



# Inflation and Unemployment



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## MACROECONOMICS



- National income accounts
- Aggregate demand and Aggregate Supply
- **Inflation and Unemployment**
- Financial, Money and Banking system
- Macroeconomic policies

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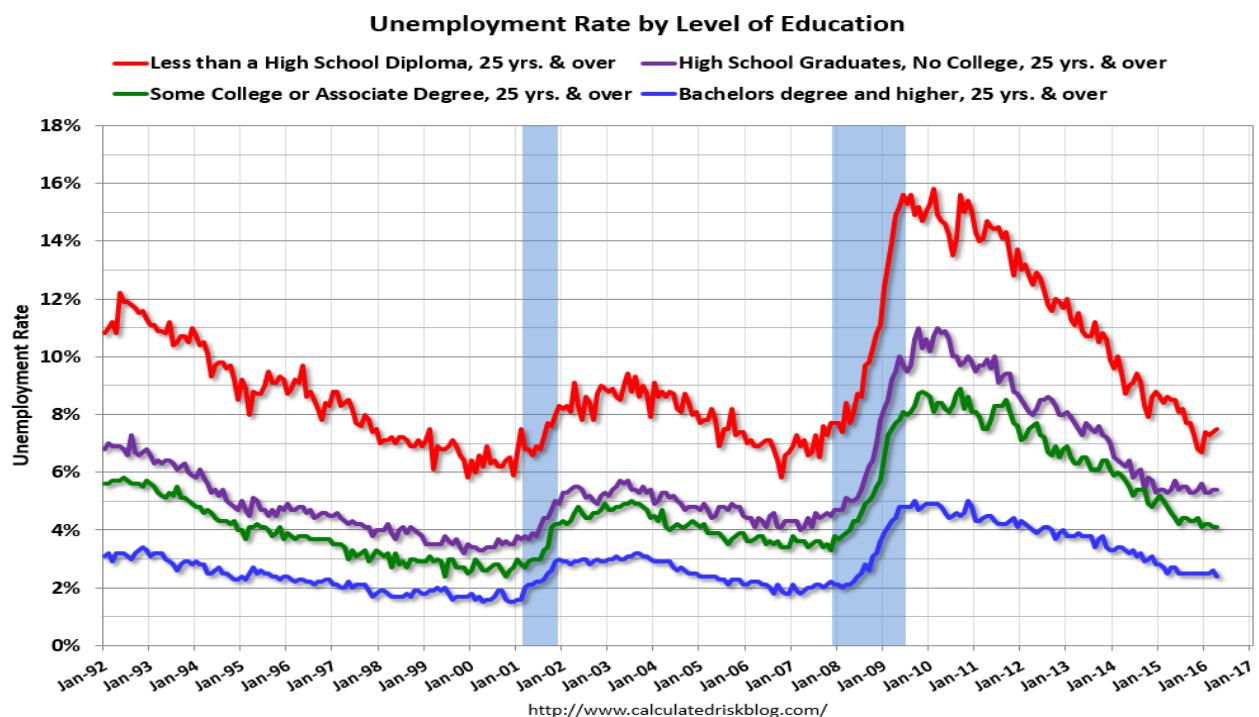
# Macroeconomic problems



- **Inflation:** Condition of constantly-rising product and factor prices
- **Unemployment:** Workforces are unable to find jobs
- **Trade difficulties:** Inefficiency in local production and allocation of resources and outputs makes national trading less competitive.
- Lack of adequate **economic growth**

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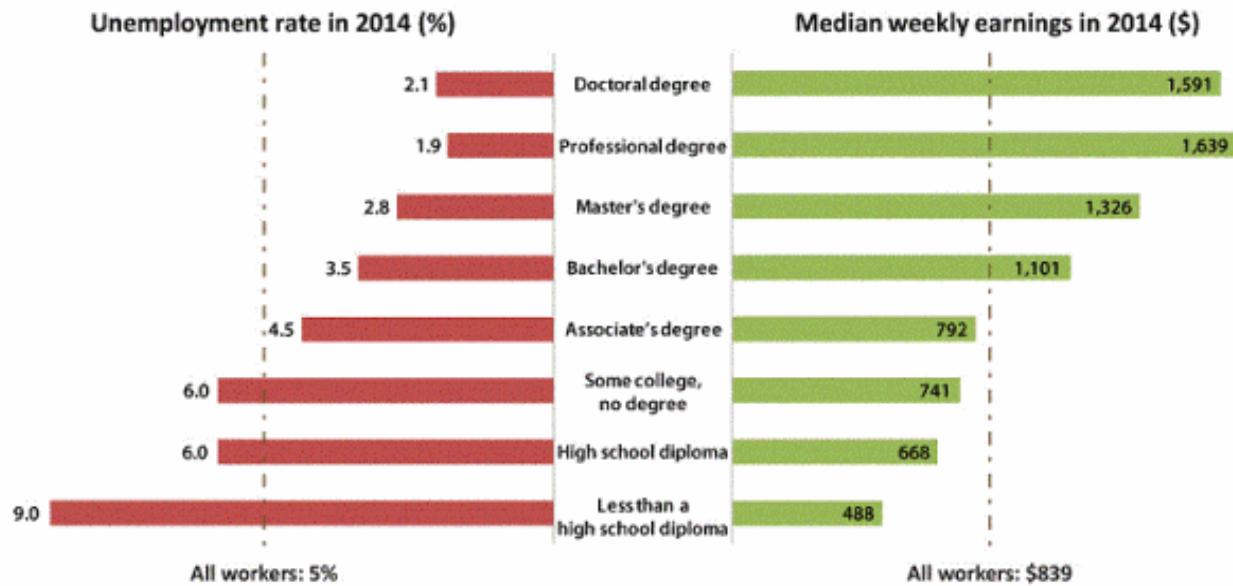
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## Earnings and unemployment rates by educational attainment

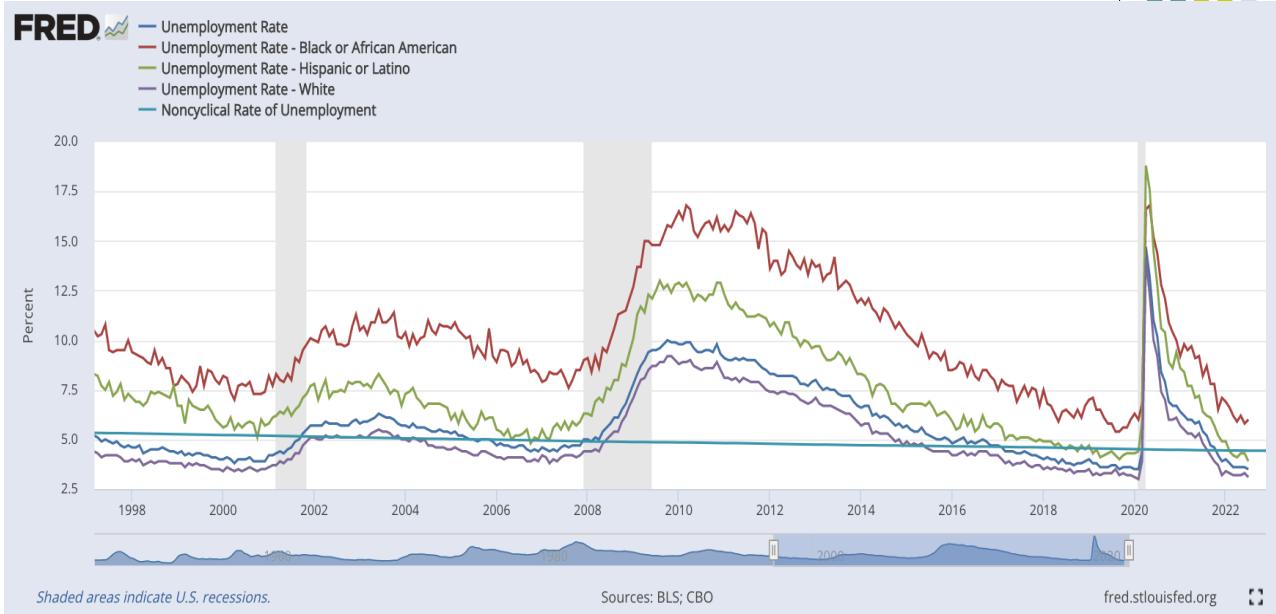


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## Unemployment



# Unemployment

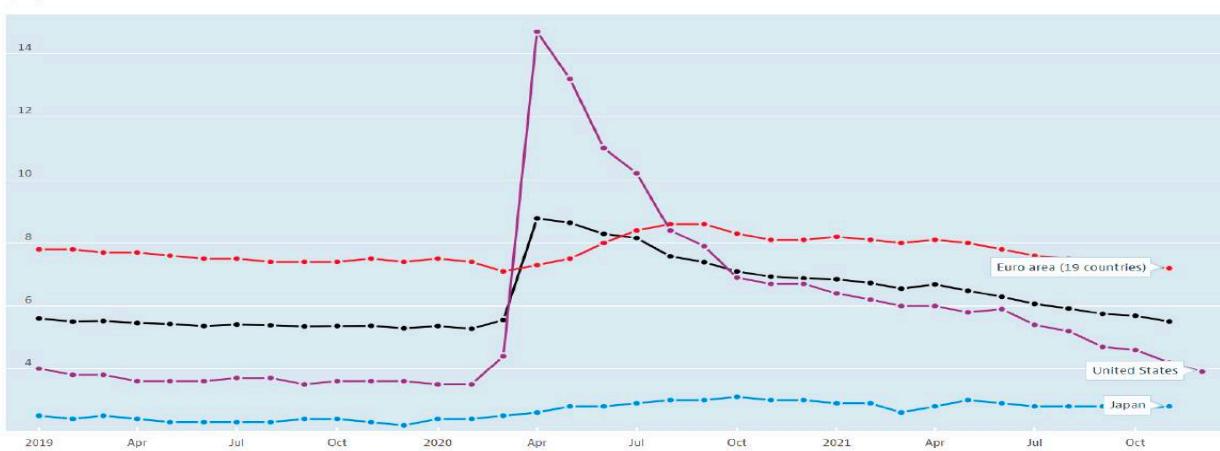


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## Unemployment rate

% of labour force, Jan 2019 – Dec 2021



Source: Labour market statistics.

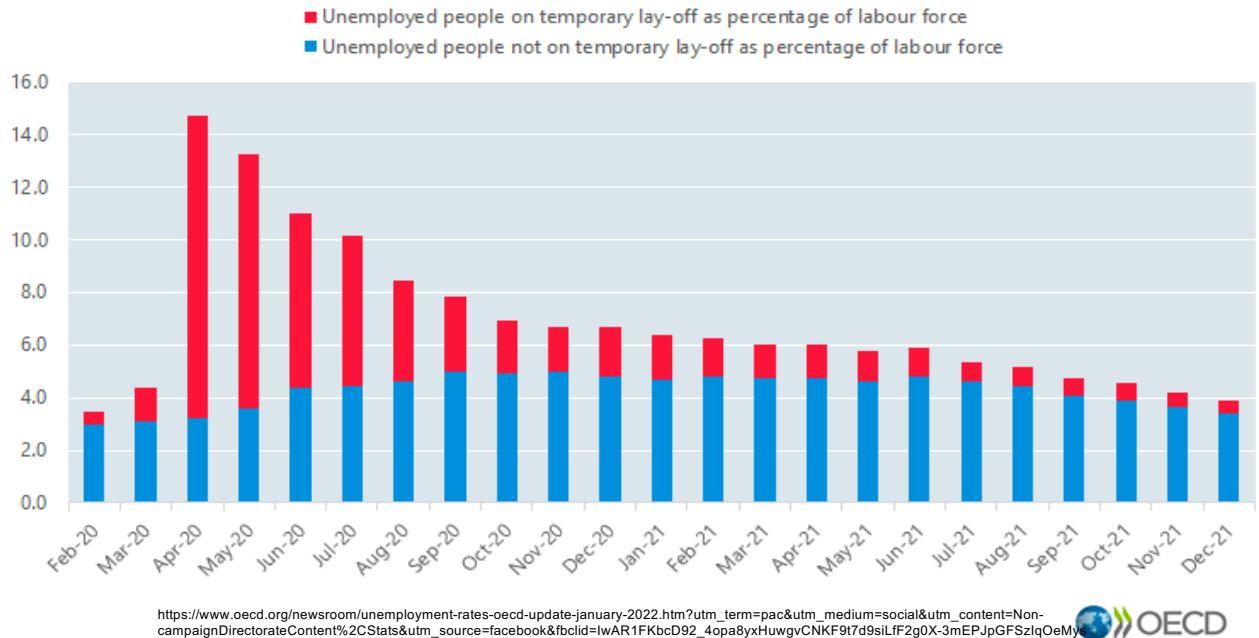


[https://www.oecd.org/newsroom/unemployment-rates-oecd-update-january-2022.htm?utm\\_term=pac&utm\\_medium=social&utm\\_content=Non-campaignDirectorateContent%2CStats&utm\\_source=facebook&fbclid=lwAR1FKbcD92\\_4opa8yxHuwgvCNKF9t7d9siLff2g0X-3mEPJpGFSzlqOeMys](https://www.oecd.org/newsroom/unemployment-rates-oecd-update-january-2022.htm?utm_term=pac&utm_medium=social&utm_content=Non-campaignDirectorateContent%2CStats&utm_source=facebook&fbclid=lwAR1FKbcD92_4opa8yxHuwgvCNKF9t7d9siLff2g0X-3mEPJpGFSzlqOeMys)

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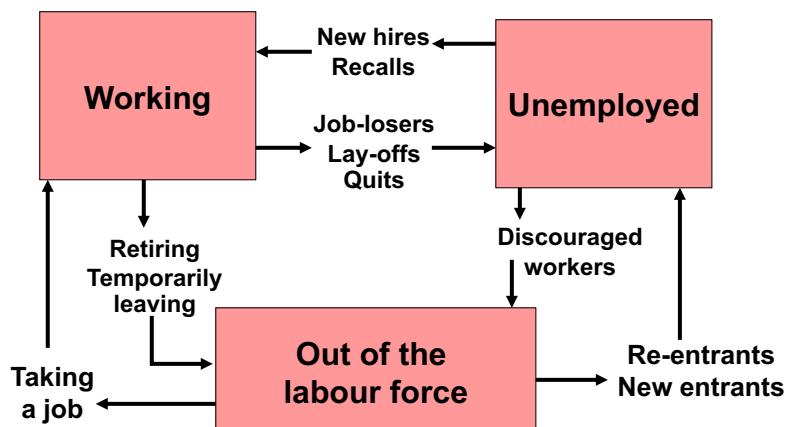
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### Composition of the United States unemployment rate



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## Labour market flows



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## How Is Unemployment Measured?

- An adult is over 16 years old.
- A person is considered **employed** if he or she has spent **most of the previous week working at a paid job**.
- A person is **unemployed** if he or she is on **temporary layoff**, is **looking for a job**, or is **waiting for the start date of a new job**.
- A person who fits neither of these categories, such as a **full-time student**, **homemaker**, or **retiree**, is **not in the labor force**.

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## Identifying unemployment

- Describing Unemployment
  - Three Basic Questions:
    - How does government **measure** the economy's rate of unemployment?
    - What **problems arise** in interpreting the unemployment data?
    - **How long** are the unemployed typically without work?
- Three categories:
  - Employed
  - Unemployed
  - Not in the labor force

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## How Is Unemployment Measured?

- The *labor-force participation rate* is the percentage of the adult population that is in the labor force.

Labor force participation rate

$$= \frac{\text{Labor force}}{\text{Adult population}} \times 100$$

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## How Is Unemployment Measured?

- Labor Force
  - The *labor force* is the total number of workers, including both the employed and the unemployed.
  - The labor force as the sum of the employed and the unemployed.
- The *unemployment rate* is calculated as the percentage of the labor force that is unemployed.

$$\text{Unemployment rate} = \frac{\text{Number unemployed}}{\text{Labor force}} \times 100$$

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## Why Are There Always Some People Unemployed?

- *Frictional unemployment* refers to the unemployment that results from the time that it takes to match workers with jobs. In other words, it takes time for workers to search for the jobs that are best suited to their tastes and skills.
- *Structural unemployment* is the unemployment that results because the number of jobs available in some labor markets is insufficient to provide a job for everyone who wants one.
- *Job search*
  - the process by which workers find appropriate jobs given their tastes and skills.
  - results from the fact that it takes time for qualified individuals to be matched with appropriate jobs.

short-term  
unemployment

Không đủ việc  
long-lasting  
unemployment

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## Identifying unemployment

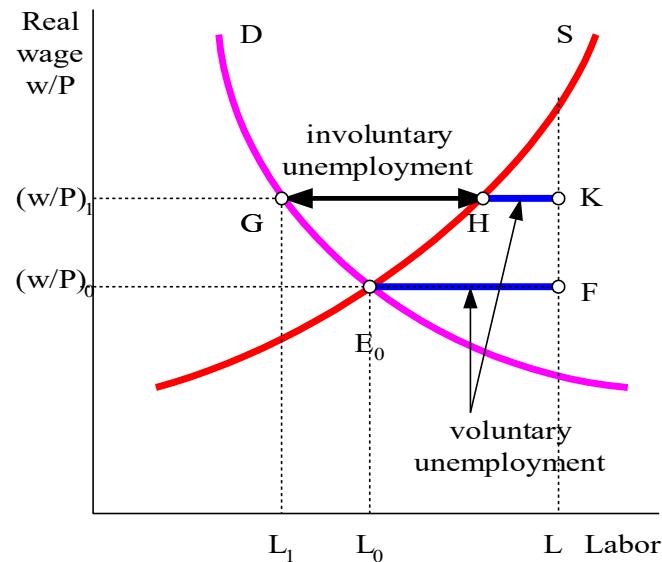
- The problem of unemployment is usually divided into two categories.
  - The long-run problem and the short-run problem:
- *Natural Rate of Unemployment*
  - The natural rate of unemployment is unemployment that does not go away on its own even in the long run.
  - It is the amount of unemployment that the economy normally experiences.
- *Cyclical Unemployment*
  - Cyclical unemployment refers to the year-to-year fluctuations in unemployment around its natural rate.
  - It is associated with short-term ups and downs of the business cycle.

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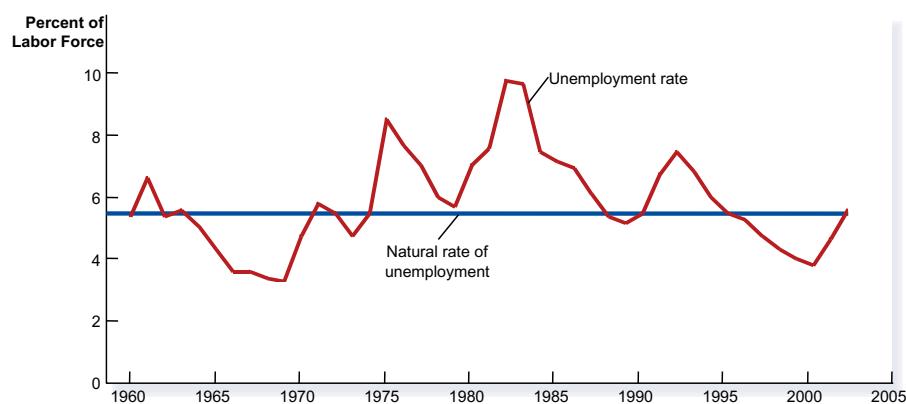
## Unemployment



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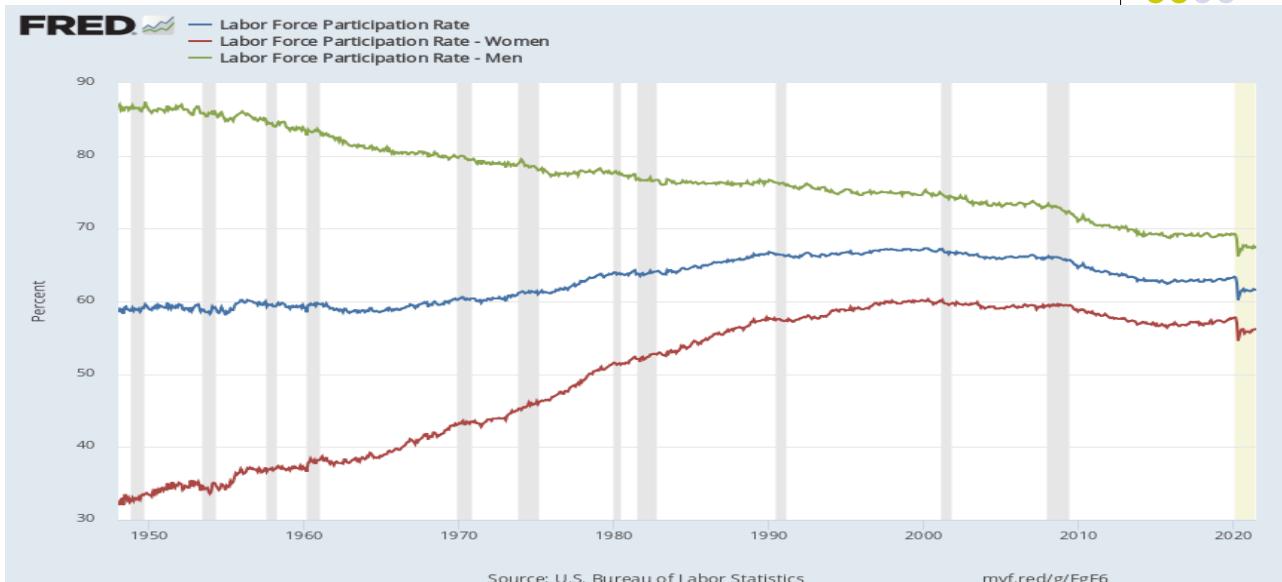
## Unemployment Rate Since 1960



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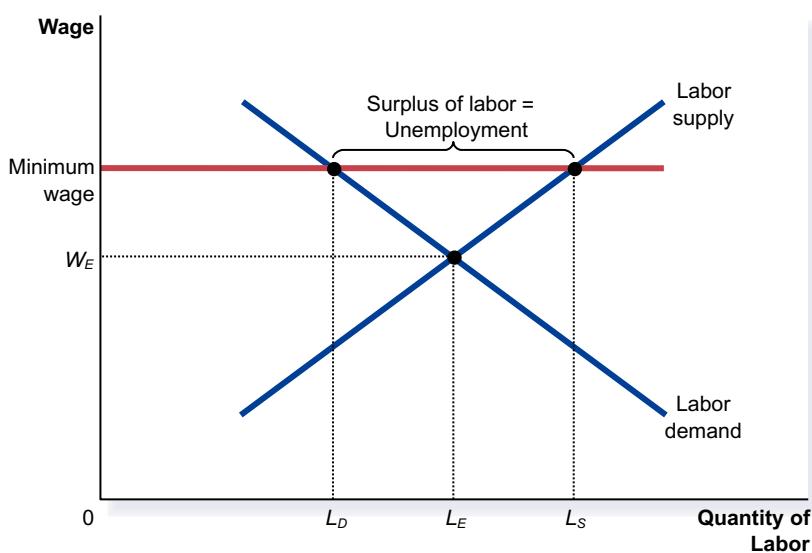
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## Labor Force Participation Rates for Men and Women Since 1950



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## Unemployment from a Wage Above the Equilibrium Level



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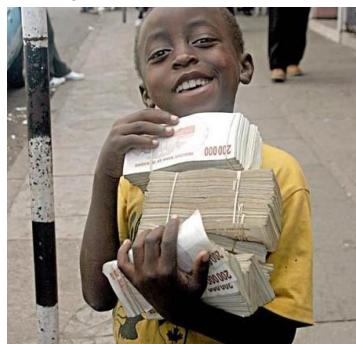
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## Zimbabwe

- Saturday, March 28, 2009
- 1 US Dollar = 37,456,777 Zimbabwe Dollar
- 1 Zimbabwe Dollar (ZWD) = 0.00000003 US Dollar (USD)
- **Zimbabwe's \$100 billion banknote with 3 eggs it could purchase on its release date**



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### HIGHEST MONTHLY INFLATION RATES IN HISTORY

Country	Month with highest inflation rate	Highest monthly inflation rate	Equivalent daily inflation rate	Time required for prices to double
Hungary	July 1946	$4.19 \times 10^{16}\%$	207%	15.0 hours
Zimbabwe	Mid-November 2008	79,600,000,000%	98.0%	24.7 hours
Yugoslavia	January 1994	313,000,000%	64.6%	1.4 days
Germany	October 1923	29,500%	20.9%	3.7 days
Greece	October 1944	13,800%	17.9%	4.3 days
China	May 1949	2,178%	11.0%	6.7 days



**+ 1 NIGHT =**



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## Inflation



- Makes Production and distribution less efficient
- Creates Uncertainties about costs and makes planning more difficult and uncertain.
- Makes it hard for long-term agreement
- Money is unable to fulfill its functions: *Medium of exchange, Unit of account, Store of value, and Standard of deferred payment*
- Export is more expensive, import is cheaper and grow in Volume.

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# Inflation



- Inflation is a rise in the average price of goods over time
- Why is inflation bad?
  - Inflation does have bad effects, but some popular criticisms are based on spurious reasoning
- What are the causes of inflation?
- What can be done about it?

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# The quantity theory of money



- **The quantity theory of money** says that changes in the nominal money supply lead to equivalent changes in the price level (and money wages) but do not have effects on output and employment.

$$M V = P Y$$

- where  $V$  = velocity of circulation
- If prices adjust to maintain real income ( $Y$ ) at the potential level and if velocity stays constant
- then an increase in nominal money supply leads to an equivalent increase in prices

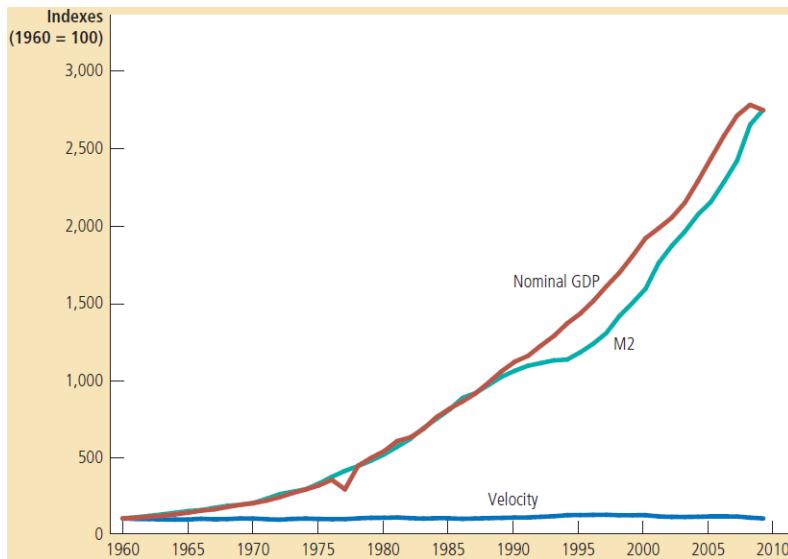
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## Nominal GDP, the Quantity of Money, and the Velocity of Money



This figure shows the nominal value of output as measured by nominal GDP, the quantity of money as measured by M2, and the velocity of money as measured by their ratio. For comparability, all three series have been scaled to equal 100 in 1960. Notice that nominal GDP and the quantity of money have grown dramatically over this period, while velocity has been relatively stable.

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## Money and prices

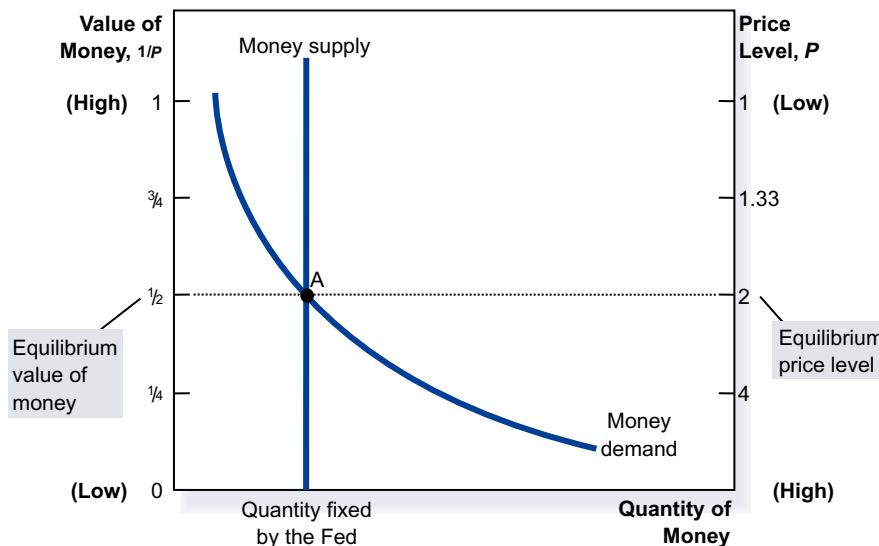
- Milton Friedman famously claimed
- ‘Inflation is always and everywhere a monetary phenomenon.’
  - i.e. it results when money supply grows more rapidly than real output.
- But this does not prove that causation is always from money to prices
  - e.g. if the government adopts an *accommodating* monetary policy.

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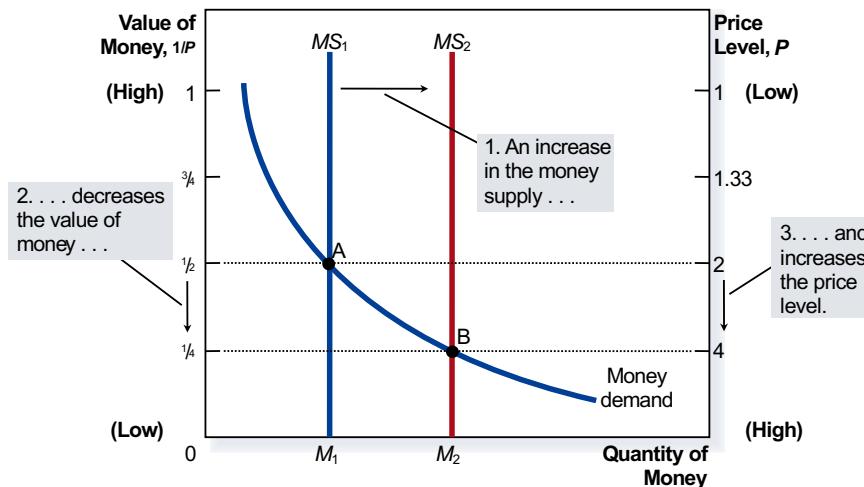
## Money Supply, Money Demand, and the Equilibrium Price Level



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## The Effects of Monetary Injection

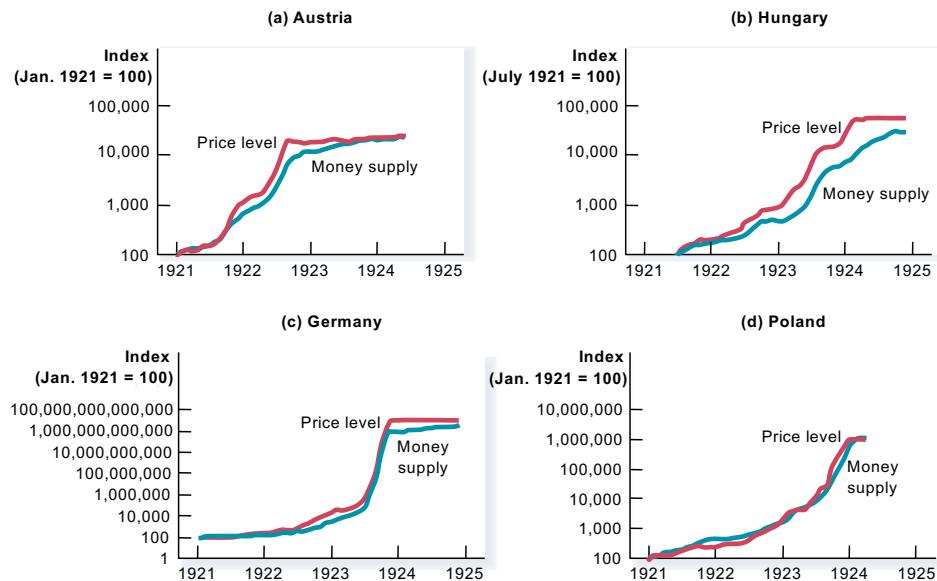


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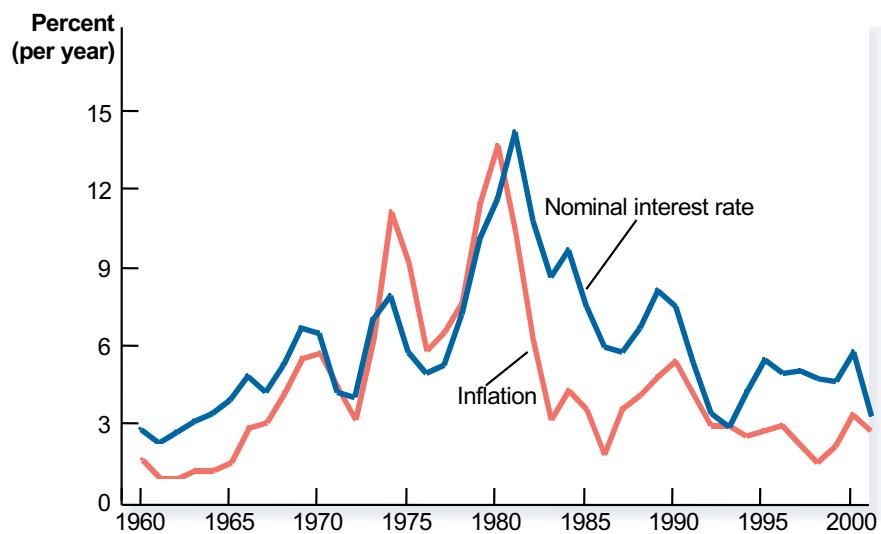
## Money and Prices During Four Hyperinflations



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## The Nominal Interest Rate and the Inflation Rate



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## HIGHEST MONTHLY INFLATION RATES IN HISTORY



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## The Inflation Tax



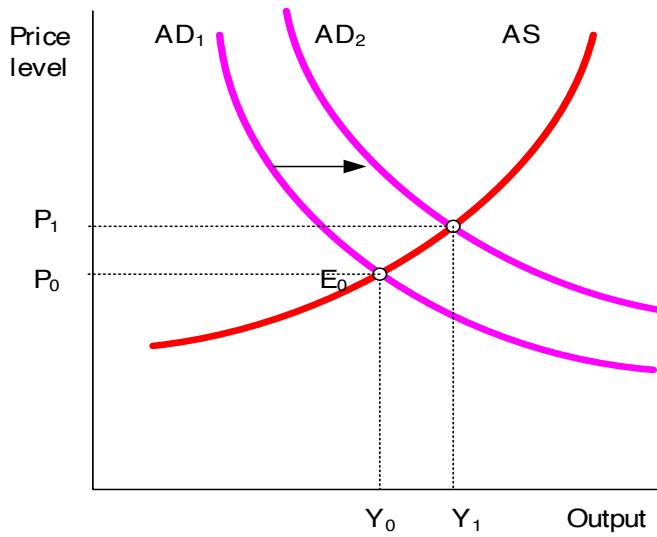
- The inflation tax

- Revenue the government raises by creating (printing) money
- Tax on everyone who holds money
  - When the government prints money
  - The price level rises
  - And the dollars in your wallet are less valuable

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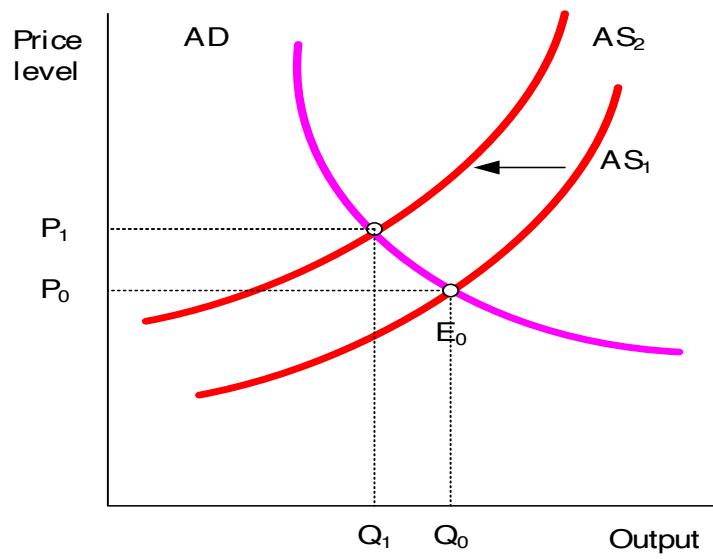
## Demand pull inflation



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## Cost push inflation



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## The Costs of Inflation



- Inflation fallacy
  - “Inflation robs people of the purchasing power of his hard-earned dollars”
- When prices rise
  - Buyers – pay more
  - Sellers – get more
- Inflation does not in itself reduce people’s real purchasing power

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## The Costs of Inflation



- Shoeteather costs
  - Resources wasted when inflation encourages people to reduce their money holdings
  - Can be substantial
- Menu costs
  - Costs of changing prices
  - Inflation – increases menu costs that firms must bear

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## Inflation-Induced Tax Distortions



- Taxes – distort incentives
  - Many taxes - more problematic in the presence of inflation
- Tax treatment of capital gains
  - Capital gains – Profits:
    - Sell an asset for more than its purchase price
  - Inflation discourages saving
    - Exaggerates the size of capital gains
    - Increases the tax burden

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## Inflation-Induced Tax Distortions



- Tax treatment of interest income
  - Nominal interest earned on savings
    - Treated as income
    - Even though part of the nominal interest rate compensates for inflation
- Higher inflation
  - Tends to discourage people from saving

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## How Inflation Raises the Tax Burden on Saving

	Economy A (price stability)	Economy B (inflation)
Real interest rate	4%	4%
Inflation rate	0	8
Nominal interest rate (real interest rate + inflation rate)	4	12
Reduced interest due to 25 percent tax (.25 × nominal interest rate)	1	3
After-tax nominal interest rate (.75 × nominal interest rate)	3	9
After-tax real interest rate (after-tax nominal interest rate – inflation rate)	3	1

In the presence of zero inflation, a 25 percent tax on interest income reduces the real interest rate from 4 percent to 3 percent. In the presence of 8 percent inflation, the same tax reduces the real interest rate from 4 percent to 1 percent.

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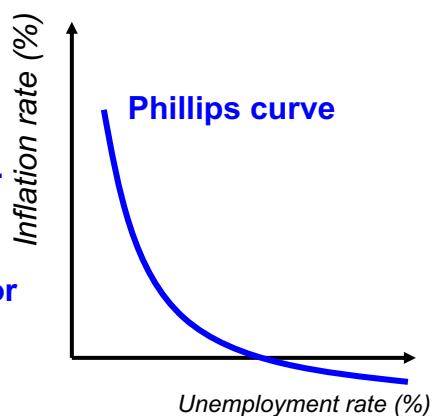


## The Phillips curve

Prof. A W Phillips demonstrated a statistical relationship between annual inflation and unemployment in the UK

The Phillips curve shows that a higher inflation rate is accompanied by a lower unemployment rate.

It suggests we can trade-off more inflation for less unemployment or vice versa.

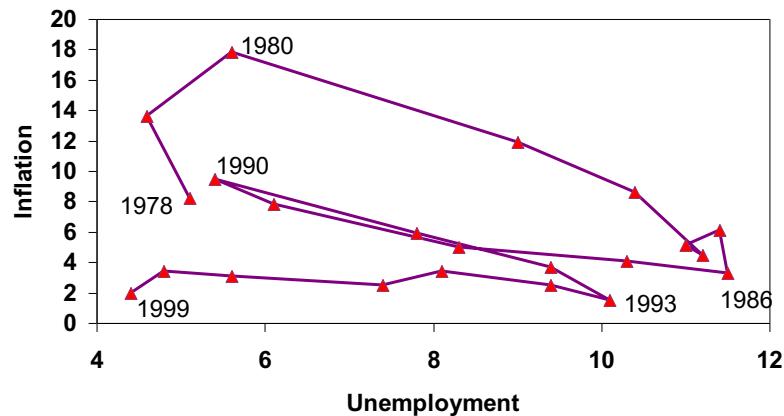


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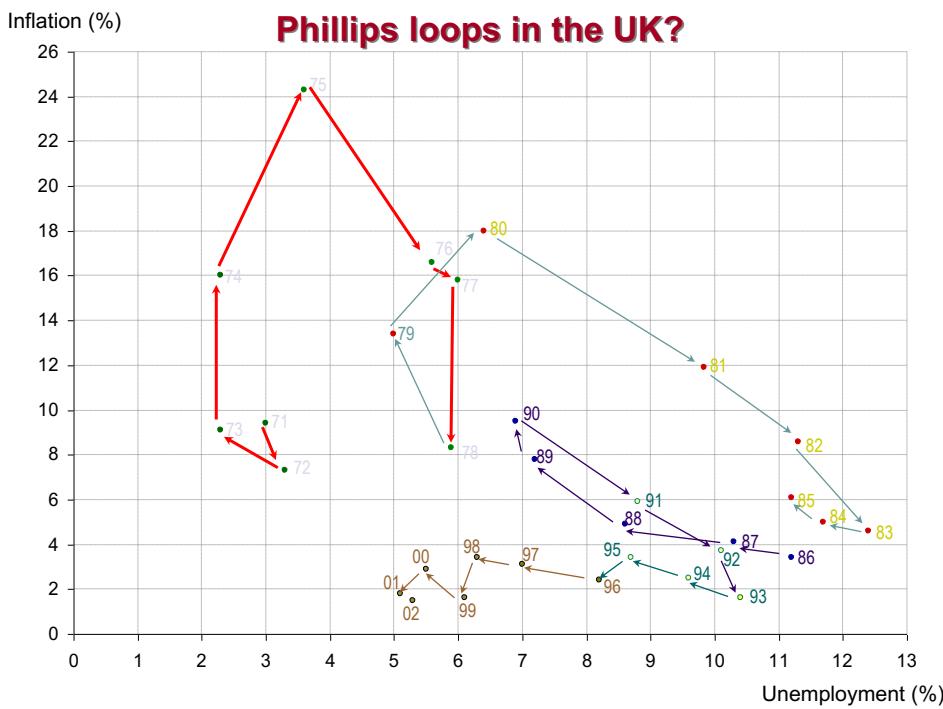
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## Inflation and unemployment in the UK 1978-99



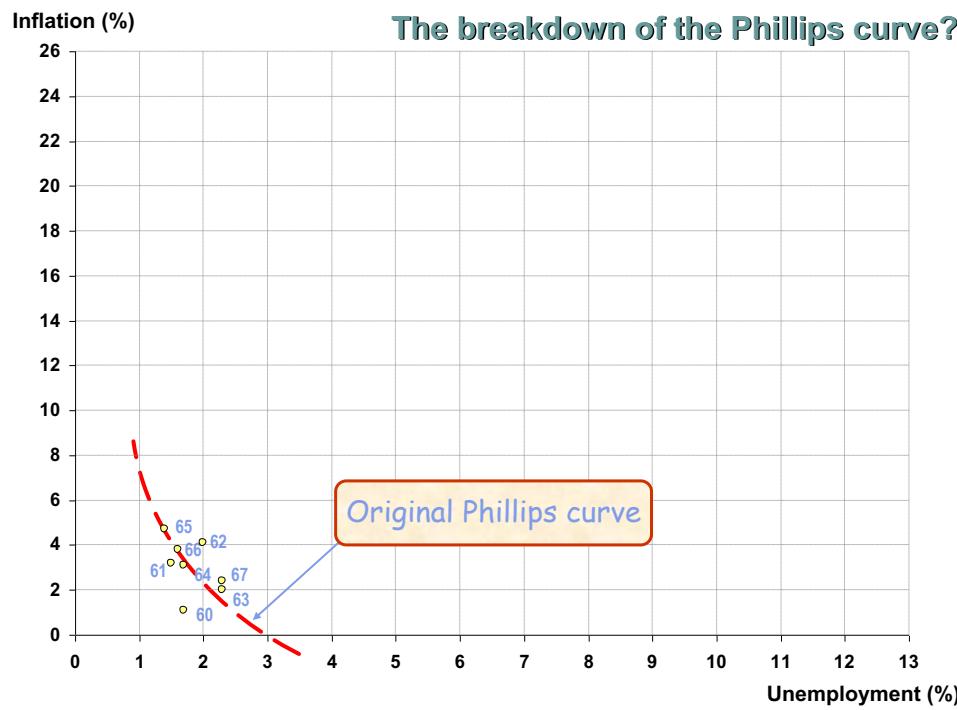
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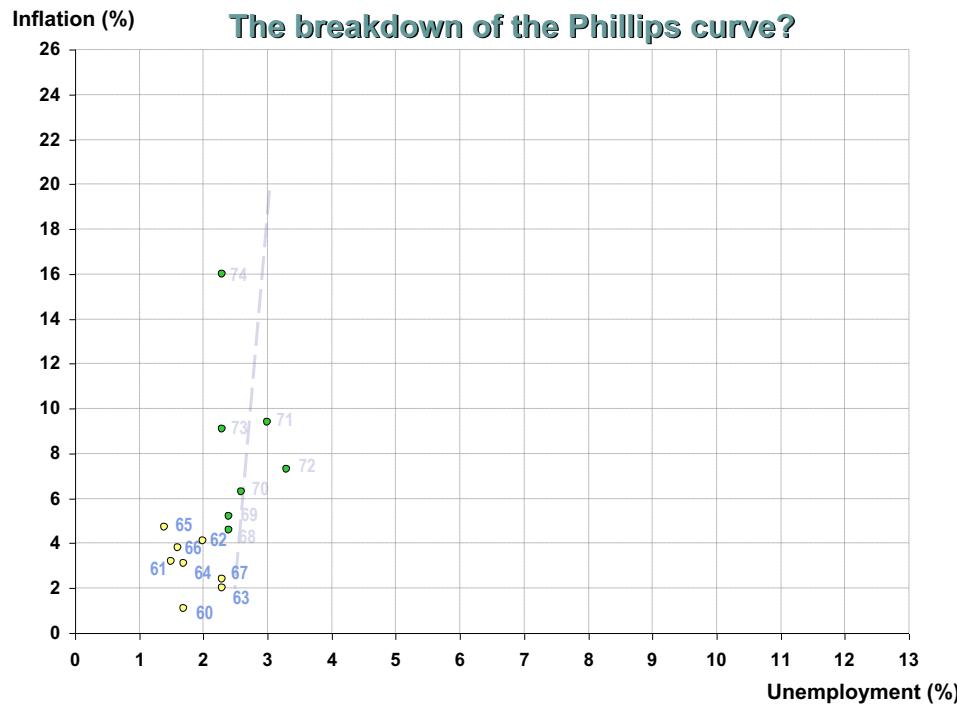


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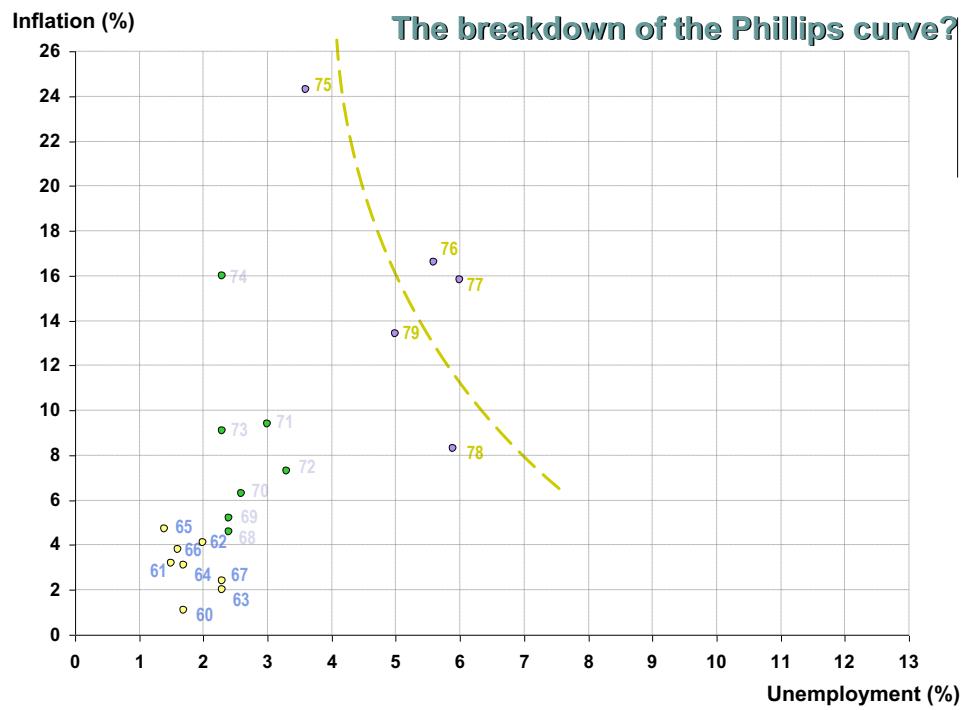
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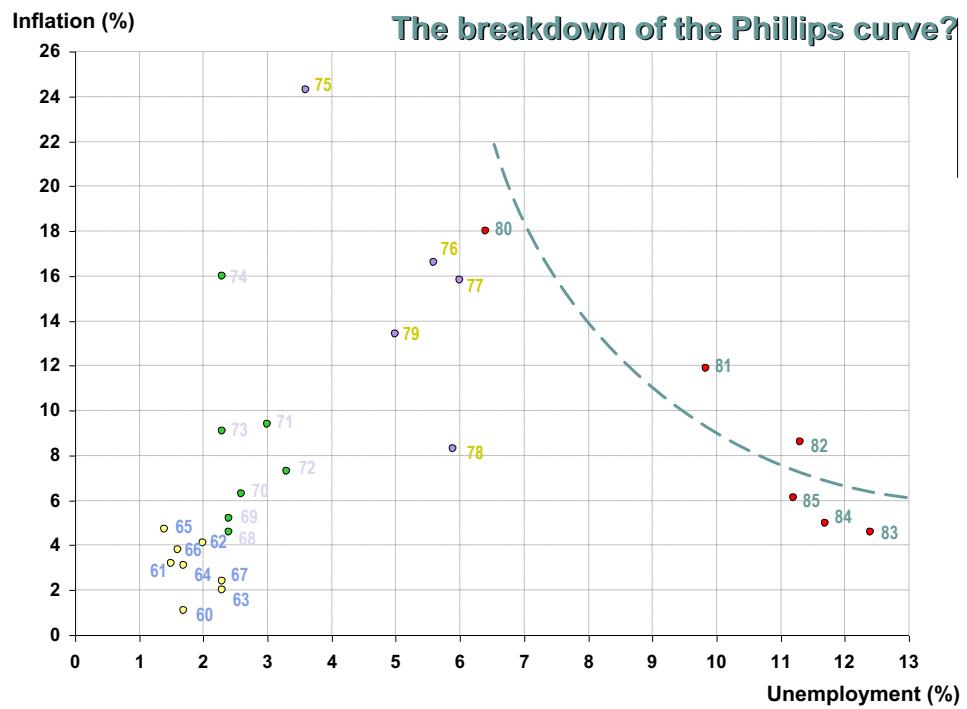
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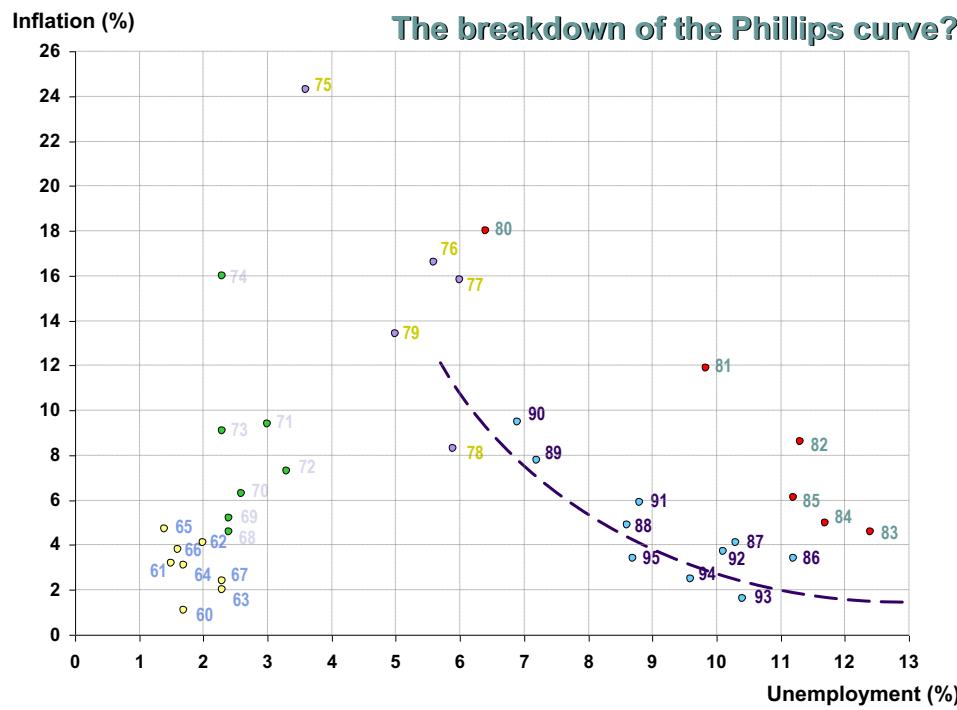
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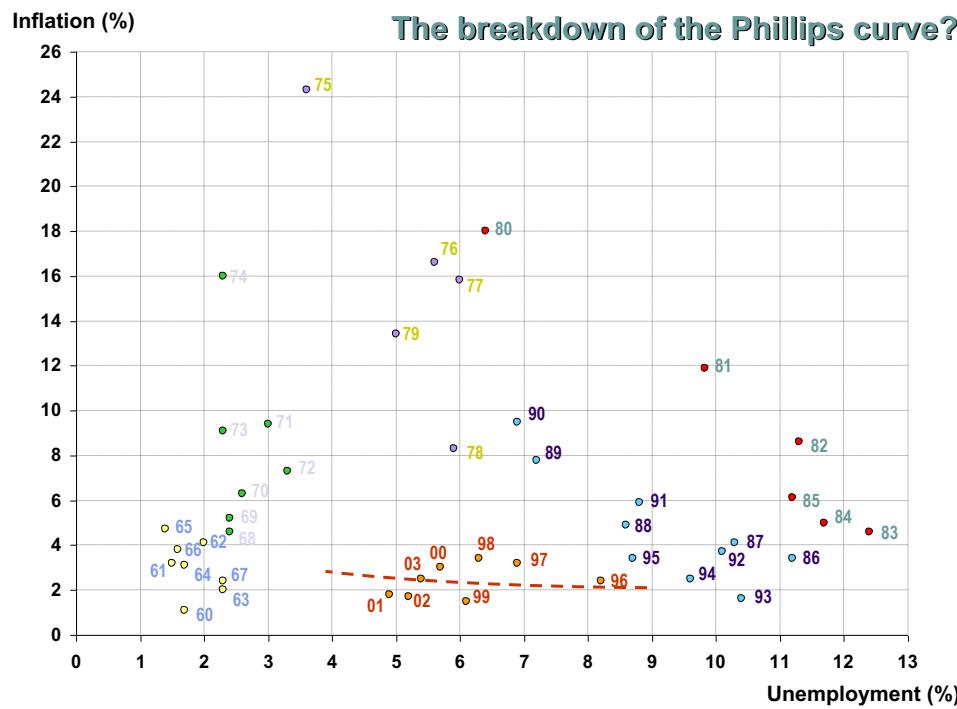
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