

# Macroeconomics

## 11. Fiscal Policy, Deficit and Debt

Bachelor's Degrees in Management and in Finance and Accounting

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# The Government Budget

## Government expenditures

- Government expenditures have three main components:
  - Government purchases ( $G$ ) of goods and services are composed of current consumption ( $G_C$ ) and investment ( $G_I$ ):

$$G = G_C + G_I$$

- Transfers/direct payments to individuals, which include unemployment benefits, Social Security, etc.
- Interest payments to holders of public debt.

# The Government Budget

## Government revenue

- Government revenue has three main components:
  - Taxes on income and wealth.
  - Social Security contributions (a percentage of wages up to a ceiling).
  - Taxes on production and imports (tariffs).

# The Government Budget

## Budget deficits and surpluses

- When government revenue exceeds expenditures, the government runs a surplus.
- When government expenditures exceed revenue, the government runs a deficit.
- One may also consider the primary deficit, which only includes current expenditures (it does not include interest payments).

# The Government Budget

## Exercises in Pluto

- ☒ Exercise 1 (Primary deficit).
- ☒ Exercise 2 (Population aging and the government deficit).
- ☒ Exercise 3 (Aging in the USA and Portugal).
- ☒ Exercise 5 (Mandatory vs discretionary spending).

# Public debt

## Factors affecting public debt

- The level of public debt as a percentage of GDP ( $d_t$ ) is affected by three factors:
  - The primary deficit as a percentage of GDP ( $p$ ).
  - The real GDP growth rate ( $g$ ).
  - The real interest rate paid on public debt ( $r$ ).
- The equation describing the evolution of public debt as a percentage of GDP is:

$$d_t = p + \left( \frac{1+r}{1+g} \right) d_{t-1}$$

- If  $g > r$ , the level of  $d_t$  is sustainable;
- If  $g < r$ , the level of  $d_t$  is unsustainable (it explodes over time).

# Public debt

## Exercises in Pluto

- ☒ Exercise 4 (The Size of public debt).
- ☒ Exercise 9 (The sustainability of public debt).
- ☒ Exercise 10 (The US debt sustainability).

# Fiscal policy

## Government spending multiplier

- Most public spending is considered mandatory: Social Security (pensions), health, defence, justice, police, public education.
- Discretionary spending or taxation can be used to manage short-run economic cycles.
- When the economy is hit by large negative/positive shocks, the private sector (firms and households) may not be able to withstand the impact of those shocks.
- The government spending multiplier is given by:

$$m^g = \frac{\Delta Y}{\Delta G}$$

## The fiscal multiplier: normal conditions

- The steeper the AS curve, the smaller the fiscal multiplier.
- The fiscal multiplier is zero if the AS curve is vertical.
- The fiscal multiplier is quite high if the AS curve is horizontal.
- Calculating the fiscal multiplier:
  - Insert AS into AD:

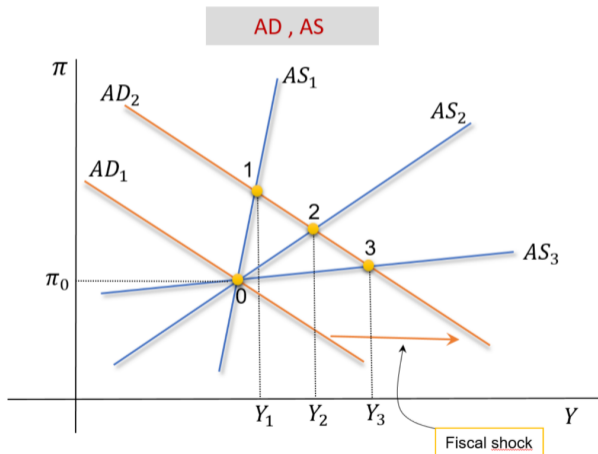
$$\begin{aligned}
 Y &= m \times \bar{A} - m \times \phi \times \bar{r} - m \times \phi \times \lambda \times [\pi^e + \gamma(Y - Y^P) + \rho] = \\
 &= \frac{m}{1 + m \times \phi \times \lambda \times \gamma} \times \bar{A} - \dots
 \end{aligned}$$

- Obtain the multiplier:

$$m^g = \frac{\Delta Y}{\Delta G} = \frac{m}{1 + m \times \phi \times \lambda \times \gamma}$$

# The fiscal multiplier: normal conditions

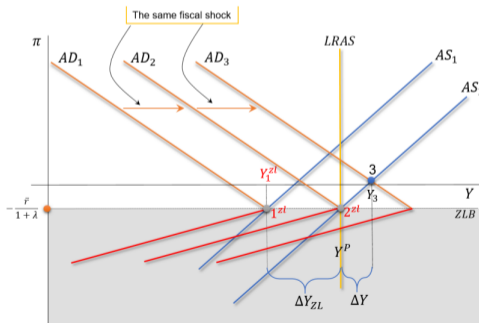
Graphical representation



# The fiscal multiplier: highest at the ZLB

## Graphical representation

- We have  $i = 0$  at the ZLB, and an increase in GDP does not lead to an increase in inflation, which allows the Central Bank to keep interest rates unchanged.
- It is as if  $\gamma = 0$  or  $\lambda = 0$ .



# The fiscal multiplier: highest at the ZLB

## Exercises in Pluto

- ☒ Exercise 6 (Projections, Projections: What to make with them?).
- ☒ Exercise 7 (The data vs the popular view).
- ☒ Exercise 8 (Business cycles and primary balances).
- ☒ Exercise 11 (The fiscal multiplier).
- ☒ Exercise 12 (Income taxes in the USA).

# References

- Mishkin, F. S. (2014), *Macroeconomics: Policy and Practice*, 2nd Edition, Pearson, Addison-Wesley, New York.