9.7%) is based on the July 2020 IMF (World Economic Outlook) predictions on percentage GDP contraction in non-euro area countries in 2020. The size of the shock is the weighted average of single country predictions with weights equal to the bilateral share of each country in total extra-EA exports.

Inflation differentials, competitiveness and adjustment costs in the euro area

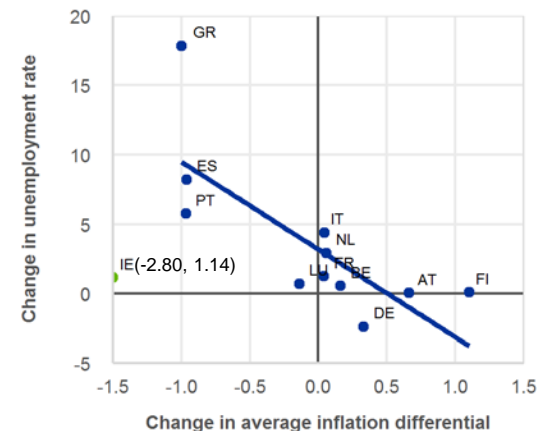
Current account and inflation differentials (1999-2008)



Inflation developments (1999-2008 to 2009-2013)



Unemployment rate and inflation differentials (2009-2013 for unemployment 1999-2013 for inflation)



Sources: Eurostat and ECB staff calculations.

Notes: The change in current account refers where possible to the period 1999-2008. The sample includes all countries designated EA12 and the countries are included from the time they joined the EMU. Current accounts are calculated as a percentage of GDP. Belgium is included from 2000, the first period for which current account data are available. Unemployment rates are calculated as a percentage of the labour force. The change in current account refers to the period 1999-2008, while the change in unemployment rate refers to the period 2009-13. Inflation differentials are calculated using the euro area weighted mean. The inflation differential refers to the average inflation differential in 1999-2008 in the left panel and the difference between the average inflation differential in 1999-2008 and 2009-13 for the middle and right panels. Ireland is excluded from the trendline in the right panel; its true values are shown in brackets.

Identifying the Phillips Curve slope using cross-country variation: benchmark euro area equation

Variables	(1) Euro area	(2) Euro area	(3) Euro area
Lagged inflation	0.904 (0.000)	0.892 (0.000)	0.884 (0.000)
Output gap	0.008 (0.000)		
Unemployment rate		-0.010 (0.000)	
Unemployment gap			-0.011 (0.001)
Constant	0.033 (0.011)	0.134 (0.000)	0.042 (0.004)
Observations	81	80	81
R^2	0.899	0.892	0.891

Source: Eser, F., Karadi, P., Lane, P.R., Moretti, L. and Osbat, C. (2020), "The Phillips Curve at the ECB".

Notes: The estimation is performed using HICP excluding food and energy (year-on-year) and output gap, unemployment gap or unemployment rate. Output gap and unemployment gap are based on estimates from the European Commission. Estimation uses robust standard errors; p-values in parentheses. The sample is from Q1 1999 to Q2 2019.

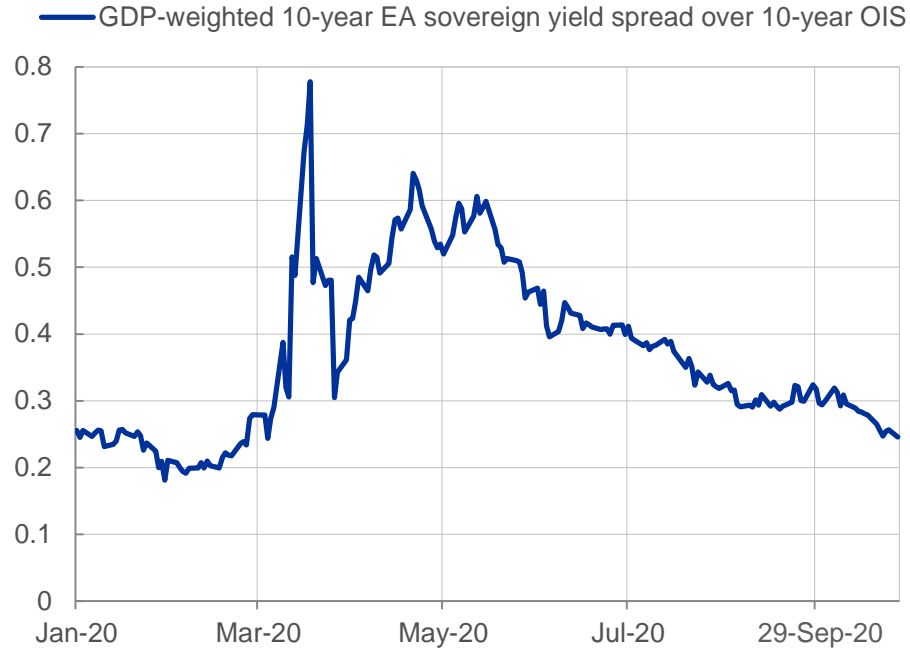
Identifying the Phillips Curve slope using cross-country variation

Variable	(1) Pooled	(2) Pooled	(3) Pooled	(4) FE	(5) FE	(6) FE	(7) FE + TE	(8) FE + TE	(9) FE + TE
Lag	0.868 (0.000)	0.903 (0.000)	0.878 (0.000)	0.854 (0.000)	0.865 (0.000)	0.862 (0.000)	0.861 (0.000)	0.865 (0.000)	0.865 (0.000)
Y gap	0.013 (0.000)			0.015 (0.000)			0.014 (0.000)		
U rate		-0.005 (0.004)			-0.011 (0.000)			-0.010 (0.001)	
U gap			-0.014 (0.008)			-0.017 (0.004)			-0.014 (0.004)
Constant	0.053 (0.000)	0.079 (0.000)	0.051 (0.000)	0.059 (0.000)	0.152 (0.000)	0.059 (0.000)	0.006 (0.850)	0.099 (0.016)	0.021 (0.487)
Obs.	1,457	1,436	1,457	1,457	1,436	1,457	1,457	1,436	1,457
R^2	0.896	0.883	0.887	0.888	0.878	0.878	0.903	0.898	0.898
Country FE	NO	NO	NO	YES	YES	YES	YES	YES	YES
Time FE	NO	NO	NO	NO	NO	NO	YES	YES	YES
N	18	18	18	18	18	18	18	18	18

Source: Eser, F., Karadi, P., Lane, P.R., Moretti, L. and Osbat, C. (2020), "The Phillips Curve at the ECB".

Notes: The dynamic panel estimation is performed using HICP excluding food and energy (year-on-year) and output gap, unemployment gap or unemployment rate. Output gap and unemployment gap are based on estimates from the European Commission. Estimation uses robust standard errors clustered at the country level; p-values in parentheses; FE refers to fixed effect; TE refers to time fixed effect. Sample: unbalanced panel, minimum starting date is Q1 1999 and the latest observation is for Q2 2019.

GDP-weighted 10-year euro area sovereign yield spread over 10-year OIS rate (percentages)



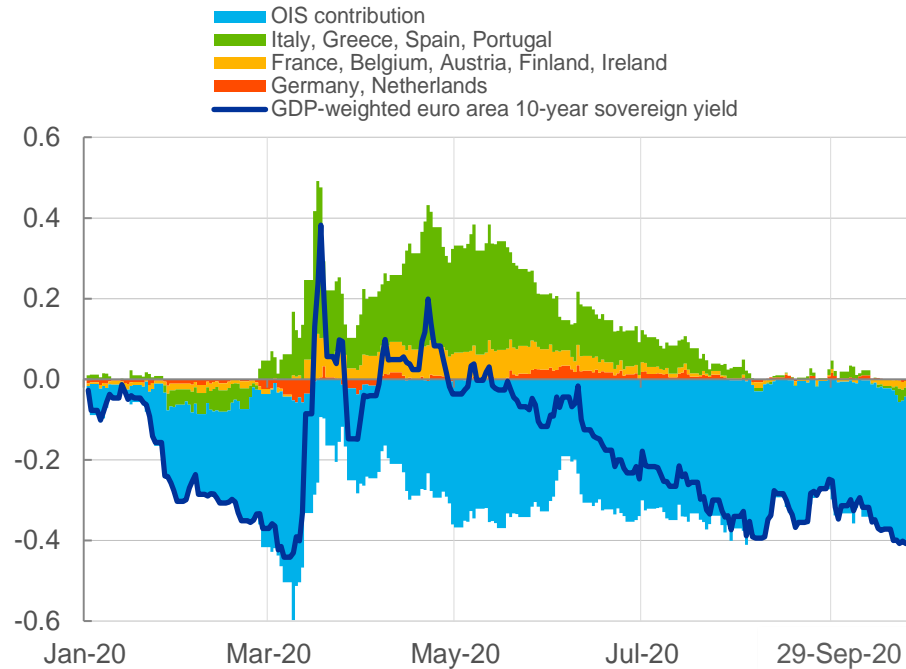
Sources: Refinitiv and ECB calculations.

Notes: The spread is the difference between the euro area GDP-weighted 10-year sovereign yield and the 10-year OIS rate.

Latest observation: 29 September 2020.

Euro area sovereign yields

(cumulative changes since 1 January 2020, percentage points)

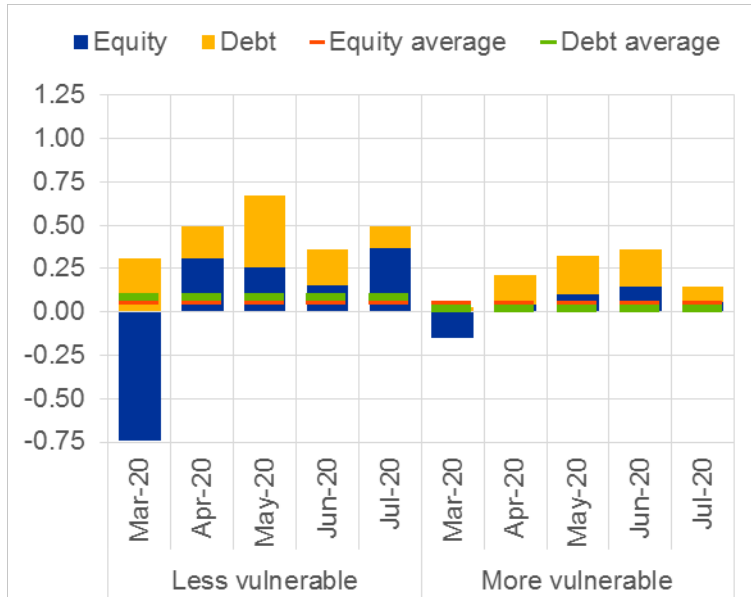


Sources: Bloomberg and ECB calculations.
Latest observation: 29 September 2020.

Portfolio investment flows by country group

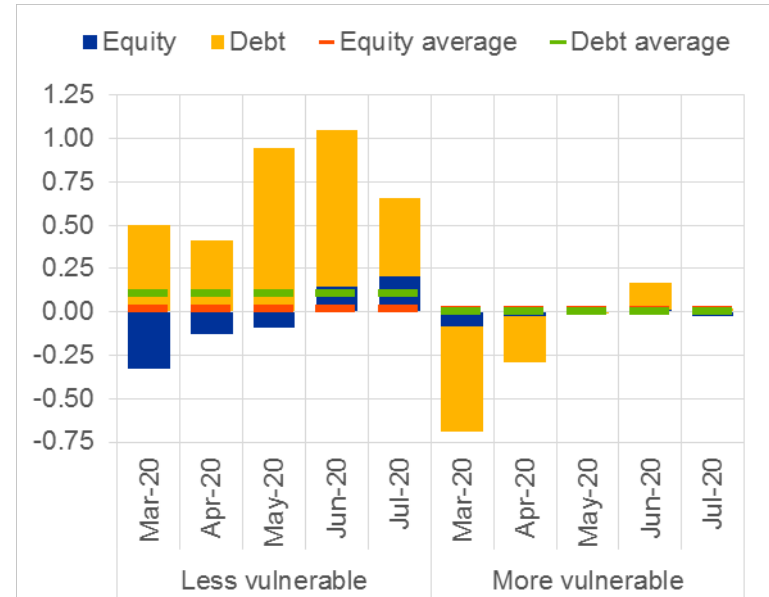
Assets

(monthly flows as a percentage of euro area GDP)



Liabilities

(monthly flows as a percentage of euro area GDP)



Sources: ECB and Eurostat.

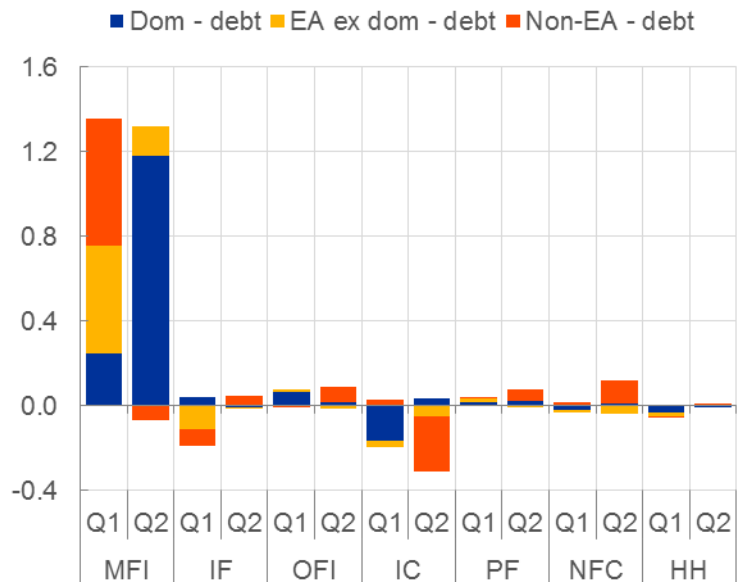
Notes: "Less vulnerable" countries are Austria, Belgium, Finland, France, Germany and the Netherlands; "more vulnerable" countries are Italy, Greece, Portugal and Spain.

Latest observation: July 2020.

Portfolio investment asset flows by sector and country group in Q1 2020 and Q2 2020

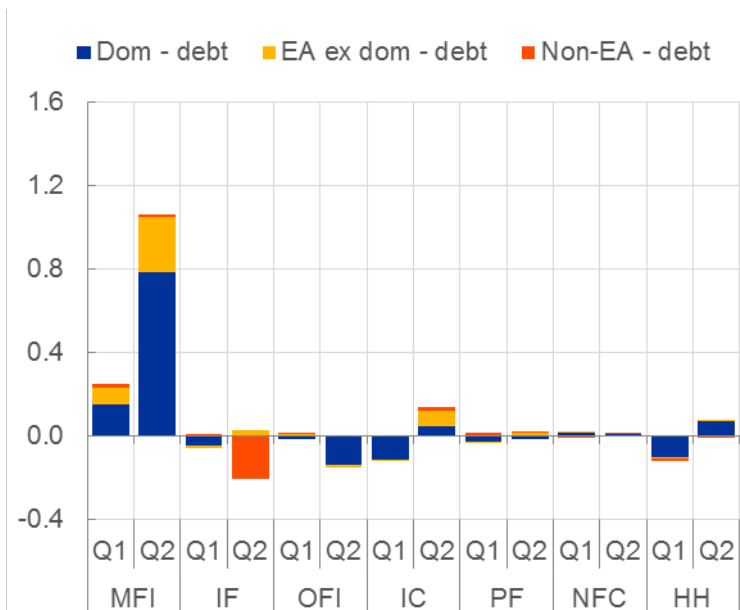
Less vulnerable countries

(quarterly flows as a percentage of euro area GDP)



More vulnerable countries

(quarterly flows as a percentage of euro area GDP)



Sources: SHS and Eurostat.

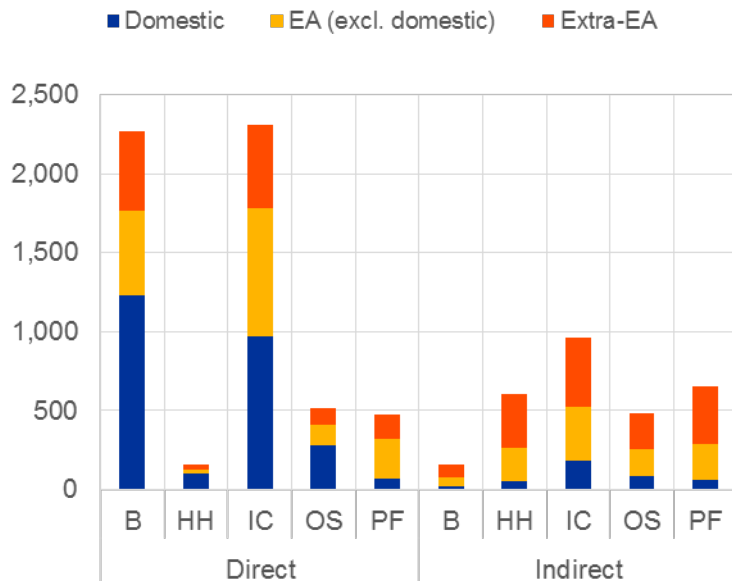
Notes: Data for Q2 2020 are preliminary. "Dom" refers to cases where the holder country is the same as the issuer country; "EA ex dom" refers to cases where the euro area holder country is not the same as the issuer country; "Non-EA" refers to all other countries; "MFI" are monetary financial institutions; "IF" are investment funds; "OFI" are other financial intermediaries; "IC" are insurance companies; "PF" are pension funds; "NFC" are non-financial corporations; "HH" are households. Conceptually, SHS and BoP data are compatible, but the latter also include domestic flows. "Less vulnerable" countries are Austria, Belgium, Finland, France, Germany and the Netherlands; "more vulnerable" countries are Italy, Greece, Portugal and Spain.

Balance of payments response to the pandemic

Direct and indirect exposures of euro area investors to debt securities at end-2019

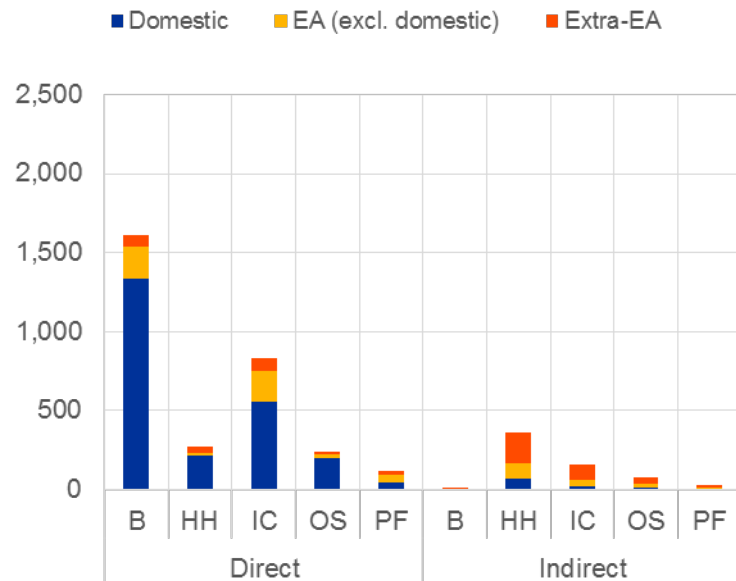
Less vulnerable countries

(EUR billions)



More vulnerable countries

(EUR billions)



Sources: SHS and author's calculations, based on Carvalho (2020), "The portfolio holdings of euro area investors: looking through investment funds", and Carvalho and Schmitz (2020), "Shifts in the portfolio holdings of euro area investors in the midst of COVID-19: looking through investment funds".

Notes: "Less vulnerable" countries are Austria, Belgium, Finland, France, Germany and the Netherlands; "more vulnerable" countries are Italy, Greece, Portugal and Spain. "Domestic" refers to cases where the holder country is the same as the issuer country; "EA (excl. domestic)" refers to cases where the euro area holder country is not the same as the issuer country; "Extra-EA" are all other countries. "B" are deposit-taking corporations; "HH" are households; "IC" are insurance companies; "OS" are other financial intermediaries, general government and non-financial corporations; "PF" are pension funds.