Macroeconomics

from the individual to the state and beyond

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Outline

What is macroeconomics?

From the individual to the aggregate level

- Microeconomics: how individual (HH & firms) take decisions to allocate their limited resources
- Macroeconomics:
    - the whole is different from the sum of the parts
    - how the aggregate level affect HH & firms (gvt) decisions
    - but who takes those decisions?
    - micro focuses on one market, macro focuses on all markets at the same time

Why do we study macro?

I once told a colleague, "If you want to understand geology, study earthquakes. If you want to understand economics, study the biggest calamity to hit the U.S. and world economies: the Great Depression"

B. Bernanke

Some questions

- Why are we so much better off than our grandparents?
- Why are we some countries exceedingly rich and some others exceedingly poor?
- What causes inflation?
- What causes unemployment?
- What causes economic crisis? What is the transmission mechanism? What is the role of policy?

Outline

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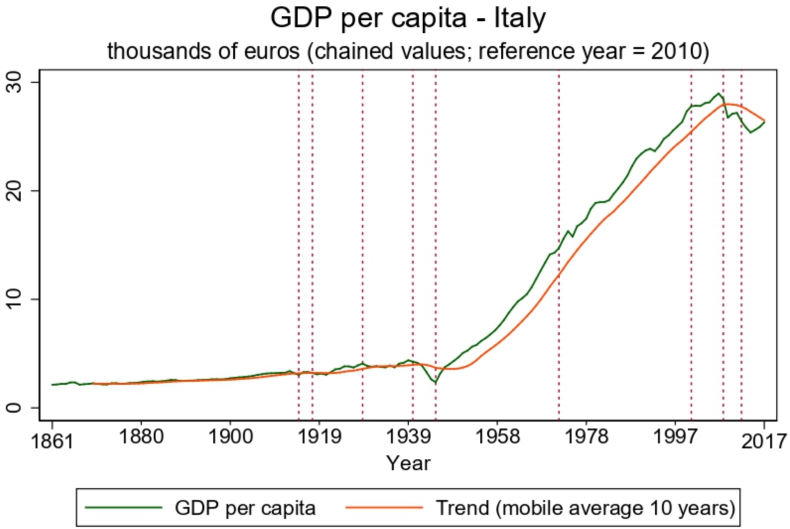
2. Main notions
   - Gross Domestic Product
   - Short & long run
   - Productivity
   - Inflation
   - Interest rate
   - The labor market
   - Other indicators

Definition

A measure of aggregate economic activity GDP is the market value (gross of amortization) of all final goods and services produced in an economy within a given time period.

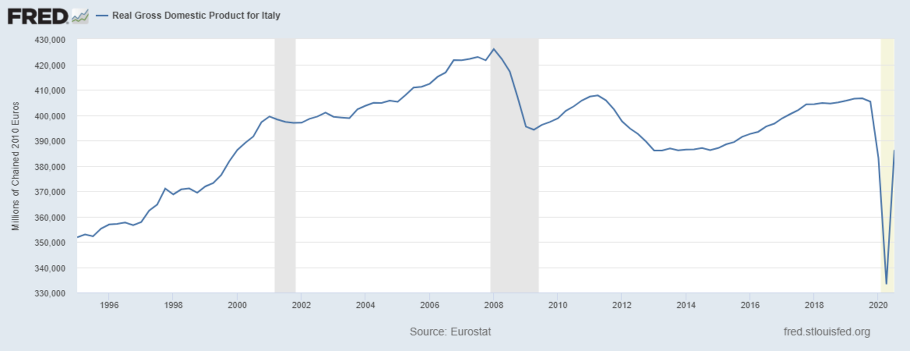
- expenditure approach $Y = C + I + G + (X - Im)$
- income approach: capital + labor income
- value added: value of output - value of input (intermediate goods)

Italian historical series

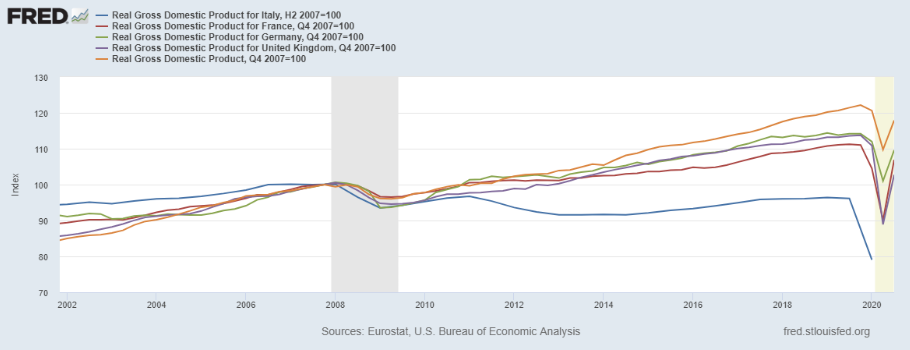


source: ricostruzione Banca d'Italia-Istat 1861-2017 (da Statistiche storiche della Banca d'Italia)

Double-dip recession



International perspective



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Business Cycle

Short-run ups and downs (booms and recessions) in aggregate economic activity

- from a Keynesian perspective we want to stabilize the economy because crisis and booms are *irrational* (results of policy conducted not soundly)
- but in our model agents are rational and crisis are outcomes of rational decisions

Long run growth

- Increase in national productive capacity and average std of living in the long run: **technological progress**
- Captured better by Gdp per capita

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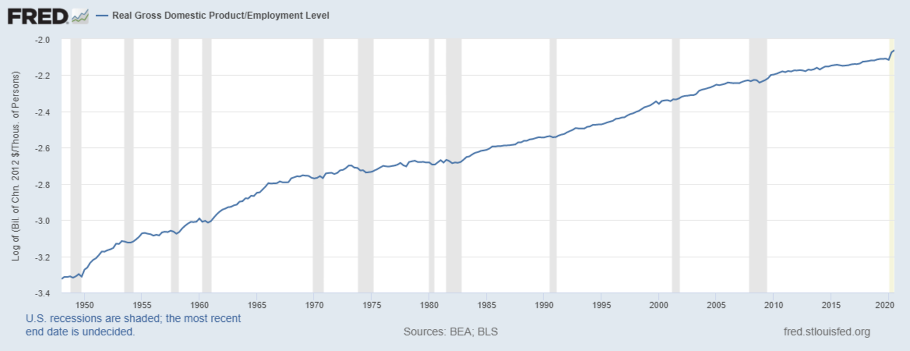
What is productivity?

- average labor productivity:

$$\frac{Y}{N}$$

Data for the US



Low productivity growth

- when productivity growth is high, std of living increases: everyones benefit (even if inequality increases)
- in developed country (expected) productivity growth is low
  - wicksellian real interest rate is low

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Main notion

- Imagine that today prices have increased vis a vis yesterday: **inflation**
- If they decrease: **deflation**
- we can define an inflation rate:

$$\pi = \frac{P_t - P_{t-1}}{P_{t-1}}$$

CB inflation targeting

$$\pi^T \approx 2\%$$

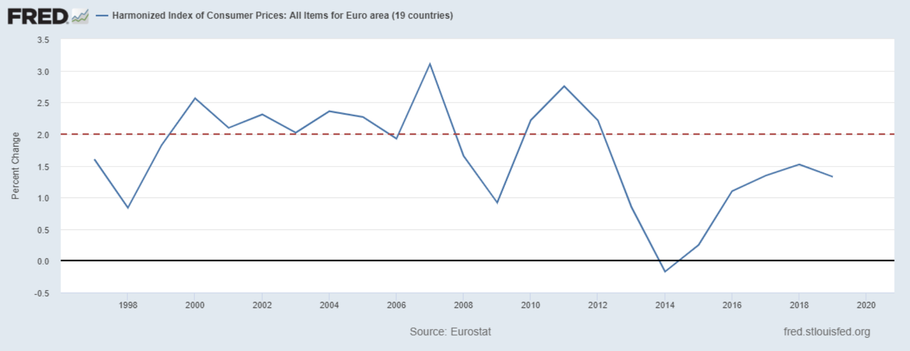
Why is low but positive inflation desirable?

- Even in presence of nominal rigidities, price stability makes the sticky price constraint non binding
  - divine coincidence in a deterministic environment: $\pi = \pi^T$ and $N = N^*$
- Are CB able to generate and control inflation?
- In presence of inflation:
  - it is not *pure* inflation
  - not all prices and wages adjust simultaneously
  - increase uncertainty by firms (investments) and HH
  - create distorsion with taxation: bracket creep
- In presence of deflation:
  - as above
  - may limit the scope of conventional monetary policy

In the long run. . .

- inflation is a monetary phenomenon
- varies 1:1 with money stock (fully controlled by CB)

HICP for Euroarea



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Nominal vs. real variables

- nominal variable: expressed in terms of current mkt value (€)
- real variable: expressed in terms of (a basket of) goods and services

Nominal interest rate

- The government issue a bond ($FV = 100€$)
- Disregard (sovreign) risk
- Promise to pay back $FV + I = (100 + 10)€$
- The interest rate is:

$$1 + i = \frac{100 + 10}{100} = 1.1$$

Definition

The interest rate is the relative price of 1€ today in terms of future €.

In case of inflation...

- If you save 1€ today, tomorrow you will have 1.1€
- If prices increases by 10: a coffee (1€ today) will cost 1.1€
- Your purchasing power hasn't changed

Real interest rate

Price of current consumption in terms of future consumption

$$r = i - \pi^e$$

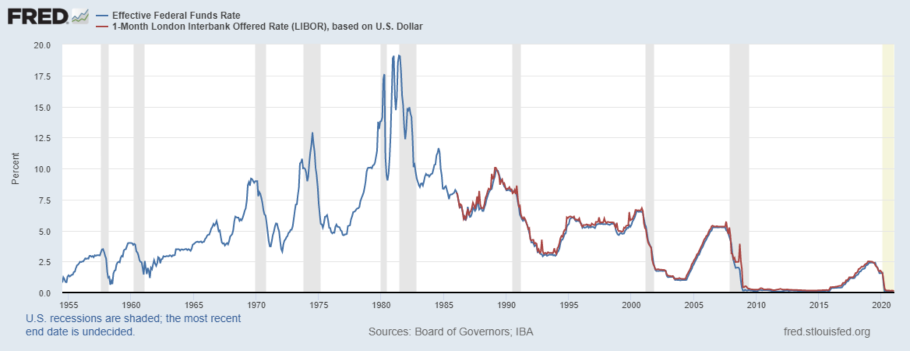
It influences svg/borrowing and investment decision.

ZeroLowerBound

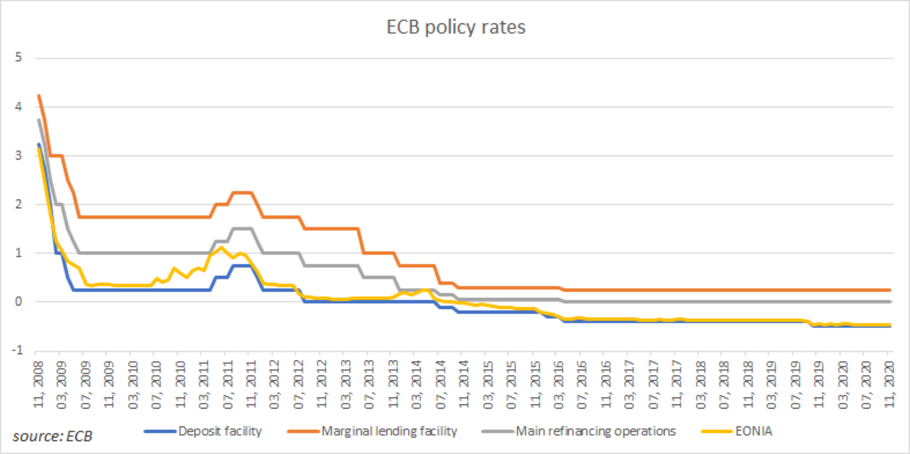
Now we are at the Zero Lower Bound:

- if $i = 0$ would you hold bonds?
  - shoe-leather costs!
- unconventional monetary policy is ineffective
- investors are tempt to take too much risk

Fed Rate and Libor



ECB corridor system



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Definitions

Interaction between labor supply and labor demand:

- working age population (15-64y)
  - labor force (L)
    - employed (N)
    - unemployed (U): not employed but activily looking for a job
- data from the Labor Force Survey

Statistics

- unemployment rate: $\frac{U}{L} = \frac{U}{N+U}$
- employment rate: $\frac{N}{WorkingAgePop}$
- participation rate: $\frac{L}{WorkingAgePop} = \frac{U+N}{WorkingAgePop}$

Unemployment rate

Why is it important?

- effect on welfare
- signal the use of resources:
  - low unemployment: economy may overheat
  - high unemployment: economy doesn't use all the available resources

Unemployment rate

Does it captures the whole picture?

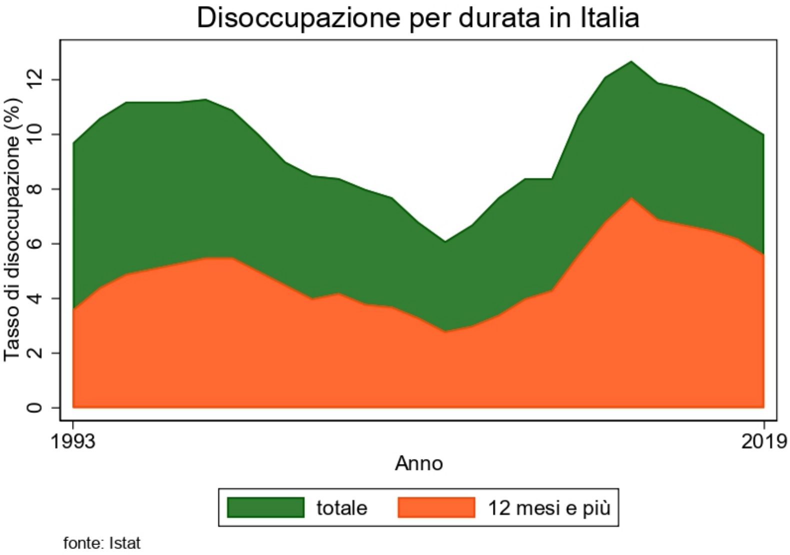
- Duration of unemployment
- Youth unemployment - Not in Education Employment or Training
- Discouraged workers (movement out of the labor force)
- Gender gap

Unemployment rate and duration

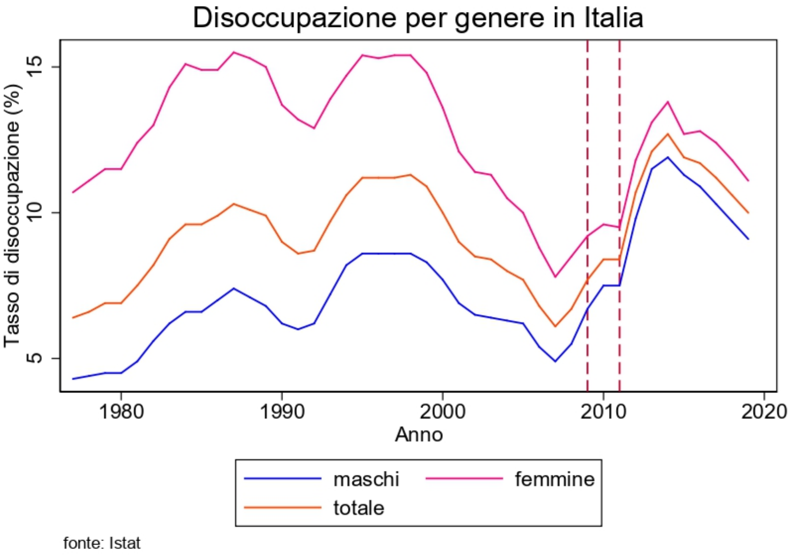
Unemployment per se can be socially efficient:

- matching each workers to the best job requires time
- but if it is prolonged it may reflect a sclerotic labor mkt

Unemployment rate and duration



Unemployment rate and gender



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Does Gdp/Income captures the whole picture?

"Without measures of economic aggregates like GDP, policymakers would be adrift in a sea of unorganized data. The GDP and related data are like beacons that help policymakers steer the economy toward the key economic objectives"
Paul Samuelson in Samuelson and Nordhaus (1995).

Does Gdp/Income captures the whole picture?

"The welfare of a nation can scarcely be inferred from a measurement of national income"
Simon Kuznets on GDP and well-being in 1934.

Easterlin paradox

- At a point in time happiness varies directly with income both among (up to a threshold) and within nations
- Over time happiness is trendless in income
- It is relative income rather than the level of income that matters

Easterlin Paradox

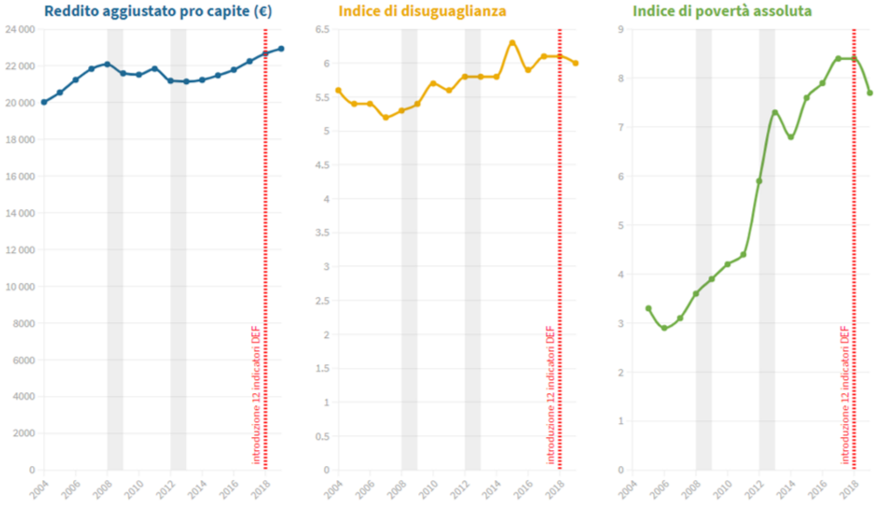
Deaton and Kahneman (2010) found that:

- Income and education are closely related to life evaluation, but less to daily emotions.
- When plotted against log income, life evaluation rises steadily. Emotional well-being also rises with log income, but there is no furtherprogress beyond an annual income of about 75,000 USD.

Bes & Desi

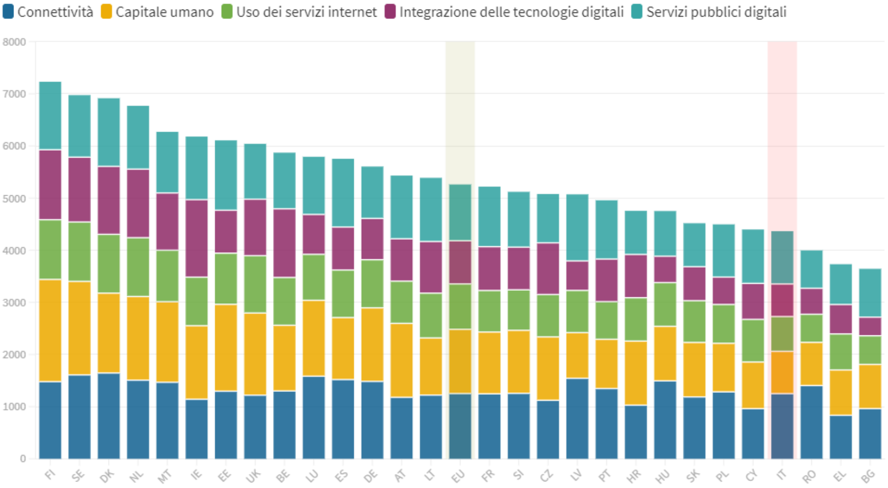
Link Articolo di Tortuga

Bes



Fonte: Istat • in grigio i periodi in cui il tasso di cresicta del PIL (in termini reali) è stato negativo
I dati 2018-2019 dell'indice di disuguaglianza sono stime Istat. Il dato 2019 del reddito medio disponibile aggiustato pro capite è provvisorio.

Desi



Fonte: European Commission, Digital Scoreboard

Outline

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3 Fiscal and monetary policy

- Fiscal Policy
- Monetary Policy
- Sovereign debt

Intuition

Fiscal Policy consists:

- form of financing by government and social transfers
- government spending (other of social transfers)

Transmission mechanism

An increase in gvt spending, increase aggregate demand, that is equal to aggregate output (which in turns increase employment)

Gvt budget

But gvt needs to finance its budget through taxes or debt:

- if gvt increases taxes, then an increase in gvt spending is reflected into a reduction of disposable income
- if gvt finances itself through debt, the situation is more complex

$$PV\{G\} = PV\{T\} + PV\{se\}$$

Outline

3. Fiscal and monetary policy
    - Fiscal Policy
    - Monetary Policy
    - Sovereign debt

Money

Three functions:

- medium of exchange: *eliminates the double coincidence of wants*
- store of value;
- unit of account

Money

Two kinds:

- base money (CB's reserves+currency): legal tender and fully controlled by CB:
  - money is a liability for the CB
- broad money (deposits): created by the banking system

Intuition

CB implements monetary policy controlling the stock of money or the short term interest rate trying to influence the real side of the economy

Key elements

- credibility: future matters - if the CB is credible it can control future expectations
    - transparency
    - systematic rule
    - independence from political pressure

Goals

- price stability (in the medium run)
  - (flexible) inflation targeting
- financial stability
- functioning of the payment system

Credit mkts and banks

One of the financial channel at work during both Great Depression and Great Recession is **fragilities in credit intermediation**

- banks were unable to channel resources to the private sector: **credit crunch**
- risk premium increased

In case of financial crisis

- CB lower the interest rate
- provide liquidity to the banking system to prevent disruption in credit intermediation

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Ricardian Equivalence

A tax cut is not a free lunch:

- under some conditions:
    - given a fixed path of gvt spending
    - a cut in tax today is followed by an increase in gvt debt
    - gvt debt should be repayed
    - people anticipate that and save more
    - **income spent in consumption is the same as whithout the tax cut**
- at an aggregate level resources cannot be transfered intertemporally

Gvt debt is a redistribution issue

A tax cut (increase of debt) is a redistribution of tax burden from one group to another

Crowding out

An increase in gvt spending may crowd out private economic activity

Forms of financing of gvt debt

- borrowing domestically
- borrowing from abroad
- using foreign exchange reserves
- printing money
- each of them is associated to a macroeconomic imbalance

The gvt can rollover debt

- if investors loose confidence: self fulfilling dynamic!

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