



Course: Economics I (macroeconomics)

Study text

13th Chapter

Monetary Policy

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13 Monetary policy

Monetary policy is part of and a tool of macroeconomic policy. It is a set of measures and policies that have to meet the required targets through monetary or currency policy instruments. Interpretation will involve money and the money supply, which is under the control of the central bank. In this text, we understand the term monetary policy change in the money supply and basic interest rates and the term currency policy is understood as interventions at foreign exchange markets (for the purpose of foreign exchange rate changes).

Monetary policy is a tool the central bank and its primary purpose is monitoring and active influence on the rate of inflation. In the Czech Republic the Czech National Bank acts as the central bank. The main objective of the CNB is to maintain price stability. The central bank uses to enforce its monetary policy targets a variety of instruments that affect both the functioning of individual commercial banks and the operation of the entire economy of the state.

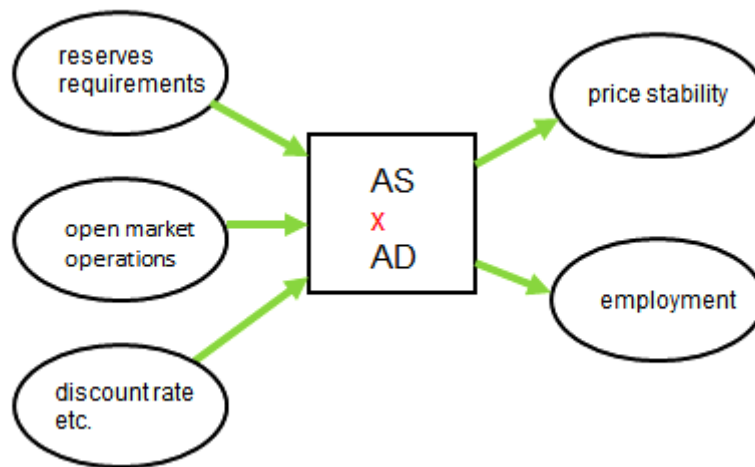
In this chapter it will be explained the tool used by the central bank to implement its policies and how these tools work. There are two opposing types of policies, explanation of their principles and their use cases. We will see that it is not as straightforward talk about the effects of monetary policy instruments. It will be explained what a dilemma of central bank is and what are the basic approaches to the implementation of monetary policy.

13.1 Objectives and instruments of monetary policy

It is necessary to meet certain preconditions to provide monetary policy. First, implemented two-tier banking system (the central bank and a network of commercial banks) is needed, developed money and capital market and the possibility of payments with other countries, if the central bank carries out operations at foreign exchange markets. The importance of monetary policy is also influenced by the integration processes (e.g. if the Czech Republic enters the monetary union and adopts a common currency, the euro, the Czech National Bank will no longer have to conduct its own monetary policy).

Basic macroeconomic variables are influenced by using the tools of monetary policy via the gear mechanism, which means its effect on aggregate supply and aggregate demand. Monetary policy of the central bank acts on basic macroeconomic objectives of macroeconomic policy, namely **price stability and employment** – as can be seen in the following diagram.

Fig. 13.1 The transmission mechanism of monetary policy instruments affecting basic macroeconomic variables



The central bank uses various monetary policy tools to influence targets (employment and price level). These tools are divided into *direct (administrative)* and *indirect (market)*.

A. Direct (administrative) instruments represent a direct central bank intervention in the banking system. Mostly used to a lesser extent than the indirect tools. These tools include:

- *liquidity rules* - determining the binding structure of assets and liabilities that commercial banks must comply;
- *credit contingents (limits)* - absolute credit contingent determines the maximum amount of loans that commercial banks can provide to economic operators and the relative credit contingent determines the maximum amount of loans provided by the central bank to commercial banks;
- *mandatory deposits* - in the form of compulsory maintenance of accounts of state institutions and carrying out transactions only through the Central Bank;
- *recommendations, challenges and agreements* - in the case of a recommendation and the challenges it is the unspoken expression of central bank's requirements, but agreements are in writing and specify the rules agreed between the central bank and commercial banks.

B. Indirect (market) tools work across the board to all commercial banks and shall be implemented in accordance with market principles. The main indirect instruments include:

- *reserve requirements (RR)* - it is a certain percentage of deposits that commercial banks must store at the central bank's account or in the form of cash. The reserve requirements affect the possibility of lending money by

commercial banks. Increase (decrease) in RR decreases (increases) the money supply in the economy;

- *open market operations (OMO)* – these operations mean sales and purchases of treasury securities (e.g. government bonds) at the free money market between the central bank and commercial banks. If the central bank sells government securities to commercial banks, it reduces the money supply. If the central bank buys government securities from commercial banks, it increases the money supply in circulation;
- *discount rate* - generally it is the base interest rate at which commercial banks can borrow money from the central bank. Money supply is influenced by this tool. Growth in the discount rate leads to a reduction in the money supply, its decline increases the money supply. The effectiveness of this tool is affected by the dependence of commercial banks on the central bank's funds. The CNB remunerated excess liquidity of commercial banks at the discount rate in the form of an automatic facility (deposit liquidity overnight). The discount rate is the lower limit for short-term interest rates at the money market in the Czech Republic;
- *lombard rate* - the interest rate on operations which commercial banks borrow money against a pledge of securities. Increasing lombard rate decreases the money supply in the economy, and vice versa. The lombard rate is upper limit for short-term interest rates at the money market in Czech Republic;
- *re-rebate bills* - commercial banks can sell promissory notes previously repurchased by the economic operators to the central bank, which is referred to as re-rebate. In this case, the commercial banks increase liquidity and money supply in the economy tends to grow;
- *currency conversion and swap transactions* - these are purchases or sales of foreign currency for domestic currency between the central bank and commercial banks. In the case of conversion it is buying (selling) a foreign currency at the current exchange rate without agreeing to reverse the operation. In case of swaps the term of reverse operation and future exchange rate are agreed. These operations have an impact on exchange rates. When selling foreign currency by a central bank, money supply (domestic currency) will decrease and when purchasing of foreign currency leads to increasing money supply in circulation;
- *operations at the international foreign exchange market* - performed by the central bank to influence the exchange rate. These operations are part of the foreign trade and currency policy.

These tools listed apply generally. We encounter concrete monetary tools at a certain central bank. The Czech National Bank defines and describes its own tools of

monetary policy on its website (<http://www.cnb.cz>), see section *Monetary policy - Monetary policy instruments*.

As far as the Czech Republic enters the monetary union, there are instruments of the *European Central Bank* on its official website (*Monetary policy instruments*, <http://www.ecb.europa.eu>).

13.2 The effects of expansive and restrictive monetary policy

There are ***two types of monetary policy*** - expansive and restrictive.

Expansive type is characterized by the fact that there is an increase in money supply in the economy. Conversely, ***restrictive type*** of monetary policy means reducing money supply. Both types of monetary policy have an impact on aggregate demand (AD).

The central bank chooses ***expansionary monetary policy*** to stimulate the growth of aggregate demand. The effect of expansionary monetary policy is not clear. It is necessary to distinguish the length of time and it depends on where the economy is. In the long run, *money is neutral* - it means that monetary expansion does not affect the real product; because the long-term aggregate supply curve is vertical and the increase in aggregate demand has an impact only on the increase in the price level (nominal product increases, the real product does not change). It also depends on whether the economy operates at the level of potential output, or it is in the output gap. In the second case the output growth is greater than the price level growth.

The effect of monetary expansion can also be influenced by the unwillingness of commercial banks, which do not respond to the interest rate cuts by increasing the volume of loans, or negative expectations, when firms do not expect improving the situation, and therefore falling interest rates may not affect the increase in consumption and investment activity and consequently increase in aggregate demand and output.

What does a frequently used term „quantitative easing“ (QE) mean? During the contraction of the economy we can hear that central banks have implemented the quantitative easing. This is a situation where traditional monetary policy tools are not effective enough in the economy (e.g. the base interest rates can not be decreased), and therefore central banks seek other solutions to help the economy. The essence is to expand the monetary base (powerful money) that passes through multiplication, and consequently will increase the number of loans and money supply growth. QE in other words means unconventional expansionary monetary policy which may be implemented in the following ways:

- purchase of financial assets of the central bank from commercial banks or other financial institutions (extension for trading assets, and entities the central bank trades with);

- lessening in setting the conditions under which the central bank lends funds to commercial banks, softening the conditions for loans provided to the banking sector;
- purchase of foreign assets; it will increase the money supply and weaken domestic currency;
- subordinating of monetary policy to the government, when the central bank finances fiscal expansion (purchases of government bonds by the central bank).

Arguments of central banks to implement quantitative easing are deflationary tendencies and economic recession in which the economy is suffering from higher rates of unemployment, pessimistic expectations and weakening of aggregate demand.

Quantitative easing has become very frequent expression of the recent financial crisis in the United States. The biggest debate took place during 2008 – 2013 when QE reached the sum of approximately 3000 billion. USD in assets of the Federal Reserve System (the assets may yield interest). Quantitative easing may be used only by the economies that have full control of their national currency and money supply.

A central bank chooses **restrictive monetary policy** in particular to reduce inflation by reducing the money supply and thereby to reduce aggregate demand. The effect of monetary restriction depends on time period and situation of the economy. In the long run monetary restriction does not change the real output and employment, but reduces the price level. Against the desired effect of monetary restriction (reducing inflation) there may cause some positive expectations of economic operators or the opportunity to purchase cheaper loans abroad.

Now, the effects of expansionary and restrictive monetary policy:

Effects of expansionary monetary policy:

- *in the short run:* decreasing interest rates will increase the expenditure of economic agents depended on the interest rate, especially investment, and consumption, government spending, thereby increasing AD, increasing product (Y) and employment, and the price level rises; if the economy is in the output gap, product growth will be greater than the price level growth;
- *in the long run:* the effect is only the price level growth – that is growth of nominal variables, real variables, such as real output or real wages will not be affected.

Restrictive monetary policy:

- *in the short run:* when rising interest rates, consumption, investment or government spending will decrease, reduce AD is expected, and a fall in product (Y) and employment, price level drops; if the economy is in the output gap, product drop is greater than the price level drop;
- *in the long run:* the effect is only a decrease in the price level - drop in all nominal variables, real variables, such as real output or real wages will not be affected.

The picture 13.2 shows the effect of monetary expansion in the short and long term situation in terms of fully used resources. In the short term there is a macro equilibrium shift from point E_1 to E_2 . The effect is mainly in the price level (a shift from P_1 to P_2) than in real output. In the long run, there is a shift from point E_1 to E_3 . Due to increase in the prices of factors of production the short run aggregate supply SRAS falls to level SRAS' and economic output is returned back to the level of potential output. We talk about *the neutrality of money* - money in the long term does not affect real macroeconomic variables. Only nominal product and the nominal interest rate will increase due to growth in the price level, but real product and real interest rate will not change. In the long run we are working with long-term aggregate supply LRAS (incidentally, it is obtained by plotting short-term macroeconomic equilibrium points E_1 and E_3).

Fig. 13.2 Effects of monetary expansionary policy in a situation of fully used resources

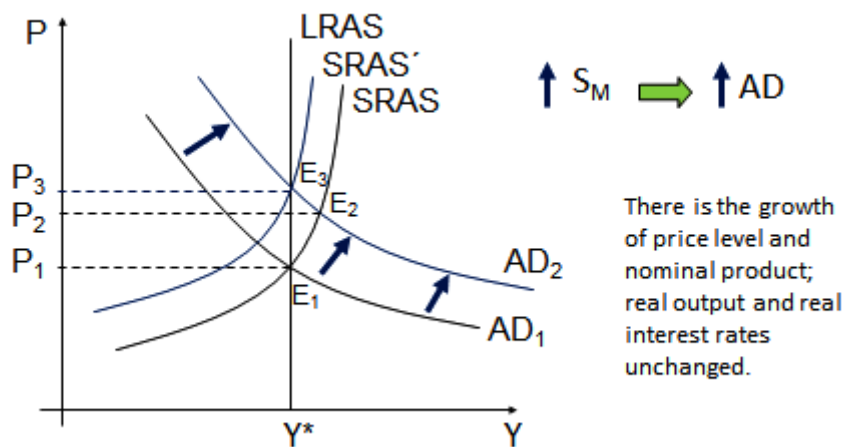
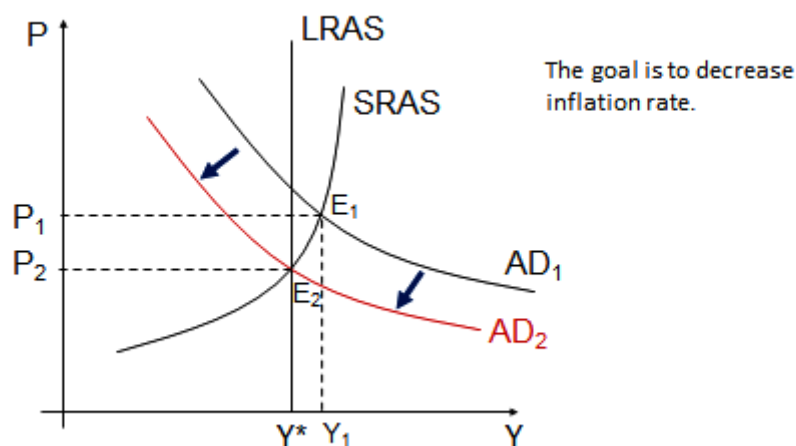


Figure 13.3 shows the effect of monetary restriction in a situation where the economy is in the inflationary gap. Restrictive monetary policy has to impress against a rise in the general price level by reducing aggregate expenditures. Assume the economy is in macroeconomic equilibrium E_1 , which determines the equilibrium price level P_1 and the output Y_1 . Monetary restriction will reduce via the gear mechanism the level of aggregate demand from AD_1 to AD_2 . There is mainly fall in price level from P_1 to P_2 and in our picture, the economy returns to a point E_2 - to the level of potential output Y^* .

Fig. 13.3 Effects of restrictive monetary policy in a situation when an actual output is greater than the potential



13.3 The dilemma of central banks

The central bank is able to either control the money supply or interest rate, it can not manage both simultaneously, and this fact is known as *the dilemma of the central bank*.

Suppose increase in demand for money (e.g. due to increasing incomes). The central bank must decide whether to intervene at the money market or not - whether to intervene and change the money supply, and if it intervenes, in favor of what - whether in favor of a constant rate or constant money supply.

The figure 13.4 shows the money market including fixed money supply S_M . The growth in the demand for money from the level of D_M on D_M' (e.g. due to growth in real incomes) will cause an increase in interest rates. Monetary policy in our case prefers to maintain a constant money supply M_1 . It may be the case when the economy is close to the level of potential output and increasing the money supply (monetary expansion) would be reflected in inflation.

Fig. 13.4 Non-activist monetary policy - central bank does not react to an increase in the demand for money

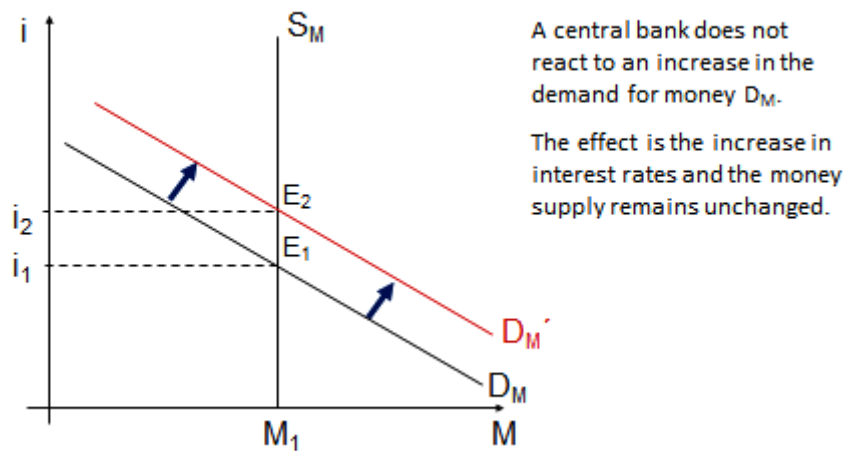
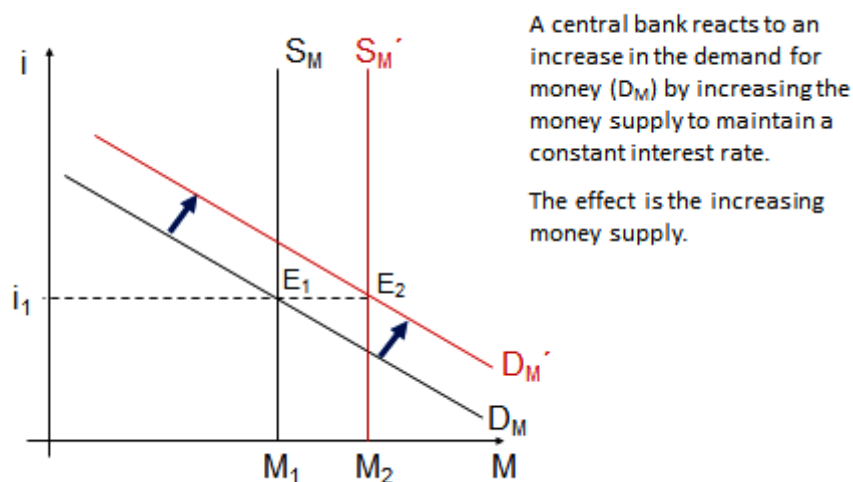


Figure 13.5 shows an activist monetary policy reacting in response to increasing demand for money D_M . The central bank prefers a constant rate of interest and decides to increase the money supply S_M . The straight vertical line moves to the right. It may be in a situation where the economy is in an output gap and the increase in interest rates would be undesirable because it will reduce the growth of investment and consumer spending, depending on the interest rate, and consequently suppress the growth of AD, output and employment. Point E_2 is a target of activist monetary policy. The result of this intervention is stable interest rate, but also increases in the money supply (M_1 shifts to the right to M_2).

Fig. 13.4 activist monetary policy - central bank responds to the increasing demand for money by increasing the money supply to maintain a constant interest rate

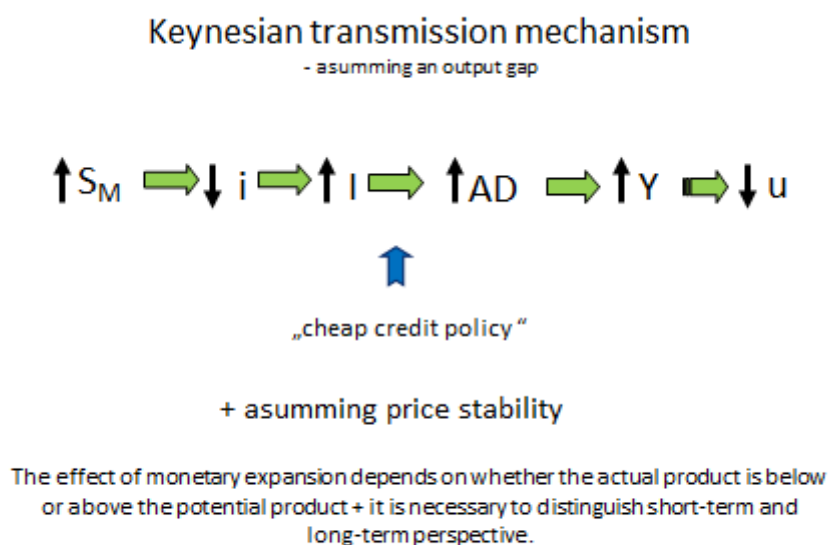


12.4 Approaches to monetary policy

Attitudes of the implementation of monetary policy of economic trends are not uniform. There are two approaches to the implementation of monetary policy: **the Keynesian and monetarist**.

The Keynesian approach of monetary policy is based on the Keynesian macroeconomic equilibrium approach. The economy is supposed to be in the output gap and the primary objective of economic (and monetary) policy is to increase employment. The Keynesian approach emphasizes the role of the interest rate as an intermediate target of monetary policy in turn affects output and employment. The link between interest rates and aggregate demand is described by *the Keynes transmission mechanism*. It consists of the following steps:

The reduction in interest rates (by the CB decision or increasing the money supply) causes an increase in consumer, investment or government spending that is dependent on the interest rate, resulting in an increase in aggregate demand that causes output growth and reducing unemployment.



Keynesians have worked with unstable demand for money and also more sensitive to interest rate changes. We admitted that the central bank can not control the money supply and interest rates simultaneously. Keynesians favor the view that the central bank should monitor the target interest rate. In Keynesian macroeconomics there was a thought that expansionary monetary policy in the form of cheap will increase the output and employment.

Monetarist approach is based on the classical concept of macroeconomic equilibrium, when the economy uses its long-term production capacity and is located

at the level of potential output. This approach explains the use of monetary policy through changes in the money supply. Its proponents assumed a stable demand for money and its low sensitivity to the interest rate. Monetarism questioned the effect of liquidity (i.e. the growth in money supply will reduce interest rates), while pointed out that the interest rates could be increased growth in the demand for money and inflation expectations of economic operators.

In the long run, monetary policy is ineffective in influencing output and employment. Monetarists therefore prefer stable, gradual and expected monetary growth accompanied by steady growth in real output. They shared the view that the central bank should give priority to the criterion of the money supply. The main representative of monetarism, American economist and Nobel laureate for economics *Milton Friedman* defined *the golden rule of monetary growth* - money supply should increase accordingly to the potential GDP growth (roughly about 3-5 %).

Monetary policy is not being implemented separately, coordination with other policies to achieve the goals is necessary, particularly coordination with the fiscal policy. It is essential to use an appropriate mix of fiscal and monetary policy (i.e. *policy mix*) to stabilize the economy.

Finally, an important thing must be mentioned, and that is the independence of the central bank. The main reason for central bank independence is that it is necessary to separate the power to create money from the power to spend money. We mean the independence of the central bank on the government. For example the government facing elections may result in an attempt to reduce interest rates. As we have seen, this step may help the economy in the short run, but in the long run may increase the price level. Or there is a danger of debt monetization, as described in the Chapter about Fiscal policy. Central bank independence is one of the elements of many developed market economies, and is considered an an important part of a healthy functioning economy.

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