Macroeconomics Lecture 1

SGPE Summer School

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Table of contents

Logistics

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- Textbook: Macroeconomics by Gottfries
- Lectures & Tutorials
- Written Assignment (10%)
- Final Exam (90%)

Macroeconomic issues

Issues in macroeconomics

- Why are some countries richer than others?
- Why is there high inflation in some countries?
- Why does unemployment exist and what influences it?
- What causes booms and recessions?
- Can fiscal and monetary policies stabilise the economy?

- When are government finances sustainable?
- What are the consequences of having a floating or a fixed rate of exchange?
- What are the pros and cons of having a monetary union?
- What are the effects of having an independent central bank?

Complications

Macro is hard

- There is a very large number of individuals and firms, all different from each othe. (Heterogeneity)
- We have to study everything at the same time, since everything is connected:
  - Consumption and investments
  - Export, import and current account balance
  - Budget deficit and national debt
  - Unemployment and inflation
  - Interest and exchange rates

What to do about it?

Make a model

- A simplified description of the world
- A toy model - Mickey Mouse version of reality

Economic models

Simplifications:

- We assume that all consumers (firms) are alike, that is, we study a typical consumer (firm). (Representative)
- We assume that consumers (firms) act rationally and have simple objective functions. They maximise utility (profit).
- We describe economic relations using simple mathematical functions, such as utility functions and production functions.

Markets:

- a labour market
- a goods market
- a credit market (money market)

Decision-makers:

- The typical firm
- The typical household
- Benevolent policymakers (government and central bank)

Problems:

- Price setting
- Wage setting
- Investments
- Consumption
- Taxes and government expenditure
- interest rate and money supply
- import and exports
- Loans in domestic and foreign currenes
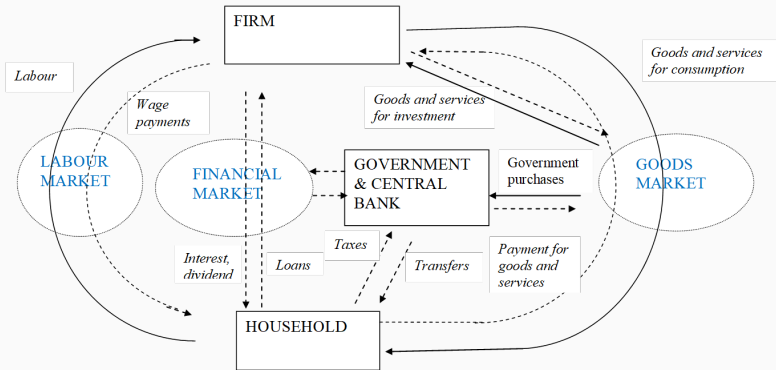
We dont try to explain everything.

- Exogenous variables: not explained in the model.
- Endogenous variables: explained in the model.

Questions to ask when studying a model (can be handy now and in MSc)

- What assumptions are made?
- Which variables are exogenous, which are endogenous?
- What questions is the model meant to answer and what questions is it unable to answer?
- Does the model provide intuitively reasonable answers?
- Does it capture what is important for the question?
- How well do the implications/predictions agree with the data?

Other issues we need to deal with:

- Many choices have a time dimension, that is, they are inter-temporal decisions. Examples: saving and consumption.

- Expectations for the future are important. Example: if unions think inflation is going to be high, they will want large wage increases.

- The effects of one specific shock may differ in the long run and the short run. Example: in the short run prices and wages are sluggish, but in the long run they are flexible.

Math repetition

Functions

- A variable designates an economic quantity (price).
- A function shows how variables are related.
- General functional form
- Specific functional form

Derivatives

The derivative shows the change in the dependent variable per unit change of the value of the independent variable. In graphics, it is the slope of the function.

- Tax (T) increases with income (Y). The marginal tax is positive. We express this as

$$\frac{dT}{dY} > 0 \qquad\qquad T'(Y) > 0$$

Multivariable functions

Sometimes a function has more than one independent variable.

- The production function $Y=F(K,N)$ says that production depends on the inputs of capital and labour
- Y production (number of units)
- K amount of capital (number of units/machines)
- N amount of labour (number of individuals)

Partial derivative

Sometimes we would like to know what happens to the dependent variable when we change one of the independent variables but keep the other constants.

- $Y=F(K,N)$ has two partial derivatives:
- dY/dK marginal production of capital.
- dY/dN marginal production of labour.

A rule of thumb

Let $Z = XY$. If we want to calculate percentage changes, then

$$\frac{\Delta Z}{Z} \approx \frac{\Delta X}{X} + \frac{\Delta Y}{Y}$$

If $Z = \frac{XY}{Q}$, then

$$\frac{\Delta Z}{Z} \approx \frac{\Delta X}{X} + \frac{\Delta Y}{Y} - \frac{\Delta Q}{Q}$$

National Accounts

National Accounts

National accounts (NA) show the flows of

- production
- income
- consumption
- saving and investments
- exports and imports

during a certain time period (year, quarter).

Important concepts in NA

- output vs. value added
- market vs. basic price
- gross vs. net
- domestic production vs. national income
- income vs. disposable income

Concept	Difference
Output versus value added	Inputs
Market price versus basic price	Taxes and subsidies
Gross versus net	Depreciation
Production versus income	Primary incomes from the rest of the world
Income versus disposable income	Taxes and transfers (secondary incomes from the rest of the world)

NA gives us answers to:

- What is the value of all goods and services produced in a country? How much do the different sectors contribute to total production?
- How large is the total income in a country and how is it distributed between capital and labour?
- What fractions of production is used for consumption, investments and exports? How much is used by the private and the public sector?
- What share of income is saved and invested?

How much do the different sectors contribute to total production?

Gross value added by activity, percent of GDP, 2007.

	Agriculture, hunting and forestry; fishing	Industry, including energy	Construction	Wholesale and retail trade, repairs; hotels and restaurants; transport	Financial intermediation; real estate, renting and business activities	Other service activities
United Kingdom	1	17	6	21	32	23
United States	1	17	5	19	33	25
Euro area	2	20	6	21	28	22

Who gets the income?

Gross domestic product in billions, 2008.

|	GDP	Taxes less subsidies Value	Taxes less subsidies % of GDP	Gross value added at basic prices	Compensation of employees Value	Compensation of employees % of gross value added at basic price
UK	1446	150	10	1296	769	59
US	14369	994	7	13376	8068	60
EU	12494	1314	11	11180	6070	54

How are the good used?

$$Y + IM = C + I + C^G + I^G + X$$
$$Y = C + I + G + NX$$

% of GDP, 2008.

|	Private consumption	Government consumption	Private investment	Government investment	Exports	Imports	Net exports
Denmark	49	27	19	2	55	52	3
Sweden	47	26	17	3	53	46	7
Netherlands	45	26	17	3	77	68	8
Finland	52	23	19	2	47	43	4
France	57	23	19	3	27	29	-2
United Kingdom	64	22	14	2	29	32	-3
Norway	39	20	19	3	49	30	19
Spain	57	20	25	4	26	32	-6
Germany	57	18	17	1	47	41	6
Japan	58	18	19	4	18	17	0
United States	70	17	15	3	13	18	-5

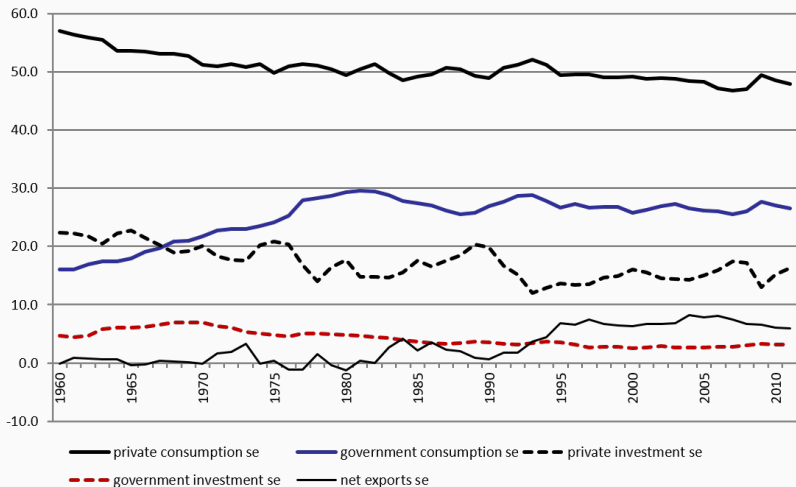# Consumption, investments, net exports USA 1950-2011
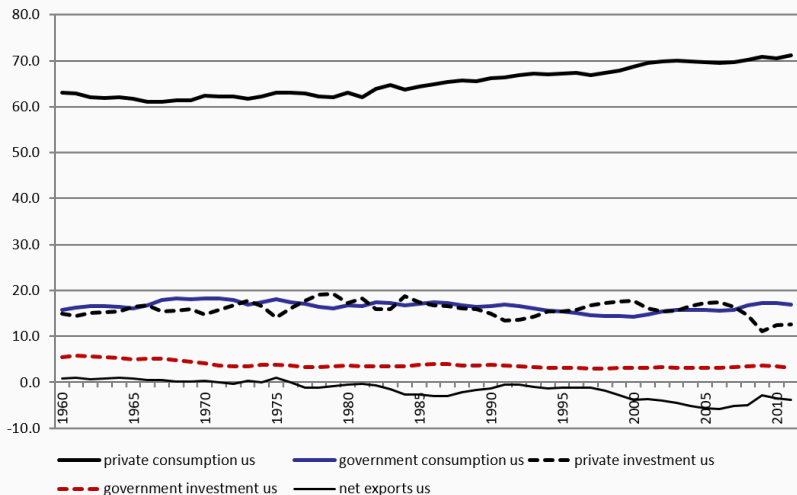
Consumption, investments, net exports UK 1950-2011
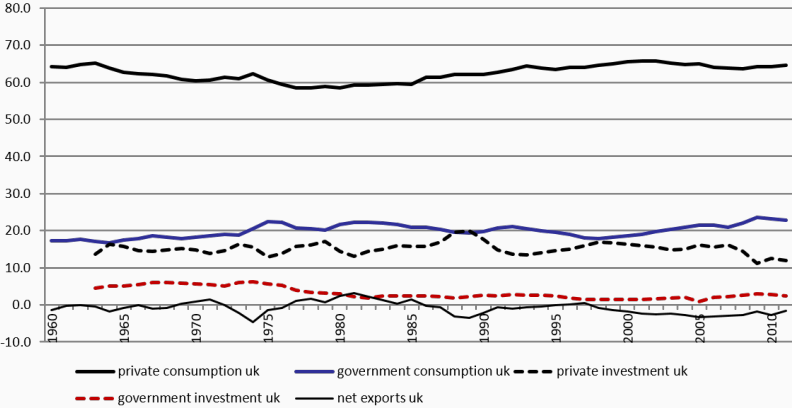
Consumption, investments, net exports Netherlands 1950-2011
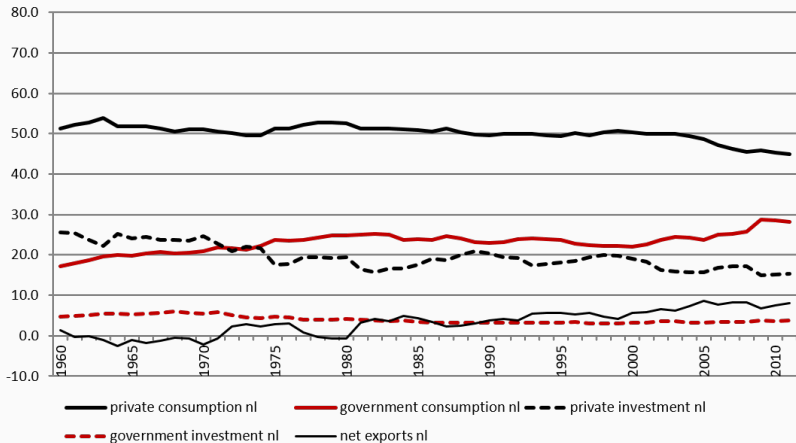
Consumption, investments, net exports Sweden 1950-2011

How to compare incomes in different countries:

- different currencies
- different price levels

Purchasing power parity (PPP): A currencys value is determined by its purchasing power.

What proportion of GDP is saved and invested

The current account balance shows the net payment flows to the country associated with net exports, net primary income and transfers from ROW.

$$CA = NX + Y^F + Tr^F$$

If there is a surplus in the CA, payments to the country exceed payments from the country. We can also view CA as savings minus investments.

$$CA = savings - investment$$

$$CA = Y + Y^F + Tr^F - C - C^G - I - I^G$$

Income, saving, and investment, percent of GDP 2008.

	GDP	Net primary income from the rest of the world	Gross national income at market prices	Net current transfers from the rest of the world	Gross national disposable income	Final consumption expenditures	Saving, gross	Gross investment	Net lending = current account (approx)
Japan	100	3	103	0	103	76	25	24	3
Norway	100	0	100	-1	99	59	40	22	18
UK	100	2	102	-1	101	86	15	17	-1
US	100	1	100	-1	99	87	12	18	-6