Economic Policy and Business Activity

Academic Year 2017-2018
2nd Semester

Chapter 3

Fiscal policy

Theory Lecture 6

3. Fiscal policy

3.1   Issues

3.1.1 What is it all about?

3.1.2 Lessons from history

3.2   Theories

3.2.1 Demand-side effects: Keynes and his critics

3.2.2 Public debt sustainability

3.2.3 Supply-side effects and reconciliation attempts

3.3   Policies

Learning outcomes for lecture 6 (today)

- Explain the main objectives and instruments of fiscal policy

- Explain the differences in the temporal dynamics of FP and MP

- Define public budget and fiscal or budgetary balance (surplus, deficit)

- Explain the different measures of indicators of fiscal balance (e.g. financial vs primary balance; cyclical vs structural balance; OECD's "underlying fiscal balance")

Fiscal policy (FP)

- FP can simultaneously fulfil the three functions of allocation, stabilisation, and redistribution

- However, **FP usually refers to the stabilisation function**, and can be defined as "the set of decisions or rules regarding taxes and public expenditures for purposes of **dampening the fluctuations** of the economic cycle in order to keep unemployment close to its equilibrium value and thus avoid the build-up of deflationary or inflationary pressures"

Fiscal policy

- FP emerges as a XXth invention that owes considerably to the thinking of John Maynard Keynes

- FP owes even more to the general rise of the share of public expenditures in GDP as a consequence of the generalization of government finances of social insurance, welfare, and education - since World War II, governments in all countries have thus been transformed from an irrelevant macroeconomic player into a major contributor to aggregate demand
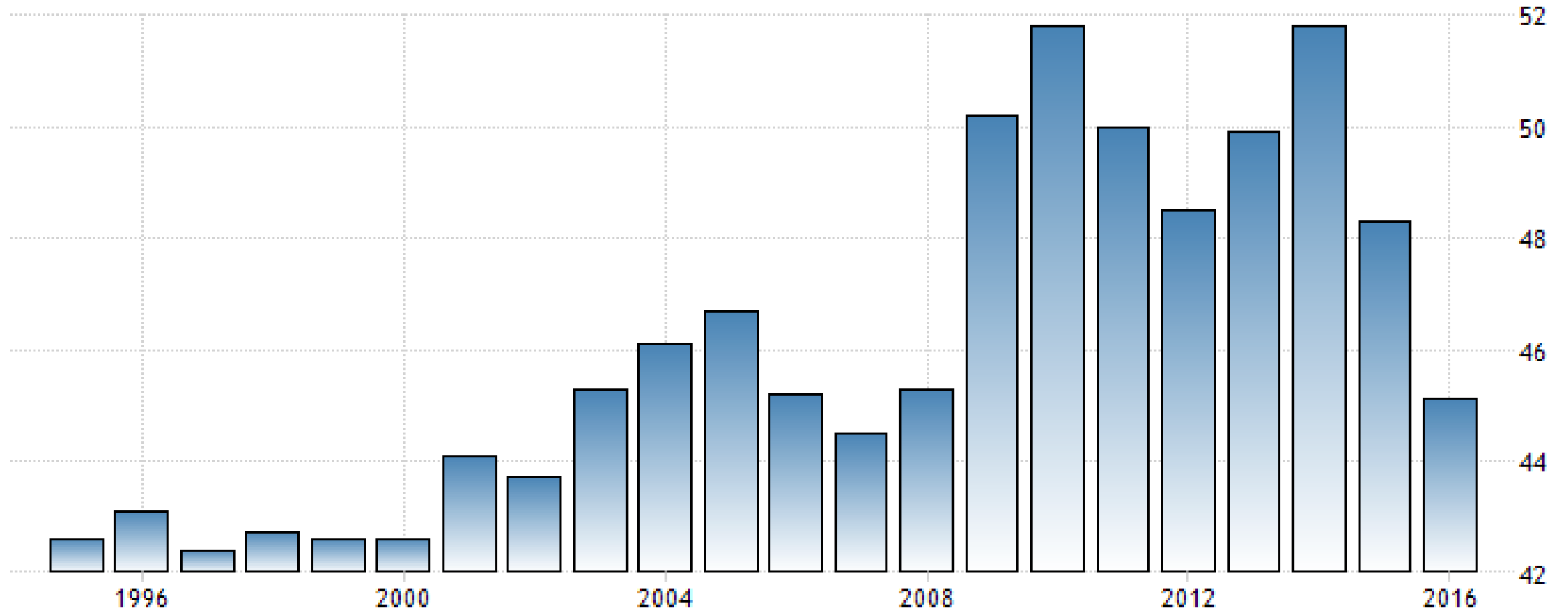
Public Spending as % of GDP in USA
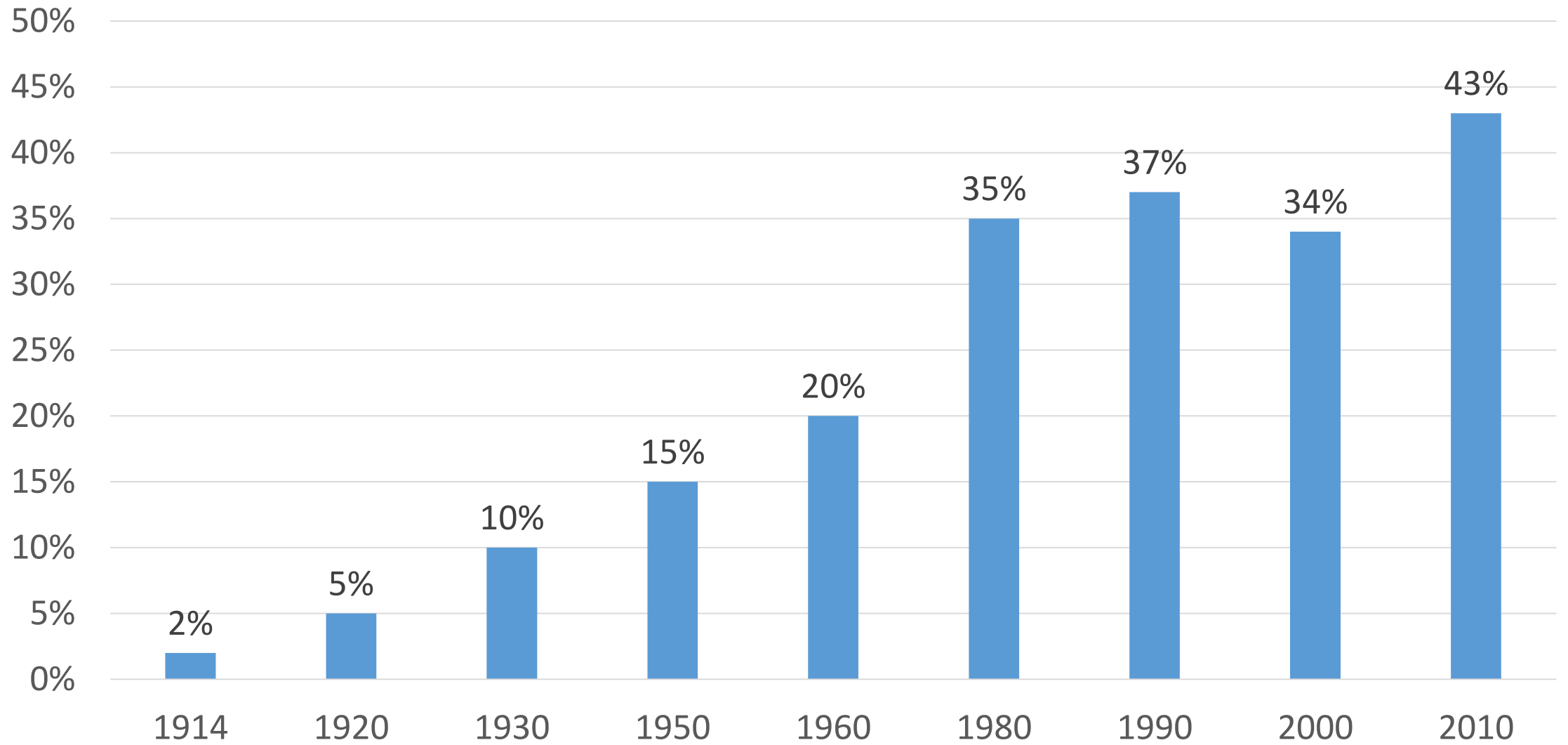
Public spending as % of GDP at current prices

Paises	2013	2010	2000	1990	1980	1977
União europeia 15	49,8	51,1	44,8			
Grécia	58,8	51,4	46,7	45,2		
Finlândia	57,9	55,8	48,3	48,2	40,2	41,6
França	57,3	56,6	51,7	49,6	46,0	
Dinamarca	57,1	57,7	53,7	55,4	52,7	45,6
Bélgica	54,4	52,6	49,1	52,3	54,9	51,1
Suécia	53,1	52,3	55,1			
Áustria	51,6	52,8	51,9	51,5	49,6	47,3
Italy	50,9	50,4	45,9	52,6	40,6	
Holanda	49,9	51,3	44,2	54,9	55,2	51,1
Portugal	**49,1**	**51,5**	**41,6**	**38,5**	**32,3**	**28,7**
Reino Unido	47,1	49,9	36,4	40,7	47,4	46,6
Espanha	44,9	46,3	39,2			
Alemanha	44,7	47,9	45,1	43,6	46,9	47,9
Noruega	44,5	45,2	42,3	53,3		
Luxemburgo	43,4	43,5	37,6	37,8		
Irlanda	42,4	65,5	31,1	42,3		
Japão	42,4	40,7	38,5	31,1		
Polónia	41,8	45,4	41,1			
Estados Unidos	38,8	42,6	33,7	37,0	34,9	34,1
Suíça	33,6	33,9	35,6	29,7		

PORTUGAL GOVERNMENT SPENDING TO GDP

https://tradingeconomics.com/portugal/government-spending-to-gdp

Public spending as % of GDP in Portugal
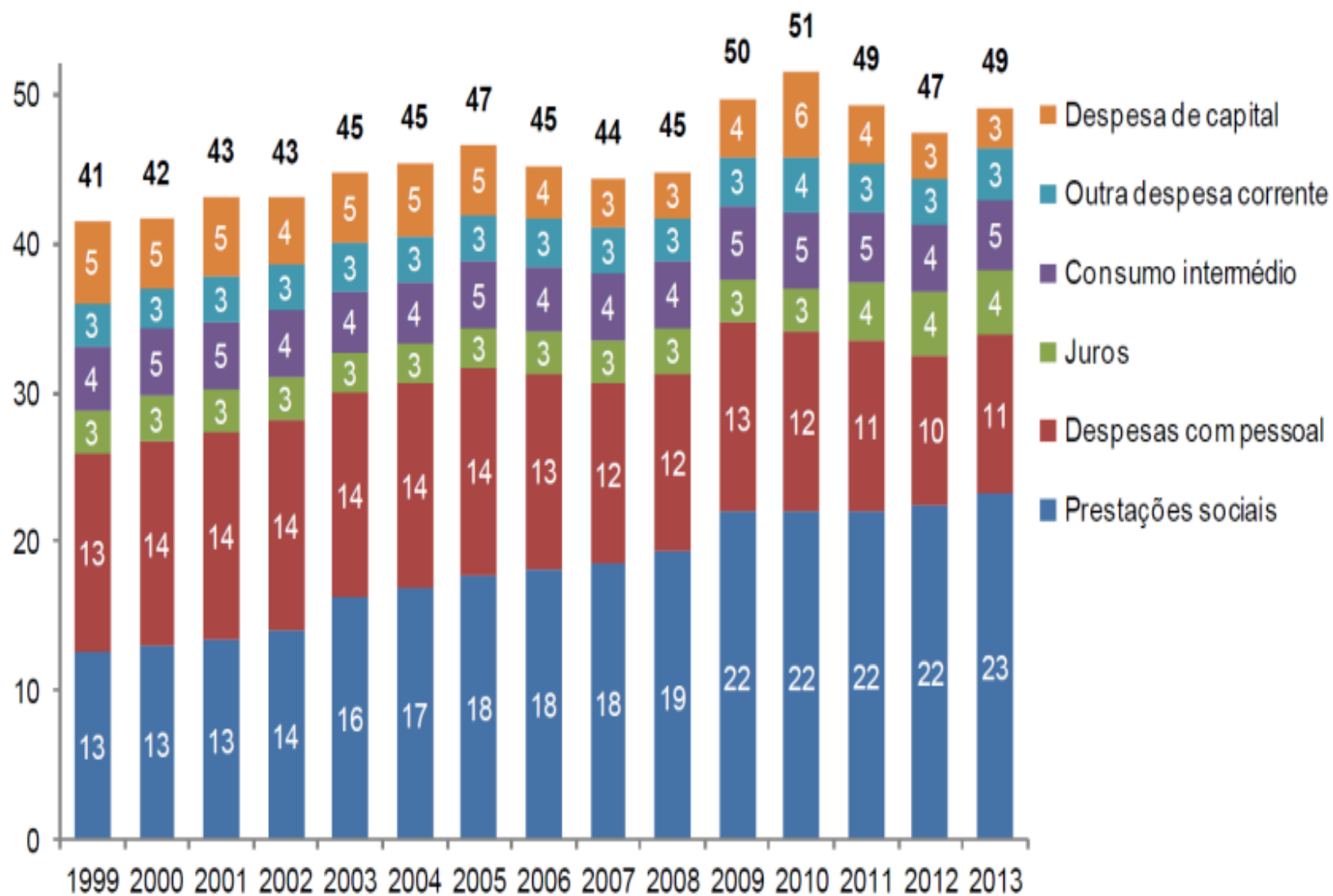
Fontes: INE e Ministério das Finanças, outubro de 2013.

Fiscal policy

- Towards the end of the XXth century, theoretical and empirical doubts were raised about the **effectiveness of fiscal policy** as a stabilization tool

- A **number of questions** were raised
  - Are **fiscal expansions** effective mainly when **public debt** reaches a high level?
  - Does **fiscal contraction** always have a recessionary effect on demand?
  - Is it possible and desirable to conceive, and use efficiently, **fiscal policy principles and rules**?
  - Who eventually **pays** the **public debt**?

Fiscal policy

- After 2008, further questions came to the fore in the wake of the financial and economic crisis, as fiscal policy was rehabilitated as a key prescription of the policy response:

  - How big should the **fiscal stimulus** package be?

  - Should it rely on **tax cuts** or **spending increases**?

  - For **how long** should it be maintained?

  - How to achieve and maintain a **sustainable debt**?

Time Dynamics of FP vs MP

- While some models treat fiscal and monetary policies in similar ways, they neither have the same flexibility nor the same reactivity:

    - **Fiscal policy** has **immediate impact on demand** through public consumption and investment, or through households' disposable income, but the **fiscal decision process is longer** than the monetary one because it requires several instances of negotiation within the government and with parliament.

    - On the contrary, the impact of **monetary policy** is delayed due to fixed-rate indebtedness of households and firms, imperfect reaction of long-run interest rates, or **lagging reaction** of the banking sector, but **decision is more rapid**.

What is the public budget?

What is the public budget?

- The **fiscal (or budgetary) balance** is the **difference between income or revenue (R) and expenditure (E):**

- There is a **fiscal surplus** when the budget balance is positive: R-E>0

- There is a **fiscal deficit** when the balance is negative: R-E<0

where:
- R: Government revenue
- E: Government expenditure

PORTUGAL GOVERNMENT BUDGET

https://tradingeconomics.com/portugal/government-budget
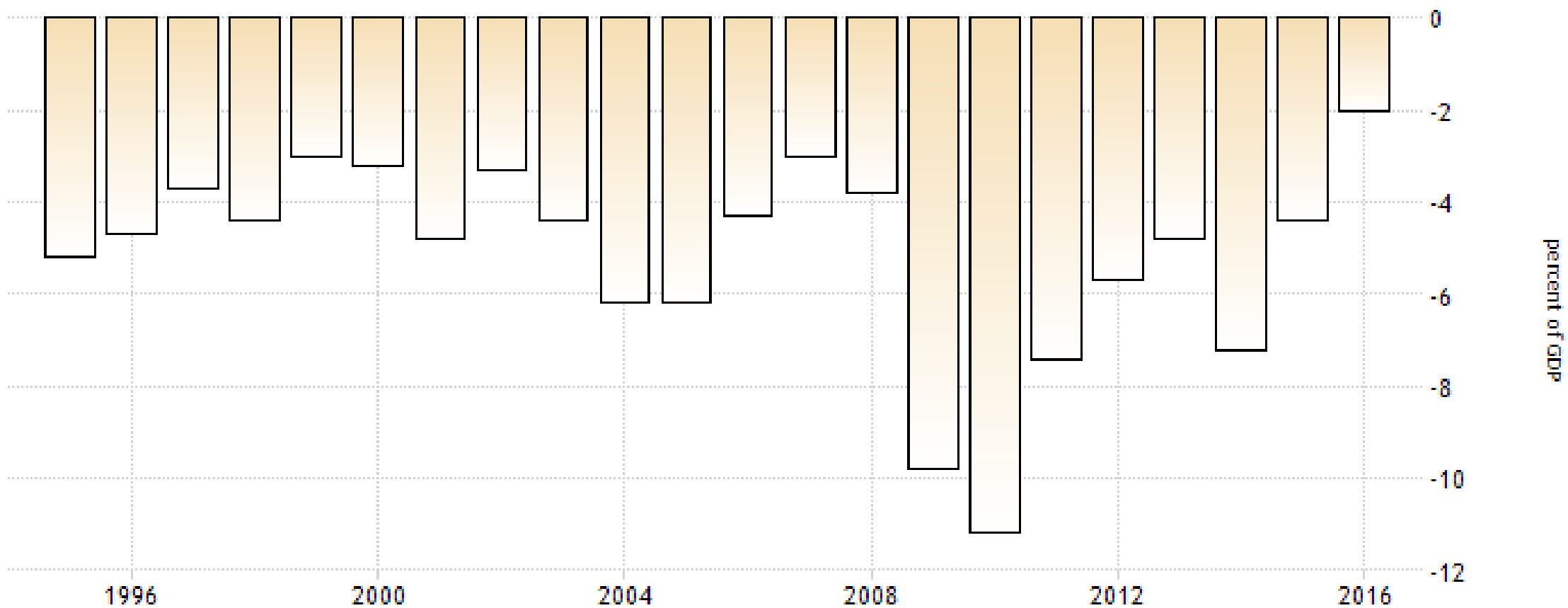
Measuring the fiscal balance

Main measures of fiscal balance:

1. **Global fiscal balance** (**net lending** or **financial balance)**: difference between revenue and expenditure of public sector; represents the borrowing need of the government and **includes the interest paid on public debt**

2. **Primary balance**: the **financial balance excluding interest payments on public debt.** This is the fiscal balance if there was no public debt

3. The **cyclical fiscal balance** which is associated with **automatic stabilizers**

4. The **structural fiscal balance (or cyclically adjusted fiscal balance), which is used to** provide a measure of the **discretionary component of fiscal policy**

5. "**underlying fiscal balance**", which **measures the structural balance excluding one-off operations**

Measuring the fiscal balance

- **Total or global fiscal balance** (called **net lending** or **financial balance)** is the difference between the revenue and expenditure of public sector

- The **financial balance** represents the borrowing need of the government and includes the **interest paid on public debt**

- **Interest charges** depend on the **debt level** and on long-term **interest rates, two variables which in the short term are not in governments' hands**

Measuring the fiscal balance

- A better indicator of the **deliberate fiscal action of government and of parliament** is the **primary balance**, that is, the **financial balance excluding interest payments on public debt** (i.e. the fiscal balance if there was no public debt)

> Financial balance (net lending) =
> = primary balance - interest payments

- It is a better indicator of government fiscal action because the charges with interest on public debt result from the successive accumulation of fiscal deficits in previous periods and hence is not a direct consequence of the current government actions

- Therefore, the global or total fiscal balance is **NOT** a good indicator of the current government deliberate or discretionary actions/decisions
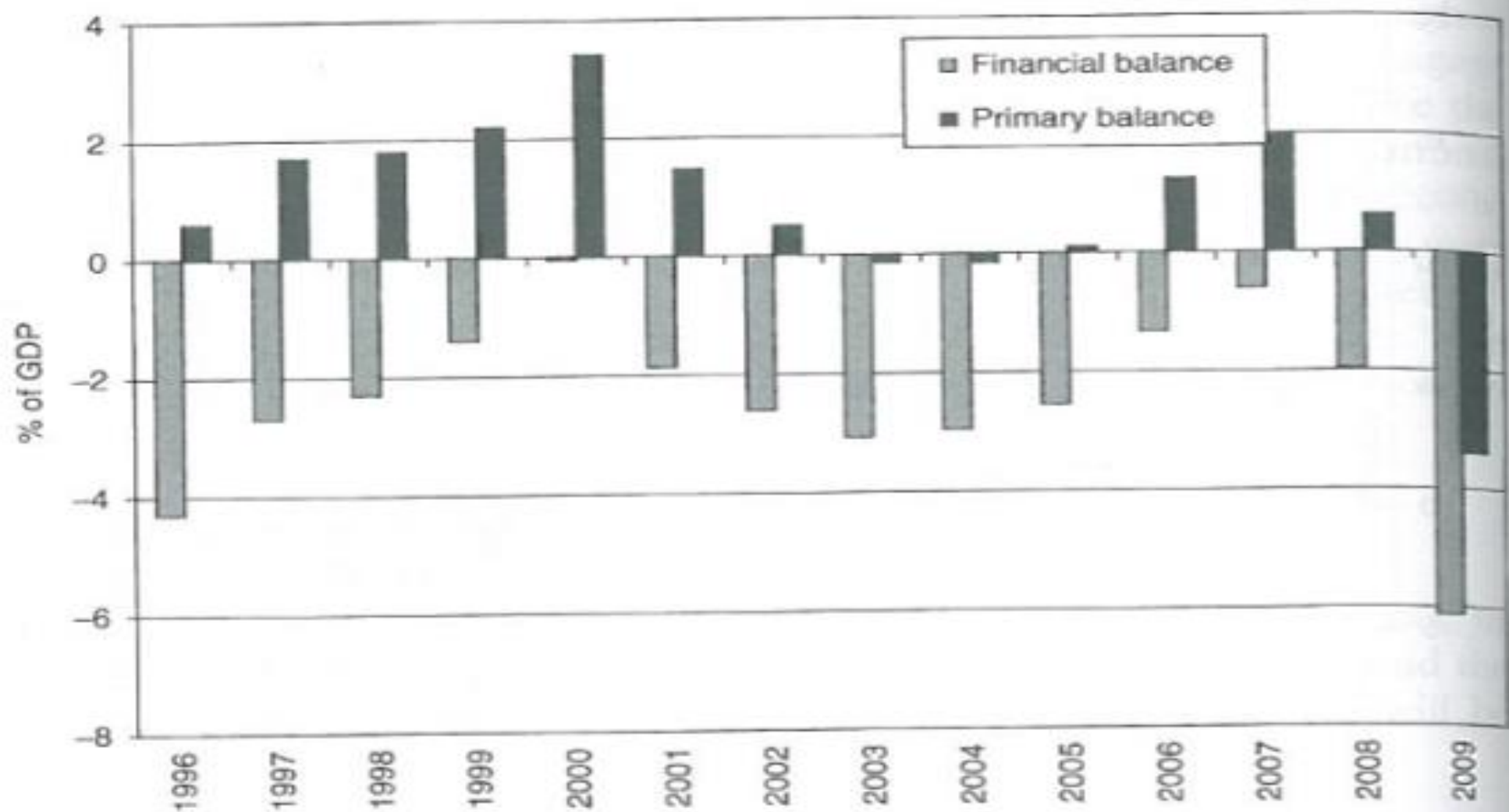
Figure 3.4 General government financial and primary balances in the euro area, 1996–2009.

Source: *OECD Economic Outlook* no. 86, November 2009.

Measuring the fiscal balance

- A general pattern of fiscal balances is that they tend to rise when economic activity booms and to decline when it is slowing down. This is because most tax bases move in line with economic activity (e.g. VAT revenues depend on final consumption), whereas some components of public spending (e.g. unemployment benefits) slowdown in economic booms

- This **spontaneous or mechanic/automatic variation of fiscal balances is known as the automatic stabilizers**

- Automatic stabilizers offset fluctuations in economic activity without direct intervention by policymakers

- We call them "stabilizers" because they flatten the economic cycle by stabilizing the effect on households' of changes in aggregate income – e.g. taxes paid, net of social transfers, increase during economic expansions, while the reverse occurs during downturns though unemployment benefits, without any policy change

Measuring the fiscal balance

- In order to capture the effects of changes in government's fiscal policy, it is useful to calculate a **cyclically adjusted fiscal balance (**called **structural balance)**

- The **structural balance measures** what **the financial balance** would be **if output was at its potential level** (i.e. output gap =0)

- The **change in the structural balance** from one period to next **is generally regarded as** providing **a measure of the discretionary component of fiscal policy because** in contrast to changes resulting from the automatic stabilizers it **results from a government decision**

Measuring the fiscal balance

- The **evolution of the fiscal balance** thus decomposes into:

1) a **cyclical component** independent of the government's will, and

2) a **discretionary component equal to the variation of the structural balance**

- The discretionary component provides a measure of the fiscal stance or attitude, i.e. of the orientation of fiscal policy

Financial balance (net lending) =
= cyclical balance + cyclically adjusted balance =
= cyclical balance + structural balance

independent of government's will=
changes from the **automatic stabilizers**

discretionary component of fiscal policy =
variation of the structural balance

Measuring the fiscal balance

- The **structural balance is the main indicator used by economists to analyse government's fiscal policy**

- We can also combine the **two decompositions** of the deficit (financial/primary, financial/structural) to calculate a **structural primary balance**:

Financial balance (net lending) =
= cyclical primary balance + structural primary balance – interest payments on public debt

Measuring the fiscal balance

- The primary and structural balances include a number of **nonrecurrent, large one-off fiscal operations** such as privatizations. These one-off operations undermine the accuracy of structural balances as indicators of the fiscal stance

- Thus, to have a more accurate measure of the fiscal balance, the OECD introduced in 2008 a new indicator - the "**underlying fiscal balance**" - which **measures the cyclically adjusted fiscal deficits adjusted for one-off operations**. In the same spirit, the OECD also publishes underlying primary fiscal balances

Fiscal balance (net lending) =
= cyclical primary balance + one-off operations + "underlying primary balance" – interest payments on the debt

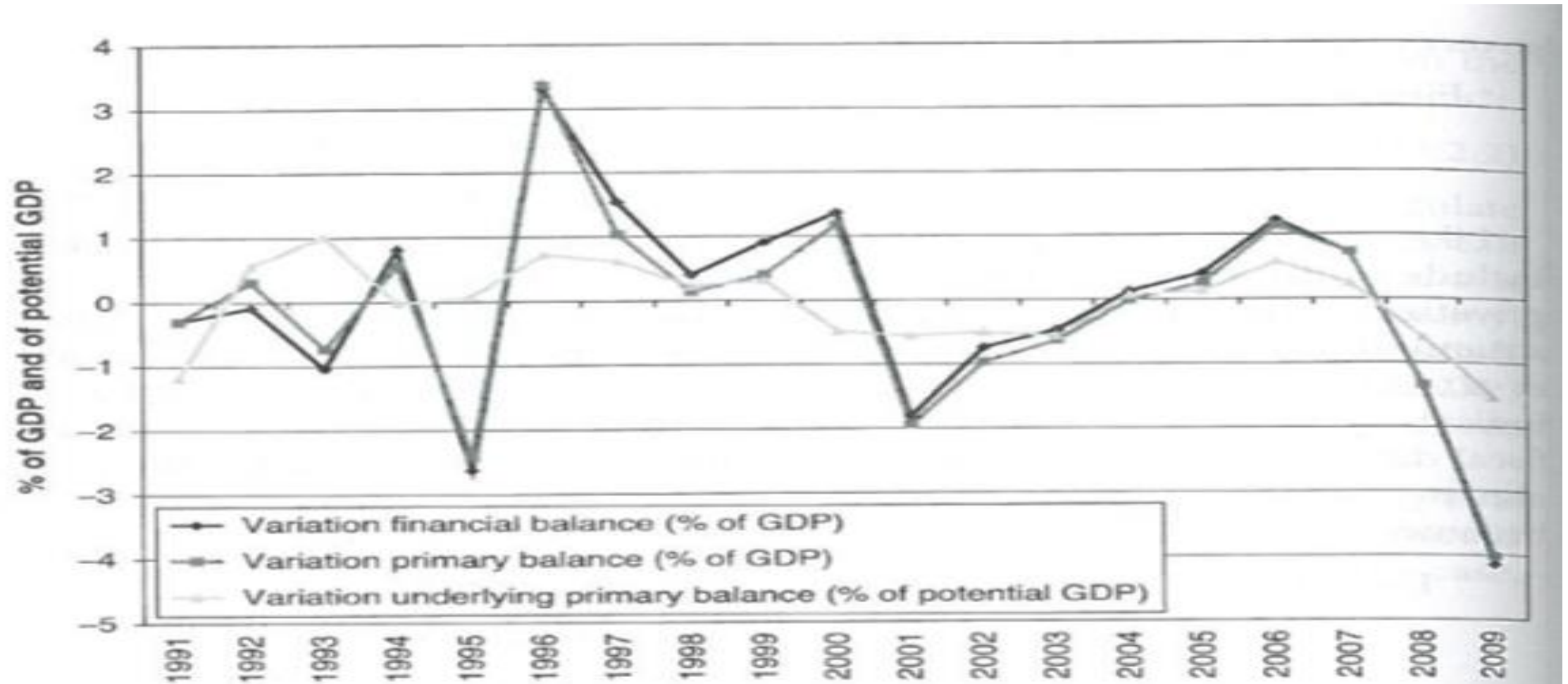# Decompositions of fiscal balances in the case of the euro area

Figure 3.5 Fiscal balances of the euro area.
Source: *OECD Economic Outlook* no. 86, November 2009.

Questions (from past exams) about fiscal balance debt:

By "**underlying fiscal balance**" we understand:
a) The balance of public accounts including secret operations.
b) Balance of public accounts including estimated taxes from underground activities.
c) Balance of public accounts excluding the area of national defense.
d) None of the above.

Theory Lecture 7

Learning outcomes for lecture 7 (today)

- Explain the main ways of financing public deficits

- Define public debt, net public debt and gross public debt

- Explain the key elements of public debt dynamics

- Define public debt (in)solvency

- Describe the options available to countries in a situation of public debt insolvency

- Describe the main indicators used to assess public debt sustainability

How to finance public deficits?

How to finance public deficits?

1. Raise taxes

2. Cut public spending

3. Sell assets

4. Borrow (issue new debt)

5. Monetization of deficit (central bank prints more money so government does not need to issue debt; in most modern economies this is not possible)

Financing public deficits

- Leaving out the option of selling assets, **deficits need to be financed** by:
    - borrowing from the national central bank (by creating money)
    - borrowing from other public or/and private agents, including international organisations or foreign governments

- The **monetization of the deficit** consists of an overdraft or a loan granted by the central bank to the government that increases the money supply. This mechanism is a powerful source of inflation

- The link between **deficit finance** and **inflation** led to restrictions on how governments can borrow from their central bank. E.g. euro area Treasuries cannot seek funding from the ECB or national central banks. Hence, public deficits need to be financed in other ways

Financing public deficits

- Public borrowing consists in selling debt securities (*titulos da divida*) to investors giving them the right to payments in capital and interest as specified in the associated debt contracts

- Accumulated borrowing constitutes public debt

- **Public debt** represents the financial liabilities of the public sector in relation to private actors

- It should not be confused with **external debt**, which represents the liabilities of all domestic actors relative to the rest of the world

Financing public deficits

- Central banks typically hold Treasury bonds as one of the counterparts of money

- They buy (or accept as collateral in repurchase agreements, see Chapter 4) these securities from banks in exchange for providing liquidity

- This mechanism differs from monetization of the deficit because the central bank is not mandated by the government to buy or sell these securities and the amounts derive from monetary policy, not fiscal policy considerations

Public debt as % of GDP

| Country	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011	2012	2013
UE 15		69	63	64	63	61	65	77	83	86	90	93
Bélgica	126	130	108	92	88	84	89	96	96	98	100	100
Dinamarca	62	73	52	38	32	27	33	41	43	46	45	42
Alemanha		56	60	69	68	65	67	75	82	80	81	80
Irlanda	92	80	37	27	25	25	44	64	91	104	117	122
Grécia	72	97	103	110	108	107	113	130	148	170	157	177
Espanha	43	63	59	43	40	36	40	54	62	70	86	94
França	35	55	57	67	64	64	68	79	82	86	90	94
Itália	94	121	109	106	106	103	106	116	119	121	127	133
Luxemburgo	5	7	6	6	7	7	14	16	20	19	22	24
Holanda	77	76	54	52	47	45	58	61	63	66	71	74
Áustria	56	68	66	64	62	60	64	69	72	73	74	75
Portugal	**53**	**59**	**51**	**68**	**69**	**68**	**72**	**84**	**94**	**108**	**124**	**129**
Finlândia	14	57	44	42	40	35	34	44	49	49	54	57
Suécia		73	54	50	45	40	39	43	39	39	38	41
R. Unido	33	50	40	42	43	44	52	67	78	84	89	91

The crisis has added to the debt level

Gross debt (% of GDP)
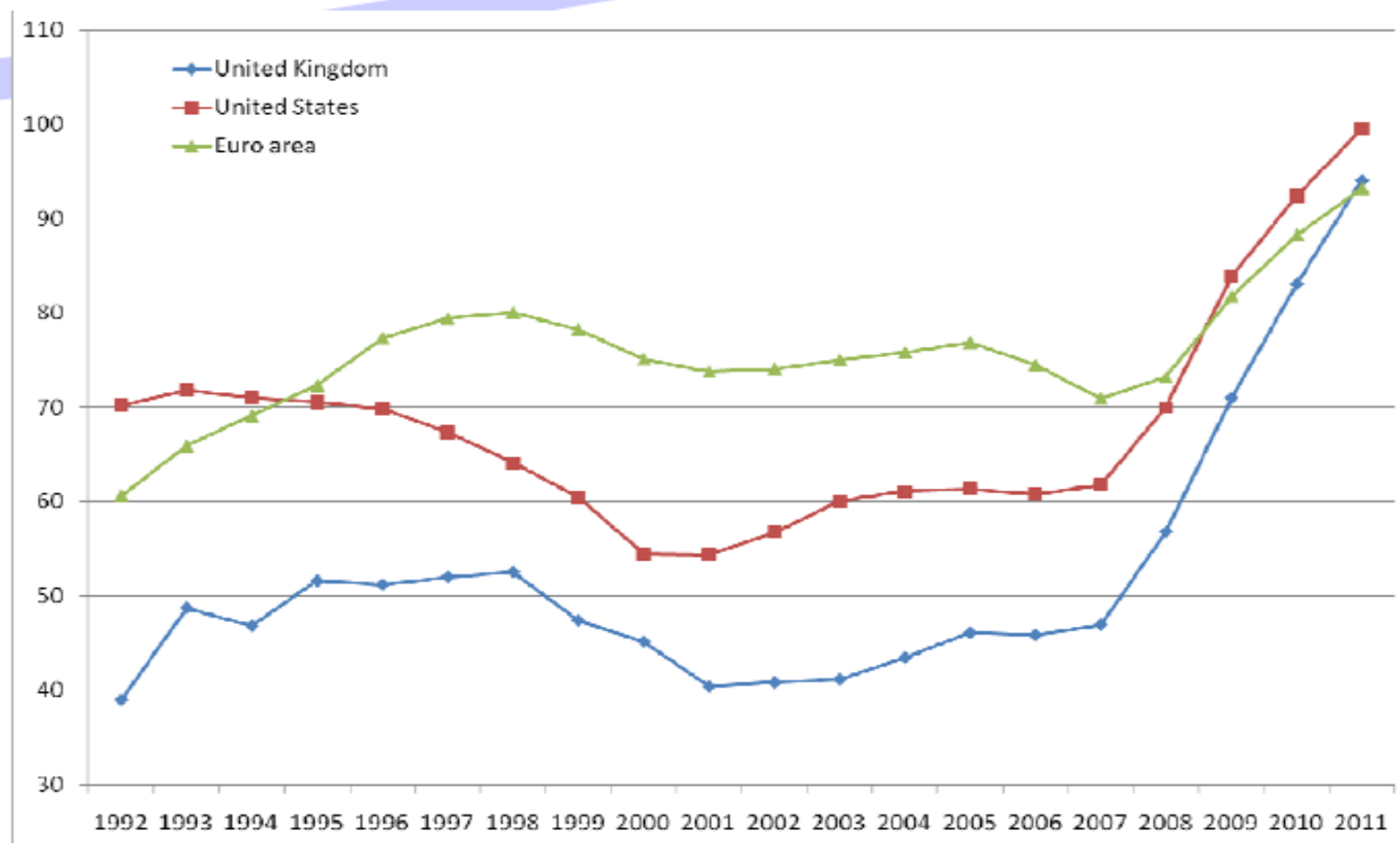
Source: OECD *Economic Outlook*, No. 86.

PORTUGAL GOVERNMENT DEBT TO GDP

Portugal recorded a government debt equivalent to 126% of the country's GDP in 2017. Government Debt to GDP averaged 78% from 1990 until 2017, reaching an all time high of 131% in 2014 and a record low of 50% in 2000

https://tradingeconomics.com/portugal/government-debt-to-gdp
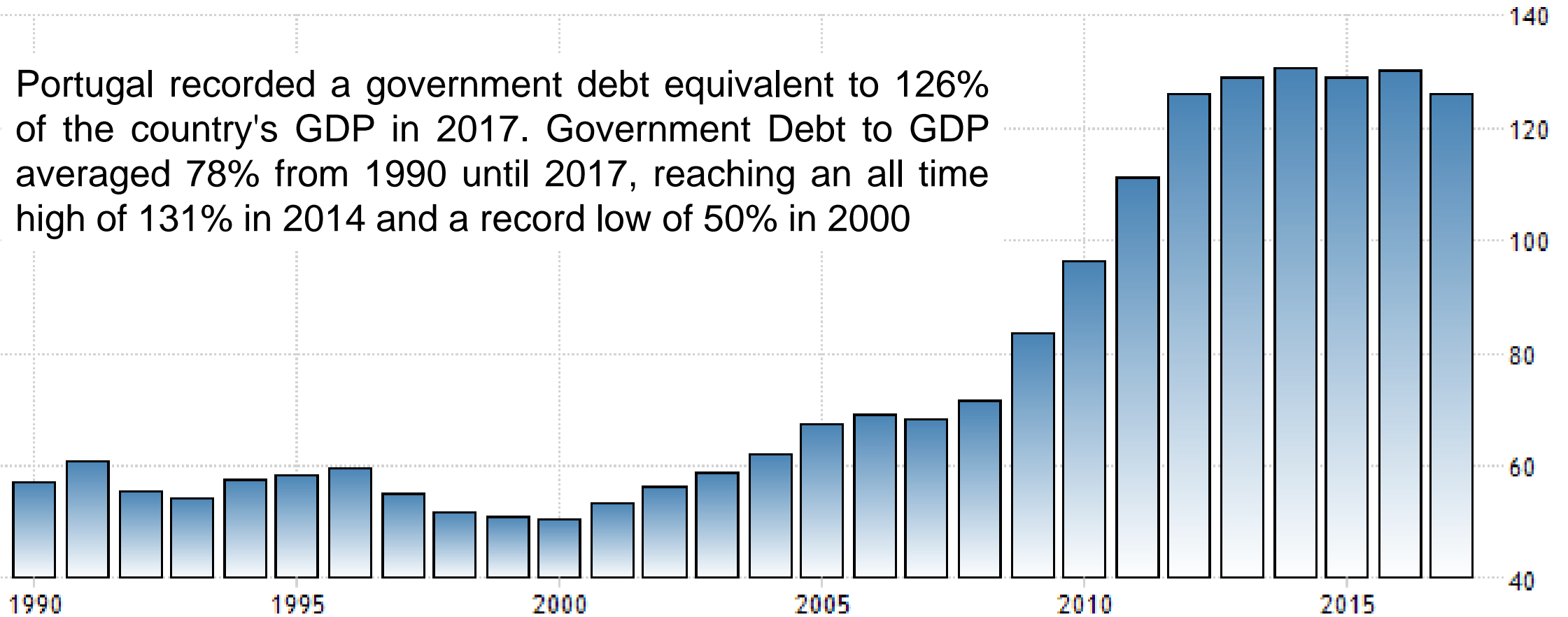
Who owns the portuguese public debt?

~Eur 240 000 000 000 (130% GDP)

~Eur 240,000,000,000 (~130% GDP)	~100%
Institutional: IMF – 16,500,000,000 ECB/BdP – 34,000,000,000	7% 14%
National investors: Private (households) – 25,000,000,000 Portuguese financial system – 53,500,000,000 Social Security – 8,000,000,000	10% 22% 3%
Other investors: European instruments – 51,600,000,000 Foreign investors – 51,500,000,000	22% 22%

*As of March 2017

Public debt

- If debt grows too rapidly, investors who buy debt securities may become concerned about the future capacity of the government to raise new financing

- As a result, doubts may arise about the **solvency** of the public sector, **which may push up the interest rate at which the government borrows**

Public debt

- However, the same rate of debt accumulation does not have the same meaning in a low-growing country as in a fast-growing country – **Why?**

Public debt

- However, the same rate of debt accumulation does not have the same meaning in a low-growing country as in a fast-growing country – **Why?**

  Because the capacity of the government to raise taxes broadly depends on nominal GDP – this is why public debt is generally measured as a ratio to GDP

Public debt

- The same primary deficit leads to faster debt accumulation the higher the real interest rate and the lower the GDP growth rate:

  - When the growth rate is higher than the interest rate, a country can stabilize its debt ratio even while maintaining a permanent primary deficit

  - When the interest rate is higher than the growth rate, there must be a primary surplus to stabilize the ratio of debt to GDP

Public debt

- Also, the same debt dynamics may not have the same meaning depending on what the borrowing resources are used for

- For example, financing new infrastructure may not worsen the long-term fiscal position of the government, for two reasons:

1) additional infrastructure may raise GDP growth and curb the future debt ratio,

2) public infrastructure assets can be sold to reduce debt

- Reason 2) suggests that another way to assess public debt is to compare it with it public assets, pointing to the difference between **net public debt vs. gross public debt**

Table 3.1
Gross and net public debt ratios in selected OECD countries in 2009 (% of GDP)

	Gross debt ratio	Net debt ratio
Australia	19.2	−3.8
Austria	70.3	37.2
Belgium	101.0	80.7
Czech Republic	42.1	−0.6
Finland	52.6	−63.2
France	86.3	50.6
Germany	76.2	48.3
Greece	119.0	87.0
Iceland	122.7	41.0
Ireland	70.3	27.2
Italy	128.8	101.0
Japan	192.9	108.3
Luxembourg	18.2	−46.1
Norway	49.2	−153.4
Portugal	87.0	57.9
Spain	62.6	34.8
Sweden	51.8	−23.4
UK	72.3	43.5
US	83.0	58.2
Euro area	86.3	53.8
OECD	90.3	51.5

Note: Gross debt ratios are measured by the OECD at market value and may thus differ from other figures quoted in this chapter, which are sometimes measured at face value.

Source: OECD Economic Outlook no. 87, April 2010.

Net public debt is the **difference between the gross public debt measured at market value and the value of public assets**

The net public debt is generally much lower than the gross public debt

It is sometimes even negative, meaning that public assets exceed public debts

The use of net public debt is debatable because a number of public assets cannot be sold. They can give an excessively favorable image of government's financial situation

Public debt dynamics

- Denoting *d* the primary deficit and *b* the debt ratio both as a percentage of nominal GDP, *n* the nominal growth rate, *g* the real growth rate, π the rate of inflation and *r* the real interest rate, **debt dynamics** can be written as:

$$b = \frac{(1+i)}{(1+n)} b_{-1} + d \cong (1 + i - n) b_{-1} + d \cong (1 + r - g) b_{-1} + d$$

$$OR$$

$$\Delta b = b - b_{-1} = b_{-1}(r - g) + d = r b_{-1} + d - g b_{-1}$$

Public debt dynamics

$$b - b_{-1} = b_{-1}(r - g) + d = \underset{\overset{1}{\frown}}{rb_{-1}} + \underset{\overset{2}{\frown}}{d} - \underset{\overset{3}{\frown}}{gb_{-1}}$$

- We can decompose the variation of the debt ratio into **three components: 1) interest payments on past debt, 2) primary deficit, and 3) relative reduction of the debt ratio through nominal growth**

- Therefore, two countries with similar primary deficit d will experience different dynamics depending on their real interest rate r compared to their real growth rate g, or equivalently, on their nominal interest rate i compared to their nominal growth rate n

3.2.2 Public debt sustainability

- Deficits (flows) result in stock accumulation and give rise to debt (stock)

- Debt needs to be serviced (i.e. payment of interest on debt), which in turn impacts on deficits

- It is important to understand the dynamics of public debt accumulation

3.2.2 Public debt sustainability

- **Solvency**: the availability of resources allowing government to meet its debt commitments

- In principle, debt can *always* be serviced through additional taxation and/or reduction of spending, but this can raise political, social and moral issues if households are hurt to degrees considered unacceptable. There are also issues of inter-temporal justice

- In general there is no collateral for sovereign debt. Thus, **assessing the solvency of a state requires an evaluation of its willingness to pay**

- Furthermore, there is a risk that a government defaults even though it is solvent – this is known as a **liquidity crisis**

3.2.2 Public debt sustainability

- To avoid **debt insolvency**, it is important to analyse **debt sustainability** – i.e. to be able to anticipate possible insolvency at any future time

- Public finance is unsustainable if, on the basis of the current economic policy and of available forecasts, the expected development of the public debt leads inevitably to a situation of insolvency

- A country in a insolvency situation has three options (excluding monetization):
  (i) massive adjustment combining cuts to primary expenditures and tax increases
  (ii) temporary support by other member states and the International Monetary Fund
  (iii) partial default whereby the government negotiates a debt reduction with its creditors

3.2.2 Public debt sustainability

- There is no universal criterion for assessing public debt sustainability:

  1. One simple approach is to look at the **stability of the debt-to-GDP ratio**. The problem is that the observed debt-to-GDP ratio may not correspond to an optimal, long-run level

  2. A more rigorous approach uses government's inter-temporal budget constraint - public finance is said sustainable if the **present value of all future public income is at least equal to the present value of future spending plus the initial value of outstanding debt**

3.2.2 Public debt sustainability

- The **stability of the debt-to-GDP ratio:**

A simple approach to sustainability requires the <u>ratio of public debt to GDP to be constant</u>:
$b = b_{-1} \rightarrow \Delta b = b - b_{-1} = 0$

To obtain this stability, the <u>primary fiscal balance </u>needs to be: $d = \frac{n-i}{1+n} b \cong (n-i)b \cong (g-r)b$

And the <u>financial fiscal balance</u>: $d + ib \cong nb$

where:

b-debt as % of GDP; d- public deficit as % of GDP; i-nominal interst rate; n-nominal interest rate; r-real interast rate; g-real growth rate

3.2.2 Public debt sustainability

- Stability of ratio of public debt to GDP: $\boldsymbol{b = b_{-1}} \rightarrow \Delta\boldsymbol{b} = \boldsymbol{b} - \boldsymbol{b_{-1}} = \boldsymbol{0}$

$$b = \frac{(1 + i)}{(1 + n)} b_{-1} + d$$

$$\Delta b = 0 \rightarrow b = b_{-1}, so:$$

$$b = \frac{(1 + i)}{(1 + n)} b + d$$

$$d = b - \frac{(1 + i)}{(1 + n)} b$$

$$\boldsymbol{d} = \frac{\boldsymbol{n - i}}{\boldsymbol{1 + n}} \boldsymbol{b} \cong (\boldsymbol{n - i})\boldsymbol{b} \cong (\boldsymbol{g - r})\boldsymbol{b}$$

- Thus, **to keep b constant, the <u>primary fiscal balance</u> has to be in surplus when the real interest rate r exceeds the real growth rate g**

- This situation prevailed in Europe in the 1980s and 1990s, when countries like Italy and Belgium had to run primary surpluses in order to reduce their public debt ratios

- The recent global crisis brought GDP growth rates below interest rates, requiring primary surpluses to stabilise debt ratios. But governments ran primary deficits as an attempt to stabilize their economies

3.2.2 Public debt sustainability

- For a debt-to-gdp ratio (*b*) of 60% of GDP and a nominal growth rate *n* of 5% (2% real growth + 3% inflation), the <u>financial balance</u> consistent with a constant debt-to-gdp ratio is 3% of GDP - the Maastricht Treaty fiscal criteria

$$d + ib \cong nb \Leftrightarrow d + ib \cong 0{,}05 * 0{,}60 \Leftrightarrow d + ib = 0{,}03$$

- Moreover, for a real interest rate of 2%, the primary deficit compatible with the stability of the debt ratio at 60% of GDP amounts to 0,6% of GDP

3.1.2 Lessons from history - Five stylized facts

1. A generalized practice of public deficits was developed in the 1970s

2. It resulted in growing public debt levels and, for some countries, in a deterioration of public debt to GDP ratios

3. Debt ratios reached at the beginning of the XXI century were noticeably lower than some of the debt ratios experienced in the past, but the fiscal response to the crisis started in 2008 resulted in a increase in debt ratios in many countries (of an unprecedented scale since the end of World War II)

4. The developments of the 1990s and 2000s reflect very different philosophies concerning the use of fiscal policy

5. The effects of an active use of fiscal policy, whether towards expansion or contraction, are not stable either in time or in space

Theory Lecture 8

Learning outcomes for lecture 8 (today)

- Explain the main features of the Keynesian approach

- Explain the Keynesian multiplier

- Explain the main factors that affect the Keynesian multiplier and the effectiveness of fiscal policy

3.2 Theories

- 3.2.1 Demand-side effects: Keynes and his critics - outlines the
    1) **Keynesian theory** (lecture 8) and
    2) M**ain neoclassical criticisms** to it (lecture 9)

- 3.2.2 Public debt sustainability: examines the **dynamics and sustainability of public debt** (see lecture 7)

- 3.2.3 **Supply-side effects and reconciliation attempts** (lecture 9)

Questions (from past exams) about fiscal balance debt:

The stabilization of the debt-to-gdp ratio requires that:
a) $n = d = ib$
b) $b = (n - i)\, d$
c) $d = (n - i)\, b$
d) $n = d + ib$

where:
d = primary deficit in % of GDP;
n = nominal growth rate of GDP;
i = nominal interest rate;
b = debt in % of GDP

2.What is the financial fiscal deficit associated with the stability of the debt-to-ratio?
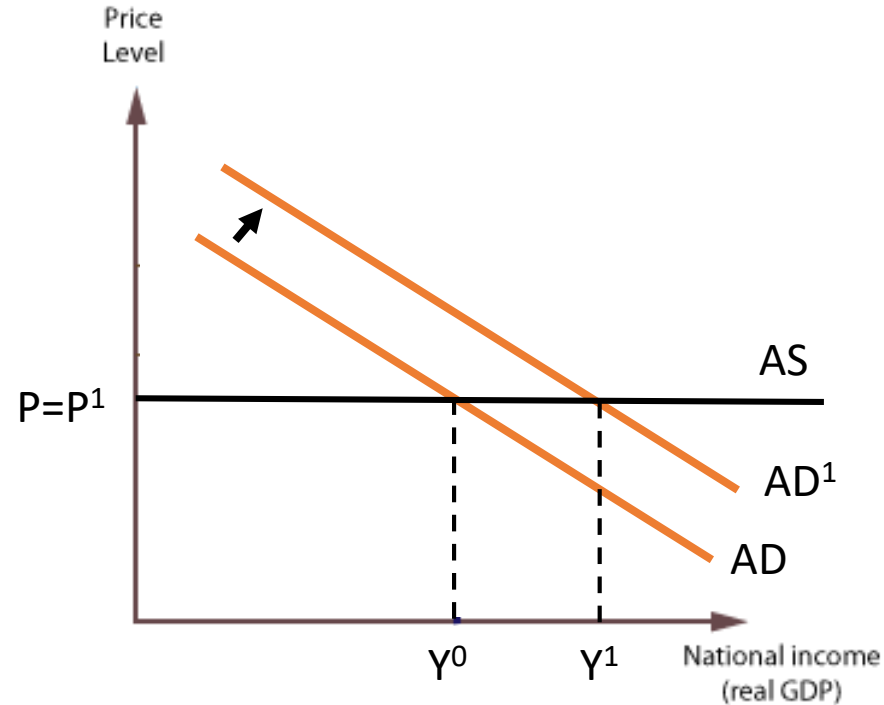
3.2.1 Demand-side effects: Keynes and his critics

Ingredients needed for the Keynesian analysis:

- **AD-AS model** of combinations of P and Y consistent with equilibrium in market for goods and money, and labour market

- IS-LM to represent the equilibrium in the market for goods and services (IS) and the market for money (LM) – see Appendix to lecture 8.
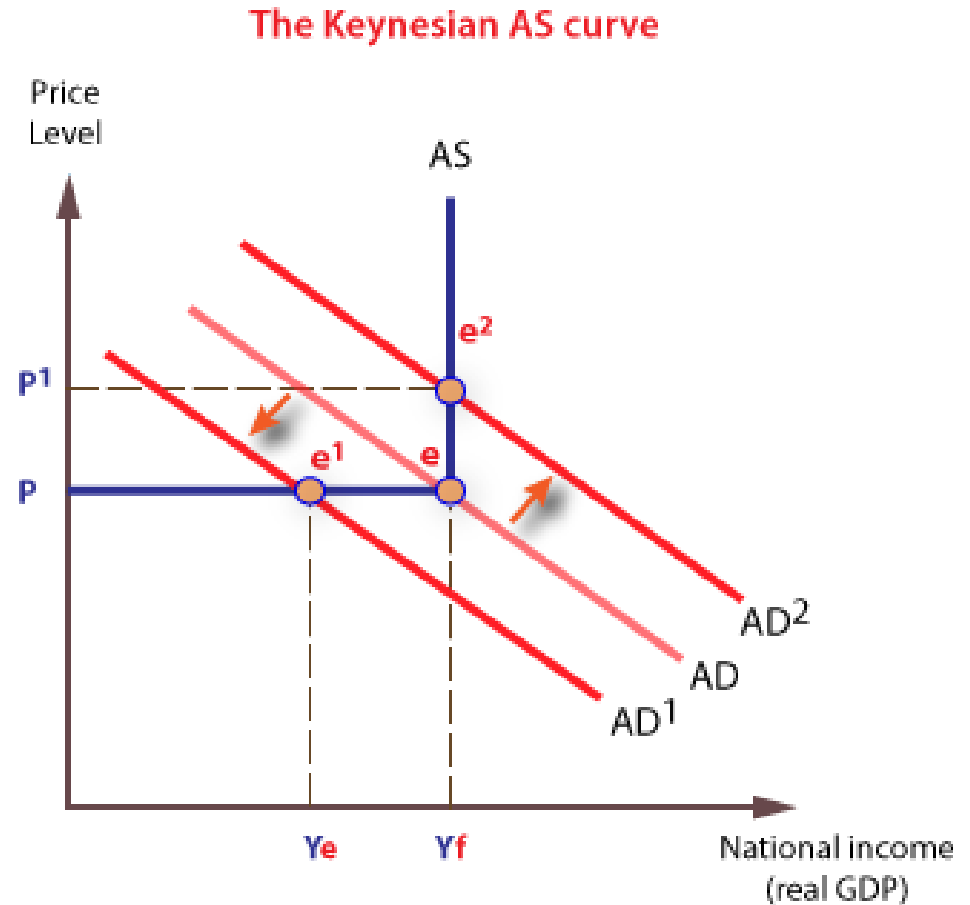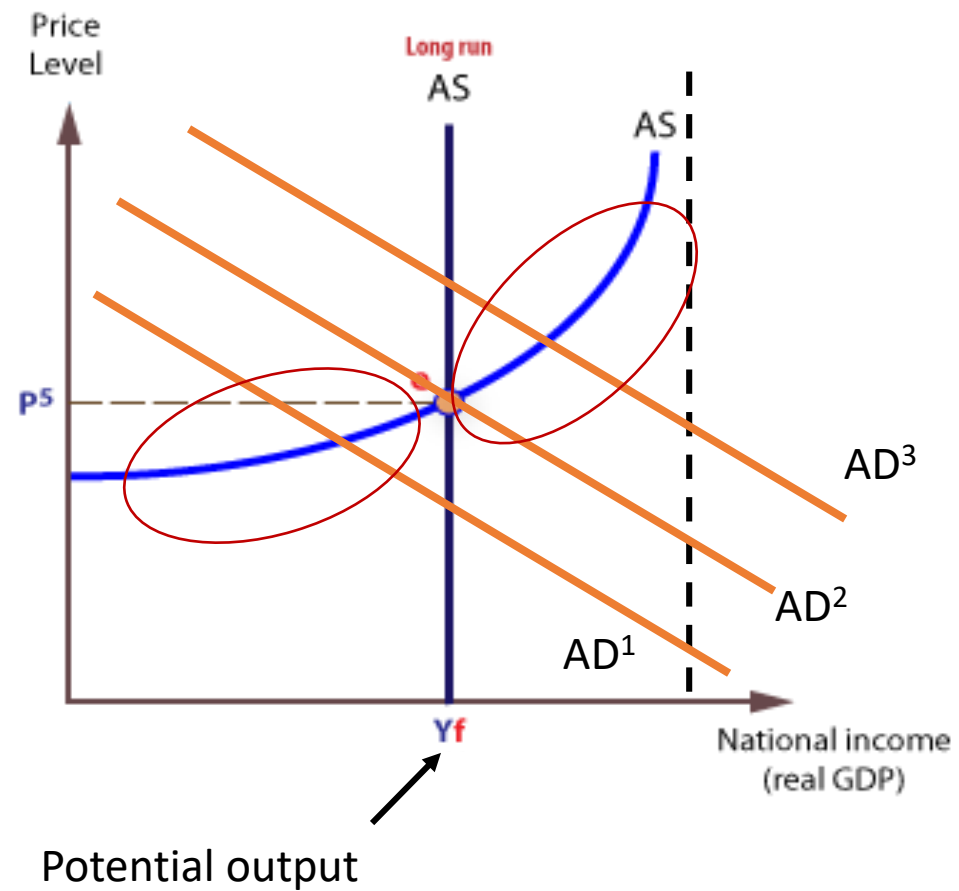
3.2.1 Demand-side effects: Keynes and his critics
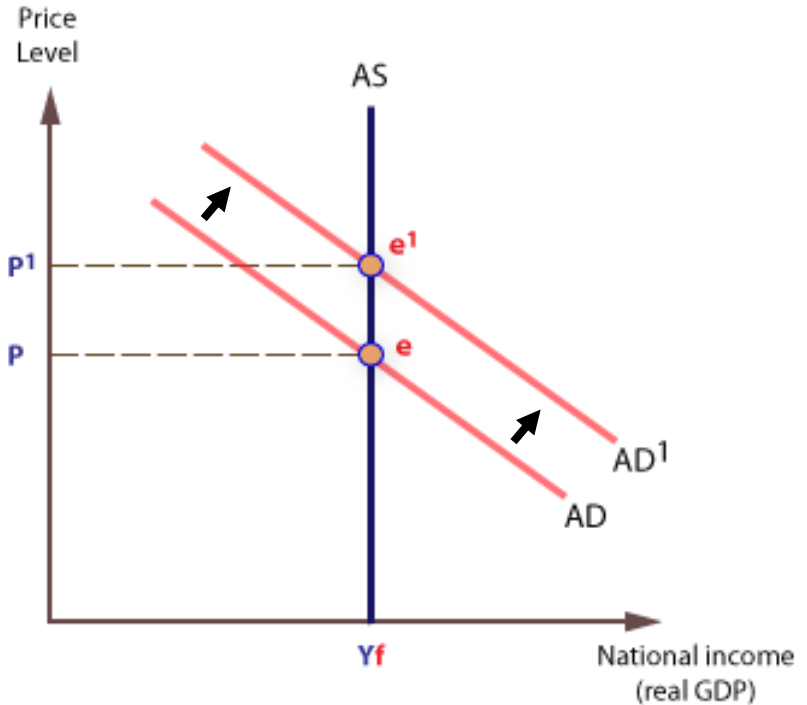
Vs.

3.2.1 Demand-side effects: Keynes and his critics

- The Keynesian model assumes **prices adjust very slowly (price rigidity)** and thus adjustment occurs via income level, at least in the sort run
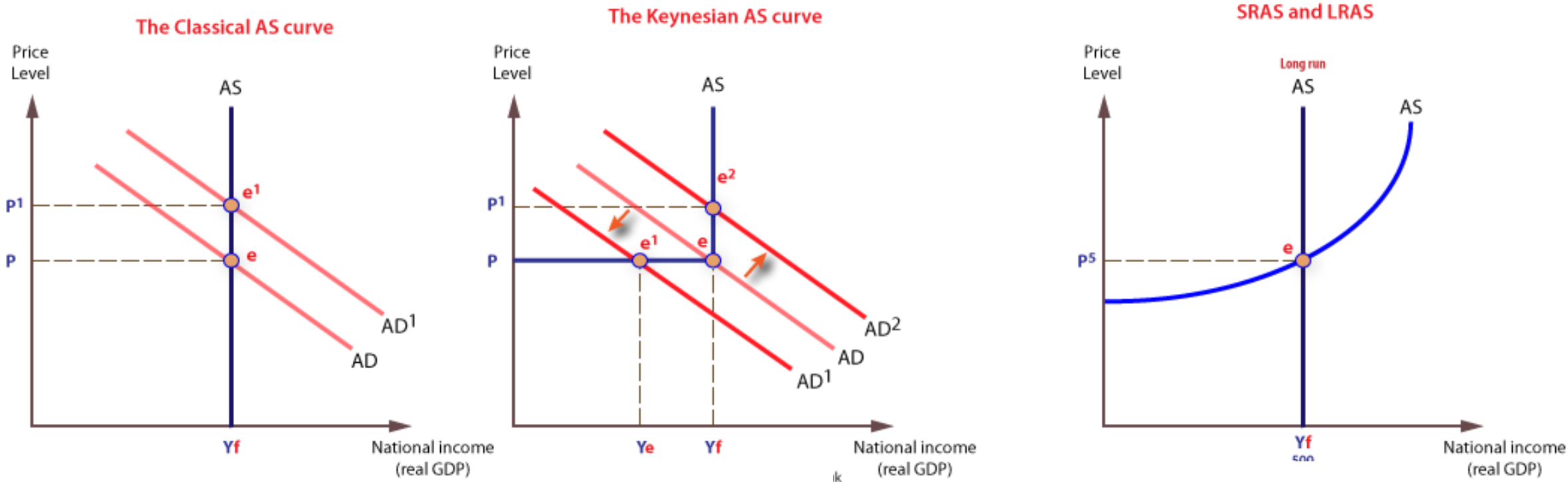
The Keynesian AS curve

Price Level

AS

P^1

e^2

e^1 e

P

AD^2

AD

AD^1

Ye   Yf

National income (real GDP)

3.2.1 Demand-side effects: Keynes and his critics

3.2.1 Demand-side effects: Keynes and his critics

- Differing views on the behaviour of the AS curve:

The Classical AS curve

The Keynesian AS curve

SRAS and LRAS

# 3.2.1 Demand-side effects: Keynes and his critics

- So: the effectiveness of demand policies depends on the slope of the short-term AS curve

- In an economy with nominal rigidities and low responsiveness of wages to labour market conditions, the short-run AS curve will be almost flat, making demand policies very effective

- In contrast, when prices and wages adjust fast to unemployment, the short-run AS curve is nearly vertical and demand policies are very ineffective
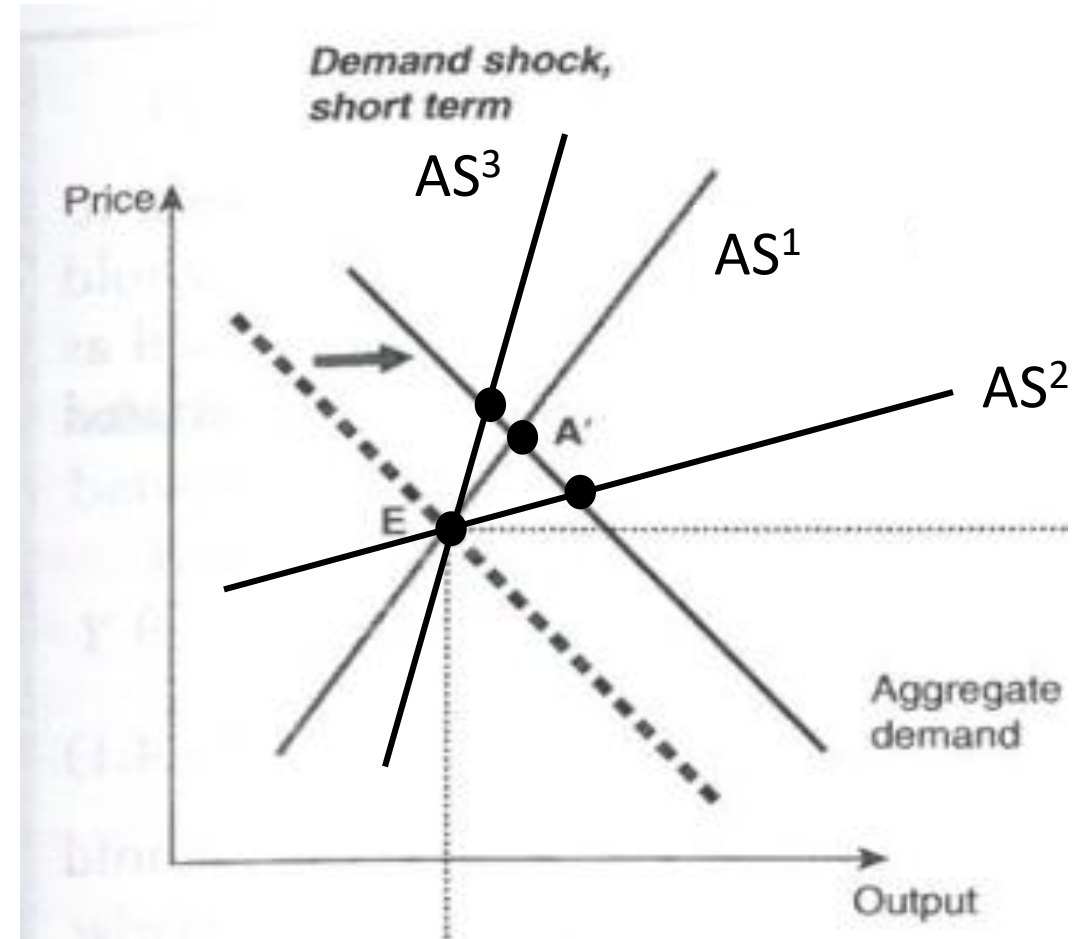
3.2.1 Demand-side effects: Keynes and his critics

- Standard **Keynesian approach assumes price rigidity or at least stickiness** in the short run, implying that prices do not adjust immediately to ensure macroeconomic balance

- It means that **the supply of goods and services is elastic** (in the short run) and **output and employment are determined by the level of aggregate demand.** Under these assumptions, **macroeconomic equilibrium does not result from price movements; rather, it is determined by the level of aggregate demand**

- As a result, **in the short term a fiscal expansion does not have a major impact on the price level and adjustment occurs through increase in output level**

- The **key role of macroeconomic policy** – fiscal or monetary – **is to ensure that the level of aggregate demand is such that the economy remains at or close to full employment**

3.2.1 Demand-side effects: Keynes and his critics

Demand shock, short term

Price

AS^3

AS^1

AS^2

E

A'

Aggregate demand
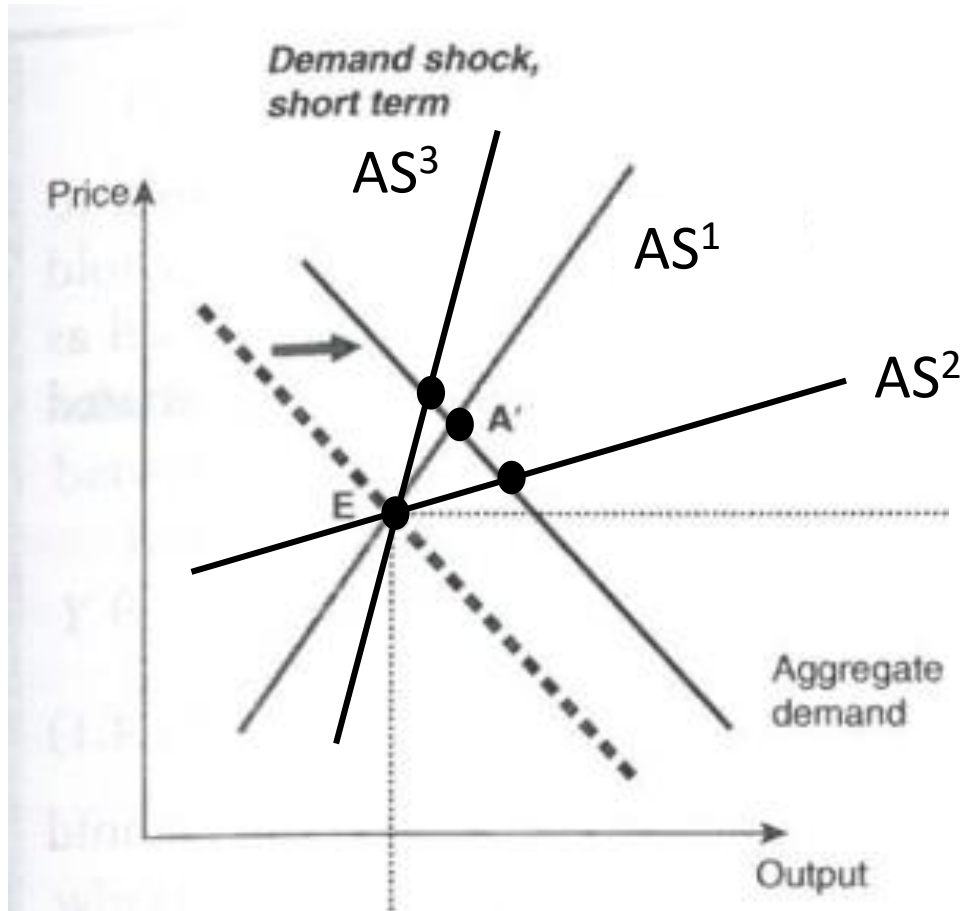
Output

- Suppose government increases public spending G ($\Delta G > 0$), shifting AD to the right and moving equilibrium from e to e^1

- The short term effect of $\Delta G > 0$ on output Y is given by the ratio between the output variation ΔY and the initial exogenous variation of aggregate demand ΔG

- **That ratio ($\Delta Y/\Delta G$) is the Keynesian multiplier of government spending**

- There are other Keynesian multipliers (e.g. taxes, investment)

3.2.1 Demand-side effects: Keynes and his critics

- An exogenous variation in aggregate demand (a demand shock) results in a proportional variation in the level of output

- The ratio between output variation and the initial exogenous variation of aggregate demand is called the **Keynesian multiplier**

3.2.1 Demand-side effects: Keynes and his critics

Keynesian multiplier

We can measure the Keynesian multiplier from the AD curve.

The AD curve after replacing the LM curve in the IS curve (see appendix for details):

$$Y = \frac{1}{\left[1 - c(1-t) + m + \dfrac{kl_1}{l_2}\right]}\left[\bar{C} + \bar{I} + \frac{k}{l_2}\frac{M^s}{P} + \bar{G} - c\bar{T} + c\overline{TR} + \bar{X} - \bar{M}\right]$$

3.2.1 Demand-side effects: Keynes and his critics

Keynesian multiplier

The Keynesian multiplier for public spending $\bar{G}$ in a fully specified AD model

$$Y = \frac{1}{\left[1 - c(1-t) + m + \dfrac{kl_1}{l_2}\right]}\left[\bar{C} + \bar{I} + \frac{k}{l_2}\frac{M^s}{P} + \bar{G} - c\bar{T} + c\overline{TR} + \bar{X} - \bar{M}\right]$$

is:

$$\boxed{\frac{\Delta Y}{\Delta \bar{G}} = \frac{\partial Y}{\partial \bar{G}} = \frac{1}{1-c(1-t)+m+\dfrac{kl_1}{l_2}} > 0}$$

3.2.1 Demand-side effects: Keynes and his critics

Keynesian multiplier - there are many factors that may reduce the multiplier and hence weaken the impact of fiscal expansion (ΔG>0)on aggregate demand and income

$$\frac{\Delta Y}{\Delta \overline{\overline{G}}} = \frac{\partial Y}{\partial \overline{\overline{G}}} = \frac{1}{1 - c(1 - t) + m + \dfrac{kl_1}{l_2}} > 0$$

Which factors do you think may reduce the size of the multiplier?

3.2.1 Demand-side effects: Keynes and his critics

Keynesian multiplier - factors that may lower the multiplier and weaken the impact of fiscal expansion:

$$\frac{\Delta Y}{\Delta \overline{G}} = \frac{\partial Y}{\partial \overline{G}} = \frac{1}{1-c} > 0 \quad \Longrightarrow \quad \frac{\Delta Y}{\Delta \overline{G}} = \frac{\partial Y}{\partial \overline{G}} = \frac{1}{1-c(1-t)} > 0$$

1

1. Taxes reduce disposable income Y^d of consumers: increase in tax rate t reduces the multiplier

With taxes: $\quad C_1 = \overline{C} + cY^d = \overline{C} + c(Y - T + \overline{TR}) = \overline{C} + c(Y - (\overline{T} + tY) + \overline{TR}) = (\overline{C} - \overline{T} + \overline{TR}) + c(1-t)Y$

Without taxes: $\quad C_2 = \overline{C} + cY^d = \overline{C} + cY$

3.2.1 Demand-side effects: Keynes and his critics

Keynesian multiplier - factors that may lower the multiplier and weaken the impact of fiscal expansion:

$$\frac{\Delta Y}{\Delta \bar{G}} = \frac{\partial Y}{\partial \bar{G}} = \frac{1}{1 - c(1 - t)} > 0 \qquad \Longrightarrow \qquad \frac{\Delta Y}{\Delta \bar{G}} = \frac{\partial Y}{\partial \bar{G}} = \frac{1}{1 - c(1 - t) + m} > 0$$

2

2. In an open economy, an additional euro of disposable income leads households to consume **imported products** and firms to import more intermediate goods, reducing the size of the multiplier

3.2.1 Demand-side effects: Keynes and his critics

Keynesian multiplier - factors that may lower the multiplier and weaken the impact of fiscal expansion:

$$\frac{\Delta Y}{\Delta \overline{G}} = \frac{\partial Y}{\partial \overline{G}} = \frac{1}{1 - c(1 - t)} > 0$$

$\longrightarrow$

$$\frac{\Delta Y}{\Delta \overline{G}} = \frac{\partial Y}{\partial \overline{G}} = \frac{1}{1 - c(1 - t) + m} > 0$$

2

2. In an open economy, an additional euro of disposable income leads households to consume **imported products** and firms to import more intermediate goods, reducing the size of the multiplier

3.2.1 Demand-side effects: Keynes and his critics

Keynesian multiplier - factors that may lower the multiplier and weaken the impact of fiscal expansion:

3. **Assumption of complete price rigidity is extreme**. If prices adjust upward, part of the increase in aggregate demand is not due to an increase of the volume of products consumed but also their price

4. **Crowding-out effect**: increase in aggregate demand can be offset by lower private investment as a response to increase in interest rate (to avoid inflation pressure from increased demand)

Both 3 and 4 point to the fact that including the money market (LM curve) leads to a reduction of the Keynesian multiplier and the reduction will be larger the greater the increase in the interest rate r and the demand for money

3.2.1 Demand-side effects: Keynes and his critics

Keynesian multiplier - factors that may lower the multiplier and weaken the impact of fiscal expansion:

$$\frac{\Delta Y}{\Delta \overline{G}} = \frac{\partial Y}{\partial \overline{G}} = \frac{1}{1 - c(1 - t) + m} > 0$$

$$\Longrightarrow \quad \frac{\Delta Y}{\Delta \overline{G}} = \frac{\partial Y}{\partial \overline{G}} = \frac{1}{1 - c(1 - t) + m + \dfrac{kl_1}{l_2}} > 0$$

3, 4

$$\frac{M^s}{P} = l_1 Y - l_2 r \iff r = \frac{1}{l_2}\left(l_1 Y - \frac{M^s}{P}\right)$$

$$I = \overline{I} - kr$$

3.2.1 Demand-side effects: Keynes and his critics

- Keynesian multiplier and the Mundell-Fleming Model of an open-economy

  - The Mundell-Fleming model studies **policy effectiveness** in a small country under **perfect capital mobility** and under the Keynesian assumption of underemployment of resources

  - Perfect capital mobility implies that the interest rate cannot deviate from the world interest rate, otherwise capital would flow in or out in search of yield

  - Depending on the exchange rate regime (flexible vs. fixed), the effect of fiscal policy will be more or less effective – see diagrams in next slide and table

Short-term effectiveness of fiscal policy in an open economy

	High capital mobility	**Low capital mobility**
Flexible exchanges rates	Ineffective or not so effective	**Effective**
Fixed exchange rates	**Effective**	Not very effective

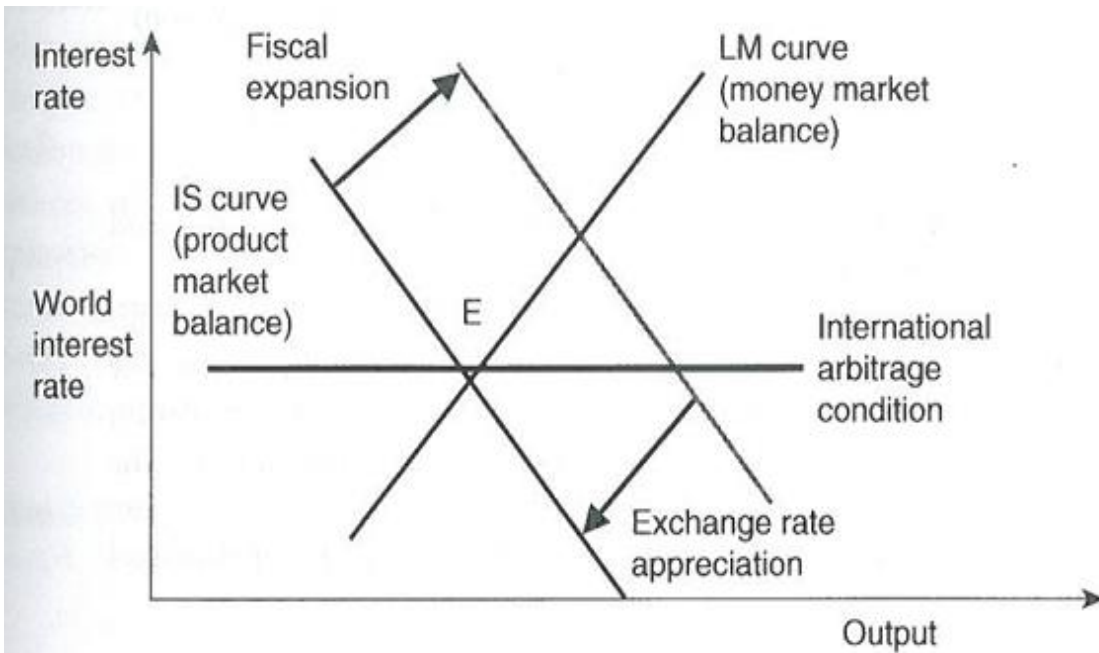## Fiscal expansion under flexible exchange rates

Figure B3.5.1 Fiscal expansion under flexible exchange rates and perfect capital mobility.

Fiscal expansion under fixed exchange rates
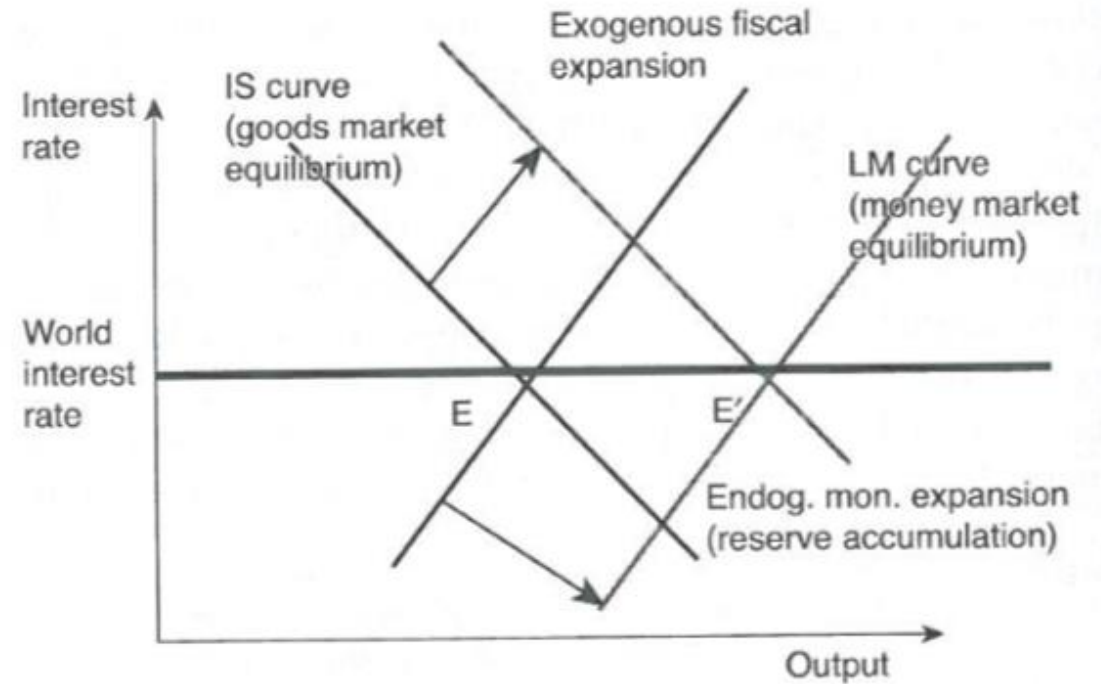

Figure B3.5.2 Fiscal expansion under fixed exchange rates and perfect capital mobility.

3.2.1 Demand-side effects: Keynes and his critics

- **Keynes's** General Theory of Employment, Interest and Money (1936) provided the conceptual framework for the **use of fiscal policy to influence the level of aggregate demand**

- While classical theory was concerned about public finance solvency (debt stock), Keynes's theory focused on the role of flows of public income and expenditures in the determination of the aggregate macroeconomic equilibrium

- However, **since debt results from the accumulation of deficits, the outcome of excessive reliance on fiscal policy was an increase in public debt ratios**. This fact was ignored in the first three decades after World War II and **it was only in reaction to an excessive reliance on fiscal policy in the 1970s to the associated permanent deficits and to the resulting increase in public debt ratios that debt-related concerns appeared**

- In response to these concerns, **economists developed models to represent public debt dynamics and their effects on the economy (see 3.2.2 in lecture 7)**

Appendix: deriving the AD curve

AD curve shows the combinations of P and Y consistent with equilibrium in market for goods and money**, represented by the IS-LM curves respectively**

IS-LM to represent the equilibrium in the market for goods and services (IS) and the market for money (LM)

Output market in Keynesian approach: IS curve (I: Investment, S: Savings)

$$\boxed{\text{I} = \text{S} = S^{private} + S^{public} = (\text{Y} - \text{T} - \text{C} + \text{TR} + \bar{X} - \text{M}) + (\text{T} - \bar{G} - \text{TR}) = \text{Y} - \text{C} + \bar{X} - \text{M} - \bar{G}}$$

where:

Income: $Y = C + G + I + \bar{X} - M$

Consumption: $C = \bar{C} + cY^d$

Disposable income: $Y^d = Y - T + \overline{TR}$

Investment: $I = \bar{I} - kr$

Revenue from taxation: $T = \bar{T} + tY$

Imports: $M = \bar{M} + mY$

Replacing each component in Y with the equation, we get:

$$Y = cY^d + \bar{C} + I + \bar{G} + \bar{X} - M$$

$$Y = c(Y - T + \overline{TR}) + \bar{C} + (\bar{I} - kr) + \bar{G} + \bar{X} - (\bar{M} + mY)$$

$$\dots$$

$$Y[1 - c(1-t) + m] = \bar{C} + \bar{I} - kr + \bar{G} - c\bar{T} + c\overline{TR} + \bar{X} - \bar{M}$$

$$Y = \frac{1}{[1 - c(1-t) + m]}[\bar{C} + \bar{I} - kr + \bar{G} - c\bar{T} + c\overline{TR} + \bar{X} - \bar{M}]$$

One (very simple) example: Suppose household consumption C is a linear function of disposable income Y:

$$C = \overline{C} + cY^d$$

where:

c, $\overline{C} > 0$

c is the **marginal propensity to consume**

If we give one additional euro of disposable income to households, how much more or less will they spend and save?

One (very simple) example: Suppose household consumption C is a linear function of disposable income Y:

$$C = \overline{C} + cY^d$$

where:

c, $\overline{C} > 0$

c is the **marginal propensity to consume**

If we give one additional euro of disposable income to households, how much more or less will they spend and save?

Answer: Households spend c and they save (1- c)

Output market in Keynesian approach: IS curve (I: Investment, S: Savings)

The IS curve: $Y = \dfrac{1}{[1 - c(1 - t) + m]} [\overline{C} + \overline{I} - kr + \overline{G} - c\overline{T} + c\overline{TR} + \overline{X} - \overline{M}]$
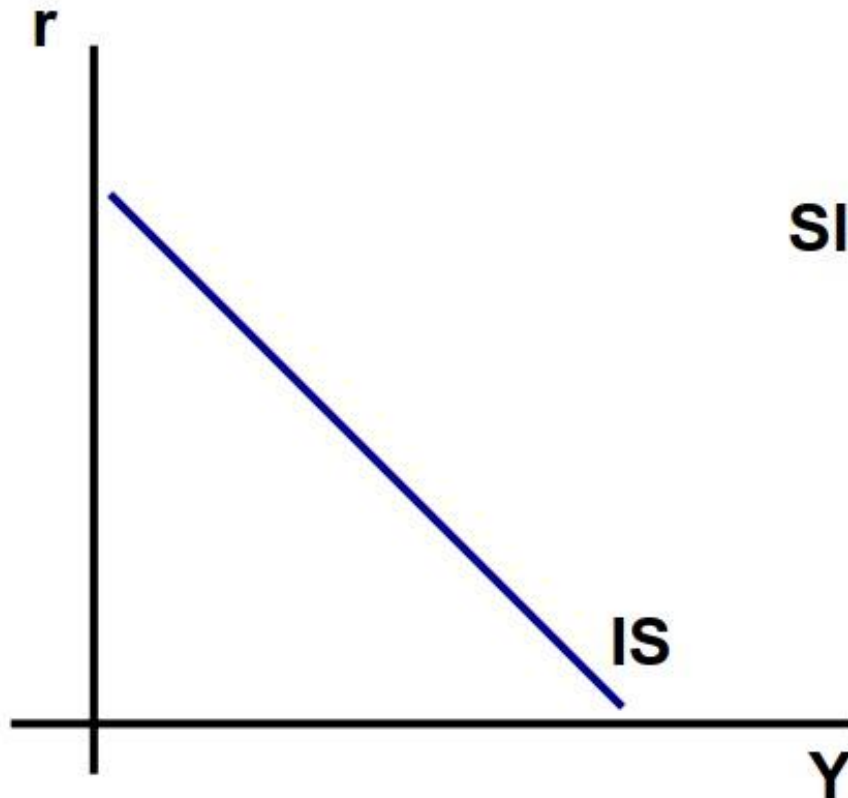
Slopes downward because
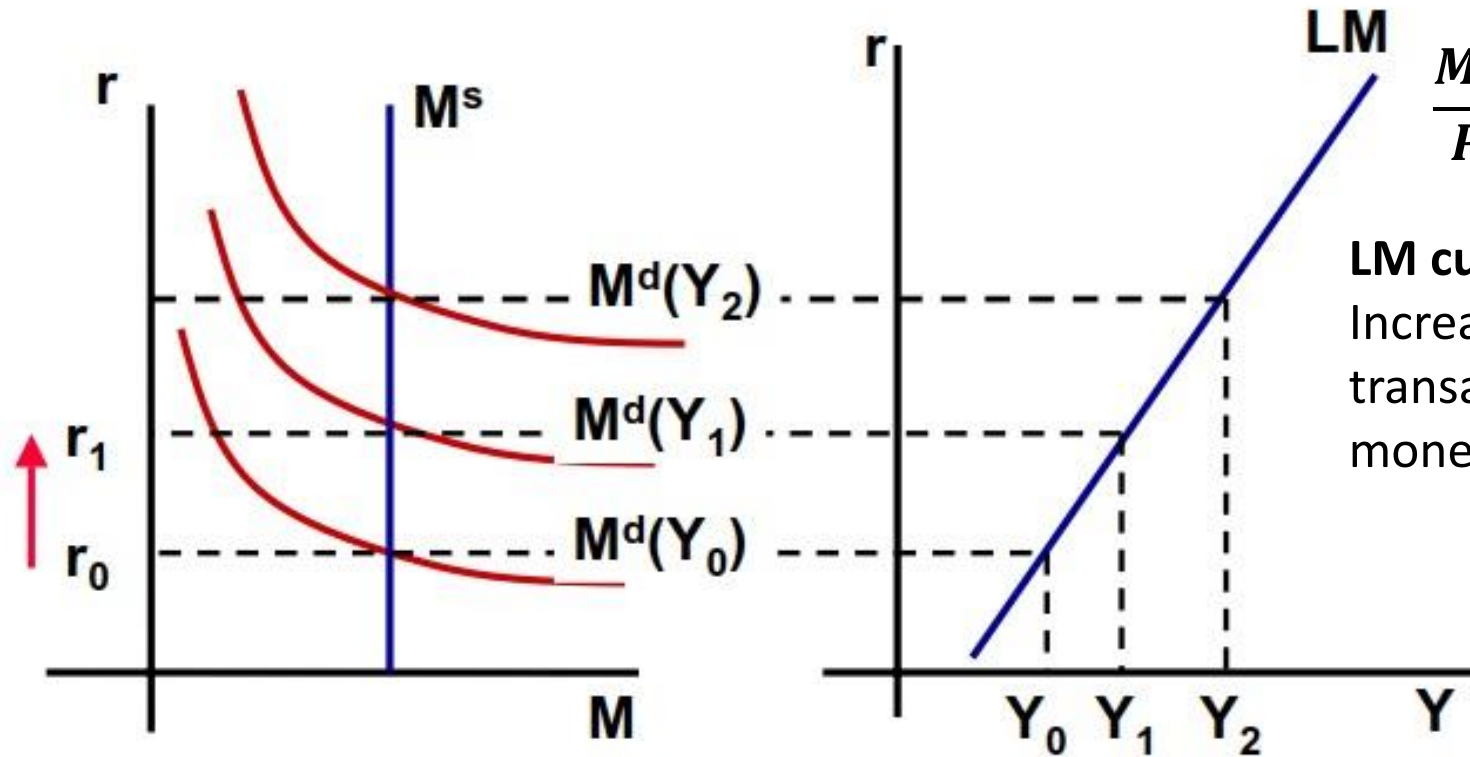
$$r\uparrow \rightarrow I\downarrow \rightarrow Y\downarrow$$

$$\frac{dy}{dr} = \frac{-k}{[1-c(1-t)+m]} < 0$$

Money market in Keynesian approach: LM curve

Real money supply: **M^s/P** (assumed exogenous)
Real money demand: **M^d/P = L(Y,r)=l_1Y-l_2r**

In equilibrium: **M^s/P = L(Y,r)** is the money market outcome and gives the LM curve
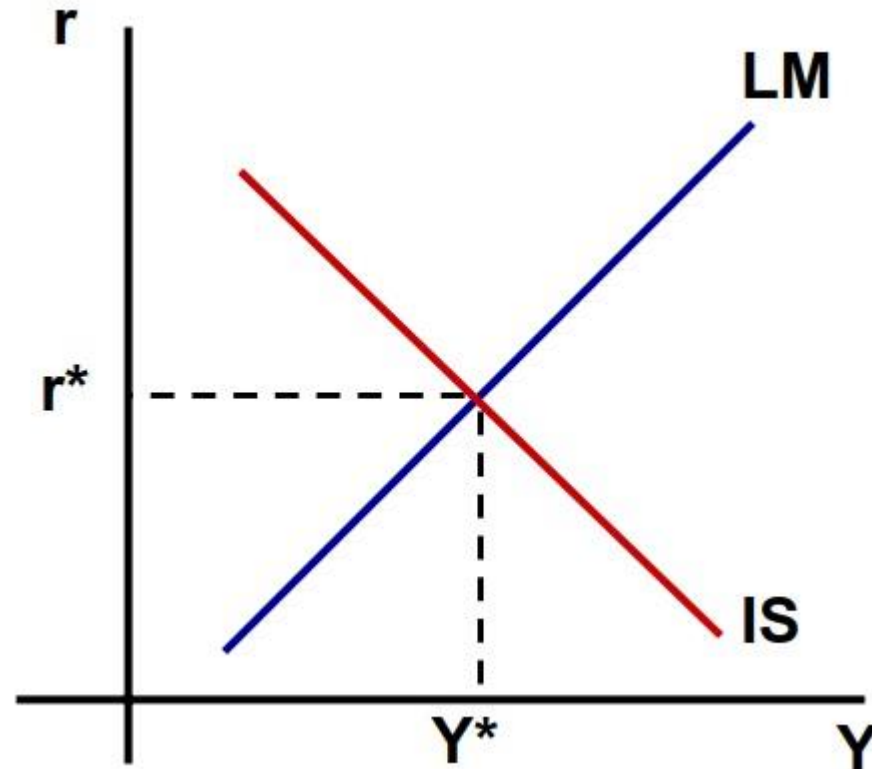
$$\frac{M^s}{P} = l_1Y - l_2r <=> r = \frac{1}{l_2}\left(l_1Y - \frac{M^s}{P}\right)$$

LM curve is upward sloping:
Increase in Y leads to increase in transactions and increased demand for money, so: $M^d > M^s \rightarrow$ rise in interest rates r

- IS-LM: the intersection of the IS and LM curves shows the combination of r and Y consistent with equilibrium of the goods market (IS) and money market (LM)

- Aggregate demand (AD) shows the combinations of P and Y consistent with equilibrium of goods market (IS) and money market (LM), i.e. intersection of IS and LM

How an expansionary fiscal policy shifts AD curve
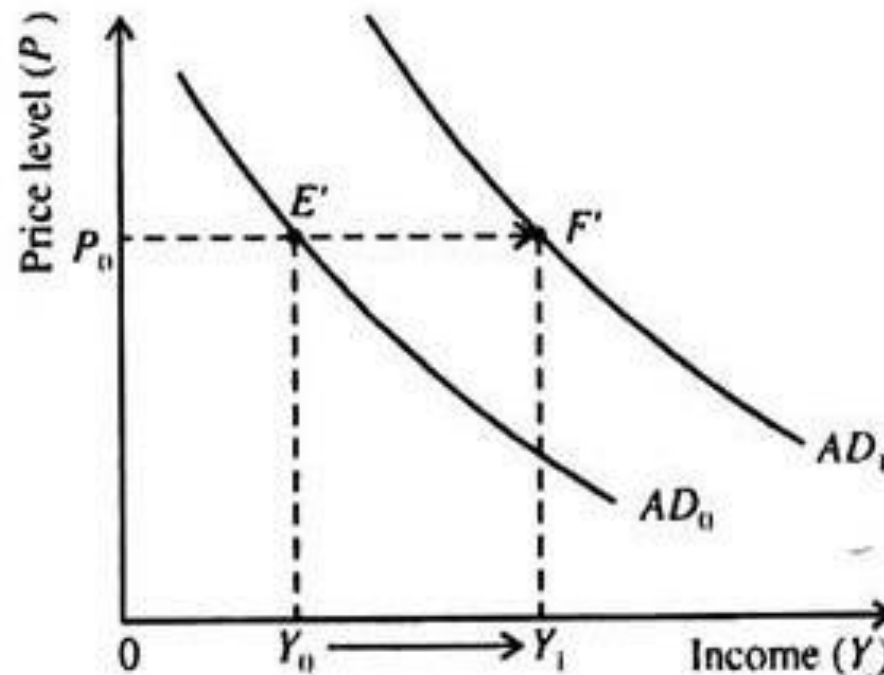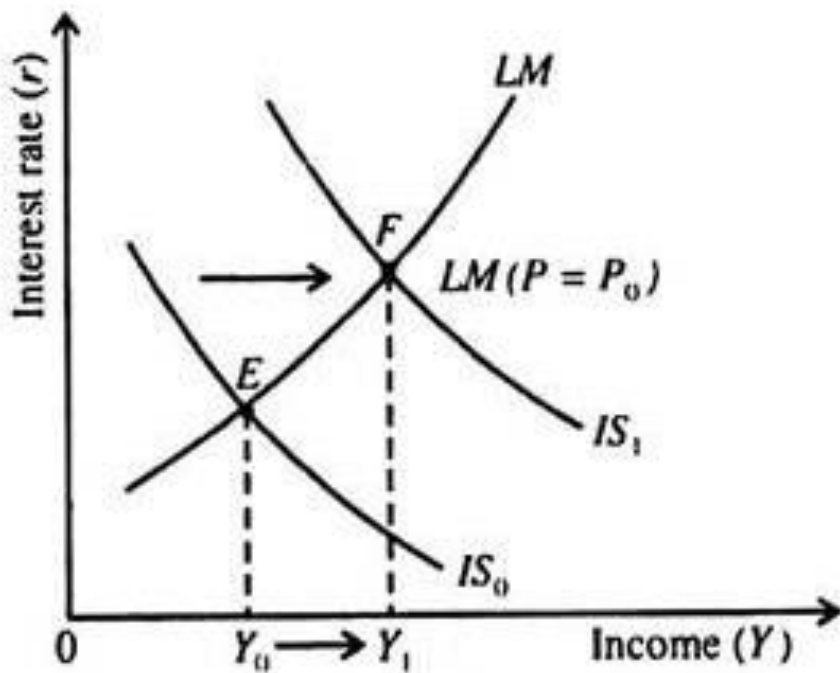
Theory Lecture 9

3.2 Theories

- 3.2.1 Demand-side effects: Keynes and his critics - outlines the
  1) **Keynesian theory** (lecture 8) and
  2) **Main neoclassical criticisms** to it (lecture 9)

- 3.2.2 Public debt sustainability: examines the **dynamics and sustainability of public debt** (see lecture 7)

- 3.2.3 **Supply-side effects and reconciliation attempts** (lecture 9)

Learning outcomes for lecture 9 (today)

- Explain the main neoclassical criticisms to the Keynesian multiplier

- Describe the main approach of neoclassical economists

- Explain the points of agreement and disagreement between Keynesians and neoclassical economists

- Understand the non-Keynesian effects of fiscal policy

3.2.1 Demand-side effects: Keynes and his critics

- **The neoclassical critique** of the Keynesian multiplier:

1. Full financial crowding-out

2. Supply rigidity

3. Ricardian equivalence

3.2.1 Demand-side effects: Keynes and his critics

- **The neoclassical critique** of the Keynesian multiplier:

1. **Full financial crowding-out**:

After a fiscal expansion (e.g. increase in public spending), the deterioration of the public balance causes a rise in the interest rate which depresses private investment (crowding-out effect).

In the AS-AD model, the AD curve does not move (or moves little) in the event of a fiscal shock: output level is not affected by a rise of public demand, but its composition is modified by the substitution of public for private demand.

3.2.1 Demand-side effects: Keynes and his critics

- **The neoclassical critique** of the Keynesian multiplier:

2. Supply rigidity:

The relative price adjustment is sufficiently rapid so that the goods-market equilibrium is determined by supply

In the AS-AD model, the AD curve moves toward the right but the AS curve is very steep and almost vertical: Producers agree to slightly increase supply only if prices increase a lot. Private demand is penalized ex-post by the rise in prices.

3.2.1 Demand-side effects: Keynes and his critics

- **The neoclassical critique** of the Keynesian multiplier:

2. Supply rigidity:

Demand shock, short term

Price

AS^3

AS^1

AS^2

A'

E

Aggregate demand

Output
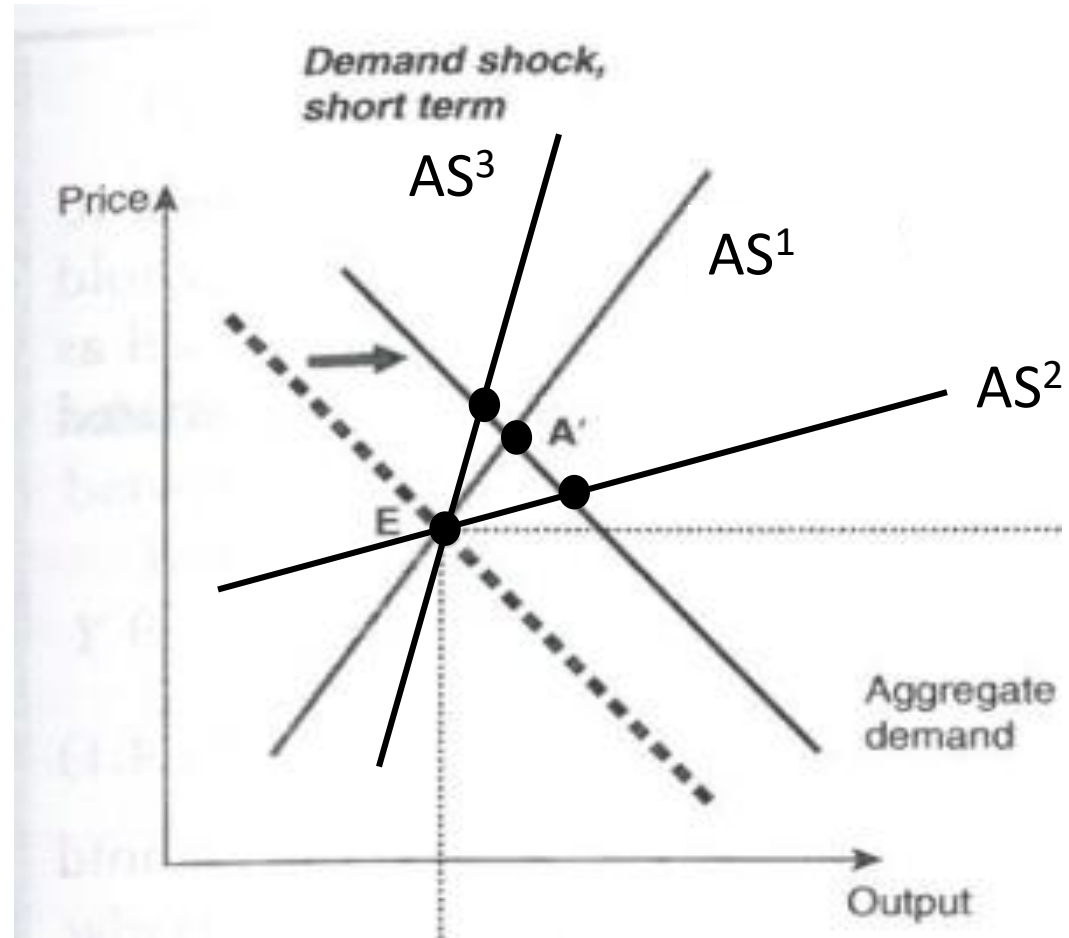
3.2.1 Demand-side effects: Keynes and his critics

- **The neoclassical critique** of the Keynesian multiplier:

3. Ricardian equivalence:

Even if the supply of goods and services (AS) is elastic, rational households will respond to an increase in public demand (or a cut in taxes) by restricting their consumption, because they expect today's deficit to translate into higher future taxes and so prepare for it by increasing their savings rate (and hence reduce consumption)

In the case of an increase in public demand, they will also cut their private consumption by the same amount, with the result that aggregate demand does not change.

There is full crowding-out, but this time due to households' expectations. The interest rate does not move.

3.2.1 Demand-side effects: Keynes and his critics

- **The neoclassical critique** of the Keynesian multiplier:

The Ricardian equivalence rests on very strong hypotheses, which often don't hold:

1. *Rational expectations* of households (able to "see through" the effect of the short-term fiscal expansion and anticipate future taxes)

2. *Fiscal expansion is assumed to be unproductive*, which is likely untrue since public expenditure in research, education, public infrastructure are expected to increase productivity.

3. *Perfect functioning of the credit markets*

4. *Infinitely lived households who treat the well-being of the forthcoming generations in the same way as they treat their own*. Real households, however, are mortal, and do not care about future generations as much as they care about themselves or their own children
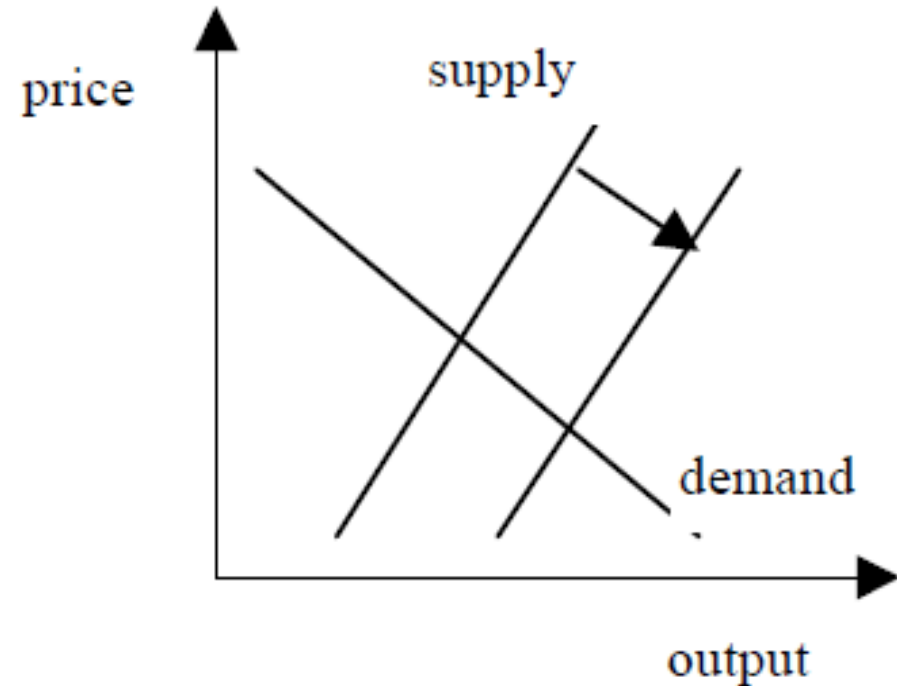
3.2.3 Supply-side effects and reconciliation attempts

- We saw in 3.2.1 that fiscal policy affects output through shifts to AD curve in the short run and this effect can be measured by the Keynesian multiplier

- The magnitude of the Keynesian multiplier is affected by several factors including the marginal propensity to consume, marginal propensity to import, taxes, etc.

- The neoclassical critics of the Keynesian multiplier also presented reasons for its ineffectiveness (e.g. crowding-out, Ricardian equivalence, supply rigidity)

- These issues raised doubts about the effectiveness of FP and help understand the **shift to supply-side policies during the 80s and 90s**. During these periods FP was mostly concerned with public finance sustainability while tax cuts were still seen as affecting output positively

3.2.3 Supply-side effects and reconciliation attempts

- Neoclassical economists generally deny any significant impact of counter-cyclical fiscal policies

- However, they underline the usefulness of tax cuts to increase aggregate supply and raise potential output

- In the AD-AS model, a tax cut moves the supply curve downward, increasing output and reducing prices

Supply-side effects of a tax cut

price

supply

demand

output

3.2.3 Supply-side effects and reconciliation attempts

- Both neoclassical economists and Keynesians recommend tax cuts to stimulate economic growth, but the neoclassical view is that tax cuts stimulate supply, while for the Keynesians it boosts domestic demand through induced rise in disposable income

- In full disagreement with Keynesians, neoclassical economists deny any positive short-run effect of public spending while emphasizing its implications in terms of future rises in taxes which, if rationally anticipated, have a negative short-term impact on consumption (Ricardian equivalence)

- Neoclassical economists agree with Keynesians that public balance should go into deficit in a recession (and into surplus in a boom)

3.2.3 Supply-side effects and reconciliation attempts

- Non-Keynesian effects of fiscal policy, e.g. when the effect of fiscal consolidation becomes expansionary leading to an increase in aggregate demand and output

- This was raised after observing that processes of fiscal consolidation aimed at reducing public deficits and debt were associated with an increase in private demand and output

- This lead to the study of *expansionary fiscal contractions,* that is, *non-Keynesian effects of fiscal policy*

3.2.3 Supply-side effects and reconciliation attempts

- Channels through which expansionary effect on demand and output may arise in spite of contractionary fiscal policy (i.e. **non-Keynesian effects**):

1. **Consumption channel**: hypothesis that a fiscal policy consolidation may under certain conditions raise private consumption. This can result from three effects:
   - Expectations effect
   - Wealth effect
   - Substitution effects (crowding in)

2. **Investment channel**: hypothesis that a successful fiscal consolidation induces a strong and permanent increase in private investment
   1. Supply-side effects
   2. Credibility effects
   3. Interest rate risk premium

3.2.3 Supply-side effects and reconciliation attempts

1. **Consumption channel**: hypothesis that a fiscal policy consolidation may under certain conditions raise private consumption. This can result from three effects:

   - *Expectations* : if consolidation is expected to lead to substantial improvements in fiscal sustainability and there is a credible structural reform agenda leading to greater efficiency of the economy this may lead to an increase in private consumption

   - *Wealth effects:* fall in interest rates increases market value of assets held by consumers and the opportunity cost of saving, leading hhs to increase current consumption and investment

   - *Substitution effects*: if there is replacement of public spending on public services (education, health, etc) by private spending (crowding-in effect)

3.2.3 Supply-side effects and reconciliation attempts

2. **Investment channel**: hypothesis that a successful fiscal consolidation induces a strong and permanent increase in private investment, explained either by a demand-side interest rate effect or by a supply-side labor market effect

- *Interest rate risk premium*: decline in real interest rate following reduction in government's borrowing needs may stimulate private investment and consumption

- *Supply-side effects*: wage cuts in public sector can reduce real wage pressure, stimulating employment, investment and output growth. These can be reinforced by improvements in the structure and institutions of labour market

- *Credibility effects*: credibility of the consolidation process may lead to optimistic forward-looking behavior of agents due to the belief that consolidation will lead to a persistent decrease in public debt

Non-Keynesian effects

Effect of a restrictive fiscal policy within various theoretical frameworks

	Hypothesis	Mechanisms	Effect of a fiscal contraction
Neo-Keynesian models	Short-medium-term horizon. Flexible supply conditions.	Partial financial crowding-out. Absence of nonlinearities. **KEYNESIAN**	Recessionary
Ricardian equivalence	Intertemporal budget constraint. Consumers with infinite horizon. Rational expectations.	Crowding-out one for one of private consumption by public consumption. Neutrality of the deficit. **NON-KEYNESIAN**	Neutral
Neoclassical models with composition effects	Neo-Ricardian framework. Fiscal distortions. The composition of the adjustment depends on the initial conditions (debt levels ...)	Super-crowding-out due to supply-side effects. **ANTI-KEYNESIAN**	Expansionary (if poor initial conditions, i.e. high debt)
Keynesian models with threshold effects	Keynesian rigidities. Consumers with finite horizon. Probability of "stabilization" grows with the debt	Keynesian mechanisms under standard conditions. Inversion of the effects under poor public finance situation. **KEYNESIAN OR ANTI-KEYNESIAN**	Recessionary if debt is low. Expansionary if debt is high.