



NATIONAL BANK OF SLOVAKIA

**TRANSMISSION MECHANISM CHANNELS IN MONETARY  
POLICY**

**Ing. Peter Dovčiak**

Institute of Monetary and Financial Studies of the NBS  
Bratislava 1999

# Transmission Mechanism Channels in Monetary Policy

*In a modern financial system, monetary policy measures are transmitted into the real economy through several channels. The present article describes the four basic channels of the mechanism of monetary-policy transmission. Some features of the transmission process have been adjusted to Slovak conditions.*

## The Interest Rate Channel

The interest-rate channel of the monetary transmission mechanism is based on the assumption that an expansive monetary policy leads to an increase in the supply of money, which causes real interest rates on the money market to fall (at a constant level of demand for money). This development creates conditions for changes in medium- term interest rates on loans, with an effect on the level of investment as well as aggregate expenditure in the economy.

Apart from creating conditions for a change in interest levels in the economy, the fall in short- and medium-term interest rates arouses the desire of economic entities to consume or save, and is based on the fact that lower interest rates increase the current value of goods as well as demand for such goods. Hence, expenditures on interest-rate- sensitive goods are affected by the marginal costs of new loans. Deposit rates also adjust gradually to the lending rates. These changes in interest rates affect the income and cash flow of debtors and creditors. Thus, interest-rate variations induced by monetary policy may lead to changes in the cash flows of creditors and debtors, and consequently to changes in their consumption and investment expenditures. In this case, we may speak of an 'income channel', which covers the effect of changes in net interest payments in the individual sectors when applied to aggregate expenditure in the economy.

As regards the interest-rate channel of the transmission mechanism, it is important to distinguish between real and nominal interest rates. Real interest rates affect the marginal costs of new loans, which determine the ratio of savings to consumption. A nominal rise in interest levels (most often seen in connection with inflation fears) leaves the marginal costs of new loans unchanged. On the other hand, it affects the cash flows and balance-sheet positions of debtors through the amortisation of loans received in the past, in line with the course of inflation. The improved cash flows of these entities has a potential impact on the level of aggregate demand.

The fact that real interest rates affect the volume of aggregate expenditure on GDP, can be used to formulate monetary policy aimed at the support of economic activity. Let's suppose that the central bank lowers nominal interest rates below the level of inflation so that the values of real interest rates are negative. Such an expansive monetary policy will raise the expected price level, together with the expected rate of inflation, and will lead to a fall in real interest rates and stimulation of expenditure in the economy through the interest-rate channel. Some economists are of the opinion that such a monetary policy may protect the economy from a sharp decline during an economic crisis.

Interest-rate channels of this type do not function effectively in countries with high inflation rates, because the relevant definition of real interest rates does not allow for high volatility in inflation.

## **The Exchange Rate Channel**

With regard to the continuing internationalisation of foreign trade, increased attention is being paid to the effect of monetary impulses on net exports via exchange rates. This channel presumes a mutual relationship between interest and exchange rates, since a fall in domestic interest rates leads to an outflow of foreign capital and depreciation in the exchange rate. The depreciated rate of exchange reduces the price of commodity exports and increases that of commodity imports, which supports the growth of net exports and aggregate expenditure.

On the other hand, monetary-policy tightening leads to an increase in the level of interest rates and appreciation in the exchange rate of the local currency (under a floating exchange rate regime), which affects the real economy in two ways. Firstly, through a price effect: the appreciation in the exchange rate lowers the level of demand for domestic goods, which become more expensive than imported goods. This reduces the level of aggregate demand. Secondly, exchange rate variations have a significant balancing effect. In the case of domestic economic entities with foreign debt, exchange rate fluctuation has a substantial effect on the net wealth of companies. Economies with a high level of external debt perceive any appreciation in the exchange rate of the local currency as an improvement in the balance sheets of companies, which may increase the level of domestic demand. Price and balance sheet effects may offset each another. In small open economies with a floating exchange rate regime, such a transmission channel may affect both aggregate demand and aggregate supply. A relaxation of monetary policy may lead to a depreciation in the exchange rate, rise in the price of imported goods, and an increase in the price of domestic products without increasing the level of aggregate demand.

## **Channel Determining the Price of Assets in the Economy**

Interest rate fluctuation induced by monetary policy, affects the level of other assets as well (shares, bonds, and real estate) in the economy. The transmission of such impulses are dealt with by two theories: Tobin's theory of investment and the theory of the effect of wealth on consumption.

Tobin's theory explains the mechanism through which monetary policy causes changes in the prices of such assets (e.g. shares), and consequently affects the real economy. With the relaxation of monetary policy, share prices will rise, increasing the market value of companies in relation to their acquisition costs (this proportion is expressed by Tobin's ratio  $q$ ). This situation encourages companies to issue new shares at a higher price, and use the resultant income for the purchase of investment goods.

The question is whether there is a relationship between the ratio  $q$  and investment expenditure, or why the relaxation of monetary policy affects share prices. According to the monetarist approach, an increase in the supply of money above the actual level of real money balances, which the public intends to maintain, leads to an increase in the volume of expenditure. One of the ways how this excess of money balances can be utilised is trading on the capital market, i.e. the growth in demand for share capital leads to an increase in share prices. The Keynesian theory comes to the same conclusion: expansive monetary policy lowers the level of interest rates, which makes the holding of bonds less advantageous than that of shares, which leads to an increase in share prices.

In the foregoing section of the article, we said that expansive monetary policy increases the price of shares and investment expenditure. However, there is an alternative channel available

for the transmission mechanism, where price fluctuation affects the level of wealth and consumption, and not that of investment. This channel is strongly advocated by F. Modigliani in his theory of life cycles. According to this theory, the level of consumption is determined by the consumer's life-cycle income, which consists of human capital, real capital, and financial wealth. The main component of financial wealth is bound up in shares. If then the level of share prices begins to rise, the level of financial wealth will also increase, together with the financial resources of consumers and the level of consumption.

## **The Credit Channel**

The volume of credits plays a significant role in the formation of monetary policy, due to its close relation to aggregate expenditures. In the case of monetary-policy tightening, banks react not only by increasing their lending rates, but by reducing the total volume of new loans as well. This situation affects mainly small businesses, which usually have no other sources of finance.

The net wealth of companies is one of the most important factors affecting the situation on the loan market. If the net wealth of a company is low, there is less potential collateral to be offered to creditors as security for loans received; this may give rise to an element of risk. Apart from this, companies with a modest amount of capital are exposed to more risky projects, i.e. creditors may lose the money they invest. Where the net value of companies is low, lending activity shows a tendency to fall, along with the level of investment expenditure.

Monetary policy may affect the balance sheets of companies in a variety of ways. Expansive monetary policy leads to a rise in share prices, which increases the net wealth of companies, as well as investment expenditure and aggregate demand, because it reduces the moral hazard problems. At the same time, expansive monetary policy may lead to a fall in interest-rate levels, which increases the cash flows of companies and reduces the moral hazard problems.

## **Analysis of Transmission of Monetary Impulses into the Real Economy of the SR**

The analysis consists of two parts: First, we shall examine the reaction of medium- and long-term interest rates (market rates for loans and deposits) to changes in short-term interest rates (money market rates). In the second part, we shall concentrate on the reaction of macroeconomic variables to changes in market rates.

### **Reaction of Market Rates to Changes in Money Market Rates**

As we have already stated, an important part of the transmission mechanism is the transmission of monetary impulses from short-term rates to a wide spectrum of interest rates in the economy. In this article, we shall not deal with the transmission of interest rate variations to share and bond prices, owing to the low degree of correlation. This is partly due to the fact that the capital market does not represent an alternative source of finance to the lending market for companies.

Tab. 1 displays the year-on-year variations in average interest rates on the financial market. The table indicates that the transmission of monetary impulses from short-term interest rates to medium-term rates is of a conflicting nature.

**Tab. 1**

(Year-on-year change %)

	1995	1996	1997	1998
<b>Money market rates</b>				
Overnight rates	-	6.84	13.11	-9.11
Treasury bills	-	4.51	13.98	-4.64
<b>Market interest rates</b>				
Government bonds	-	-1.65	11.27	4.03
Bank credits	-5.05	-0.59	7.47	0.26
Bank deposits	-1.93	-2.55	1.60	0.21
Nominal exchange rate (SKK/USD)*	-1.712	2.326	2.887	1.425

\* Negative sign stands for appreciation

Several factors determine the transmission of monetary impulses within the structure of interest rates by term. The most frequently encountered is increased government demand for new sources of finance (particularly in 1997 and 1998). Apart from this factor, the interest rate channel of the transmission mechanism is affected by the degree of competitiveness of the banking sector, structure of bank assets, alternative approach to financial resources, and the 'depth' of the financial market.

The more quickly the rates of interest on loans and deposits adjust to changes in rates on the money market, the more effectively the impulses of monetary policy are transmitted into the real economy. The process of transmission depends to a large extent on the competitiveness of the banking system. If the banking market is not dominated by certain banks, then the rates of interest on loans and deposits will be significantly affected by any change in the level of official rates. On the other hand, the existence of state-owned banks (without adequate motivation to maximise their profits) will diminish the effect of monetary policy on medium-term interest rates.

Interest rates on loans and deposits also depend on the access of households and enterprises to alternative sources of finance, i.e. on the degree of development of the capital market and on access to foreign resources. As we have already stated, under Slovak conditions, the capital market does not really represent an alternative to bank loans for companies in need of investment capital. On the other hand, access to foreign financial markets, resulting from gradual liberalisation of capital flows from abroad, may be regarded as a significant source of finance for companies since 1995.

The 'depth' of the money and capital markets is another important factor affecting the effect of changes in money market rates on the other interest rates and expenditures in the economy. A shallow or inadequately competitive financial market often gives rise to increased interest-rate volatility. In such a case, it is costly for banks to adjust their interest rates (for administrative reasons or due to the fear of losing customers), hence they do not adjust their medium-term rates with every change in money market rates. The reaction of interest rates to an inadequate capital market to changes in official rates is similarly unpredictable.

## **Reaction of Macroeconomic Variables to Changes in Market Interest Rates**

A standard method of monitoring the transmission mechanism in relation to the real economy is comparison of interest rate variations with changes in real GDP including its components. Due to the lack of information on the development of GDP (especially on its individual components), this article is limited to a description of certain trends of development.

During the period under review (1995-1998), the Slovak economy experienced dynamic growth, accompanied by a rise in the level of interest rates. This fact affects the relationship between interest rates and aggregate expenditure (especially investment), which was mentioned in connection with the interest-rate channel of the transmission mechanism. Similarly, the assumption that higher interest rates will reduce the level of consumption in favour of savings, has not been confirmed. Expenditure on real consumption has not been reduced by high interest rates.

A key role in the transmission mechanism of monetary policy was played by the exchange-rate channel. The relationships between interest rates, exchange rates, and net exports (as stated above) cannot be confirmed on the basis of empirical data. Deviations from the theoretical assumptions can be attributed to the application of a fixed exchange rate regime or to inadequate substitution between domestic and foreign financial assets and liabilities.

## **Conclusion**

An understanding of the channels through which monetary policy affects the real economy, represents a complex problem and therefore requires a model approach. The present conclusions were drawn from an objective analysis and are not designed to solve the complicated problem of mutual relationships between the monetary and real sectors of the economy.

Interest rate variations have a relatively small effect on the real economy. This means that the transmission of monetary impulses, caused by a change in instruments under the direct control of central banks (e.g. short-term interest rates or minimum required reserves) to variables with a direct effect on investment or consumption expenditures in the non-financial sector (interest rates on loans, deposit rates, price of assets, and exchange rates), takes place in the Slovak economy with considerable delay. The slow process of transmission between short-, medium-, and long-term interest rates, is due mainly to the existing structure of the financial system.