Principles of Economics II

Lecture 5-6: Economic fluctuations and unemployment

Fall 2022
Kristiina Huttunen

Last week: Market failures

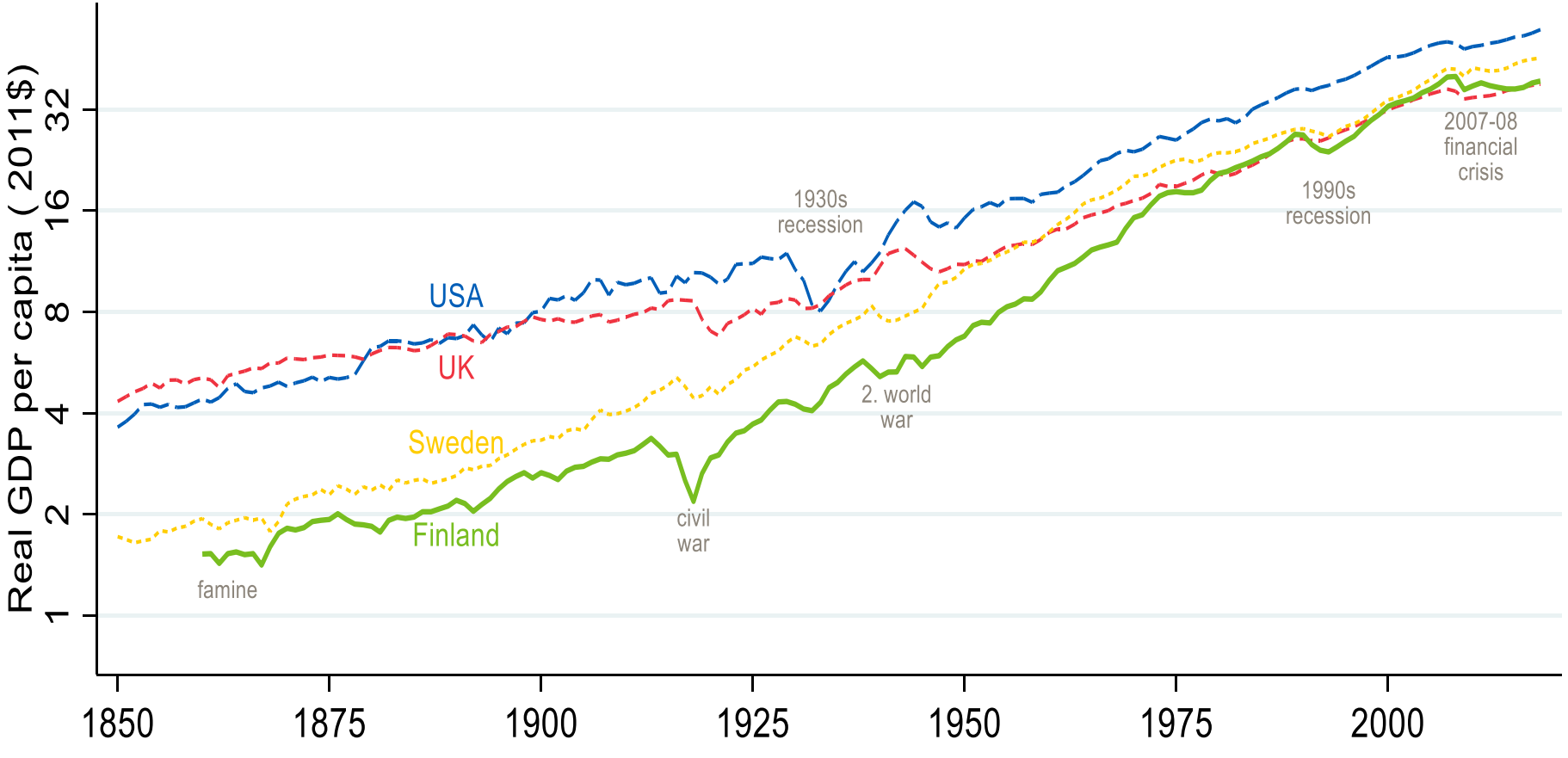
- **External Effects (Banana plantations and fishermen)**
- **Public goods**
- **Asymmetric information (adverse selection, moral hazard)**

Outline Lectures 5-6:

- **Introduction**
- **The business cycle**
- **Measuring the aggregate economy: GDP**
- **Economic fluctuations and consumption**
- **Economic fluctuations and investment**
- **Inflation**

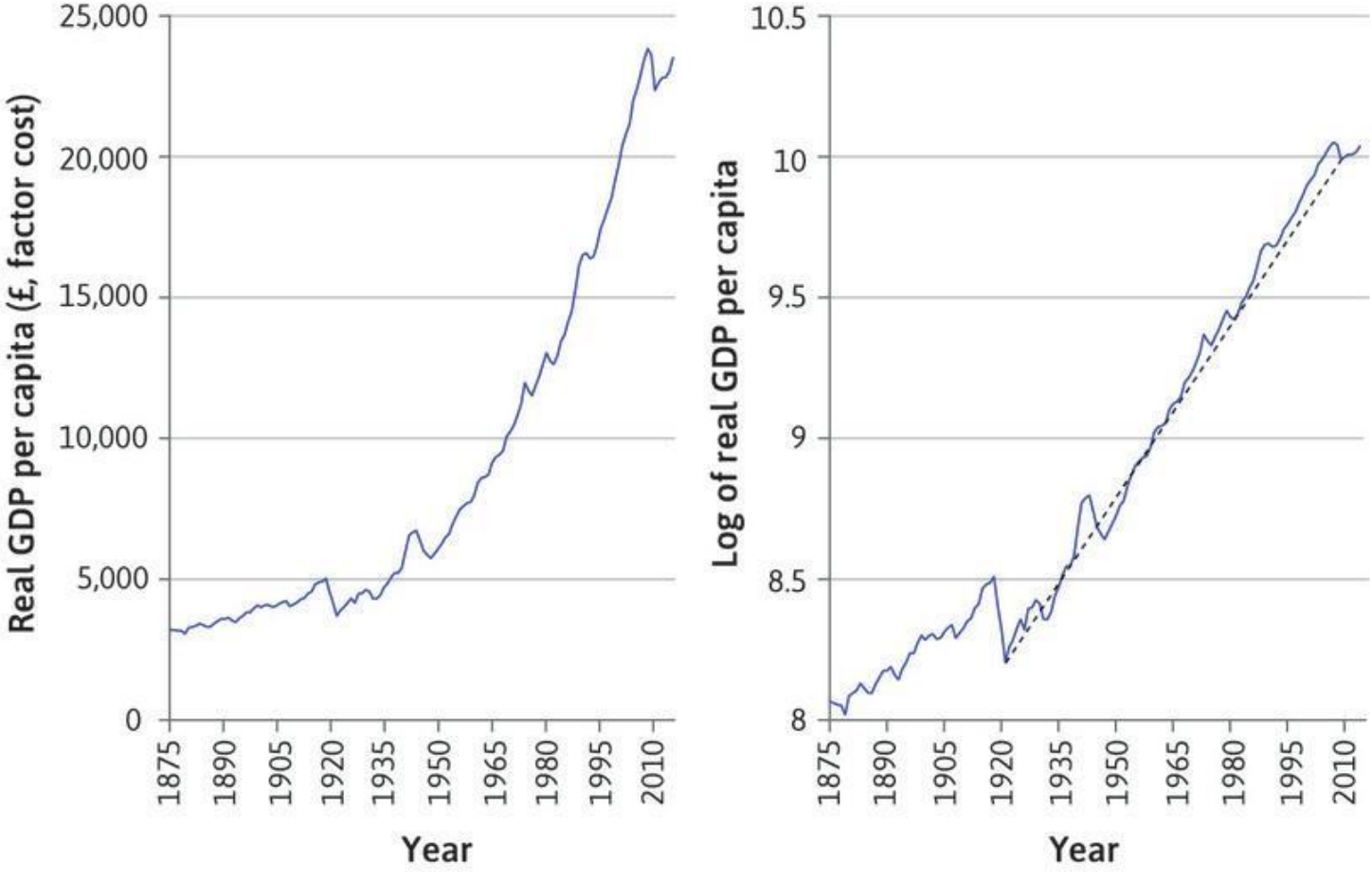
The business cycle

GDP per capita in four different countries



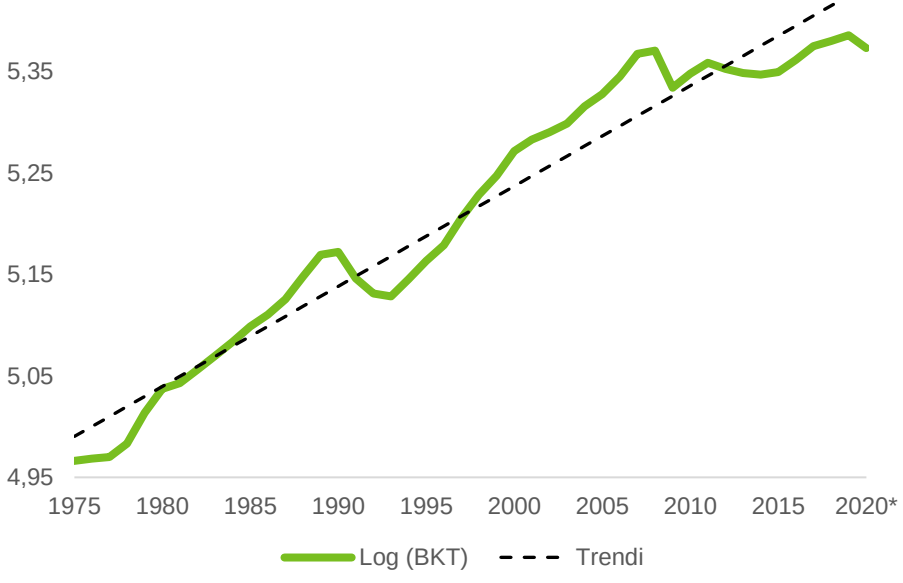
Source: Maddision historical statistics

UK GDP per capita (1875–2014)



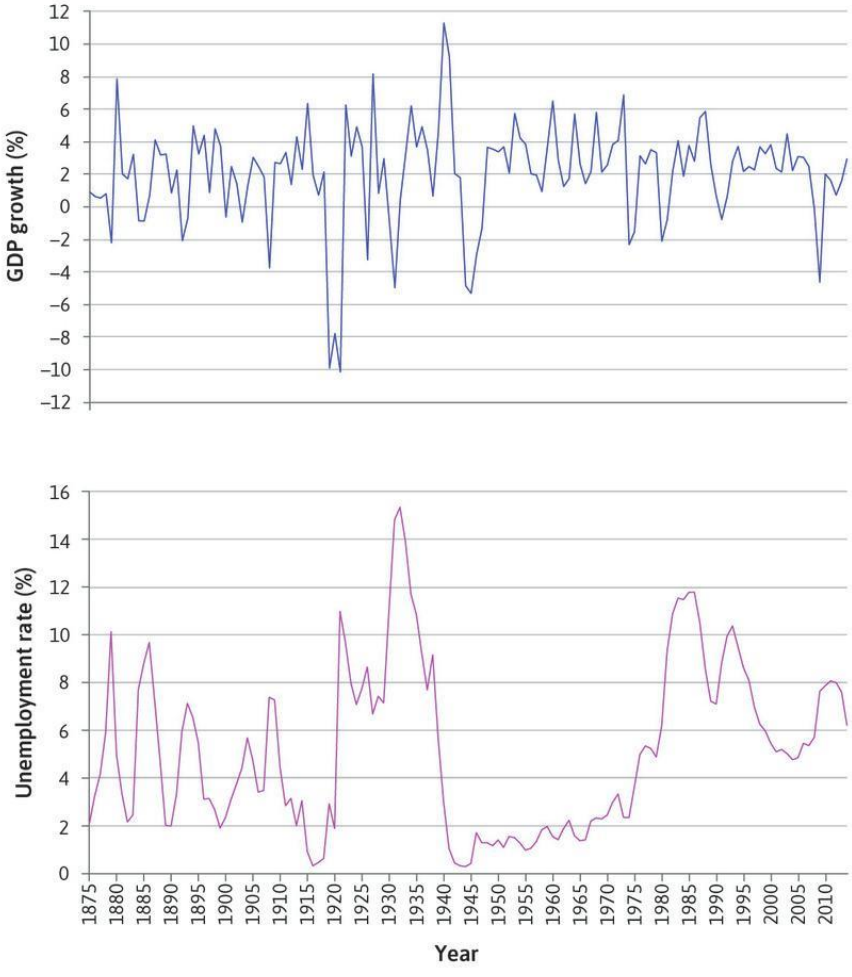
Growth of log of GDP per capita in Finland

Dotted line describes the average growth rate in Finland
(During this period 2,3% a year)



UK GDP growth and unemployment rate (1875–2014)

The panels show UK GDP growth and the unemployment rate for the period 1875–2014



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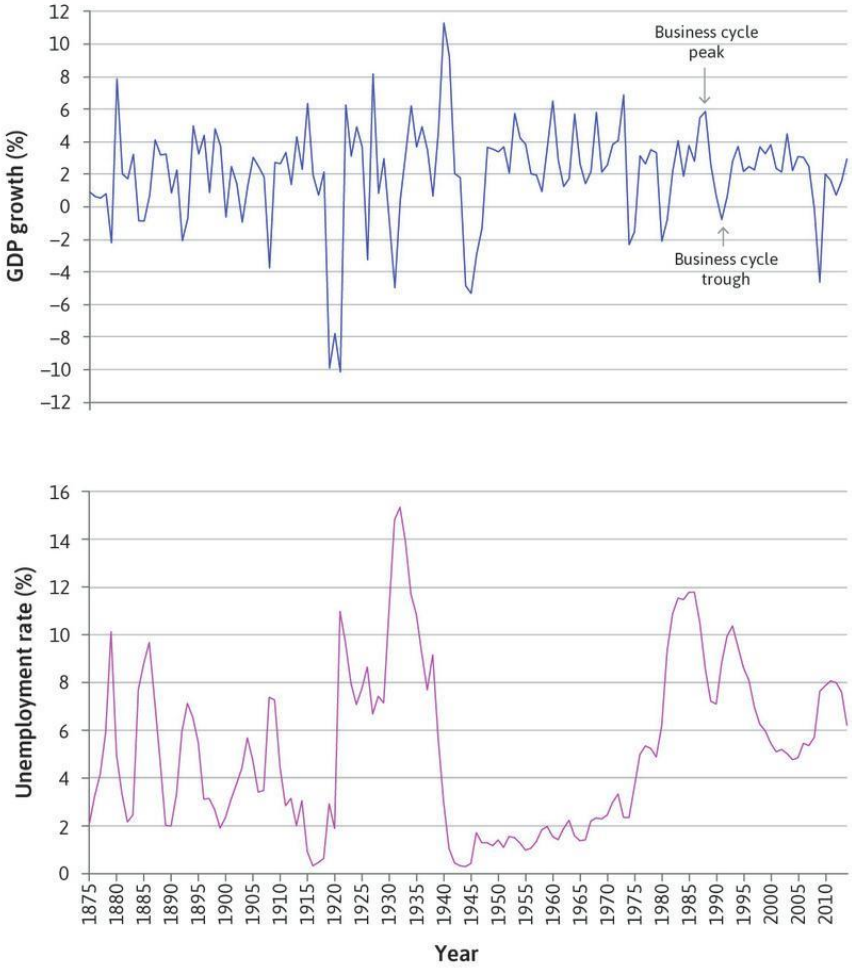
The arrows highlight the peak and trough of a business cycle during the late 1980s and early 1990s



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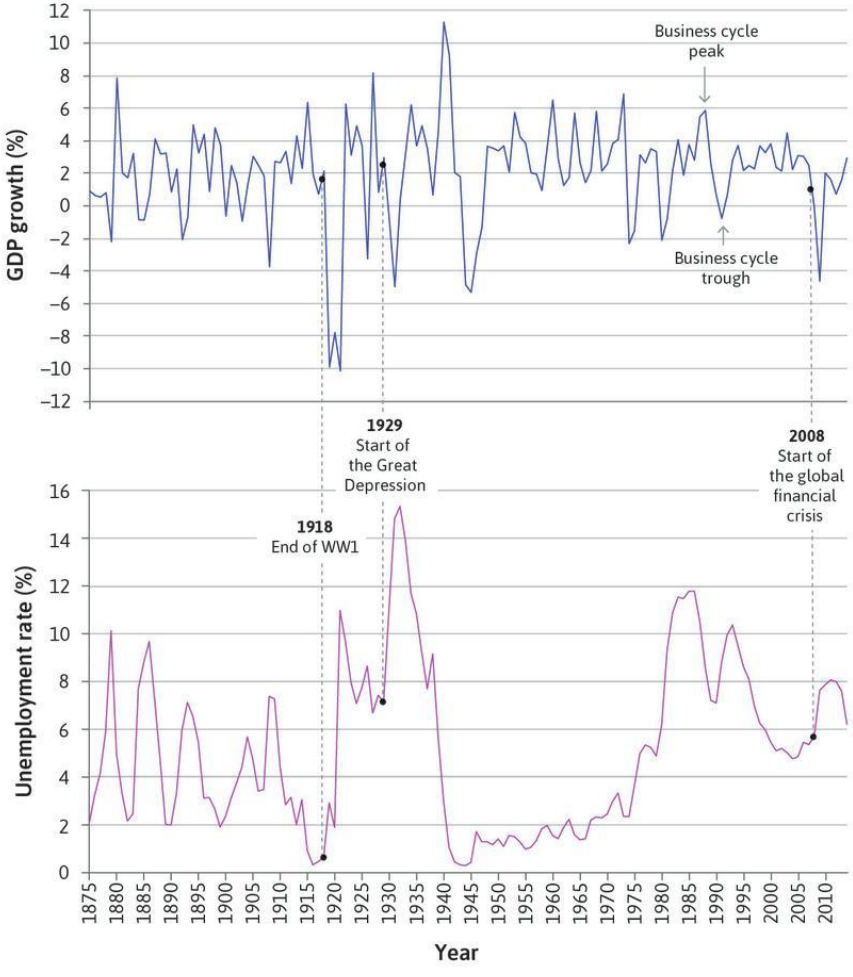
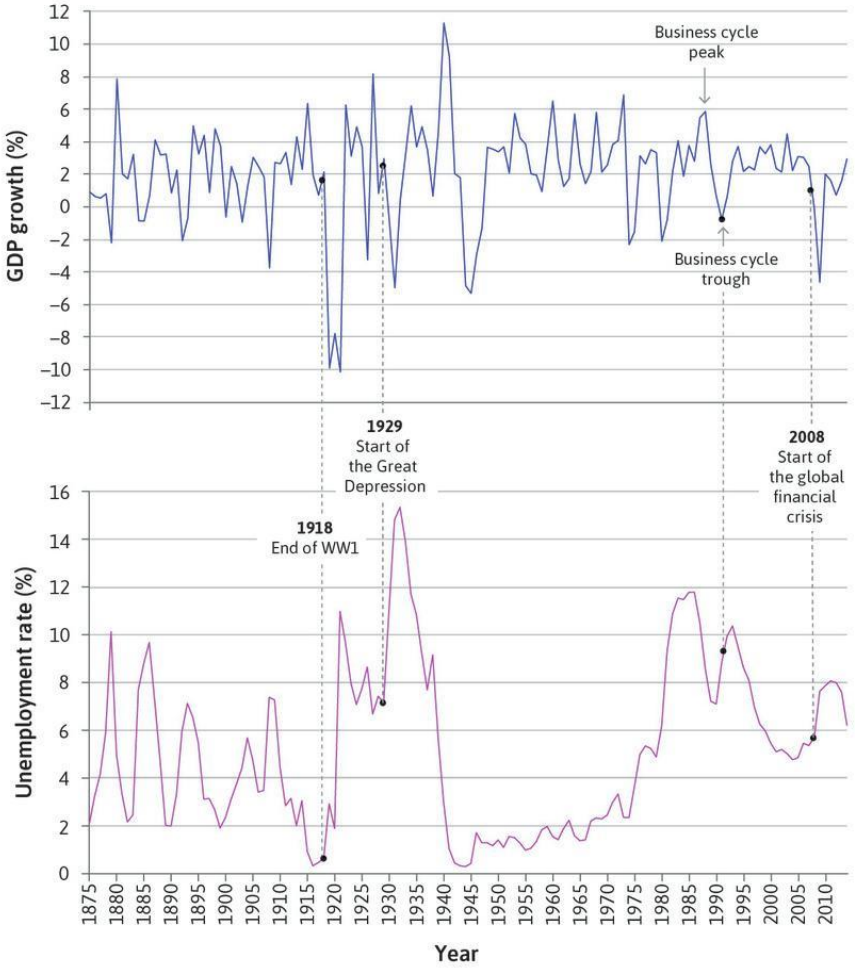
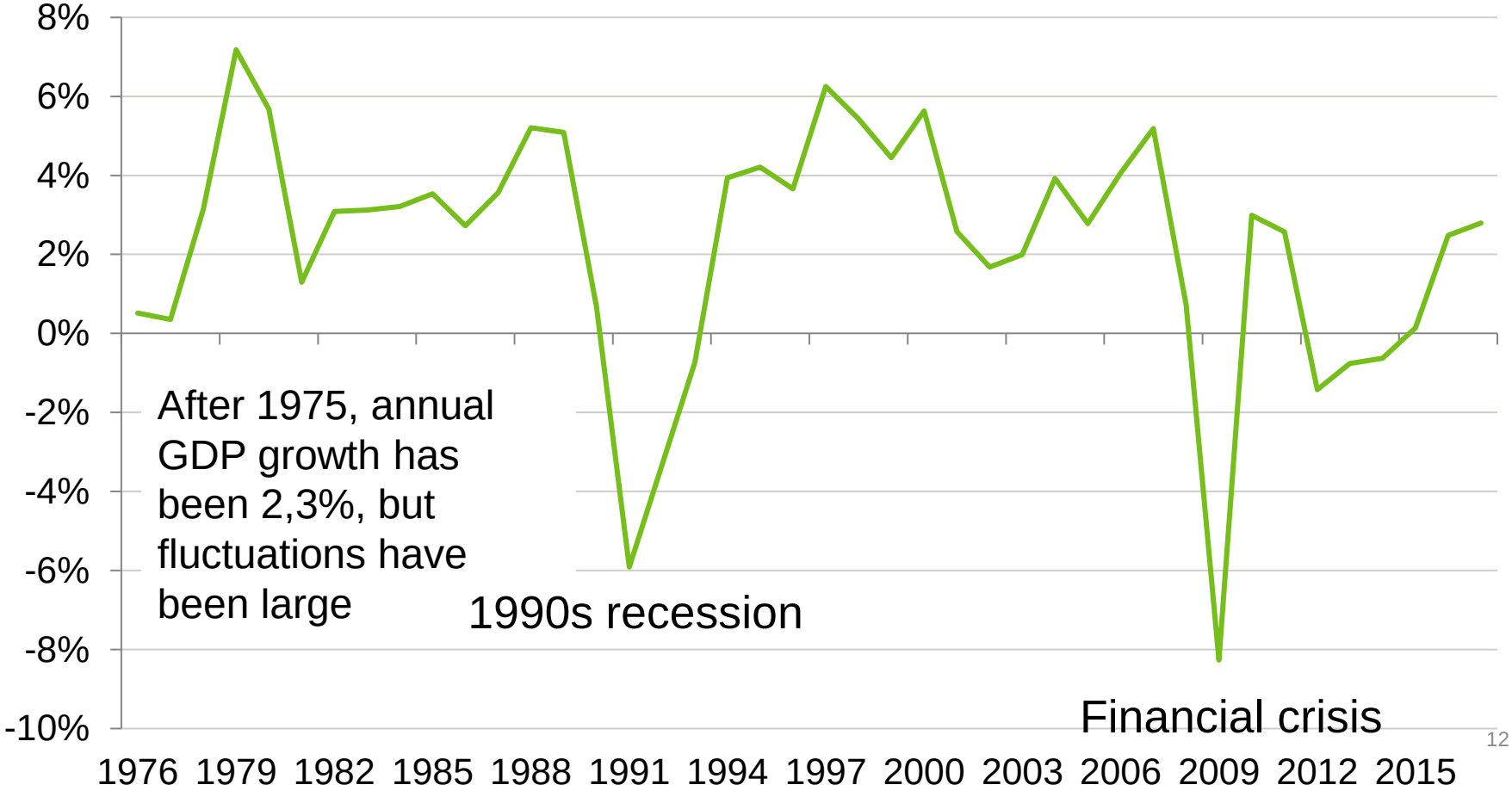


UK GDP growth and unemployment rate (1875–2014)

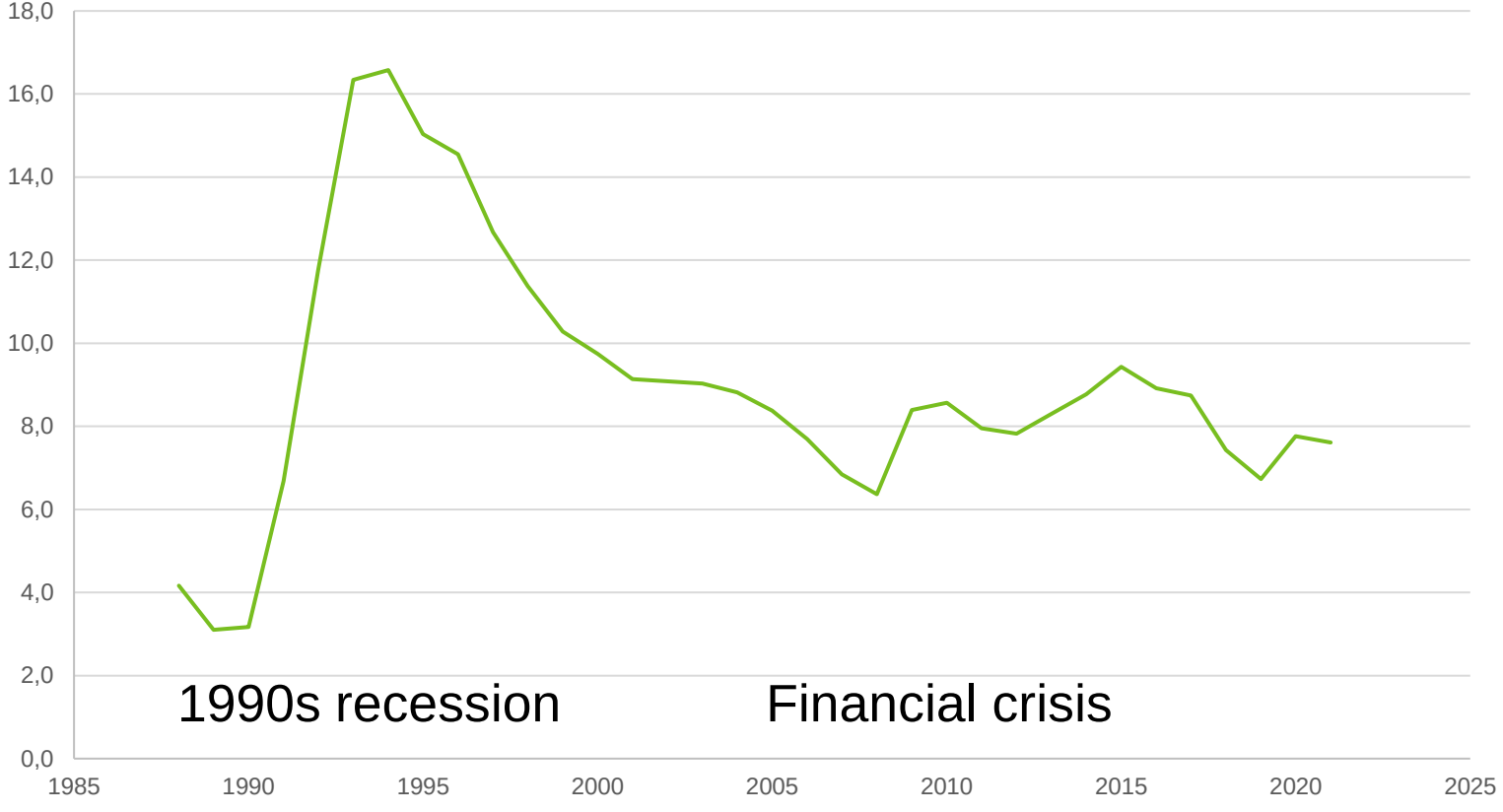
We can see that downturns in the business cycle are associated with rising unemployment



GDP growth in Finland (1976–2017)



Unemployment rate in Finland (1988-2021)



The business cycle

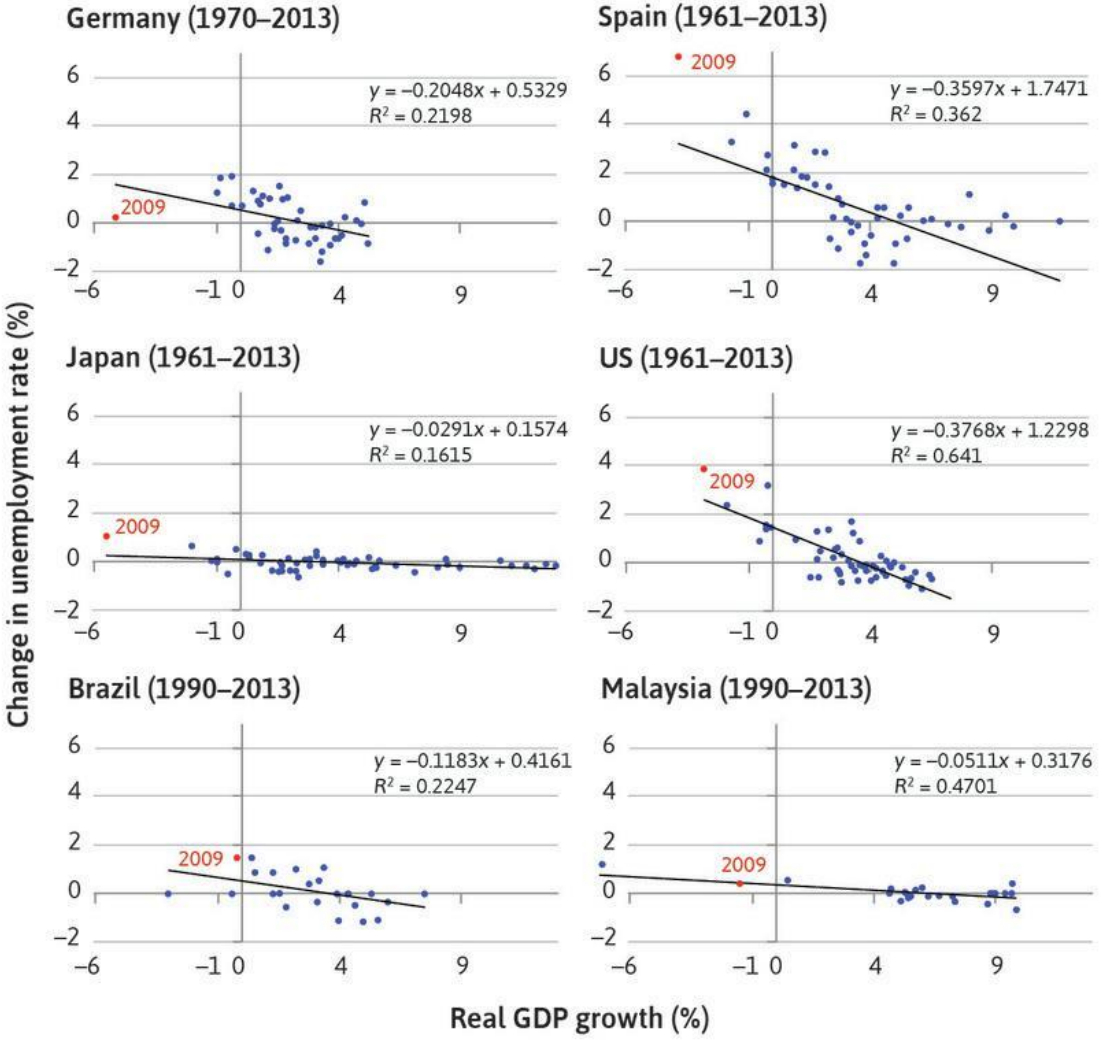
- **Economic growth is not a smooth process**
  - Business cycle = Alternating periods of positive and negative growth rates. The economy goes from boom to recession and back to boom
- **Recession:**
  - NBER definition: output is declining. A recession is over once the economy begins to grow again.
  - Alternative definition: the level of output is below its normal level, even if the economy is growing. A recession is not over until output has grown enough to get back to normal.
- **Unemployment rate varies over business cycle**

Okun's law

Okun's Law = a stable (negative) relationship between unemployment and GDP growth

Higher output growth→ Unemployment decreases

Illustrate this with regression line (line that best fits the data)



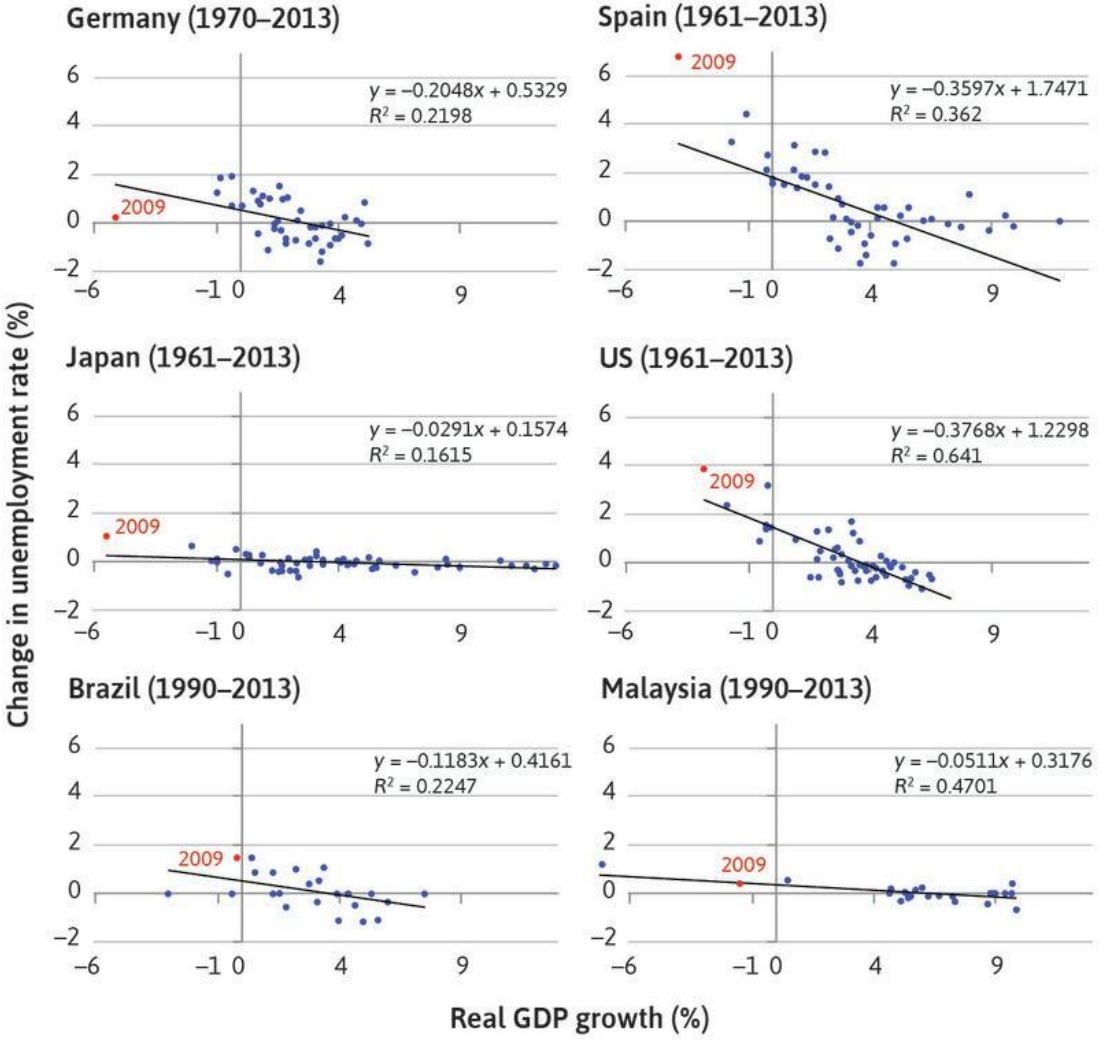
Okun's law

Note on linear regression:

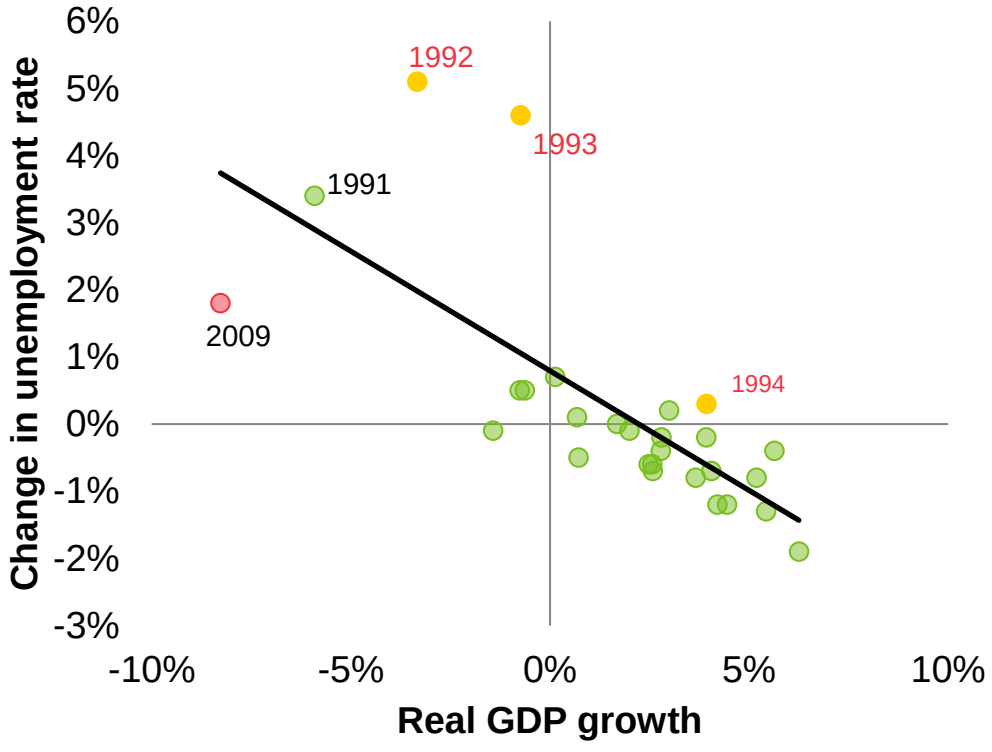
Coefficient (e.g. -0.2048 in first panel for Germany) describes how unemployment is expected to change if GDP growth changes: a 1% **increase** in GDP growth is associated with 0.2048 percentage points **decrease** in unemployment rate.

Constant (e.g. 0.5329 in first panel for Germany) tells the predicted level of unemployment change when GDP is not growing.

R^2 measures the proportion of variance of the explained variable (change in unemployment) that is explained by the explanatory variable(s) (change in GDP growth).



Okun’s law in Finland



What prediction does the regression line (Okun’s law) show for unemployment (change) when the economy is not growing?

How well did the Okun’s law predict unemployment rate changes in the 1990s recession or in the financial crisis (2009)?

Measuring the aggregate economy

Measuring the aggregate economy

National accounts

System used to measure overall output and expenditure in a country (Statistics produced by national statistical offices, e.g. Statistics Finland)

Gross Domestic Product (GDP):

Output of all producers in a country

Three equivalent ways to measure GDP:

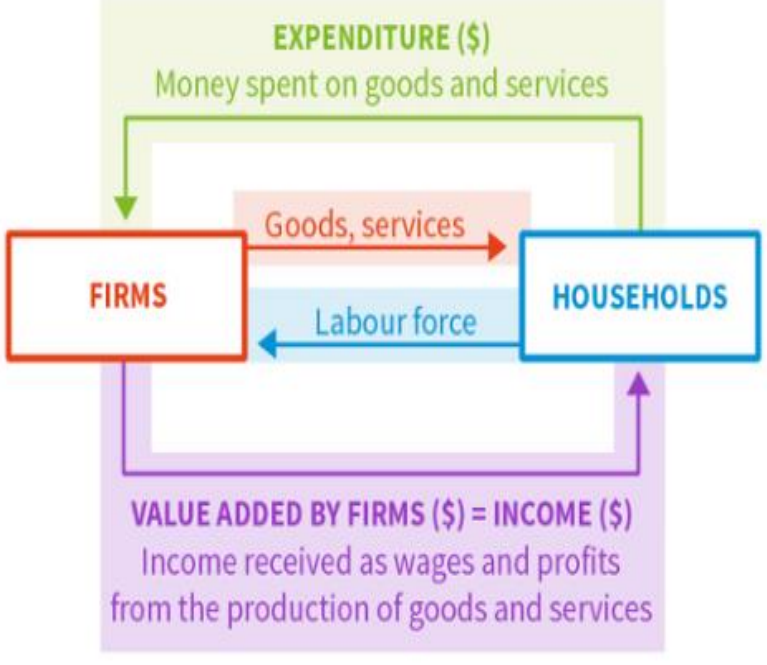
Total **spending** on domestic products (by households, firms, the government, and residents of other countries)

Total domestic **production** (measured as value added, goods and services used as inputs to production are substracted from the total value of output)

Total domestic **income** (wages, profits, self-employment income, taxes)

The relationship between spending, production and incomes in the economy can be represented as **circular flow model**

Circular flow model



Components of GDP

- **Consumption (C)**
  - Expenditure on consumer goods and services
- **Investment (I)**
  - Expenditure on newly produced capital goods (incl. equipment, buildings, and inventories = unsold output)
- **Government spending (G)**
  - Government expenditure on goods and services, and investment (excluding government transfers to avoid double-counting)
- **Net exports (trade balance)**
  - Exports (X) minus imports (M)

Components of GDP

Components of GDP

In most countries, private consumption makes up the largest share of GDP

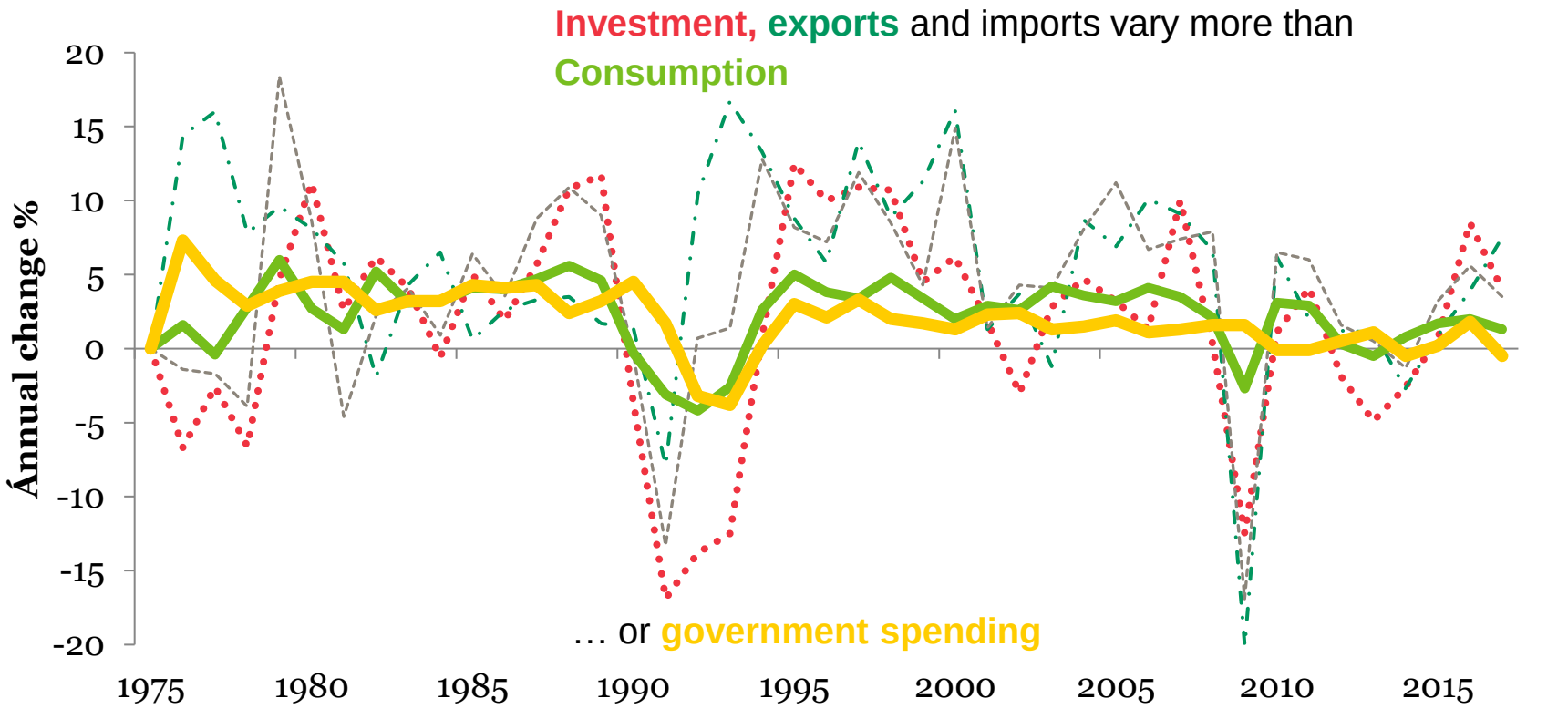
	US	Eurozone (19 count.)	China	Finland
Consumption (C)	68%	56%	37%	55%
Government spending (G)	15%	21%	14%	24%
Investment (I)	19%	20%	49%	22%
Exports (X)	14%	44%	26%	36%
Imports (M)	16%	41%	24%	37%

Components of US GDP growth

	GDP	CONSUMPTION	INVESTMENT	GOVERNMENT SPENDING	NET EXPORTS
2009	-2.8	-1.06	-3.52	0.64	1.14

$$\text{Percentage change in GDP} = (\text{percentage change in consumption} \times \text{share of consumption in GDP}) + (\text{percentage change in investment} \times \text{share of investment in GDP}) + (\text{percentage change in government spending} \times \text{share of government spending in GDP}) + (\text{percentage change in net exports} \times \text{share of net exports in GDP})$$

Components of GDP growth, Finland 1975–2017



Shortcomings of GDP as measure

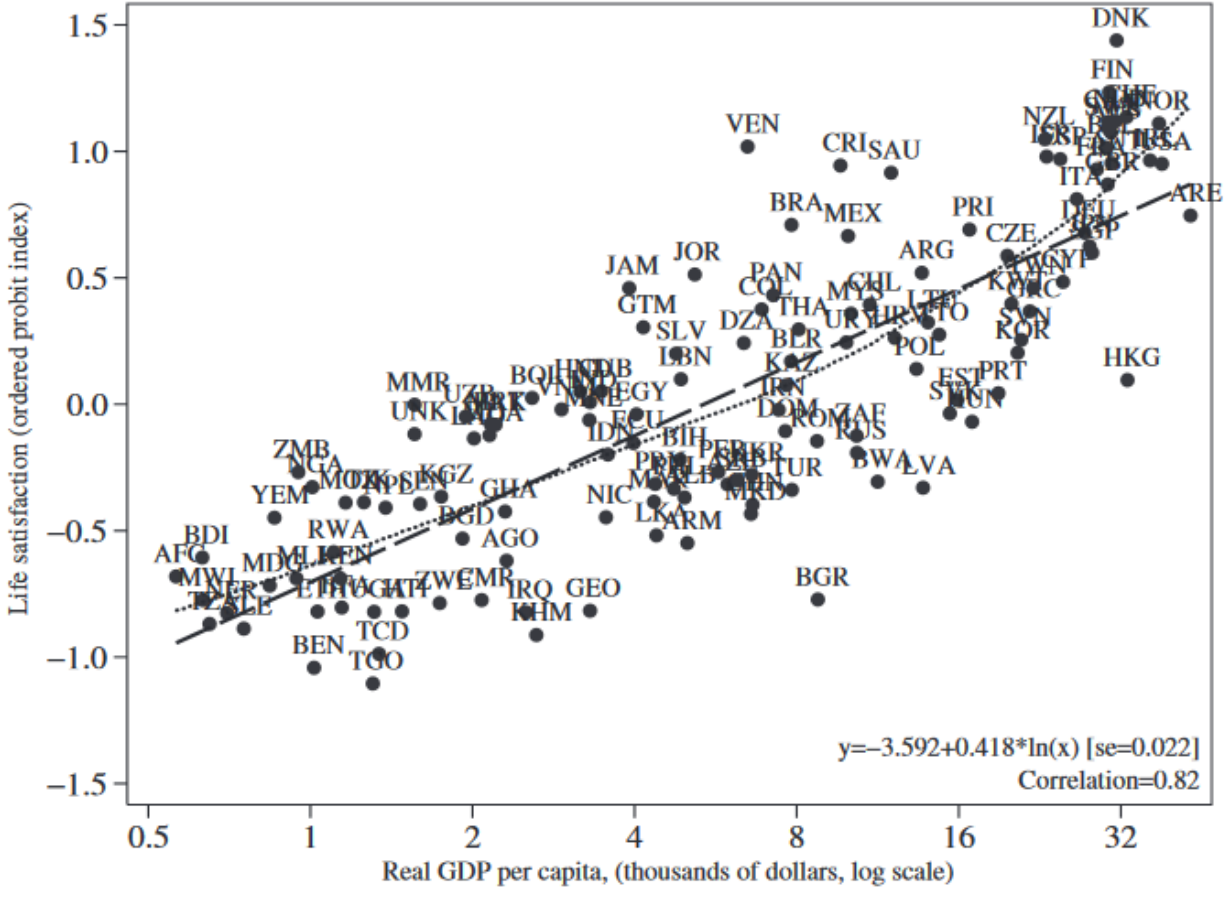
- **It is a conventional measure of the size of an economy**
  - Measures the size of the pie, not how it is distributed
  - Does not measure household production or environmental quality
- **Distinguish aggregate GDP from GDP per capita**
  - Often growth of GDP per capita is the more interesting one
- **GDP per capita is a flawed measure of living standards**
  - Does not measure leisure time or other important aspects in life that make people happy
  - At the same time, it correlates strongly with many measures of living standards

In defense of GDP

Despite the shortcomings, in practice, GDP turns out to be a surprisingly useful indicator of the health of nations

It is highly correlated with other measures of well-being

Figure 4. Life Satisfaction and Real GDP per Capita: Gallup World Poll[a]



Source: Stevenson & Wolfers, 2008

Economic fluctuations and consumption (C)

Shocks

- **Shock = an unexpected event (such as extreme weather) which causes GDP to fluctuate**

- **There are two broad types of shocks:**
  - Good or bad fortune strikes the household
  - Good or bad fortune strikes the entire economy

Household shocks

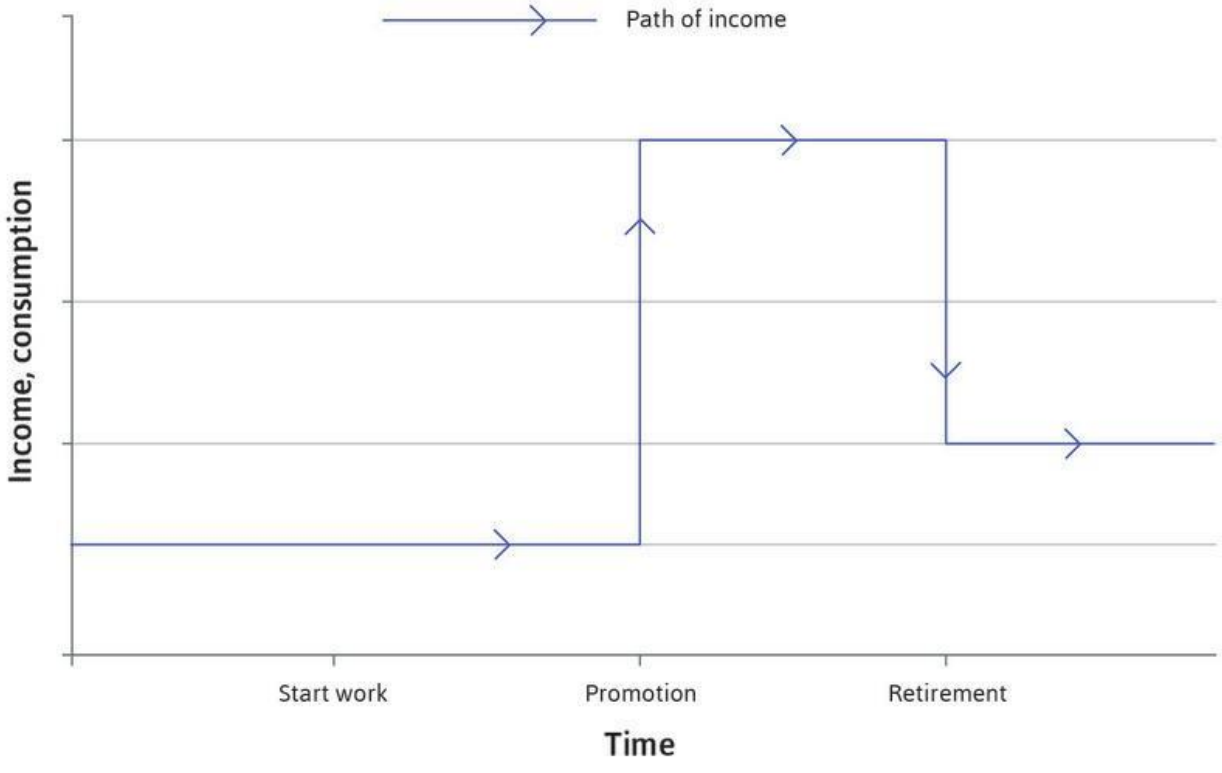
- **People use two strategies to deal with shocks that are specific to their household:**
  - Self-insurance – saving and borrowing. Other households are not involved
  - Co-insurance – support from social network or government
- **This reflects that households prefer to smooth their consumption and that they are (to a degree) altruistic**

Economy wide shocks

- **Co-insurance is less effective if the bad shock hits everyone at the same time**
  - Extreme weather, wars etc.
  - Also shocks that hit a large fraction of the population, but not everyone (shocks in demand for export goods)
- **But when these type of shocks hit, co-insurance is even more necessary**

Smoothing consumption

The blue line shows the path of income over time: it starts low, rises when the individual is promoted and falls at retirement

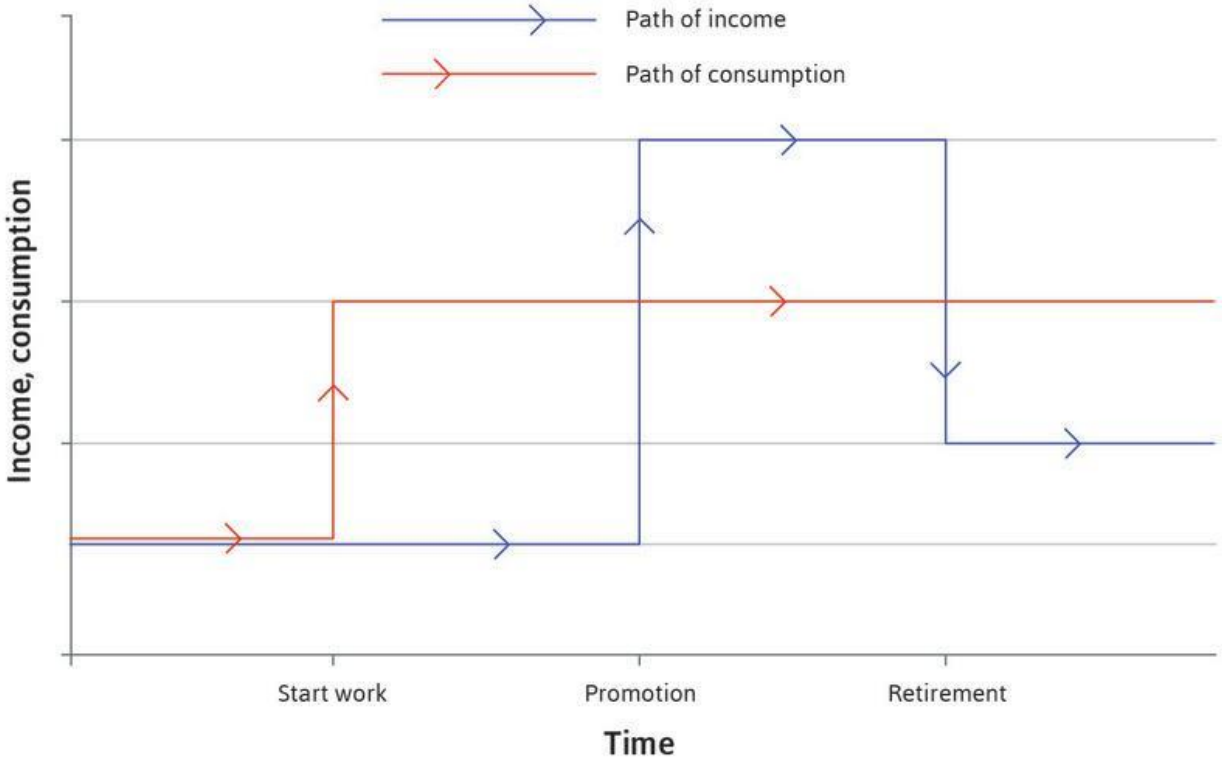


Smoothing consumption

The blue line shows the path of income over time: it starts low, rises when the individual is promoted and falls at retirement

Consumption expenditure is the red line

It is smooth (flat) from the point at which the individual first gets a job

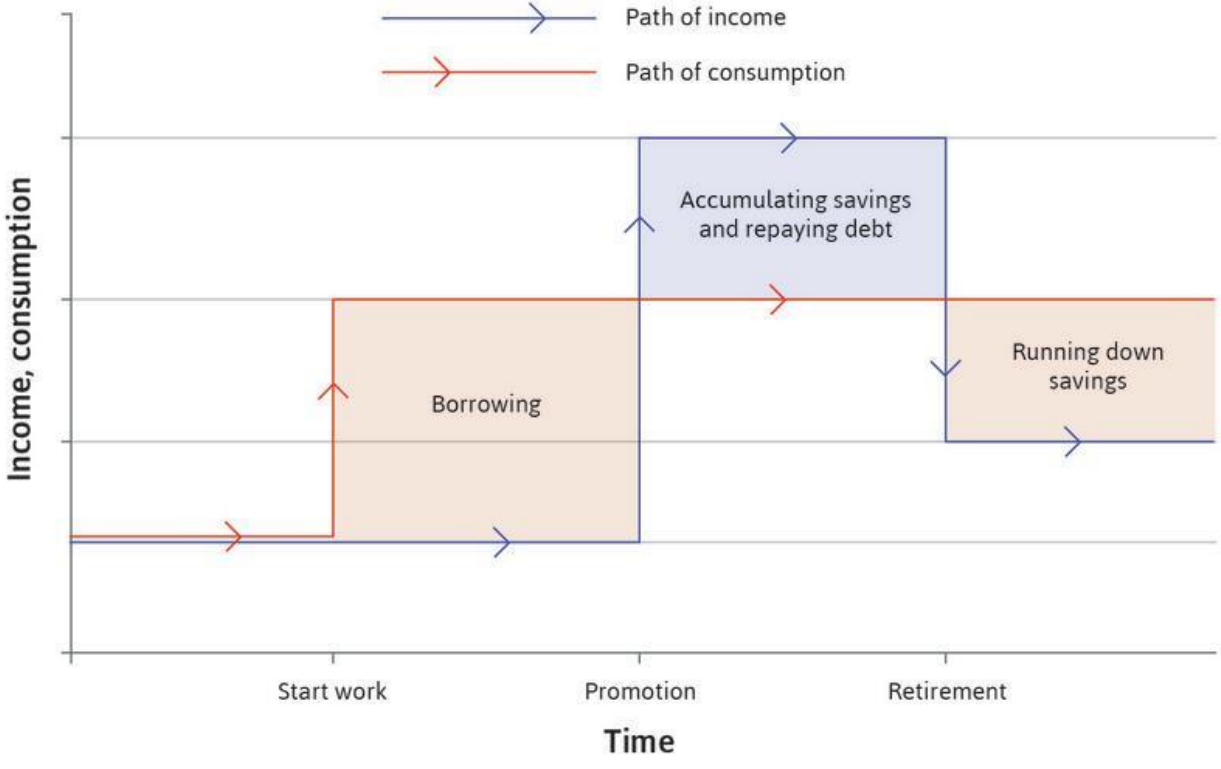


Smoothing consumption

The individual borrows while young

At this time, income is low

The individual saves and repays the debt when older and earning more, and finally runs down savings after retirement, when income falls again



Consumption smoothing and the aggregate economy

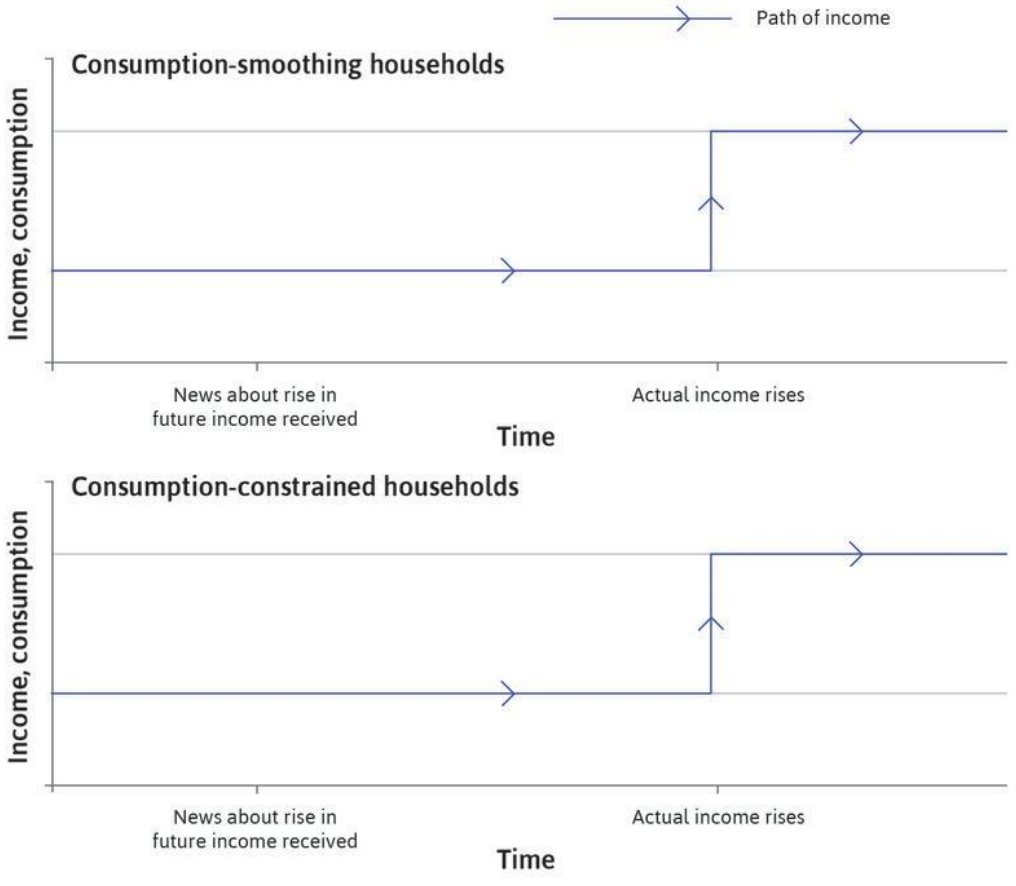
- **What if the individual shown in the figure encounters an unexpected income shock?**
- **The individual will make a judgement about whether the shock is temporary or permanent**
  - Permanent shock: We should adjust the red line in the figure up or down to reflect the new long-run level of consumption that the individual adopts, consistent with the new pattern of income
  - Temporary shock : Little will change. A temporary fluctuation in income has almost no effect on the lifetime consumption plan, because it makes only a small change to lifetime income

Consumption smoothing and the aggregate economy

- **Consumption smoothing is a basic source of stabilisation in an economy**
- **Limitations to consumption smoothing mean it cannot always stabilise the economy; it may amplify the initial shock**
  - Credit constraints, weakness of will, limited co-insurance
- **This helps us understand the business cycle and how to manage it**

Credit constraints

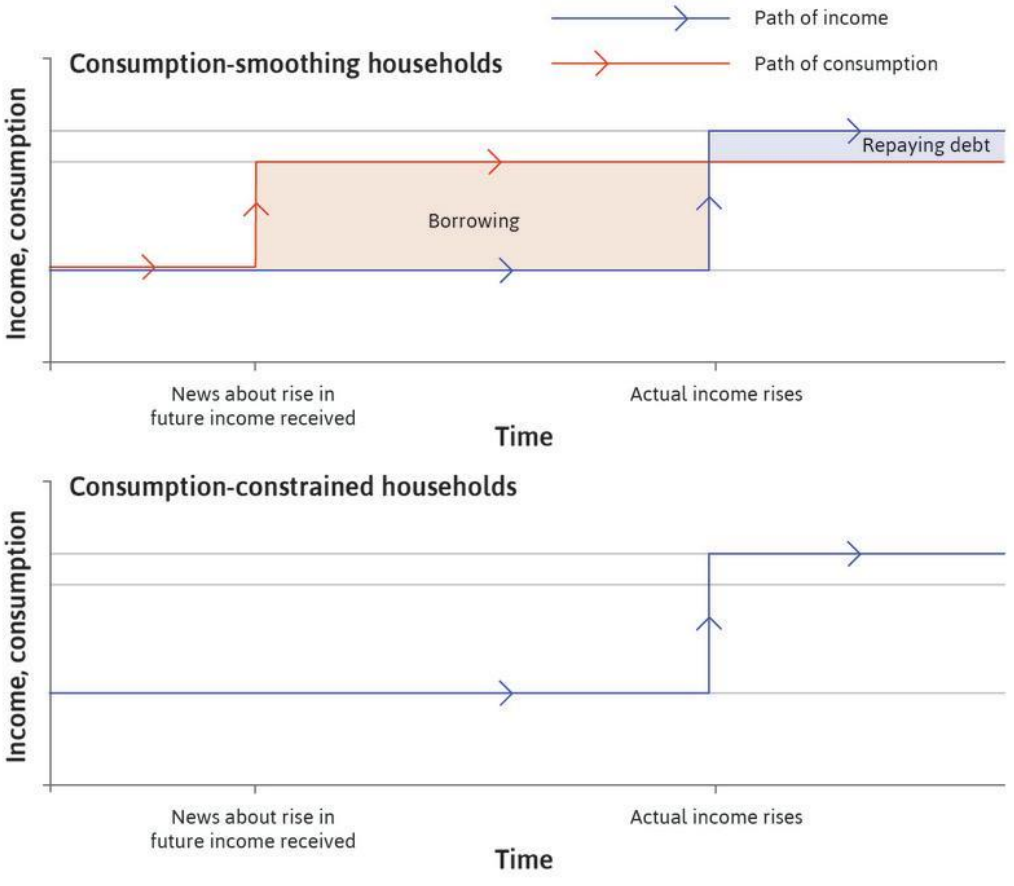
The blue lines on the figure show that the path of income over time is the same in both households



Credit constraints

The blue lines on the figure show that the path of income over time is the same in both households

The red line in the top panel shows that, in a consumption-smoothing household, consumption changes immediately once the household receives the news



Credit constraints

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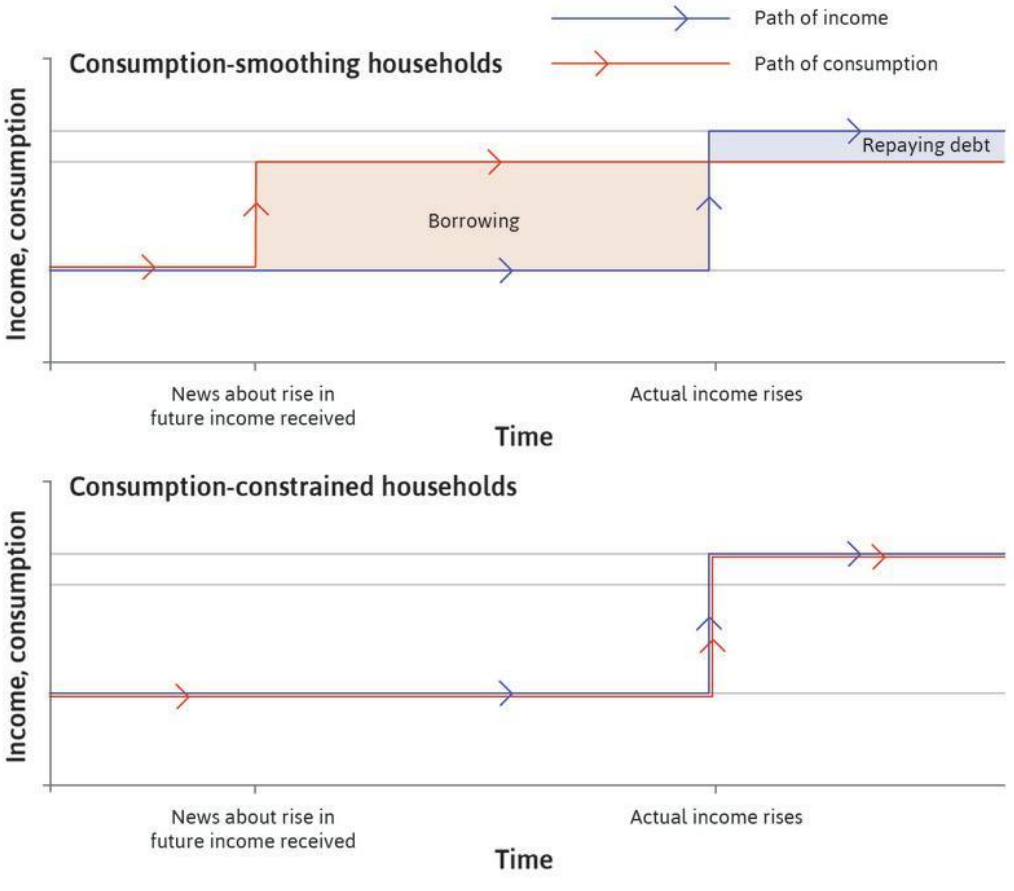
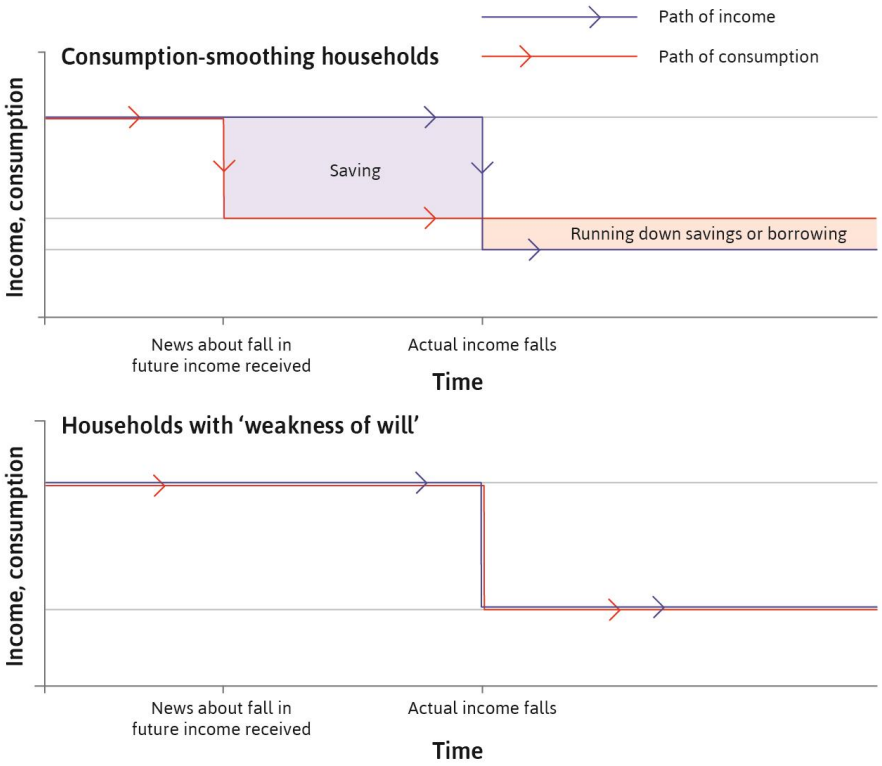
A credit-constrained household that cannot borrow has to wait until the income arrives before adjusting its standard of living



Limitations to smoothing: weakness of will



Weakness of will – inability to commit to beneficial future plans.

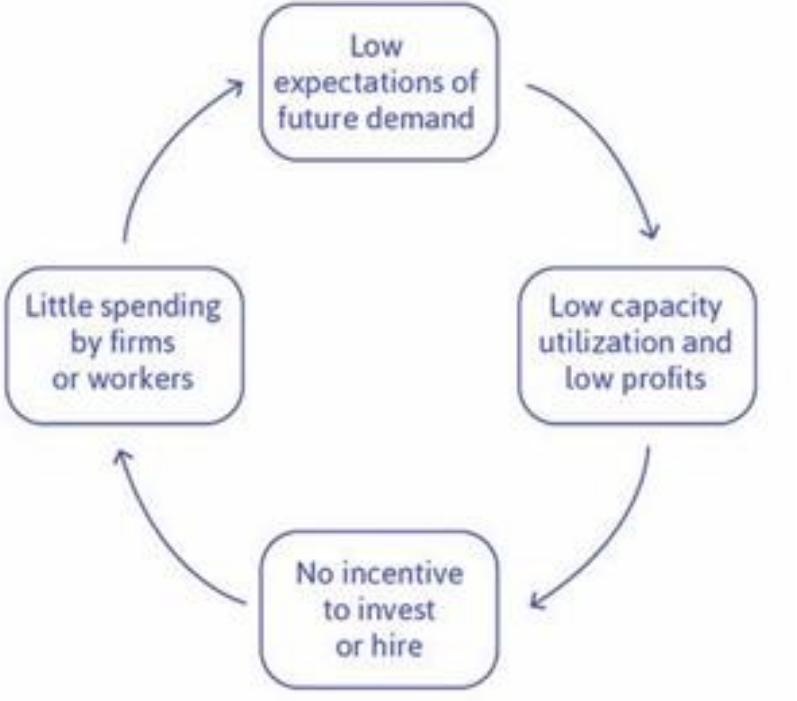
A household is able to smooth consumption but doesn't, and may regret it later.

Economic fluctuations and investment (I)

Volatile investment

- Firms don’t have preferences for smoothing like households
- They adjust investment plans to both temporary and permanent shocks, to maximise their profits
- Investment decisions depend on firms’ expectations about future demand (other firms’ investments)

Negative expectations of future demand create a vicious circle



Positive expectations of future demand create a virtuous circle

Investment as coordination game

Actors: the two firms (A and B)

Actions: Invest, or Do not invest

Information: they decide simultaneously

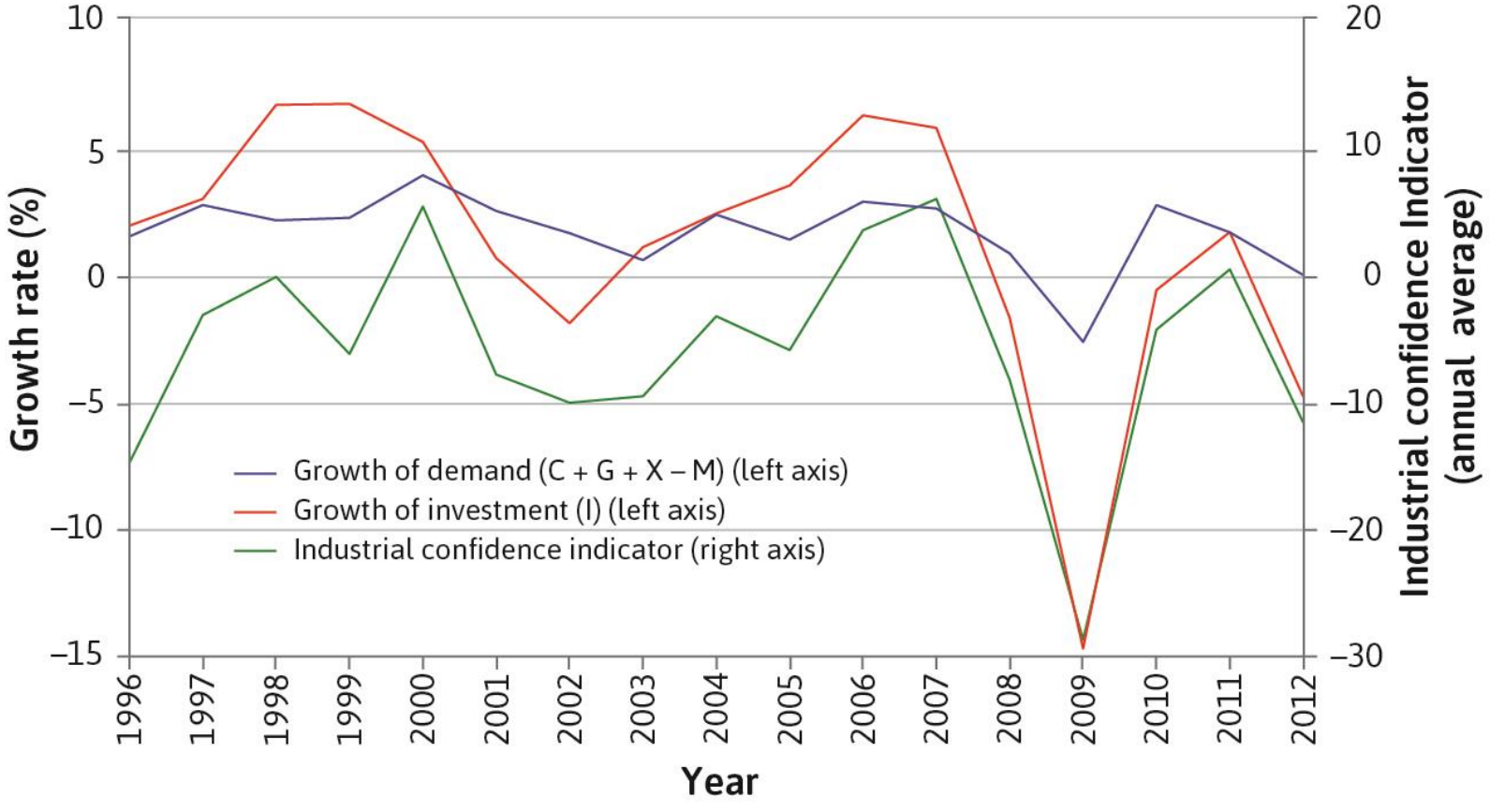
Payoff: profits from investment

Investment is the best response to other firms' investment, not invest is best response to other firms' not investing

There are two Nash equilibria in this game (upper-left and lower-right)

		B's profit	
		B invests	B does not invest
A's profit	A invests	100 / 100	80 / –40
	A does not invest	–40 / 80	10 / 10

Business confidence – Eurozone



Business confidence may help firms coordinate investment

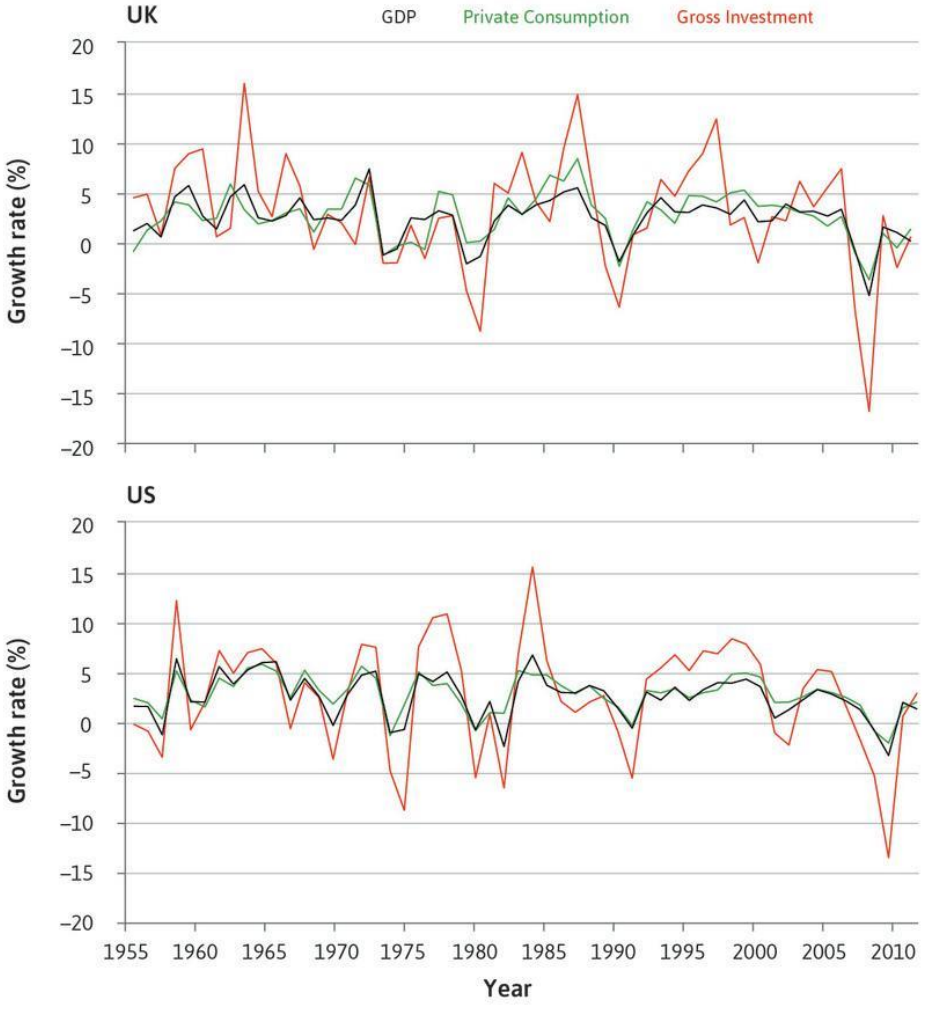
Investment and aggregate economy

Investment is much more volatile than consumption

The benefits of coordinating investment makes cycles self-reinforcing

Firms respond positively to the growth of demand in the economy

This is why investment is more volatile than GDP



Other components of GDP

- **Government spending is less volatile than investment**
  - Does not depend on business confidence
  - Government also acts as an automatic stabilizer through transfers and investment on public infrastructure

- **Exports depend on demand from other countries**
  - Will fluctuate according to the business cycles of major export markets

Inflation

Inflation: definition

- **Inflation** is an increase in **the general price level in the economy**
- Deflation is decrease in the price level
- Last year: Rapid increase in inflation in several countries

Inflation in Finland 1990-2022

Inflation: selected European countries in 2022

	Inflation
Finland	8.1
Denmark	10
United Kingdom	10.1
Germany	10.4
Euro Area	10.7
Sweden	10.8
European Union	10.9
Hungary	20.1
Estonia	22.5
Lithuania	24.1

Source: Tradingeconomics.com

Measuring inflation

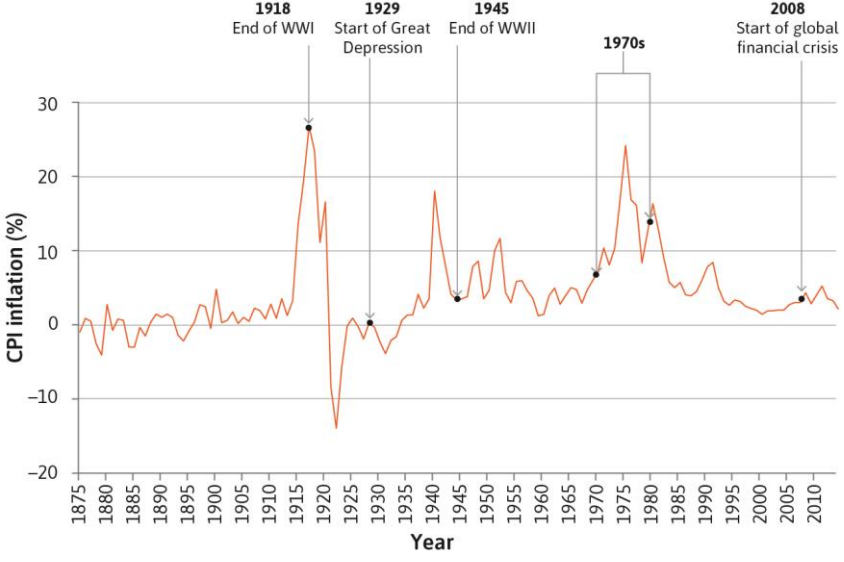
- **Common measure of inflation is change in the Consumer Price Index (CPI)**
  - Measures the general level of prices that consumers must pay for goods and services, including consumption taxes
  - Based on a representative bundle of consumer goods – "cost of living"
  - The goods and services in the basket are weighted according to the fraction of household spending they account for
  - Excludes exports, which are consumed by foreign residents, but includes imports, which are consumed by domestic households

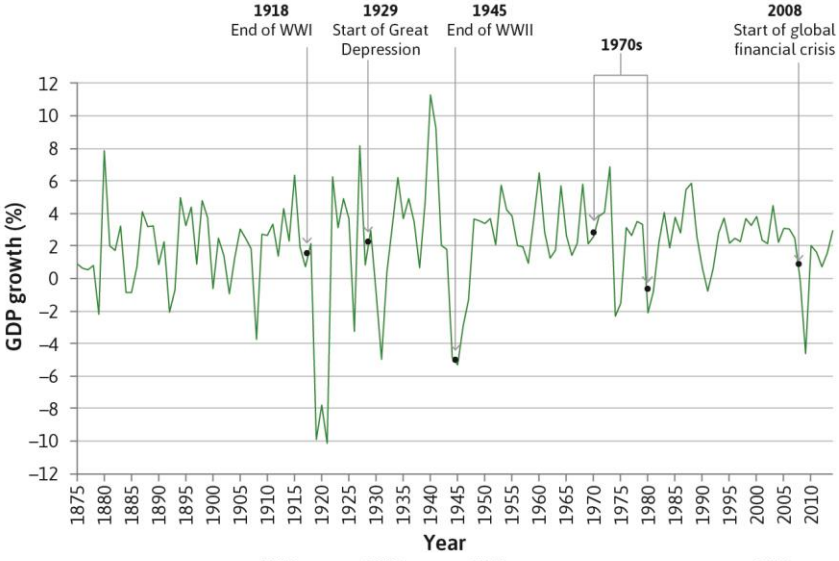
Measuring inflation

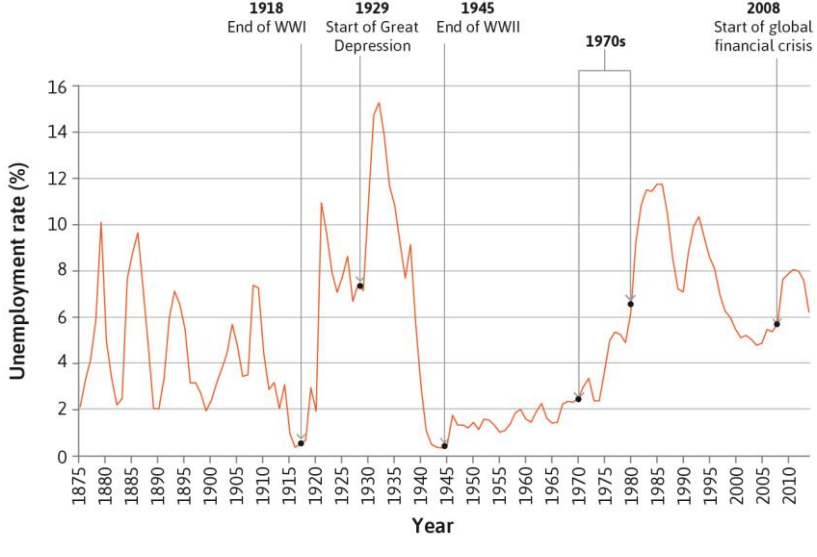
- **GDP deflator is a measure of the level of prices for domestically produced output (ratio of nominal to real GDP)**
  - Tracks prices of components of GDP (C, I, G, NX)
  - Allows GDP to be compared across countries and over time
- **The real GDP series shows how the size of the home economy changes over time, taking into account changes in the price of domestically produced goods and services**

Inflation, GDP, and Unemployment

Inflation tends to be lower during recessions (high unemployment)







Summary

- **Economic growth is not a smooth process – the economy goes through a business cycle**
  - Households try to smooth their consumption over the business cycle (problem: credit constraints)
  - Investment is more volatile than GDP; the outcome of a self-reinforcing coordination game
  - Inflation moves with the business cycle
- **System of national accounts to measure the economy**
  - $GDP = C + I + G + X - M$
- **Measuring GDP as income, spending, production**

Next unit: Unemployment and fiscal policy

- The multiplier process: How limits on households' ability to save, borrow, and share risks affect GDP
- **Fiscal policy**: How government spending can help stabilize the economy
- Limitations of fiscal policy: The consequences of being part of the world economy