Macroeconomics Lecture 7

SGPE Summer School

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Introduction

What is money?

What determines demand and supply of money?

What determines inflation in the long run?

How high should inflation be?

Money

What functions does money have?

- Means of payment
- Unit of measurement
- Store of value that does not yield interest

Example: bills and coins

Model

We assume that in the model:

· Money is a means of payment: the need for money depends upon the volume of transactions

· Money is used as a unit of measurement: prices and wages are set in terms of money

· Money is a store of (form of) savings that generates no interest

· The central bank controls the money supply

Types of money

In practice there are several ways of measuring money:

· Monetary base: bills and coins in circulation plus deposits that banks have in the central bank

· M1: bills and coins among the general public plus demand deposits ('immediately available funds')

· M2: M1 plus deposits on certain conditions (tied for a certain time etc.)

· M3: M2 plus money market fund shares and certain debt securities

Money in the model

Monetary base is closest to our theoretical concepts :

· All transactions take place with monetary base

· Money is the unit of measurement for wages and prices

· Bills and coins generate no interest and bank funds in the central banks generate lower interest than the market interest rate

· The central banks control the monetary base through market transactions (pure market transactions and repurchase operations)

What determines the demand for money?

$$MV = PY$$

- M is the supply of money in circulation
- V is the turnover speed of money
- P is the price level
- Y is production

Alternative 1

Constant V

Demand for money

$$M^d = \frac{1}{V}PY \implies \frac{M^d}{P} = \frac{1}{V}Y$$

That is, real demand for money is proportional to real production (income)

V is an increasing function of nominal interest rate

$$M^d = \frac{1}{V(i)}PY \implies \frac{M^d}{P} = \frac{1}{V(i)}Y$$

That is, real demand for money increases with Y and decreases with i

Long Run

Money and inflation

Equilibrium (supply of money = demand for money):

Real supply of money $\frac{M}{P}$ and demand for money $\frac{Y}{V(i)}$

In equilibrium

$$\frac{M}{P} = \frac{Y}{V(i)}$$

What happens if the central bank increases the money supply M ?

- Y increases?
- i decreases?
- P increases?

It depends on what time perspective we consider.

Short run: prices are rigid. Long run: prices adjust.

Here we consider the long run: · Production is given by Y^n

· Real interest is given by $= r^n$ which means that nominal interest is given by $i = r^n + \pi$

Equilibrium condition: $\frac{M}{P} = \frac{1}{V(r^n + \pi)} Y^n$

Determines the price level: $P = \frac{MV(r^n + \pi)}{Y^n}$

Price level: $P = \dfrac{MV(r^n + \pi)}{Y^n}$

Assume that r^n and , and thereby V, are constant

Long term inflation: $\pi = \dfrac{\Delta P}{P} = \dfrac{\Delta M}{M} - \dfrac{\Delta Y^n}{Y^n}$

Conclusion: If the money supply grows faster than equilibrium production, the result is inflation

Inflation in the long run

· In the long run, inflation does not affect real variables (the classical dichotomy)

· Higher money supply growth brings higher inflation ceteris paribus

· Milton Friedman: 'Inflation is always and everywhere a monetary phenomenon'
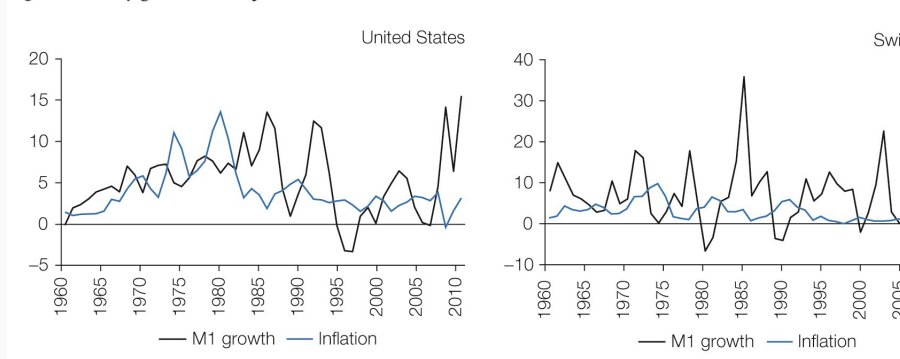
· In the long run, yes!

Fig. 7.1 *Money growth and inflation, 1990–2010, percent*
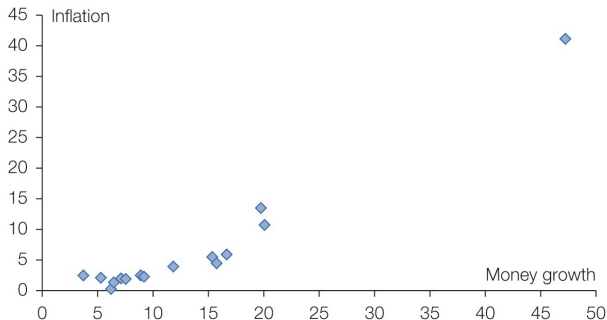
Note: The figure shows yearly M1 growth and consumer price inflation for the OECD countries where data is available.

Source: *OECD Economic Outlook*, OECD, 17 April 2012, http://www.oecd-ilibrary.org/statistics.

Fig. 7.2 *Money growth and inflation*

United States — M1 growth — Inflation

Switzerland — M1 growth — Inflation

Figure 1: Money growth is measured by the growth rate of M1 and inflation is measured by the growth rate of CPI

Conclusion

Very high money supply growth leads to high inflation

– support for the theory

· No correlation when money supply growth is low:

V is far from constant

· A theory that assumes that V is constant in the short run is not useful for predicting inflation

· But our theory says that ceteris paribus increased money supply growth leads to increased inflation

Problems with too high inflation:

· Menu costs

· More difficult to compare prices when observations quickly become out of date

· Inefficient changes of relative prices when prices change at different times

· Unintended effects on tax and transfer systems

· Wealth redistribution and disruptions of long-term contracts (wages, loans)

Optimal inflation

Problems with low inflation:

· Obstructs real wage adjustment if nominal wages are sluggish downwards

· Monetary policy becomes more difficult because the interest rate cannot be lower than zero

Conclusions

- Very high inflation leads to substantial losses

- Zero inflation can cause problems

- Some positive rate of inflation is optimal but hard to say exactly what rate

- Most central banks have an inflation targets of 2 or 3 per cent

- What they do to reach this goal is discussed in Chapter 10