

European Economic Policy
cod. 149006-ENG
6cfu

Annalisa Cristini office 215
annalisa.cristini@unibg.it

Logistic

Timetable

- Tue 8.30 -10.30 → (Classroom 10)
- Wed 10.30 -12.30 → (Classroom 5 Moroni)

Office hours: Thur 14.30-16.30, or online on request. A
Please send me an email and we fix a meeting

Reference

- Paul De Grauwe **Economics of the Monetary Union**, OUP 14th Edition (2023)

Other references will be uploaded in the moodle page under 'Slides and course materials'

Lectures

- Elearning Moodle
- European Economic Policy
 - Key: Cristini6429

Exam

70% based on a written exam

30% based on class projects and active participation. Some suggested topics and references will be provided.

Who can take part at the project?

Calendar and classes

										Total hors
Sett	15	16	22	23	29	30				12
Ott	6	7	13	14	20		27	28		14
Nov	3	4	10	11		18	24	25		14
Dic	1	2		9	15	16				8
										48

Introduction to EEP

The start of the European Economic and Monetary Union (EMU) on 1 January 1999 was a historic event.

Why?

Two main parts of this course:

1. What are the pros and cons of forming a MU and abandon one's currency? (Theory)
2. How does EMU work? What are the problems of running a MU in Europe? (Economic Policy-oriented)

Start: few attempts ever to introduce a MU without force of arms.

- What does economic theory say about MUs?
- What were at that time (1980's 1990's) the views about forming a European MU? What were **economists** thinking about this idea?
- **Costs and benefits analysis**

MU in Europe created some problems and faced unprecedented crisis.

Second part of the course deals with the actual working of EMU

- How was the European Central Bank (ECB) designed to conduct a single monetary policy?
 - Are there any shortcomings of this design, and if so, why?
- How does the fiscal policy in the European MU work?
- How did the MU cope with the crisis? Have they changed the way EMU works? How is EMU facing the climate change?

Some basic issues

- Different kinds of MU
 - Some MU are intrinsically 'fragile' because they are **incomplete**
 - Different institutions
-
- Are there issues typical to the European MU?
 - Did these problems emerge from the start?

Which countries are EMU member?

- To join the EMU a country needs to be part of the European Union (EU)
- Once member of EU a country is legally bound to adopt the euro, once the conditions set out in the Maastricht Treaty are satisfied (only exemption: DK)
- Notice: countries decided to join EU either through a parliamentary vote or a referendum

Entry/exit year of countries into European Union

1958: Belgium, France, Germany, Italy, Luxembourg, Netherlands ("**founding countries**")

1973: Denmark, Ireland, United Kingdom (Referendum) Norway voted not to join

1975 UK Voters chose to stay with 67% support.

1981: Greece

1982 Greenland (autonomous territory of Denmark) voted to leave and exited in 1985

1986: Portugal, Spain

1995: Austria, Finland, Sweden (Referendum)

2004: Estonia, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, Czech Rep, Hungary (Referendum) Cyprus

2007: Bulgaria, Romania

2013: Croatia (Referendum)

2020: Brexit (Referendum in 2016)

2026: Iceland voted against (52.8%) reopening formal EU accession talks

EU 27 member States

21 use the euro

Austria

Belgium

Bulgaria (2026)

Cyprus (2008)

Croatia (2023)

Estonia (2011)

Finland

France

Germany

Greece (2001)

Ireland

Italy

Latvia (2014)

Lithuania (2015)

Luxembourg

Malta (2008)

The Netherlands

Portugal

Slovakia (2009)

Slovenia (2007)

Spain

6 do not use euro

Czech Republic

Denmark

Hungary

Poland

Romania

Sweden

Notes on EU Treaties

Two important Treaties to which we will sometimes refer:

- Treaty on European Union (TEU) (55 articles, main goals and rights)
- **Treaty on the Functioning of the EU (TFEU)** (358 articles, more detailed)
 - Chapter VIII Economic and Monetary Policy

The **Treaty of Lisbon (2009)**, ratified by all member states, amended the previous formulations of the Treaties. Note: TFEU was first called the Treaty establishing the European Community

Italy is the depository country of the founding treaties of 1957 and of all subsequent treaties.

Treaty of Lisbon, drawn up in a single copy in the 23 official languages of the Union, is "deposited in the archives of the Government of the Italian Republic"

A repository of the treaties can be found here:

<https://eur-lex.europa.eu/collection/eu-law/treaties/treaties-force.html#new-2-51>

Art.3 (clauses 3, 4) TEU

3. The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment. It shall promote scientific and technological advance.

It shall *combat social exclusion and discrimination*, and shall promote social justice and protection, equality between women and men, solidarity between generations and protection of the rights of the child.

It shall promote economic, social and territorial cohesion, and solidarity among Member States.

It shall respect its rich cultural and linguistic diversity, and shall ensure that Europe's cultural heritage is safeguarded and enhanced.

4. The Union shall establish an **economic and monetary union** whose **currency is the euro**.

Art.9 TUE

9. In all its activities, the Union shall observe the principle of the equality of its citizens, who shall receive equal attention from its institutions, bodies, offices and agencies. Every national of a Member State shall be a citizen of the Union. Citizenship of the Union shall be additional to and not replace national citizenship.

Art. 13 TEU

art. 13 TEU

- European Parliament, European Council, **Council, European Commission**, Court of Justice of the European Union, **European Central Bank** and Court of Auditors

ECOFIN: Economic and Financial Affairs Council (EU)

EUROGRUP: Ministers of Economic and Financial Affairs of the Euro countries

Brief summary of Euro Area (EA) characteristics

- EA is the second largest world areas in terms of population
 - Euro area 358,664,361 United States 341,784,857
- EA 3° largest in terms of world GDP share (after China e USA)
([see graph](#))
- Developed economy → tertiary sector is dominant, but less than in US
- The role of the State is a significant presence in the economy (Gov revenues and expenditures- including social benefits) are large shares of GDP, larger than in the US
- Unemployment is normally lower in USA (in 2025 is 6.2% in EZ and 4.2% in USA)
- Public finances (debt/GDP, deficit/GDP) tend to be smaller in EA vs USA (2023: 87% vs 114% and -3.1% vs -7.6%)
- EA is a more open economy (Exports, Imports) than other large world areas like USA and Japan



GDP (constant 2015 US\$)

Euro area

United States

China

Search data e.g. GDP, populatio ✕ ▾

GDP (constant 2015 US\$) - Euro area, United States, China

Country official statistics, National Statistical Organizations and/or Central Banks; National Accounts data files, Organisation for Economic Co-operation and Development (OECD); Staff estimates, World Bank (WB)

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Line

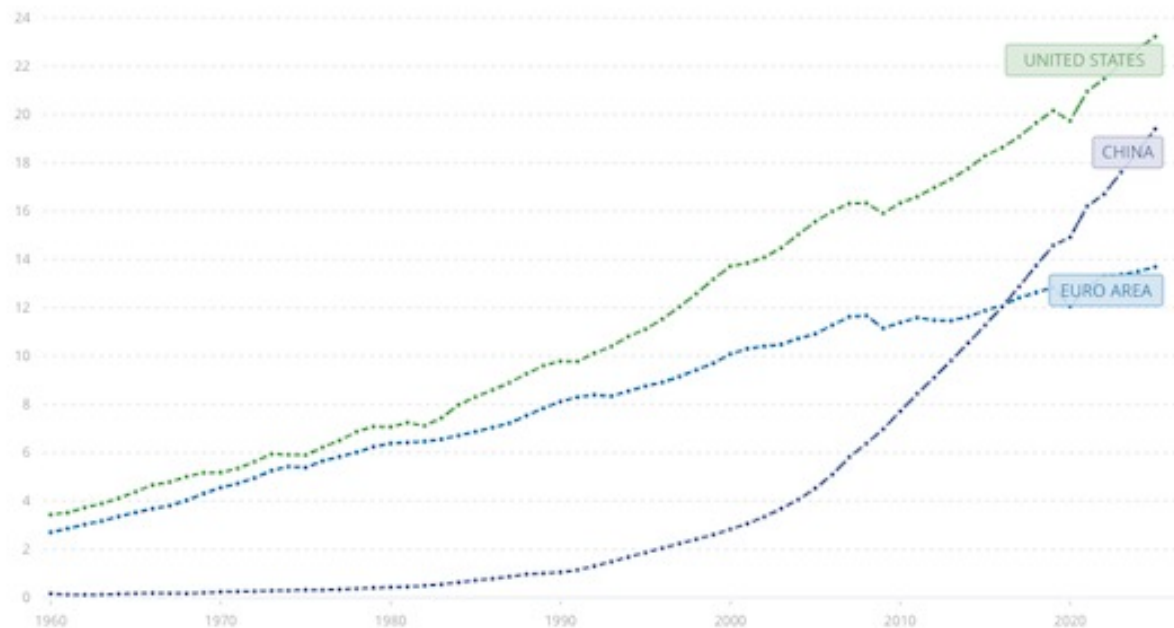
Bar

Map

Also Show

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1960 - 2025



Selected Countries and Economies

Country	Most Recent Year	Most Recent Value (Millions)
China	2025	19,401,316.13
United States	2025	23,222,782.19
Euro area	2025	13,689,135.86

European Economic Policy 2026-27

<https://data.worldbank.org/indicator/NY.GDP.MKTP.KD?locations=XC-US-CN>

Key features of the Euro Area (EA) economy

- <https://data.ecb.europa.eu/key-figures>

Differences within EA:

- GDP growth
- GDP per capita
- Inflation
- competitiveness

Some helpful links for documentation, data, maps

- ECB European Central Bank
 - <https://www.ecb.europa.eu/home/html/index.en.html>
 - <https://data.ecb.europa.eu/>
 - Main features - Overview of key euro area indicators
- European Commission
 - https://economy-finance.ec.europa.eu/index_en
- Bank of Italy
 - <https://www.bancaditalia.it>
- Eurostat, OECD, ONS, FRED
- DB·NOMICS
 - <https://db.nomics.world/>

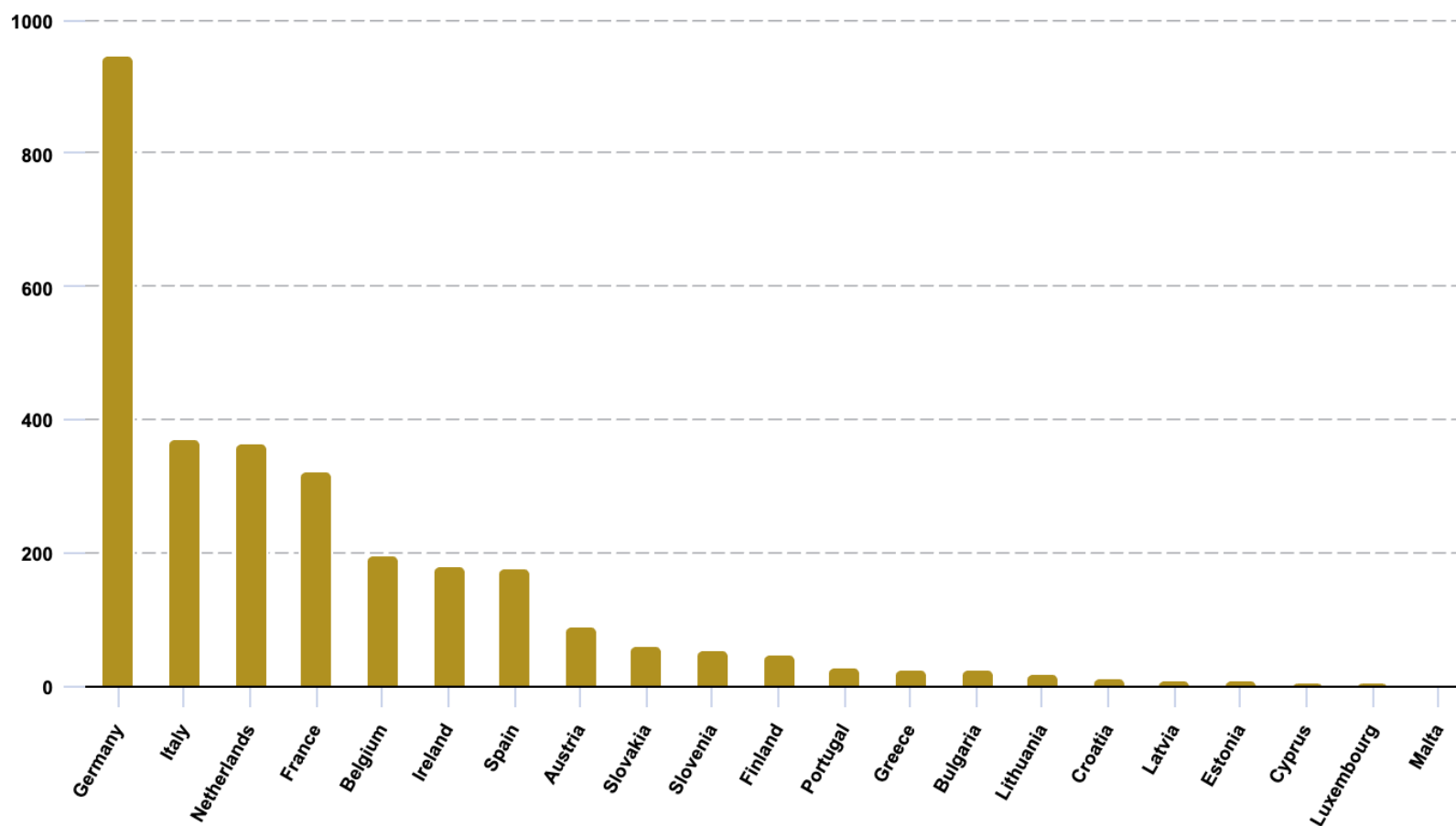
Interesting comments and articles

- *Economist*
- *FT*
- *VOXEU*
- *Brugel.org*

- EA countries are characterized by being open economies and trade is a relevant part of their GDP
- A monetary union is characterized by a single currency, hence a single exchange rate.
- While the exchange rate of the euro vis-a-vis other currency is the same for all EA member states, the latter differ in terms of competitiveness, measured by the real exchange rate, hence exports and imports can differ hugely across countries, other things equal

Extra-euro area exports of goods, 2024

(€ billion)



Source: Eurostat - [ds-059331](#)

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Extra-euro_area_trade_in_goods

European Economic Policy 2026-27

Competitiveness in a MU

- Competitiveness is a key macroeconomic indicator for an open country
- Within a monetary union divergences in competitiveness are problematic
- To understand why, let's recap some basic concepts

Exchange rate

Let E be the euro dollar exchange rate (euro = base currency)

It tells us that we can buy E dollars with 1 euro

E can depreciate or appreciate

Let the price of good i sold in US be P^i_{US}

Let the price of good i sold in EZ be P^i_E

- $P^i_E E$ is the price of good i sold in EZ, in dollars
- P^i_{US} / E is the price of good i sold in US, in euros

Law of one price

- Compare price in dollars of good i sold in Europe ($P_E^i E$) with price of the same good sold in USA (P_{US}^i)
- If they are the same, $P_E^i E = P_{US}^i$
then the *law of one price* holds for that good
- If so, then it also holds that: $P_{US}^i / E = P_E^i$

That is, the price in euro of the good sold in US equals the price of the good sold in EZ

Purchasing Power Parity (PPP)*

- If the **law of one price** holds **for all goods** in a given basket → **PPP** holds

$$P_E E = P_{US}$$

where P_{US} is the average dollar price of a reference commodity basket sold in the United States and P_E is the average euro price of the same basket in Europe

- In this particular case, the exchange rate between two currencies equals the ratio of the countries' average price levels

$$E = P_{US}/P_E$$

- PPP asserts that all countries' price levels are equal when measured in terms of the same currency.

*For this part you can see Krugman and Obstfeld, International Economics: Theory and Policy, 6th Ed., 2015

Does the law of one price hold in practice?

An example

Example: BIG MAC INDEX (August 2023)

<https://www.economist.com/interactive/big-mac-index>

Price Big Mac in EZ: €5.28

Price Big Mac in USA: \$5.58

Exchange rate necessary to obtain PPP is: $5.58/5.28=1.06$

Market exchange rate E is 1.10

→ The dollar is **undervalued** against the euro

$5.58/1.1 = 5.07$ € (Big Mac in USA costs less than in EZ)

$(5.07-5.28)/5.28 = -4\%$

OR

$5.28 * 1.1 = 5.808$ \$ > 5.58 → more convenient to buy in US!

Challenge yourself

In July 2025 the Big Mac costs \$6.01 in US and €5.96 in EZ

As of July 2026, the Big Mac costs \$6.22 in US and €6.19 in EZ

<https://www.economist.com/interactive/big-mac-index>

Answer the following questions:

1. Between July 2025 and July 2026, what was the Big Mac price inflation in EZ and in USA?
2. Is the euro overvalued or undervalued against the dollar in July 2026? (market exchange rate = 1.14)
3. In July 2026, is it cheaper to buy a Big Mac in US or in EZ?

The bilateral real exchange rate

If PPP holds, then:

$$P_E E = P_{US} \rightarrow P_E E / P_{US} = 1$$

Deviations from PPP define the **bilateral real exchange rate**, which is a measure of competitiveness between two countries:

$$E_R = P_E E / P_{US}$$

$E_R > 1$ goods are more expensive in EZ than USA.

$E_R < 1$ goods are less expensive in EZ than USA.

→ Possible role of **E nominal exchange rate** as a policy instrument

Role of the exchange rate as policy instrument

Suppose price in EZ have increased vs prices in US

- $E_R = P_E E / P_{US}$
- P_E goes up $\rightarrow E_R$ goes up (*ceteris paribus*) $\rightarrow$ price competitiveness declines $\rightarrow$ bad news for EZ
- If E is a policy instrument $\rightarrow$ **depreciation** (reduce E) can recover competitiveness

The exchange rate as a policy instrument within a MU

- Consider two countries (A and B) that are part of a MU.
- Average prices are P_A and P_B
- What is the exchange rate E between A and B?
- Then: $E_R = P_A/P_B$
- If country A loses competitiveness vs country B, can the currency be depreciated?

Cost competitiveness

- Replace the average price by a measure of costs, like the Unit Labour Cost

How are prices determined?

- Prices are relevant for competitiveness
 - How are determined?
- Market prices include indirect taxes, like VAT, which can differ across countries.
- Suppose we look at the producer price.
- What are the factors that determine this price?
- Derive the price from the firm's profit maximizing condition in imperfect competition
- Result resembles the markup rule

Firm price setting in imperfect competition

Let labour be the only input

Mark up rule

$$1) \quad P = \frac{WN}{Y} (1 + m)$$

P = price of output

W = wage or labour cost (compensation) per employee

N = employment

Y = output

m = mark up

$WN/Y = W/(Y/N)$ = wage per employee/labour productivity = **unit labour cost (ULC)**

Write (1) as follows:

$$2) \quad P = \frac{W}{Y/N} (1 + m) = \frac{W}{Q} (1 + m)$$

$Q = Y/N$ = average labour productivity

- Three main factors that affect the average price:
 - Cost of labour
 - Average productivity
 - Mark-up

Effective exchange rate (EER) and Real EER (REER)

A country has various competitors in international markets
(including partners in the euro area)

- The **Effective exchange rate** measures the nominal value of the euro relative to the currencies of a member state's principal competitors
- **Real EER** provides an overall measure of the competitiveness of a member state relative to its principal trading partners
- **Weighted (geometric) average** of bilateral (real or nominal) exchange rates
- Weights correspond to the **trade shares**

<https://www.ecb.europa.eu/mopo/eaec/eer/html/index.en.html>

Evolution of trade weights in the euro EER-41.

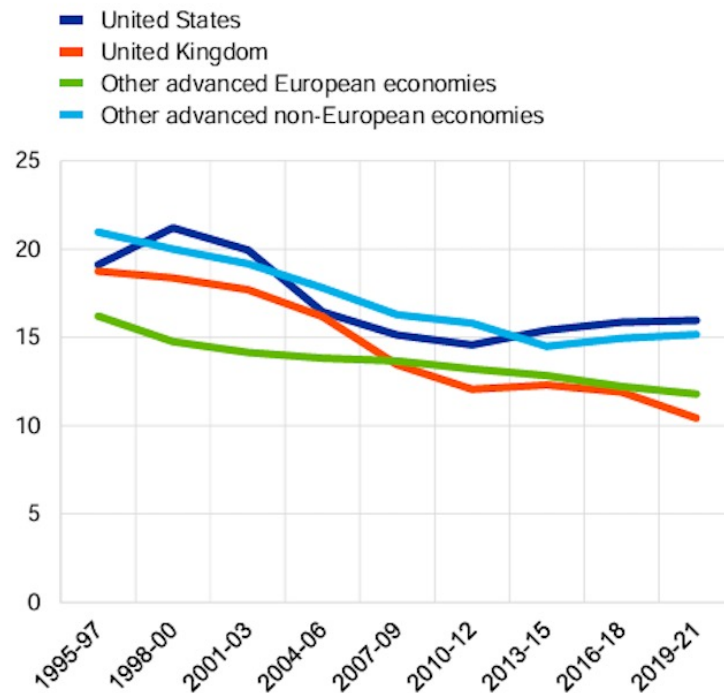
Since 2020 they include also trade shares in services

Chart 6

The evolution of combined trade weights in the euro EER-41 over time

a) Advanced economies

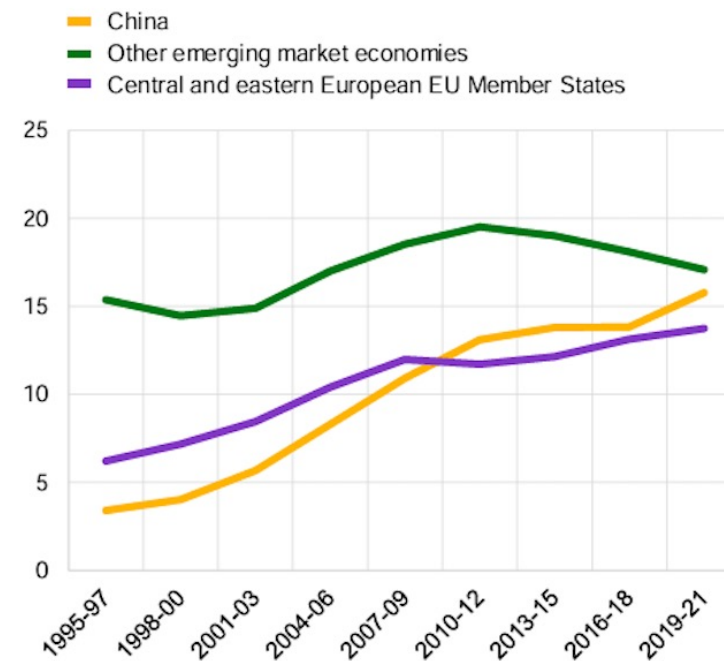
(percentages)



Source: ECB.

b) Other countries

(percentages)



Source: ECB.

Notes: "Central and eastern European EU Member States" comprises Bulgaria, the Czech Republic, Croatia, Hungary, Poland and Romania; "other advanced European economies" comprises Denmark, Iceland, Norway, Sweden and Switzerland; "other advanced non-European economies" comprises Australia, Canada, Hong Kong SAR, Israel, Japan, New Zealand, Singapore, South Korea and Taiwan; and "other emerging market economies" comprises Algeria, Argentina, Brazil, Chile, Colombia, India, Indonesia, Malaysia, Mexico, Morocco, Philippines, Peru, Russia, Saudi Arabia, South Africa, Thailand, Turkey, Ukraine and the United Arab Emirates.

Schmitz, Martin & Dietrich, Andreas & Brisson, Rémy, 2024. "The ECB's enhanced effective exchange rates and harmonised competitiveness indicators: An updated weighting scheme including trade in services," Statistics Paper Series 49, European Central Bank.

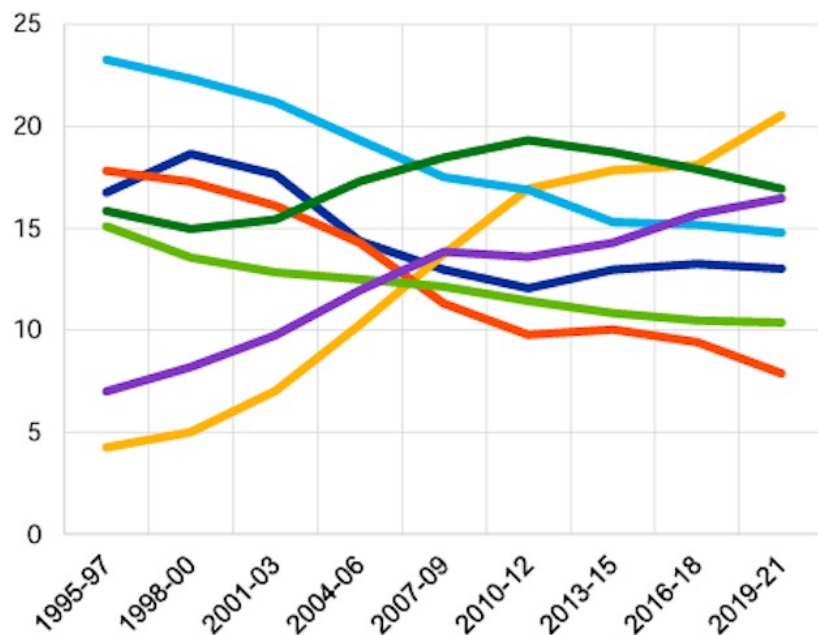
- The shares of the **US, UK, other advanced economies** (European and non-European) have decreased
 - However, the decrease in importance of the United States, in particular, and non-European advanced economies has tailed off and even partly reversed, over the past decade
- The trade weight of **China** has increased strongly over time
 - yet another rise in the latest three-year period
- The share of other emerging economies, which became increasingly important for euro area trade during the 2000s, has declined over the past decade.
- Central and eastern European EU Member States have consistently gained in importance owing to their further integration into European value chains.
- These shifts in trading partner importance reflect – sometimes **diverging developments in manufacturing and services trade**

Chart 7

Evolution of trade weights of the EER-41 group of trading partners – manufacturing

(percentages)

- United States
- China
- United Kingdom
- Other advanced European economies
- Other advanced economies
- Other emerging market economies
- Central and eastern European EU Member States



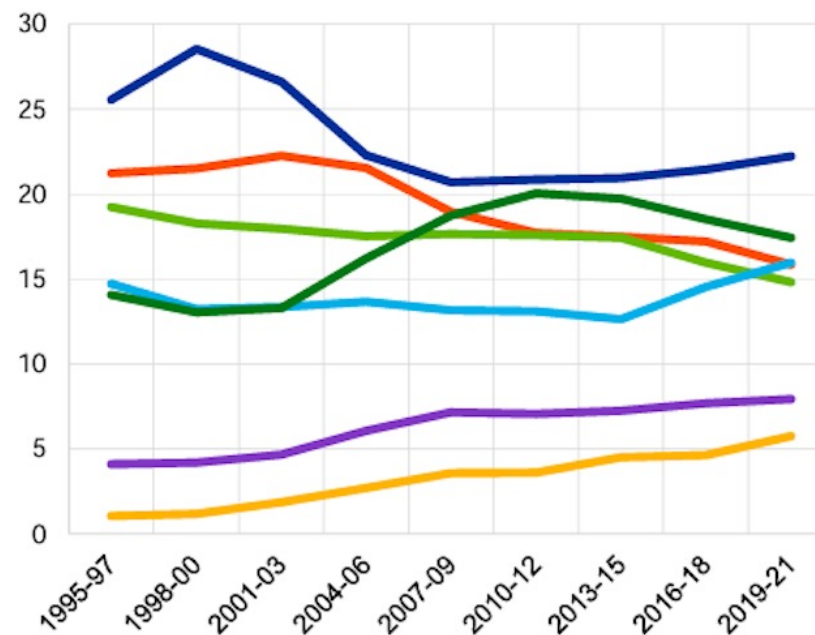
Source: ECB.

Chart 8

Evolution of trade weights of the EER-41 group of trading partners – services

(percentages)

- United States
- China
- United Kingdom
- Other advanced European economies
- Other advanced economies
- Other emerging market economies
- Central and eastern European EU Member States



Source: ECB.

- China is the largest trading partner of the euro area in terms of manufactured goods (21%), but it is only the fourth largest partner for services (6%).
- By contrast, the United States is the largest euro area trading partner for services (22% vs 13% for manufacturing).
 - US share in services declined in the nineties but picked up again in the last decade: US remains a major trading partner for the euro area in telecommunications, computer and information services, and other business service. Check differences wrt UK

Competitiveness data in European MU

Data for competitiveness in EA can be found in:

<https://data.ecb.europa.eu/main-figures>

ECB interest rates and exchange rates

Harmonized competitiveness indicators

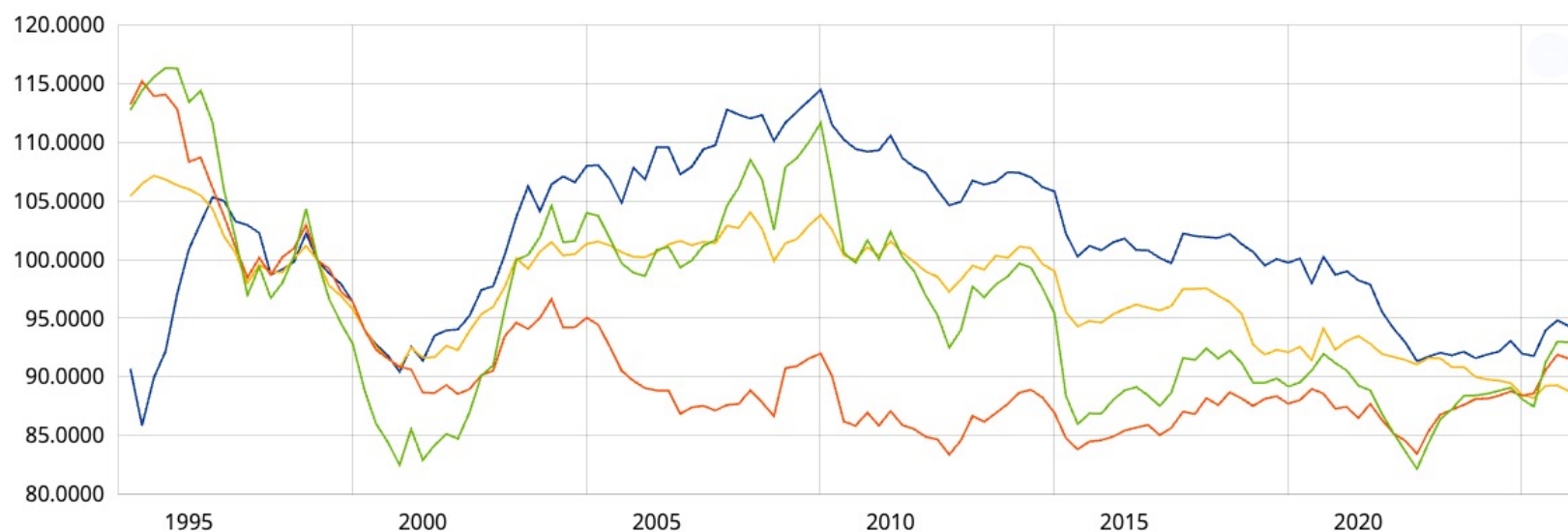
$$E_R = E \cdot P_{EAcountry} / P_{other}$$

Note: Eurostat computes both price competitiveness (using consumer price indices or GDP deflators) and cost competitiveness (using Unit Labour Costs)

Harmonized competitiveness indicators - ULC

ECB Data Portal, 14 September 2026, 15:59 CET

- Italian lira real harmonised competitiveness indicator against euro area countries and extended group of trading partners (HCI-17+euro area countries), unit labour cost in total economy deflated , Quarterly, 99Q1=100
- French franc real harmonised competitiveness indicator against euro area countries and extended group of trading partners (HCI-17+euro area countries), unit labour cost in total economy deflated , Quarterly, 99Q1=100
- German mark real harmonised competitiveness indicator against euro area countries and extended group of trading partners (HCI-17+euro area countries) , unit labour cost in total economy deflated , Quarterly, 99Q1=100
- Euro real effective exchange rate against extended group of trading partners (EER-17), unit labour cost in total economy deflated , Quarterly, 99Q1=100



Source: ECB

Harmonized competitiveness indicators – ULC vs CP

ECB Data Portal, 14 September 2026, 16:07 CET

- Italian lira real harmonised competitiveness indicator against euro area countries and extended group of trading partners (HCI-17+euro area countries), unit labour cost in total economy deflated, 99Q1=100
- German mark real harmonised competitiveness indicator against euro area countries and extended group of trading partners (HCI-17+euro area countries), unit labour cost in total economy deflated, 99Q1=100
- German mark real harmonised competitiveness indicator against euro area countries and broad group of trading partners (HCI-40+euro area countries), consumer prices indices deflated, 99Q1=100
- Italian lira real harmonised competitiveness indicator against euro area countries and broad group of trading partners (HCI-40+euro area countries), consumer prices indices deflated, 99Q1=100



Source: ECB

Harmonised competitiveness indicators

The purpose of HCIs is to provide comparable measures of euro area countries' price and cost competitiveness that are also consistent with the real effective exchange rates (EERs) of the euro

Based on consumer price indices The consumer price indices measure the average change over time in the prices paid by households for a specific basket of consumer goods and services.

Based on unit labour cost indices for the total economy: Calculated as the ratio of compensation per employee to labour productivity. Labour productivity is measured as GDP at constant prices divided by the total number of persons employed $ULC = W / (Y/N) = WN/Y$

Time dimension and rates of change

Change in competitiveness =

$$(E_{R,t} - E_{R,t-1})/E_{R,t-1}$$

- Increase in E_R indicates loss of competitiveness (**real** appreciation)
- Decline in E_R : improvement of competitiveness (**real** depreciation)
- If we see a change in E_R this may be due to changes in P_E , in P_{US} or in E , or in all of them!
- Can we measure which factors are responsible?

Competitiveness rate of change

$$E_{R,t} = P_{E,t} E_t / P_{US,t}$$

Take the log and let $\log(X) = x$ (small X)

$$e_{R,t} = p_{E,t} + e_t - p_{US,t}$$

Take the derivative with respect to time $\rightarrow$ (instant) rate of growth

$$d e_{R,t} / dt = d p_{E,t} / dt + d e_t / dt - d p_{US,t} / dt$$

$$\dot{e}_R = (\dot{p}_E - \dot{p}_{US}) + \dot{e}$$

The rate of change of competitiveness is equal to the inflation differential plus the rate of change of the exchange rate

Rate of change of an average price index = inflation

Likewise, consider the mark up rule: $P = \frac{W}{Y/N} (1 + m) = \frac{W}{Q} (1 + m)$

Take logs and then the derivative wrt time:

$$\dot{p} = \dot{w} - \dot{q} + \Delta m$$

where $\log(1+m) \cong m \rightarrow d \log(1+m)/dt = dm/dt = \Delta m$

We found a key relation:

Inflation is nil if the rate of growth of productivity is sufficient to satisfy the rate of growth of wages and profit margins

From levels to rates of growth

Brief math revision

Rate of change and proportional rate of change.

Discrete versus continuous time

Given $X(t)$, with t continuous, the change of $X(t)$ in time interval $\Delta t = s$ is given by:

$$X(t + s) - X(t) = \Delta X$$

Variation in the unit of time:

$$\frac{(X(t + s) - X(t))}{s} = \frac{\Delta X}{s}$$

As the interval gets smaller (continuous time), we obtain the change in the instant of time, i.e. the time derivative:

$$\lim_{s \rightarrow 0} \frac{(X(t + s) - X(t))}{s} = \frac{dX}{dt} = \dot{X}$$

Proportional variations

Most of the time we are interested in the rate of change or rate of growth.

In discrete time this is given by:

$$\frac{(X_{t+s} - X_t)}{X_t}$$

Likewise, in the instant of time this is given by:

$$\frac{dX_t}{dt} / X_t = \frac{\dot{X}}{X}$$

In both cases these are percentage rates of growth, once multiplied by 100

Why is the instant rate of change interesting?

Use of logarithmic transformation

Take log of X , $\log(X_t)$, then the derivative with respect to time is:

$$\frac{d \log X_t}{dt} = \frac{1}{X_t} \frac{dX_t}{dt} = \frac{\dot{X}}{X}$$

This is the (instant) rate of change !!

X	$(X_t - X_{t-1})/X_{t-1}$	$\ln(X)$	$\ln(x_t) - \ln(X_{t-1})$
100.1		4.60616969	
100.4	0.002988048	4.60916221	0.002992521
99.9	-0.00500501	4.60416969	-0.004992522

Summing up

DISCRETE TIME

Variation of X in a time interval

$$X_{t+s} - X_t$$

Rate of growth

$$\frac{(X_{t+s} - X_t)}{X_t}$$

CONTINUOUS TIME

Change in the instant of time

$$\lim_{s \rightarrow 0} \frac{X_{t+s} - X_t}{\Delta t} = \frac{dX_t}{dt} = \dot{X}$$

Instant rate of growth

$$\frac{\dot{X}}{X} = \frac{d \log X(t)}{dt}$$

A final note on PPP

- *Absolute PPP*
 - It states that exchange rates equal relative price levels.
- *Relative PPP*
 - It states that the percentage change in the exchange rate between two currencies over any period equals the difference between the percentage changes in national price levels, i.e. the inflation differential.
 - Relative PPP between the United States and Europe would be:

$$\dot{e} = \dot{p}_{US} - \dot{p}_E$$

where $\dot{p}$ is the inflation rate

Weak empirical support for PPP

- The empirical support for PPP and the law of one price is weak in recent data.
 - The prices of identical commodity baskets, when converted to a single currency, differ substantially across countries.
 - Relative PPP is sometimes a reasonable approximation to the data, but still it performs poorly