ECONOMIC POLICY

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Week 3

Seigniorage and forward looking expectations

Monetarism

- Inflation depends on the rate of growth of money → To reduce inflation one needs to reduce the growth rate of the money supply.

- This is true in the long run, in steady state. Short run dynamics, however, is different.

- A monetary restriction in the present, if it is not credible, can fail to reduce inflation.

- What is credibility?

Money demand and inflation dynamics

$$\pi_t = \frac{1}{1+\gamma}\sigma_t + \frac{\gamma}{1+\gamma}\pi_{t+1}$$

- Rearranging

$$\sigma_t - \pi_t = -\gamma(\pi_{t+1} - \pi_t)$$

- If $\sigma_t > \Pi_t \rightarrow$ real money supply increases and decreases in the reverse case.

- Real money supply increases (decreases) if decelerating (accelerating) inflation is expected.

Seigniorage

- So far σ, nominal monetary growth was treated as exogenous, as the tool of the monetary policy

- Let us have seigniorage, the fiscal income derived from money creation, the goal of monetary policy.

- If the goal of monetary policy is S, than we should consider that as exogenous.

$$S_t = \sigma_t e^{-\gamma\pi_{t+1}} \quad \longrightarrow \quad \pi_{t+1} = \frac{1}{\gamma}\ln\frac{\sigma_t}{\bar{S}}$$

- The government adjusts monetary growth so that S is to be held constant.

- Digression: do members of parliament know what seigniorage is?

- If not, then how they make decisions about the level of this type of government revenue?
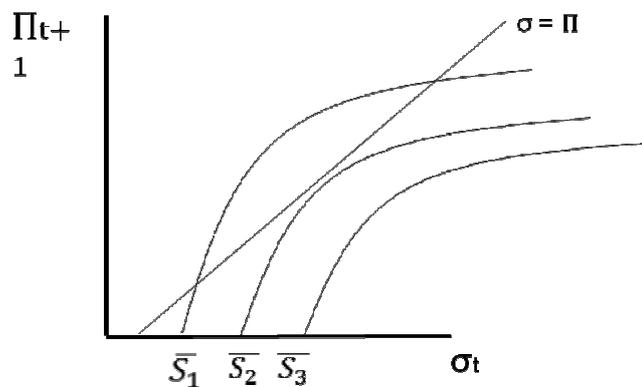
Constant seigniorage cvurve

- **Derived from the equilibrium condition of the money market. Values of σ_t and Π_{t+1} that creates money market equilibrium.**

- **A different curve belongs to every S.**
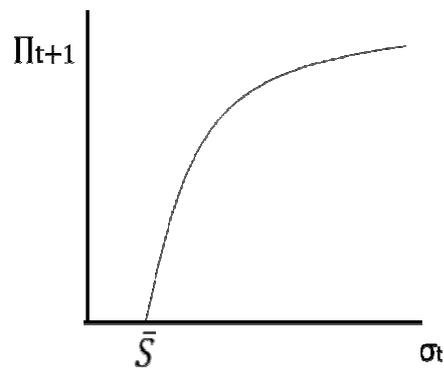
Steady state

- **$\sigma_t = \sigma$ and $\Pi_{t+1} = \Pi$ holds for every t.**

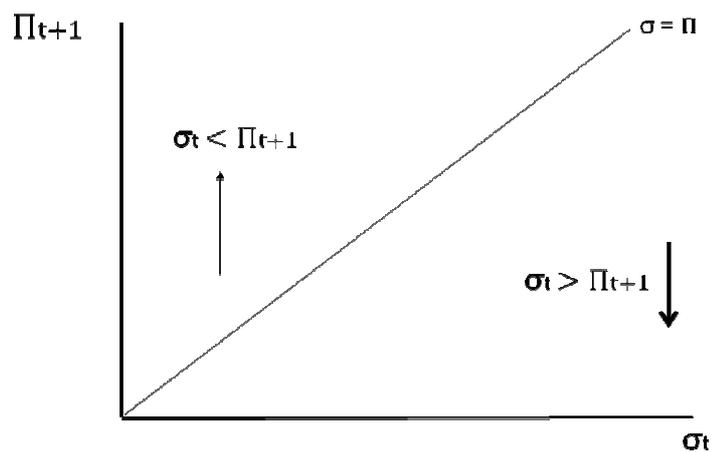- **Depending on the value of S we have one, two or zero long run equilibrium points.**

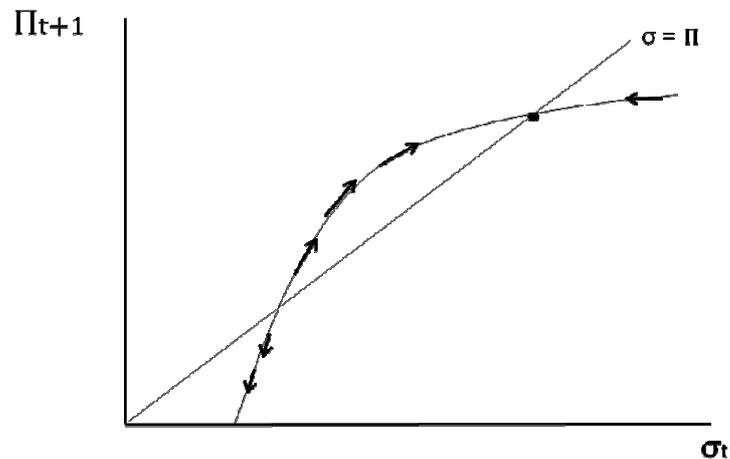# Dynamics

$$\sigma_t - \pi_t = -\gamma(\pi_{t+1} - \pi_t)$$

- Rearranging

$$\sigma_t - \pi_{t+1} = -(1+\gamma)(\pi_{t+1} - \pi_t)$$

- If $\sigma_t > \Pi_{t+1}$ then expectations for the inflation level in the future slow down.

The whole system

- The higher inflation equilibrium is stable, the lower is not.

- If the time period when we reach the long run equilibrium is given, then we can recursive calculate the level of inflation in the current period.

- Otherwise the system is underdetermined.

$$\ln \bar{S} = \ln \sigma_t - \gamma \pi_{t+1}$$

$$\pi_t = \frac{1}{1+\gamma}\sigma_t + \frac{\gamma}{1+\gamma}\pi_{t+1}$$

- We have got two equations and three unknowns (σt, Πt and Πt+1)

- We need to know the level of inflation at one point of time in the future. Otherwise the system is undetermined.

Conclusions
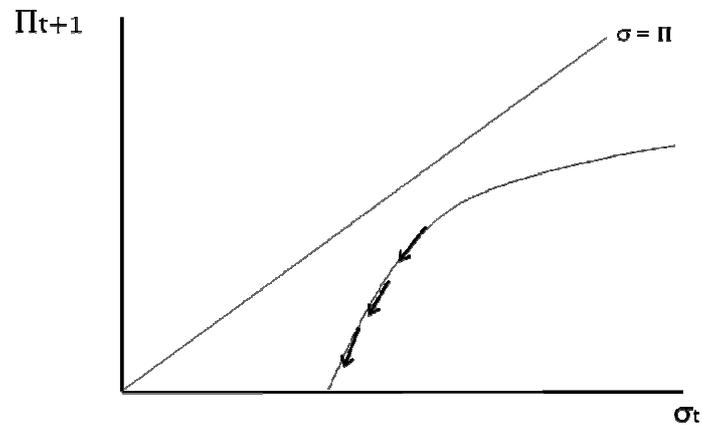
Problem

- If σ is exogenous, then Π is undetermined.

- The government tries to adjust σ to hold S constant, assuming expectations are given. The public tries to form inflationary expectations from the value of σ, the government money creation. We are in a bad circle.

- To close the system, we need to have an event to be expected in the future that can pin down expectations

Model

- Unsustainable fiscal position in the long run

- Taxes and seigniorage do not cover budget expenditures

- National debt is growing continuosly

- What happens if a debt limit is reached *at a distant future date?*

Government budget constraint

- Government spending can be financed out of three sources only: taxation, borrowing and money creation (seigniorage).

$$G_t = T_t + \frac{B_t^s}{P_t} - \frac{(1 + R_{t-1})B_{t-1}^s}{P_t} + \frac{M_t^s}{P_t} - \frac{M_{t-1}^s}{P_t}$$

Debt constraint

- We assume there is an upper limit for government debt. Due to the flow deficit, debt grows continuously, the situation is unsustainable, not in the present, but in the long run.

- If we reach the debt limit at T , current spending on G and on interest cannot be financed via borrowing any more, only via taxation and seigniorage.

- Fiscal policy followed so far has to be modified radically at time T.

Alternative scenarios

- Fiscal stabilization at time T. Deficit is eliminated, there is no further need for collecting seigniorage $\sigma = \Pi = 0$.

- From T and onwards the government tries to extract the maximum value of seigniorage. From T then $\sigma = \Pi = 1/\gamma$.

- Whichever event happens in T, it pins down the future inflation then, and determines inflationary expectations in the present.

- The two different scenarios illustrate different power relations in between the monetary and the fiscal authorities. In case of interest conflict, whose will is going to win:

- What really counts for the present level of inflation is not what really happens in the future. What counts is what we expect them to do in the future, what we expect which is going to be more powerful when the time comes.

Regime 1
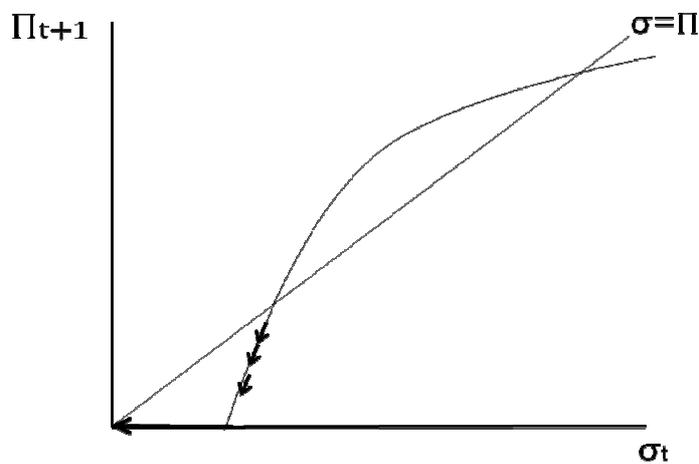
We expect the monetary authority to hold out when the budget hits the debt limit. It will not allow money growth to accelerate. The fiscal stabilization eliminates the need for seigniorage from T, therefore inflation is expected to be zero then. As a result, inflation will be low and decreasing now.

Regime 2

- If we expect the fiscal interest to win in the future. Then we know there will be much higher inflation in the future. This expectation will make inflation high and increasing in the present.

- In a setting like this a slowdown of money growth to reduce current inflation is not going to be credible. It will just fasten accumulation of debt and increase expected inflation in the future. This lifts current inflation as well. Current monetary restriction does not necessarily reduce current inflation.

Π_{t+1} $\sigma = \Pi$

σ_t
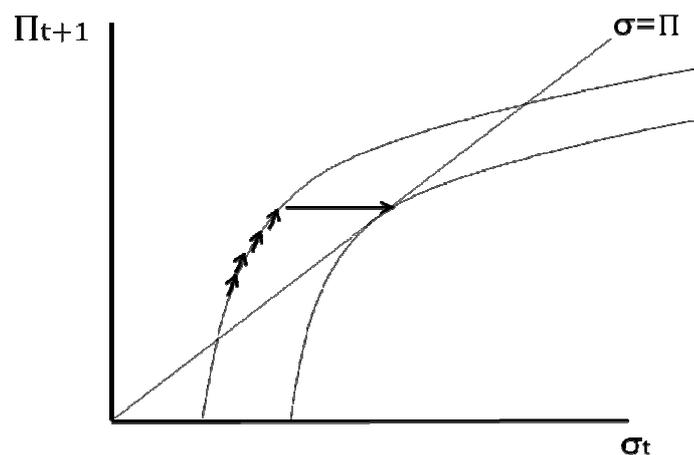
Evaluation

- Under normal conditions empirical relevance of these models is limited.

- They assume perfect price flexibility and classical dichotomy.

- The role of money and monetary policy is restricted to earning seigniorage income.

- This type of economic policy prevails in unusual circumstances only.

Literature

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- Sargent–Wallace: Egy kis monetarista számtan, In: Sargent (2005): Infláció és racionális várakozások, Nemzeti Tankönyvkiadó, Budapest