

# European Inflation Tracker

— News, Story, Indicators, Explanations, Readings —

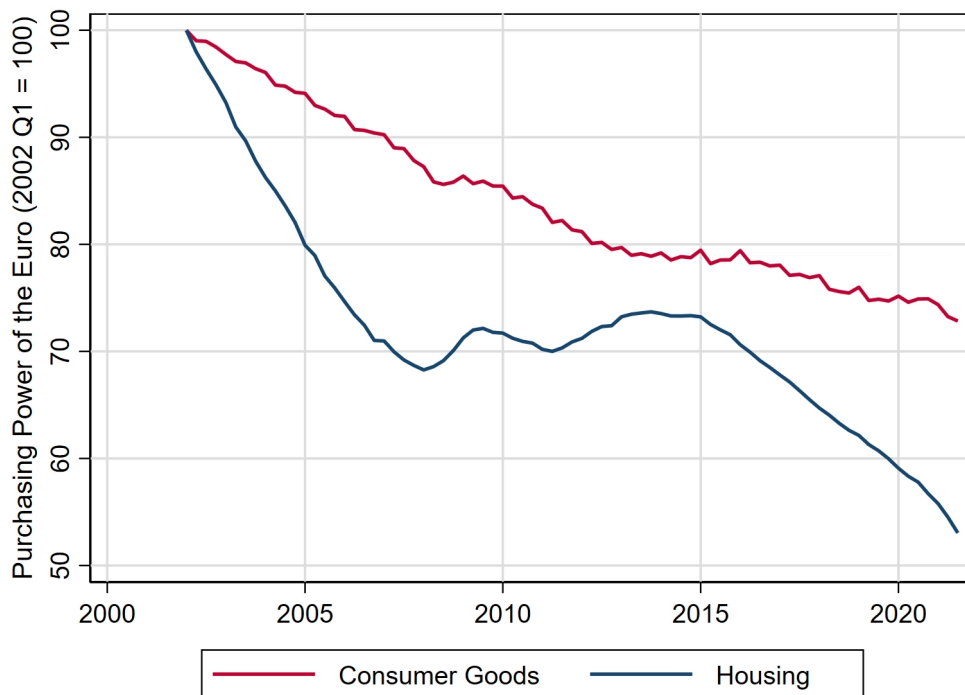
## Why Inflation matters

*Higher prices imply a lower purchasing power of money*

Money is used to buy goods, services, and assets. If prices go up, the value of each Euro (or Franc) is reduced as it can buy less. We can illustrate this relationship by looking at the price level of consumer goods as well as house prices in the the Euro area. Since 2002, people use the Euro as currency. While the coins and banknotes still look (more or less) the same, the value of them has been reduced.

Economists say the purchasing power today is lower than in the past.

The chart shows that each Euro of 2002 is now worth 73 cents when buying consumer goods and only 55 cents when buying real estate. Put differently, due to inflation people in the Euro area need almost twice as much money to purchase the same house as in 2002. Someone who had a net income of, say, 2'000 Euro in 2002 and does not earn 2'740 Euro today can afford fewer consumer goods. And only if his income went up to 3'680 Euro, he can afford the same housing.



Source: OECD accessed on Mar 23, 2022

The simple Rule of 72 helps quantifying magnitudes: We divide 72 by the annual growth rate (here 3.2% for housing) and obtain the number of years for the price level to double:  $72 / 3.2 = 22.5$

Thus, a 2% annual rate of inflation cuts the purchasing power in half every generation (36 years).

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# How to measure inflation?

*It is a bit complicated*

Put simply, inflation rates document how prices in an economy change.

But which prices should we look at and how do we aggregate various price movements?

The main indicator used by economists is the so-called **consumer price inflation (CPI)**, sometimes called headline inflation. This is measured by tracking the prices of a basket of goods and services that consumers typically buy. Each good and service, like cars or hair cuts, is given a weight in this basket. Hence, it is *one* measure of inflation that aims to be representative. But each individual spends his/her money differently. And countries differ in how they allocate weights. The ECB ([link \(https://www.ecb.europa.eu/stats/macroeconomic\\_and\\_sectoral/hicp/html/index.en.html\)](https://www.ecb.europa.eu/stats/macroeconomic_and_sectoral/hicp/html/index.en.html)), for instance, uses different weights than the SNB ([link \(https://www.bfs.admin.ch/bfs/de/home/statistiken/preise/erhebungen/lik/warenkorb.html\)](https://www.bfs.admin.ch/bfs/de/home/statistiken/preise/erhebungen/lik/warenkorb.html)).

To complement the CPI, which does not capture all price changes in an economy, economists consider other measures of inflation. Among those we find:

- › core inflation: CPI without volatile components like food and energy prices
- › producer price inflation (PPI): prices received by domestic producers for their output
- › house price inflation: prices of real estate
- › share price inflation: prices of publicly listed companies

While economists typically consider year-on-year price changes, these can be misleading. One reason for this is the so-called *base level effect*. Suppose prices fall in 2020 by 5% and then increase by 5% in 2021. The result is that prices are still lower than in 2019 ( $100 * 0.95 * 1.05 = 0.9975$ ). The high growth rate of 5% in 2021 fell on a reduced base due to the 5% drop in 2020.

For this reason, we track price changes over time using an index that is set to 100 in a base month (or year).

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## What causes inflation?

### Quantity Theory of Money

*Inflation happens when too much money chases goods and services*

The oldest and most important explanation for rising prices goes back to (at least) German astronomer Nikolaus Kopernikus in the early 16th century. It can be summarized with one equation:

$$M * V = P * T$$

On the left-hand side we have total spending in an economy:  $M$  is the total money in circulation and  $V$  is the velocity of money (how often each Euro or Franc on average is used per year for the purchase of goods and services).

On the right-hand side we have, again, total spending in an economy:  $P$  is the price level of goods and services purchased in a given year and  $T$  is the number of transactions.

The equation must always hold. Every Euro used for a purchase (left-hand side) shows up as spending for a transaction (right-hand side).

To explain inflation, we must make two assumptions:

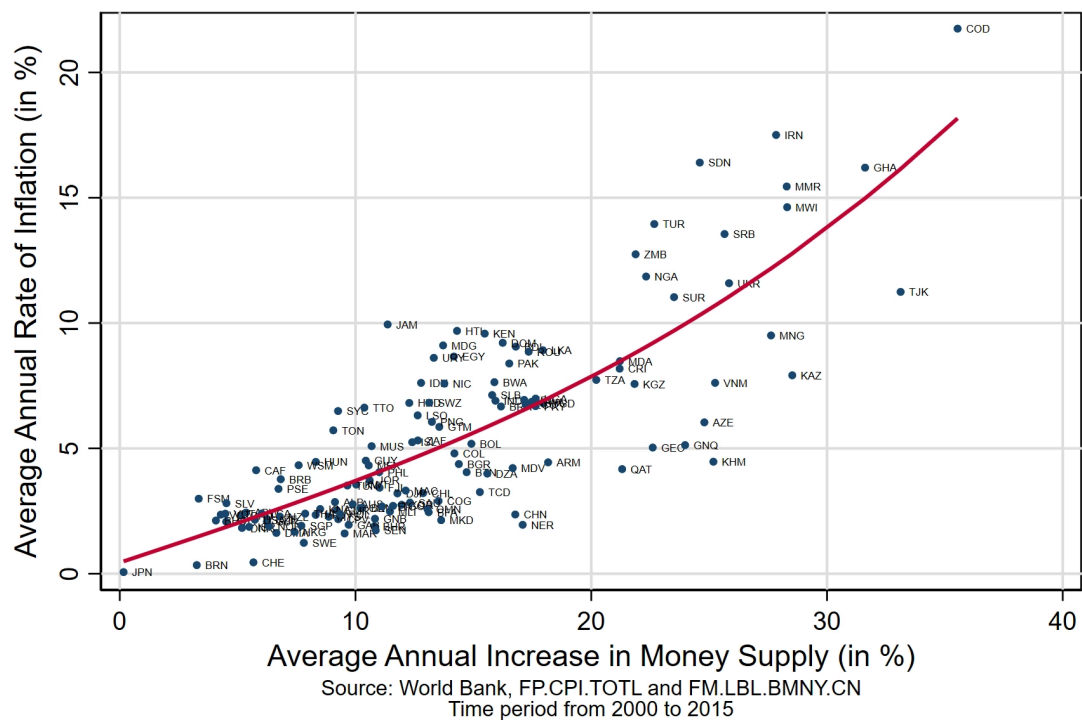
- > Any increase in  $M$  has no impact on  $T$ .
- > The velocity of money,  $V$ , is constant over time.

With these assumptions, an increase in  $M$  leads to a proportional increase in the price level  $P$ .

In simple terms: If the money supply increases, it does not create more goods and services that people can buy with the money. Thus, if the additional money is used as often as the existing money (i.e., the velocity does not change, no one hoards the new money) then more money chases an existing amount of goods and services. This results in higher prices – because money is less scarce compared to the amount of goods and services.

In reality, of course, things are not that simple. The second assumption, the stability of the velocity of money over time, is not fulfilled. Much of the additional money supply in the past years was not used for the purchase of goods and services. Economists say it was hoarded. The data show that it is stored by commercial banks in central banks. Thus, money supply in the real world grew faster than prices.

But this does not refute the quantity theory of money. If we consider a large number of countries, track their money supply growth and inflation rate over several years, we find strong support for the quantity theory of money:



Another aspect of the quantity theory of money is worth noting. An increase in money supply does not imply that all prices go up, much less that they do this synchronously. The extra money is like liquidity (think water) that falls on uneven territory. No one can predict where exactly liquidity will go first and where it flows afterwards. In a market economy, people are largely free to spend the money however they see fit.

Put differently, when the ECB increases money supply there is no reason to expect prices of various goods, prices of real estate, or share prices to move in tandem. There is also no reason to expect the rate of inflation to be similar in the 19 countries of the Euro area.

## The Phillips Curve

*Inflation happens when unemployment is low*

A complementary explanation for inflation is that prices increase during economic booms. When the unemployment rate is low, workers have more bargaining power and can push up wages at a faster pace. This raises costs for companies which then pass on the higher cost to customers in the form of higher prices.

Empirically, this relationship between a country's unemployment rate and its rate of inflation (or wage growth) is credited to economist William Phillips and called Phillips curve ([https://en.wikipedia.org/wiki/Phillips\\_curve](https://en.wikipedia.org/wiki/Phillips_curve)).

# The pros & cons of inflation

*Some benefit, many lose*

When price levels increase broadly, this erodes the value of each Euro, Franc, or whatever currency we consider. As a result, all values expressed in nominal terms lose in real terms. Put simply, someone having 200'000 Euro in a bank account will be able to buy fewer goods when inflation leads to higher prices. Perhaps 200'000 Euro was enough to buy a certain house in 2010 but due to house price inflation that same house now costs 400'000 Euro. The savings are then just enough to buy half that house. By the same token, someone who owes a bank 200'000 Euro sees the real value of that debt erode when inflation occurs.

To sum up that first part: Inflation reduces the real value of any nominal term – on the asset or liability side. Thus, debtors win and savers lose. Anyone who owes someone money benefits from inflation, anyone who has saved money loses when inflation goes up.

But there are more effects of inflation:

- › During times of high inflation, the rate of inflation is typically more volatile. This volatility makes it harder to write contracts. Suppose inflation was 4% in one year, then 9% and 5% in the following years. What would you expect for the next year? How much should (nominal) wages increase to compensate for future inflation?
- › High rates of inflation reduce money's ability to perform its fundamental functions: store of value, unit of account, medium of exchange. Price adjustments are costly and must be performed more frequently when inflation is high. Moreover, people seek to hold real assets instead of cash.
- › Large increases in money supply lead to inflation but not all prices move in tandem, and price changes are impossible to predict. Thus, inflation rewards speculation and gambling – at the expense of thrift and work. The redistribution of real incomes is not a zero-sum game but nations as a whole are worse off with inflation because fewer efforts are devoted to productive activities.
- › Unexpected increases in the rate of inflation reduce nominal interest rates and nominal wages. Hence, companies can benefit in the short-run from a reduction in costs. Inflation allows for reductions in real wages without cutting nominal wages.
- › Higher rates of inflation, as a result of a larger money supply, led to higher income for the central bank (seigniorage) and thus for the state.

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## Measuring Money Supply

*What the different aggregates include*

Economists distinguish different monetary aggregates. These are important for measuring money supply and for conducting monetary policy. They differ slightly between the Euro area and

Switzerland.

For the ECB they include:

- › M0: is called base money and includes banknotes in circulation as well as (required and excessive) reserve deposits of commercial banks at the ECB.
- › M1: includes currency in circulation and sight deposits of customers at commercial banks.
- › M2: includes all of M1 as well as deposits with an agreed maturity of up to two years and deposits redeemable at notice of up to three months.
- › M3: includes all of M2 as well as repurchase agreements, money market fund shares/units and debt securities with a maturity of up to two years.

For the Swiss National Bank they include:

- › M0: is called monetary base and includes currency (banknotes) in circulation and sight deposits of banks at the central bank.
- › M1: includes currency in circulation and short-term sight deposits of customers at commercial banks.
- › M2: includes all of M1 and savings deposits of customers at commercial banks.
- › M3: includes all of M2 and time deposits.

Hence, the difference between monetary aggregates is in liquidity, with M0 only including the most liquid financial means. That is, banknotes and money at the central bank. M1 and M2 are broader as they include the smaller aggregates in addition to the most liquid forms of money.

The key difference between M0 and M1 is that M1 covers (short-run) deposits of customers at commercial banks while M0 includes deposits of commercial banks at the central bank. Put simply, M1 is money that can quickly be used for the purchase of goods and services. When M1 goes up, inflation is likely to increase.

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## Insightful Readings

*Books and websites for the general public*

There are several books which explain key concepts and provide key historical and current illustrations of inflation. Among these, we find:

- › Henry Hazlitt, "What you should know about inflation", 1960 ([PDF here](#))
- › Jens O. Parsson (real name Ronald Marcks), "Dying of Money", 1974
- › Hans-Werner Sinn, "Die wundersame Geldvermehrung", 2021
- › Thomas Mayer, "Das Inflationsgespenst", 2022

There are also websites that offer additional insights:

- › Financial Times, "Inflation Tracker", [link](#)

*Research papers with detailed statistics and explanations*

- › Bruegel (September 2018), Excess Liquidity, [link](#)  
Discussion of why it increased so much since 2008
- › Corradin et al. (2021), [link](#)  
ECB economists examining money market conditions
- › Kaufman and Schmid (2018), [link](#)  
Analysis of the SNB's recent policy