NEW SZÉCHENYI PLAN

ECONOMIC POLICY

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Fiscal policy II

Dynamics and forward looking expectations

Forward looking expectations

- In case of forward looking expectations timing of fiscal policy measures can be very important.
- Previously announced or unannounced fiscal policy measures can have quite different adjustment paths.
- Effects of the measure and effects of the information about it are to be separated.

Dynamics and forward looking

- Time paths for taxes and spending
- In a dynamic setting T and G are related to each other through the intertemporal budget constraint of the government. T and G cannot be both exogenous.

- If we consider G as exogenous, then it determines the present value of taxes. Moreover: timing of taxes would not matter. (Ricardian equivalence)

Representaive consumer

- The simplest case:
- If we substitute the government budget constraint into the one of the consumer, we can eliminate the tax variable

$$c + \frac{c'}{(1+r)} = y + \frac{y'}{(1+r)} - t - \frac{t'}{(1+r)}$$

$$G + \frac{G'}{1+r} = T + \frac{T'}{1+r}$$

Ricardian equivalence

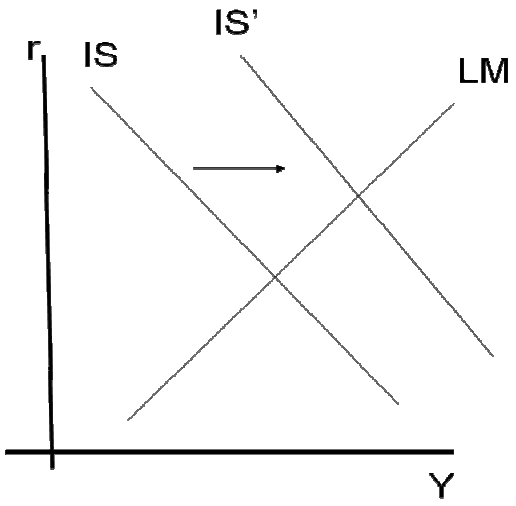
- Assumptions
- G is exogenous
- Forward looking expectations
- Perfect capital markets
- Representative agent
- There is no income redistribution.
- No distortive taxes and other market imperfections exist.
- Conclusions:

- With given time path of G reductions of taxes would not be expansive.
- It is not easy to determine practically, however, whether the public expects G or T to be exogenous.
- If RE holds then the level of national debt does not matter.
- However, it holds only if we assume perfect capital markets. In reality they are not perfect.
- In practical modeling both Ricardian and non-Ricardian consumers are built into the model.
- There is also risk premium on debt usually made dependent on its size.

A dynamic IS-LM model

- A traditional keynesian structure
- Price level is exogenous
- Lacks micro foundation
- Demand oriented, production is fully determined by the level of demand.
- We model expansive fiscal policy, an increase in G.

Static IS–LM



What is the time path to reach the new equilibrium?

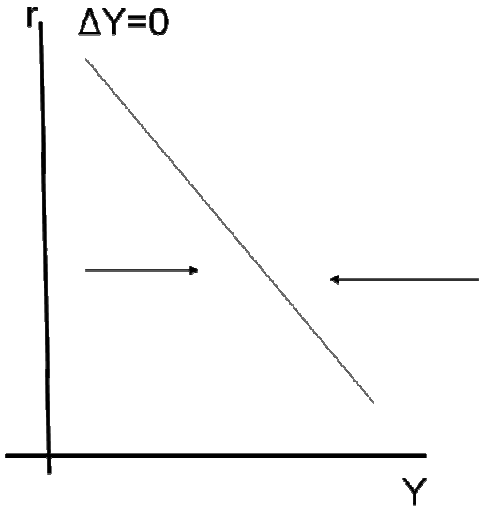
Goods market dynamics

- Linearized system. In equilibrium:
- Y = aY – br + G
- Assumption: supply adjusts to changes in demand, but it requires time to pass, adjustment is slow. In the meantime the market exhibits disequilibrium.
- Excess demand → Y increases
- Excess supply → Y decreases

$$Y^d = aY - br + G$$

$$\frac{\partial Y}{\partial t} = \lambda(Y^d - Y)$$

- The speed of supply adjustment depends on λ.



Money market dynamics

- Goods market: movement towards the equilibrium is slow.
- Money market: money is liquid. The money market adjusts immediately. The money market is always in the state of equilibrium.
- There are two different types of equilibrium though. In the steady state, r is constant in time. This is long run equilibrium. In the short run, r is changing in equilibrium.
- What makes r to change?

Digression

- Why does demand for money depend on r?
- M/P = L(Y, r) LM curve
- Transaction demand makes it to depend on Y.
- Why holding money in excess of the transaction demand?

- Models with micro base
- MIU, or Finance constraint

An alternative

- Holding money reduces uncertainty and risk.
- What risk?
- Nominal prices of non-money assets can change. This can cause capital gains or losses for holders.
- The price of money cannot change by definition. Money can be used for hedging risk stemming form price changes of other assets.

Keynes

- Speculative demand for money
- What is speculation?
- An adjustment in the portfolio holdings according to the expected changes in their prices in the future.
- Simplified portfolio structure: money and non-money (bond) assets.
- Interest is return on non-money assets held.
- We hold money for speculative purposes, if we expect a decrease in the prices of non-money assets.
- Hold less or none if we expect the prices of other assets to increase.
- Why is that so?

Price of an interest bearing asset

- Price of an asset is the present value of its expected future stream of returns.

$$PV = \sum_{i=1}^{k} \left(\frac{1}{1+r} \right)^{i} C$$

- A change in the rate of interest changes the discount factor we use when calculate the present value. The price of the asset changes resulting in a capital gain or loss.

Keynes

- Expecting an increase in the price of the interest bearing assets is the same thing as expecting a drop of the interest rate.
- Expecting a drop in the interest → small level of speculative demand for money. We hold other assets instead because we expect their prices to increase.
- Expecting an increase in the interest → high level of speculative demand for money.

Forward looking

- What should we preserve from the old keynesian thoughts?
- The fact that the future interest rate is connected to the present interest rate
- But not like Keynes thought (the present determines the future rate).
- Rather, expectation of the future is to determine the current rate.

Equilibrium in the money market

- Original money market
- M/P = L(Y, r) LM curve
- Linearized: M/P = βY – γr
- If duration of bonds lasts only for one period, then return would not include expected price changes.
- Assume perpetual (never maturing) bonds for the sake of simplicity.

Price of the bond

- Let P_k stand for the price of the bond. It is determined by the actual rate of interest.

$$P_K = \sum_{i=1}^{\infty} \left(\frac{1}{1+\bar{r}} \right)^i = \frac{1}{r}$$

- Change in the price of the bond is:

$$\frac{\frac{\partial P_K}{\partial t}}{P_K} = \frac{-\frac{\partial r}{\partial t} \Big/ r^2}{1/r} = -\frac{\frac{\partial r}{\partial t}}{r}$$

- Return on bonds is the sum of the interest income and the expected change of the price of the bond.

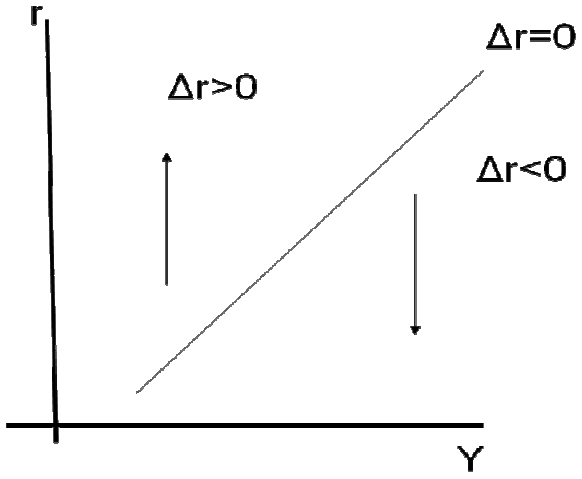
Money market equilibrium

- The new money demand function is as follows:

$$\frac{M}{P} = \beta Y - \gamma\left(r - \frac{\frac{\partial r}{\partial t}}{r}\right)$$

- The money market is always in equilibrium. In the short run the interest rate changes, in the long run it is a constant.

Equilibrium in the money market

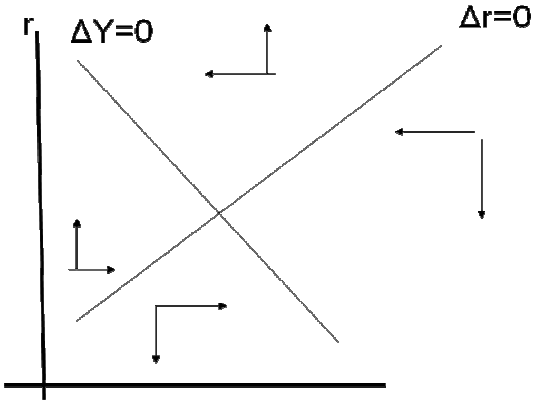


The complete model

$$Y^d = aY - br + G$$

$$\frac{\partial Y}{\partial t} = \lambda(Y^d - Y)$$

$$\frac{M}{P} = \beta Y - \gamma\left(r - \frac{\frac{\partial r}{\partial t}}{r}\right)$$



Literature

- Görömbey–Pete (1998): Makromodellek, egyetemi jegyzet, Debrecen
- Robert J. Barro (1989): The Ricardian Approach to Budget Deficits, The Journal of Economic Perspectives, Vol. 3, No. 2
- Douglas Bernheim (1989): A Neoclassical Perspective on Budget Deficits, The Journal of Economic Perspectives, Vol. 3, No. 2