

MONETARY POLICY  
IN HUNGARY  
2012



MAGYAR NEMZETI BANK



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## Monetary Policy in Hungary\*

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# Foreword

As an independent institution responsible for conducting monetary policy, the Magyar Nemzeti Bank attaches great importance to informing the general public about its goals and activities. This book presents an overview of the current practice, mission and operating framework of monetary policy in Hungary. This fourth issue of *Monetary Policy in Hungary* is intended for a wider audience. The Bank has therefore set as its primary goal to be easily understandable, in addition to maintaining a high professional standard.

In writing this book, the main aim of the authors was to familiarise readers with the basic concepts and relationships through which monetary policy functions. Although the Bank's activities are rather complex, the book does not discuss its tasks related to banknote and coin issue, foreign exchange reserves management or financial stability, an area which attracted particular attention during the financial crisis. These issues are covered in detail in the Bank's other publications and on its website (<http://english.mnb.hu/>).

One can read this informative handbook through from beginning to end, but the individual chapters are also complete on their own. Chapter 1 acquaints the reader with the concept and importance of price stability; Chapter 2 sets out the strategy leading to price stability and the framework of inflation targeting; Chapter 3 provides a detailed account of the monetary policy decision-making process and the key role and practical forms of central bank communications; Chapter 4 discusses the mechanism through which monetary policy affects the economy – the five main transmission channels; and Chapter 5 outlines the major functions and elements of the Bank's monetary policy instruments. The most important economic concepts and definitions discussed throughout the book are set out in the Glossary at the end of the book.

We hope that this book will appeal to a wide audience and will provide a useful and interesting guide not only to those readers with some expertise in economics but also to those still unfamiliar with the basics of monetary policy.

**András Simor**  
Governor  
Magyar Nemzeti Bank

# 1 Monetary policy – the price stability objective and how it is pursued

## 1.1 WHAT IS MONETARY POLICY?

**Monetary policy** is part of economic policy, for which the **central bank** is responsible. The ultimate aim of economic policy is to increase social welfare by influencing and controlling economic developments. The individual branches of economic policy – monetary policy, fiscal policy, tax policy, employment policy, etc. – contribute to meeting this objective by pursuing their own goals. The objective of monetary policy is to maintain **price stability**, which is the combination of persistently low inflation and **well-anchored expectations**. In the following, we discuss why monetary policy can best contribute to long-term growth and, ultimately, to social welfare by maintaining price stability.

## 1.2 WHAT IS INFLATION AND HOW IS IT MEASURED?

**Inflation** is a general and permanent rise in prices across the whole economy. This means that a rise in the price of one particular item does not necessarily lead to higher inflation (just as a temporary rise in the price level). In an economy, prices constantly change as aggregate supply and demand conditions vary. If demand for a product rises and supply is insufficient to meet that demand, then prices will keep rising until equilibrium is restored. It is often the case that the costs of inputs rise, leading producers to set higher prices. Thus, inflation occurs when the prices of a wide range of products and services rise. Viewed from a different perspective, inflation erodes the purchasing power of money: the same amount of money will buy less goods and services. When prices are stable, incomes retain their real value, i.e. consumers can still buy the same quantity of goods and services as before.

The **consumer price index** is the most widely used measure of inflation. It shows how the price of a weighted basket of goods and services that consumers typically buy changes. The goods included in the imaginary consumption basket are weighted on the basis of spending by an average Hungarian household. The Central Statistical Office (CSO) regularly surveys households' spending habits and determines the exact composition of the basket. The percentage weights of goods included in the basket are revised periodically (typically biennially) to reflect changes in spending and are modified if necessary. For example, with the introduction of new items, the composition of the basket and the percentage shares accounted for by items already in the basket will both change.

Collecting data – maintaining the list of prices observable in shops – and processing them are the task of CSO staff. Each month, they monitor developments in the prices of several thousand items, which they use to produce various measures of inflation. One such measure, widely used in economic analysis, is **core inflation**. The core measure of inflation includes goods whose prices are less volatile – i.e. they do not 'bounce around' from one period to another – and tend to change mainly in response to changes in supply and demand. Consequently, the core inflation measure does not include unprocessed foods, vehicle fuels and products and services whose prices are administered. Another measure, the **constant tax price index** (CTI), is calculated by removing price movements caused by tax changes. This measure is especially useful when there are frequent shifts in the regulatory environment, for example, when VAT rates or excise duties are changed. The constant tax price index shows how much inflation would have risen had tax changes not taken place.

All of the various measures of inflation discussed above are suitable for expressing price changes over different time horizons, depending on what we want to examine. If, for example, we wish to know how much prices have changed over the whole year, we compare today's prices to those of the same month one year ago. This measure of inflation is known



as the annual price index. A great advantage of the annual price index is that it is not influenced by purchases typical during certain periods of the year and which fall outside consumers' usual spending habits.<sup>1</sup>

If, however, we are interested in the most recent price developments and want to know how much prices have risen over the course of a month or quarter, we compare current prices to those of a month or quarter ago. Accordingly, monthly and quarterly price indices are intended to measure short-term movements in the general price level.<sup>2</sup>

Prices tend to go down as well as up, however. If prices are lower than a period ago, i.e. if there is a sustained decline in the price level, then there is **deflation** (the risks of deflation are discussed in detail in the next Chapter). Deflation is simply the opposite of inflation.<sup>3</sup>

### 1.3 PRICE STABILITY DOES NOT MEAN ZERO INFLATION

Price stability is not equal to zero inflation. Although at first sight it may seem plausible that prices should be constant over time, low, positive rates of inflation are more favourable in terms of the smooth functioning of the economy.

First, measuring inflation is subject to a number of statistical and measurement errors. This is because the consumer price index is unable to immediately account for improvements in the underlying quality of individual products purchased or the substitutability between products. If the price of a product remains constant but its quality improves, consumers will get a better product for the same price. However, a product of unchanged quality will cost less, so the index overestimates the price change. Another source of distortion is the appearance of substitute products or changes in consumer habits. This is because the index responds with a lag if, for some reason, there is a shift in demand away from goods typically purchased in the past towards cheaper products. The CSO strives to monitor the effects arising from the above reasons and alter the composition of the consumption basket accordingly from time to time.

Another consideration relates to the phenomenon of deflation discussed above. **Deflation** represents a persistent decline in the general price level. If economic agents expect this decline to continue in the future, they may choose to delay consumption as long as possible to take advantage of lower prices, as they will be able to buy more goods and services for a given amount of income. Accordingly, current demand will decline in anticipation of more favourable future prices, which in turn will entail a decline in supply over time. Because of diminished demand for goods, companies will scale down production, which will ultimately lead to layoffs. But even with a decline in supply, products will become cheaper and cheaper. This self-reinforcing cycle may ultimately lead to inefficiency of monetary policy and protracted **recession**. Consequently, if the objective set is too low, there is a greater risk of deflation. Another aspect of the process is so-called **debt deflation**. When there is a general decline in the price level, the prices of properties (flats and houses), provided as collateral for loans, also fall. If there is a persistent decline in prices, the value of collateral will not be enough to cover the amount of loan, and therefore banks will be interested in renegotiating their contracts (e.g. they may request customers to provide further collateral). If borrowers go bankrupt and banks begin to sell the properties, this will put additional downward pressure on prices in the housing market. The consequences of this self-reinforcing cycle are very harmful.

There is also a third risk of a zero inflation target associated with deflation, which may threaten to reduce the efficiency of monetary policy. The policy rate is the most important instrument of the MNB. By changing the policy rate, the Bank is able to influence market participants' decisions and, ultimately, inflation. A reduction in the policy rate has the effect

<sup>1</sup> For example, people buy much more champagne around New Year's Eve than in other months of the year, but because exactly the same thing happens each year, the annual index is not distorted by increased demand for champagne or price discounts.

<sup>2</sup> In contrast to the annual index, these measures do not eliminate what are known as seasonal effects. Regular within-year price movements are referred to as **seasonality**. For example, most swimming suits tend to be sold in the summer, and pullovers are mainly purchased during the winter months. Shopping around Christmas time and major shopping around holidays also belong to this category. Monthly and quarterly indices are sensitive to such periods of the year. In order to be able to measure a change in prices during a month or quarter, we first need to eliminate the above effects, i.e. price data need to be seasonally adjusted.

<sup>3</sup> Deflation should not be confused with disinflation, which, despite its similar name, has a quite different meaning. **Disinflation** is 'slowing' inflation, i.e. a fall in the rate of increase in prices. Under disinflation, prices tend to rise more slowly over a given period than they did previously, i.e. the inflation rate tends to be lower from time to time.

of raising output while pushing up inflation.<sup>4</sup> As described above, under deflation the price level decreases continuously, prompting economic agents to save more, because their money will be worth more in the future. Under such circumstances the Bank must reduce interest rates. However, interest rates cannot be reduced indefinitely, as they may not be lower than zero. This is because if banks paid negative interest on savings, economic agents would be better off holding cash and waiting to spend later. Consequently, holding money has no cost, and monetary policy is unable to prevent further declines in prices and economic growth. In this case, deflation makes monetary policy ineffective and leads to economic recession.

Finally, the downward rigidity of nominal wages is also an argument in favour of a low, positive rate of inflation. When demand for a product declines, a profit-maximising company will have no choice but to reduce its prices and wages. But because wages are 'sticky' downwards, the company can only reduce its total labour costs by shedding labour, which is a cost for society. At a higher average rate of inflation, however, the equilibrium growth rate of nominal wages is also higher, i.e. a larger buffer is available for cost adjustment. Consequently, nominal wage growth may remain positive, albeit only slightly, if the company is forced to reduce its labour costs due to weak demand. In such a case, inflation allows supply to adjust to the decline in demand through lower wage growth rather than through an increase in unemployment.

## 1.4 WHAT FACTORS CAN CAUSE INFLATION?

Under market conditions, the prices of individual goods and services are determined by supply and demand. A number of factors can cause prices to rise, such as:

- ...a temporary increase in demand. When, at a given level of supply, demand increases for whatever reason, prices will tend to remain unchanged for a time (i.e. they are sticky over the short term) and supply will try to keep pace with increased demand. Although higher-than-usual capacity utilisation – for example, increasing the load on machines and performing overtime – leads to higher production volumes, it is a costly solution. Added costs of overtime work and increased use of machines means extra costs for the company. In addition, this process cannot go on infinitely; when production cannot be expanded any further, prices will adjust – in this case they will go up. Demand will contract in response to higher prices, and supply and demand will return to a balance. This phenomenon is known as **demand-pull inflationary pressure**.
- ...higher costs. If production costs – raw material prices, wages – rise, producers may choose to absorb cost increases by allowing their profits to decline or they may choose to pass them on to the purchasers of their products by raising prices. This phenomenon is known as **cost-push inflationary pressure**.
- ...if expectations of future inflation are high and/or not well anchored. An **inflationary spiral** occurs when expectations increase, and because economic agents expect prices to rise, they will demand higher (nominal) wages in order to maintain the purchasing power of their income, i.e. the quantity of goods and services that they are able to buy. However, because an increase in wages leads to higher production costs for manufacturers, as we have seen, their effect may pass through into prices. At that point, the process will become self-reinforcing, i.e. an upward spiral will begin to form.

## 1.5 COSTS OF INFLATION – OR THE ADVANTAGES OF PRICE STABILITY

A general increase in the overall price level leads to a loss of efficiency for several reasons and can result in significant costs to economic agents. By maintaining price stability, these costs of inflation can be eliminated, thereby ensuring the efficient functioning of the economy.

### Prices have a coordinating role

With price stability, prices can easily and efficiently play their role in coordinating the allocation of resources. Because the general price level is stable, a rise in the price of an individual product can be traced back either to higher demand

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<sup>4</sup> The workings of monetary policy are discussed in detail in Chapter .

or lower supply, depending on which of the two forces prevails. In such a case, it is easy for market participants to interpret the information conveyed by prices and they can adjust to the new environment: producers may decide to set up new production capacity, while buyers may switch spending towards cheaper substitutes, which will ultimately result in a new equilibrium price. However, when the prices of all products are rising, the coordinating role of prices weakens sharply. It is impossible to tell exactly whether prices have risen in response to an increase in demand for the given product or simply in response to rises in the prices of other products.

### Advantages of a stable, predictable business environment

In the course of business planning, economic agents try to gauge what economic environment they should expect in the future: whether there will be sufficient demand for their products and how the costs which are relevant for them will evolve. A stable, predictable economic environment makes business planning easier, helps in implementing longer-term, large-scale investment projects and contributes to financial deepening. It is easier for companies to plan their business and lenders are more willing to provide credit for the longer term, without requiring a premium to compensate them for inflation risks. This in turn encourages businesses to make longer-term investment decisions and – given that they do not have to worry that incomes will lose their real value – increases the attractiveness of the various forms of saving.

A predictable environment also reduces the costs of information gathering and repricing. This is because in a volatile business environment, when the prices of individual products change more frequently, both producers and consumers incur costs. Producers incur **menu costs** arising as a practical consequence of updating their price lists, while consumers have increased difficulty monitoring developments in the prices of goods they buy.<sup>5</sup>

### The purchasing power of money remains stable

With price stability, money retains its purchasing power. This means that the total volume of goods and services that can be purchased with earned income will not fall. The financial loss in value, which is suffered by market participants because they are able to purchase less goods due to higher prices, is called **inflation tax**.

At this point we should add that inflation tends to affect households with different levels of income to various degrees. Those that have financial savings or give greater weight to goods represented in their basket that are not part of everyday life are better able to protect themselves from the harmful effects of inflation. They realise a return on their saving, which offsets the deterioration in the value of money, and they are able to adjust their consumption: either in terms of the range or in terms of the quality of goods they purchase. The demand for goods they purchase is **elastic**, i.e. it can easily change depending on the price. By contrast, those individuals whose income is only enough to cover their everyday expenses generally are unable to substitute further. The costs of essentials such as food and housing are given greater weight within their consumption basket. Their demand for these goods is **inelastic** – i.e. low-income individuals are unable to cut spending significantly if there is a fall in their real income.

### Price stability eliminates potential income shifts

Erratic, constant changes in prices may cause a reallocation of incomes via several channels. A deviation of inflation from anticipated levels may lead to income reallocation between the parties to contracts for **nominal** values, i.e. contracts denominated in 'forints'. So, for example, inflation affects the relationship between lenders and debtors. Money lent today will be worth less in an inflationary environment when it is repaid to the lender: the borrower will be better off and the lender will lose value. In a similar vein, inflation significantly affects social benefits set for fixed (nominal) amounts.<sup>6</sup>

<sup>5</sup> The costs related to repricing – based on the classic example of updating restaurant prices – are called **menu costs**. Another term worth mentioning is **shoe-leather costs** of inflation. During a continuous increase in the general price level, economic agents seek to do their shopping as early as possible, before prices go up. To do this, they need money. Because their deposits held with banks earn interest, they will gain the most by leaving their savings in their accounts for as long as possible. Shoe-leather cost refers to the cost of time and effort for people associated with having to frequently go to the bank. However, with the development of financial literacy and the wider use of bank cards, the importance of this type of cost for holding money has fallen significantly.

<sup>6</sup> **Indexation** is a widely used practice to reduce such distortions arising from inflation. This means that nominal wages are adjusted to past inflation. Although this may help somewhat to handle the problem of a fall in purchasing power, it is incapable of fully eliminating it due to its backward-looking nature.

This effect is also visible in the tax regime. Under a progressive tax structure, higher-income households face higher **tax rates**. If nominal wage growth increases along with inflation, the purchasing power of incomes will be the same (i.e. real income will be constant). But because the tax system does not take inflation into account, only the amount of earned income from wages, a higher tax rate will pertain to taxable income if it rises above the upper limit of the tax bracket. Consequently, although the purchasing power of households' incomes before taxation has not changed, after taxation they will find themselves in a worse position than previously.

## 1.6 MONETARY POLICY AND ECONOMIC GROWTH

The **long-run neutrality of money** is a concept accepted in economics and widely supported by experience. This theory states that although monetary policy is able to influence economic growth in the short term, i.e. to stimulate or dampen demand, it has no influence on real variables – employment, growth, etc. – in the longer term. This is because the long-run equilibrium levels of those variables are determined by movements in supply – the use of available technology, demographic factors or the preferences of economic agents. There is a maximum attainable level of production in an economy, which is achieved by a full utilisation of all available factors of production. This is referred to in the economic literature as **potential output**. The highest rate of economic growth which does not contribute to inflation is called **potential growth rate**.<sup>7</sup>

To illustrate the long-term neutrality of monetary policy, suppose that we gift economic agents with money which they can spend buying anything they want. Income earned in this way will generate extra demand, which supply will try to satisfy by stepping up production. When, however, existing capacities are no longer sufficient to satisfy demand, prices will begin to rise. At a higher level of prices, demand will decline and supply and demand will return to balance. In fact, the balance between supply and demand has developed at the original level of output, but at a higher price level. So the expansionary effect of monetary policy has proved to be temporary: the short-term increase in demand has been offset by a rise in the price level.

The above example highlights two points. First, the central bank is able to stimulate or constrain economic activity in the short term, i.e. to smooth out fluctuations in output. But, second, it is unable to generate permanent changes in output, and its actions will ultimately lead to changes in the general price level. Growth in potential output – or **(long-term) potential growth** – is determined by the improvement in supply-side factors (technological progress, capital accumulation, an increase in the pool of labour available to work, etc.). It is important to note, however, that monetary policy can greatly contribute to the development of a predictable and certain environment, a precondition for the economy to realise its longer-term growth potential, by maintaining price stability, and it can have a positive indirect effect on long-term growth.

The recent **financial crisis** has also shown that monetary policy must face a degree of economic overheating which is not necessarily (or not immediately) reflected in an increase in inflation. Often this masks **financial imbalances** (e.g. asset price bubbles or large indebtedness) which are difficult to identify during their build-up phase, but the 'bursting' of such bubbles may lead to severe **recession** in extreme cases. Because these risks cannot be captured using traditional forecasting systems, the central bank must take particular care to identify such imbalances early enough and prevent them from developing. It can best do that by conducting **macroprudential analysis**, performing regular analysis of financial and credit market developments and by using various forward-looking, early warning indicators. Accordingly, price stability is a necessary but not necessarily sufficient condition for long-term sustainable economic growth, and the central bank must seek to achieve macroeconomic stability using the instruments at its disposal.

## 1.7 RATIONAL EXPECTATIONS AND CREDIBILITY

Expectations are of particular importance for economic policy, given their key role in economic agents' current decisions. But because agents can determine whether their expectations were met – i.e. whether promises were kept – only in the

<sup>7</sup> The difference between current output and the potential – or natural, long-term equilibrium – level of output is called **output gap**. The output gap is negative if the economy produces below its potential output. In such cases, real economic processes point to a decline in inflation, due to lower demand. If output exceeds the natural level of output temporarily, i.e. if capacities are 'over-utilised', the economy becomes overheated and higher costs due to extra production will have inflationary effects.

future, economic policy-makers may feel strongly tempted to ‘surprise’ them. Thus, ultimately, policy can have its desired effect without the need to meet its promises.

This comfortable situation may exist even where economic policy is aimed at bringing down inflation. Suppose that inflation is running at a high rate and economic policy-makers declare that they will do their best to bring it down. If economic agents trust this announcement, they will accordingly adjust their price and wage-setting decisions to lower future inflation, which in turn will lead to a decline in inflation. At that point, policy-makers may be tempted to take advantage of lower expectations and stimulate the economy by generating surprise inflation.

One cannot, however, continuously surprise economic agents. They form their expectations *rationally*, i.e. they not only take into account promises, but also economic policy decisions of the past. Therefore, announcements by an institution that behaved contrary to its announced actions will not have any impact on expectations. If the central bank lacks credibility, the costs of bringing down inflation will be substantially higher.

Consequently, expectations can be influenced only via a credible economic policy. Only past behaviour consistent with the mission of policy, and institutional guarantees that the objectives of monetary policy will not be subordinated to the government’s short-term economic policy interests may strengthen credibility. This is the reason why delivering price stability is the objective of an independent, accountable central bank in modern economies.

### 1.8 BASIC REQUIREMENTS OF EFFICIENT MONETARY POLICY STRATEGY

We can draw up certain guidelines in terms of the conduct of monetary policy based on past experience, which are essential for achieving the ultimate goal – price stability. These are known collectively as *monetary policy strategy*.

The primary, most important element of this strategy is an easily understandable and clearly defined set of objectives. In the practice of modern central banks, maintaining price stability is the primary objective of monetary policy. In addition, monetary policy may be involved in the pursuit of a number of other goals: for example, in smoothing out brief fluctuations in growth or preserving the stability of the financial intermediary system. However, the relationship between and hierarchy of the individual goals should be clearly defined.

Second, resulting from the workings of the economy, the central bank needs to make its decisions in a forward-looking manner. This is because there occur two different types of lag during economic policy decision-making. The time it takes for an action to be taken after the need to take action is recognised is called *inside lag*, while the time it takes for the full effect of a decision to pass through the economy after it is taken is called *outside lag*. In the case of monetary policy, situations requiring intervention are relatively easy to identify; however, the decisions do not have an immediate impact on the economy. So the inside lag of monetary policy is short and its outside lag is quite long. Central bankers therefore should focus on medium-term events that they are able to influence and should have forecasts of their likely outcomes. Processing a wide range of information and conducting detailed analyses make it possible to make well-founded decisions.

Last but not least, strategy must be transparent and credible for economic agents. Transparent operations and clear communications are indispensable for the central bank to be capable of influencing economic agents’ decisions and expectations. The *nominal anchor* of policy may help implement this goal. The importance of this lies in the fact that policy-makers try to ‘anchor’ expectations to the carefully chosen value of a well observable and measurable economic variable. This is because if expectations are not consistent with the central bank’s objectives, they not only weaken the economic effects of monetary policy decisions but may become self-fulfilling as well, making policy completely ineffective in extreme circumstances. There may be different nominal anchors, depending on the monetary policy regime: the nominal exchange rate or the inflation target may play the role of a nominal anchor.

# 2 The inflation-targeting framework

## 2.1 CORE PRINCIPLES OF INFLATION TARGETING

Altogether 27 countries, both developing and developed, operate some sort of a formal inflation-targeting regime worldwide. Its popularity is partly a reflection of its relative simplicity and the success of pioneering central banks in achieving their price stability objectives. Key elements of this **monetary policy strategy** can be found in the practice of the European Central Bank (ECB) as well as the central bank of the United States (Federal Reserve – Fed).<sup>8</sup>

**Inflation targeting** (IT) is a monetary policy strategy where a **central bank** seeks to fulfil its primary objective of maintaining price stability by meeting a publicly announced inflation target. According to Mishkin, this strategy encompasses five strategic elements:<sup>9</sup>

### 1. Public announcement of a medium-term numerical target for inflation.

A publicly announced, medium-term numerical **inflation target** is one of the cornerstones of inflation-targeting regimes. As will be seen, such a target for inflation fulfils a variety of roles. First, it enhances central bank accountability (see point 5) and provides easily interpretable information for economic agents about the mission of monetary policy. Second, it helps anchor expectations at an appropriate level (the role of the target as a nominal anchor is discussed in more detail later in this Chapter).

### 2. Institutional commitment to price stability as the primary objective of monetary policy, to which all other goals are subordinated.

Putting the objectives of monetary policy into statute gives the central bank a clear legal mandate and responsibilities as well as the means and rights by which they pursue those objectives. Under an inflation-targeting regime, the price stability objective should enjoy priority over all other monetary policy goals. If such goals exist, the central bank should take them into account without prejudice to its primary objective. Central bank independence is a precondition for establishing an institutional commitment to the objective of price stability. This will ensure that short-term political or other interests do not divert monetary policy from the primacy of achieving the inflation target.

### 3. A monetary policy strategy based on a wide range of information.

Although under an inflation-targeting regime the price stability objective is clearly the main focus of monetary policy, decisions should not be based solely on movements in a single economic variable. First, the workings of the economy are very complex. Movements in inflation are affected by a variety of factors, for example, the economic outlook, commodity prices, tax rules and labour market developments. Consequently, it is important to analyse and understand those factors and, as will be discussed later, to make forecasts for them. Moreover, because they tend to have an impact by influencing economic agents' decisions, monetary policy decisions not only affect movements in prices but also affect all other underlying processes in an economy. The more information is available, the more accurate the picture of economic conditions will be for decision-makers and the more precisely they can gauge the likely consequences of their decisions.

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<sup>8</sup> Although officially the ECB is not an inflation-targeting central bank, it does have a numerical inflation target ('inflation below, but close to, 2 per cent'). The Fed has a multiple-objective mandate: the central bank's objectives also include achieving maximum employment and ensuring moderate long-term interest rates, in addition to delivering price stability.

<sup>9</sup> MISHKIN, FREDERIC S. (cop. 2002), 'Inflation Targeting', in SNOWDON, BRIAN AND HOWARD R. VANE (eds.), *An Encyclopedia of Macroeconomics*, Cheltenham, UK, Northampton, MA, USA, Edward Elgar, pp. 361–365.

#### 4. Increased transparency of monetary policy by communicating the plans, objectives and decisions of the monetary policy authority to the public and the markets.

Monetary policy **transparency** is a requirement set against the functioning of the entire institution and is closely linked to **credibility**. Because in addition to low, stable inflation, price stability also means that **expectations are well anchored** (which in turn plays a key role in the mechanism through which monetary policy affects the economy), the central bank should be able to influence them.<sup>10</sup> Consistent behaviour and communication can best contribute to reducing uncertainty about monetary policy and thus serve as a guide for markets. A transparent operational framework can help improve the predictability of decisions, which in turn may increase the efficiency of monetary policy.

#### 5. Increased central bank accountability for meeting the inflation target.

Accountability is the 'cost' of **central bank independence** accompanying the primacy given to the price stability objective and institutional commitment. Being the sole institution responsible for the conduct of monetary policy, the central bank must be able to account to the public for its decisions and their consequences. It fulfils this requirement by issuing annual and quarterly reports as well as other reports made to Parliament, consistent with the provisions of the MNB Act. At the same time, this criterion strengthens the requirement of transparency, discussed in the previous point, and contributes to improving credibility.

The key strategic elements presented above highlight an important point: an inflation-targeting framework is not just about setting a publicly announced inflation target. Price stability is therefore more than just meeting the inflation target. In order for the framework to be successful and price stability – i.e. the combination of low inflation and **well anchored expectations** – to be ensured, it is essential that the other four criteria also be met, in addition to achieving the numerical target for inflation.

## 2.2 NOMINAL ANCHOR – OR THE IMPORTANCE OF EXPECTATIONS

A publicly announced numerical inflation target, which also acts as a nominal anchor, is one of the key elements of an inflation-targeting framework. By definition, a **nominal anchor** is an economic variable which is able to stabilise or 'anchor' economic agents' expectations about the future course of inflation. If the nominal anchor is credible, i.e. if economic agents believe that the monetary authority is able to meet its objective, then they will develop their expectations of future inflation consistent with that anchor.

The central role of expectations is best illustrated by the fact that, depending on whether expectations are anchored or not, the same monetary policy action can trigger movements in opposite directions through the so-called **expectations channel**.<sup>11</sup> With a credible central bank and monetary policy committed to maintaining price stability, expectations may amplify the effects of individual monetary policy actions and help reduce the real economic costs associated with them. However, in the absence of credibility and commitment, the efficiency of monetary policy decisions will weaken and their costs measured as an output loss for the real economy will increase.

For example, in a situation where inflation is likely to increase, monetary conditions need to be tightened in order to ensure that the inflation target remains achievable. However, through a reduction in aggregate demand, an interest rate increase will have real economic costs, which will be lower when expectations are well anchored. If economic agents expect that the monetary authority will be successful in bringing inflation under control and keeping it on target, then they will formulate their expectations consistent with the target. Consequently, through their decisions today, for example, on leaving their expectations of nominal wages unchanged, they will also contribute to avoiding an acceleration in the rate of inflation. Hence, the cost of monetary policy in terms of output loss will fall, i.e. containing inflation will involve lower real economic costs. If expectations are not anchored, the situation is reversed, as monetary policy actions will have two different costs: the cost of an output loss from an interest rate increase and the cost of further policy tightening, due to additional inflation generated by increased expectations.<sup>12</sup>

<sup>10</sup> On the role of expectations, see section 2.2.

<sup>11</sup> For more details on transmission channels and the transmission mechanism of monetary policy, see Chapter 4.

<sup>12</sup> The real economic costs of disinflation can be influenced by a number of other factors. For example, if fiscal policy is not committed to low inflation, monetary policy – credible as it may be – will only be able to bring down inflation at higher real economic costs.

Consequently, the credibility of the nominal anchor and the credibility of the monetary authority are inseparable. Well-anchored expectations amplify the impact of the Bank's **key policy rate** on inflation and allow more room for monetary policy to take into account other considerations such as promoting growth.

## 2.3 THE INFLATION FORECAST AS AN INTERMEDIATE TARGET

The Bank is able to influence the economy by changing the level of its key policy rate. However, because it takes time for interest rate decisions to work through the economy (they tend to have a long **outside lag**), the Bank must respond adequately not to current economic outcomes but to those expected in the future.

In addition to the long outside lag, the relationship between monetary policy instruments and the ultimate goal is also rather complex. A change in the key policy rate exerts its impact on price developments through economic agents' decisions and a number of intermediate stages and channels. During decision-making, therefore, it is also useful to consider other variables which monetary policy is able to influence directly and help achieve the ultimate goal via the transmission mechanism of monetary policy. These are known as **intermediate targets**. Under the inflation-targeting regime, this role is played by the inflation forecast. A well chosen intermediate target not only gives guidance about the ultimate goal, but also captures changes in factors that are beyond the direct control of the Bank before they would actually influence the ultimate goal itself. Thus, the Bank is capable of taking actions based on the intermediate target before an inflation shock actually occurs, in order to maintain price stability.

Therefore, due to the slow adjustment of the economy and the complexity of monetary policy, the Bank makes its decisions in a forward-looking manner. One of the most important sources of information for decision-making is the quarterly **macroeconomic forecast**, which is produced for a wide range of macroeconomic variables, in addition to inflation. A macroeconomic model which is good at capturing the mechanisms at work in the economy provides the background for the inflation forecast. Its main purpose is to analyse and forecast the factors shaping inflation developments. The decision-support function of the analysis is complemented by **endogenous monetary policy** in the model. This means that the macroeconomic path of the forecast is produced by taking into account monetary policy responding to the outlook for inflation and developments in output. Simplifying greatly, we have the following rule. When inflation is likely to rise persistently above the target, the Bank usually raises interest rates in order to bring inflation back into line with the target over the medium term. Conversely, when inflation is likely to fall persistently below the target, the Bank cuts interest rates. Generally, the outlook for the real economy is also given some weight in the forecast, in addition to the deviation of inflation from the target. The greater the credibility of the Bank, the greater the opportunity to take into account output considerations, in addition to its primary objective. Thus, the regime provides for a certain degree of flexibility and gives scope to accommodate other considerations, without prejudice to the primary objective.

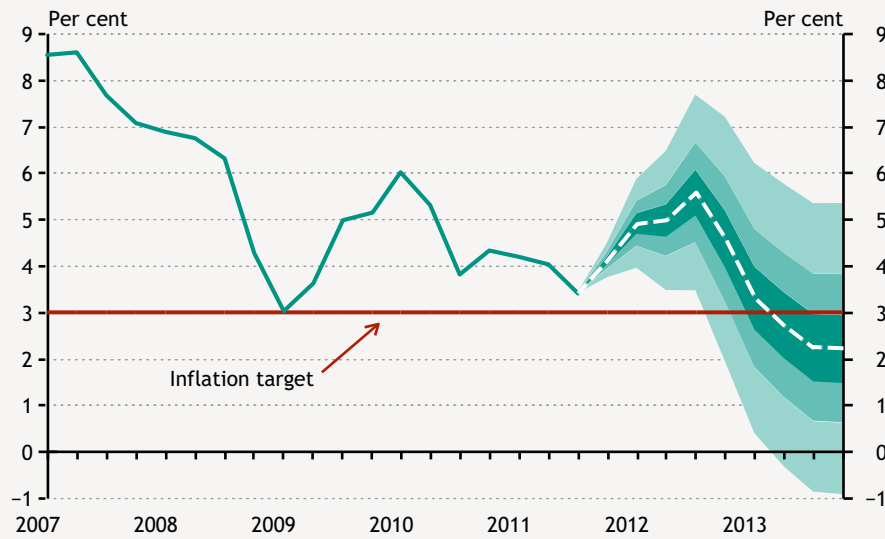
Thus, the forecast shows the expected future path of the economy and the path of interest rates required to keep inflation on track to meet the target in the medium term. It is important to note, however, that forecasting systems can only capture output developments in a simplified way, as do models in general. Consequently, during decision-making several considerations may come into play which, although important in terms of the interest rate decision, cannot be captured by the model.

## 2.4 KEY ELEMENTS OF THE FORECAST – BASELINE SCENARIO, FAN CHART, RISK SCENARIOS

There are a wide variety of instruments available for the Bank to deal with uncertainty arising from various sources. The technical uncertainty related to the forecast is described by the **fan chart**. In producing the inflation forecast, a band can be assigned to each point in time, within which a given variable will fall with a certain degree of probability. The 'central tendency' of this – represented by a dashed line on Chart 1 – is the most probable future path of inflation called the **baseline scenario**. In the short term, when more information is available, movements in the economy can be forecast with greater confidence than in the longer term. Consequently, the farther we move away in time, the more uncertain the forecast will be. To reflect this uncertainty, the width of the symmetrical band around the baseline scenario will widen for about a year, but uncertainty will not increase beyond that point.



**Chart 1**  
Fan chart of the December 2011 inflation forecast



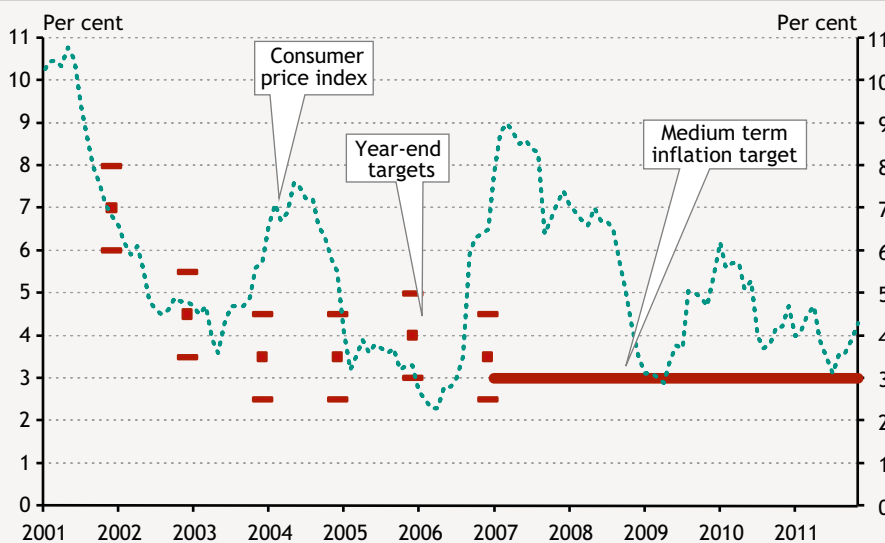
Note: The lighter bands moving away from the centre cover a 30%, 60% and 90% probability.

The purpose of the alternative scenarios is to quantify the risks related to certain assumptions underlying the inflation forecast. The **risk scenarios** present events which, if they occur, might warrant a different direction for monetary policy relative to the assumptions underlying the baseline scenario.

## 2.5 HISTORY OF INFLATION TARGETS IN HUNGARY

The primary statutory objective of the Magyar Nemzeti Bank is to achieve and maintain price stability. To reach this goal, the Bank has employed an inflation-targeting regime since June 2001.<sup>13</sup> The Bank set the first targets for December 2001 and December 2002, and then until the end of 2006 it set its targets annually going two years forward (see Chart 2). From 2007, the Bank has pursued a continuous inflation target. This means that inflation is expected to be consistent with the

**Chart 2**  
Inflation and inflation targets in Hungary



<sup>13</sup> Strictly speaking, the regime has been operated in its fully-fledged form since February 2008. Previously, a flexible peg to the euro within a fluctuation band limited the room for manoeuvre in monetary policy. For more details on exchange rate regimes, see section 5.2.3.

target each month of the year, rather than on average of a particular year or at a particular point in time. According to the Bank's analyses, an inflation target consistent with price stability and the smooth functioning of the economy is currently 3 per cent for the twelve-month increase in the consumer price index published by the Central Statistical Office. According to the Monetary Council's decision, the target will be revised at the time Hungary joins the exchange rate mechanism of the European Union (ERM II), but at least every three years at the latest. The target was revised first in 2008 and then in August 2011. On both occasions, the Monetary Council left the Bank's 3 per cent inflation target unchanged.

Each year, the Monetary Council assesses performance in meeting the inflation target in the Bank's Annual Report. The assessment takes into account that there may be unanticipated shocks to inflation which could not be foreseen at the time the forecast for inflation was produced or which monetary policy is unable to respond to in the short term, due to the long outside time lag of policy actions. For this reason, a maximum  $\pm 1$  percentage point deviation in the consumer price index from the 3 per cent target ex post is still acceptable in terms of maintaining price stability.

# 3 Decision-making and communication

## 3.1 THE DECISION-MAKING PROCESS

Fundamentally, the Bank can meet its inflation target by changing the key policy rate at the appropriate time and to the appropriate degree.<sup>14</sup> In Hungary, the level of the **key policy rate** is decided by the Magyar Nemzeti Bank's supreme decision-making body – the Monetary Council. Pursuant to the MNB Act in effect, the Monetary Council consists of at least five and at most nine members. In addition to the Governor of the MNB and its Deputy Governors, the Council has external members elected by Parliament for a term of six years. The Executive Board, comprised of the Governor and Deputy Governors of the MNB, is a body responsible for implementing the decisions of the Monetary Council and for directing the operations of the Bank.

The Governor, who is also the Chairman of the Monetary Council, and at least two but at most three Deputy Governors, are appointed by the President of the Republic at the proposal of the Prime Minister for a six-year term. The competent committee of Parliament has the right to make a recommendation to the Parliament on the appointment or dismissal of the Council's external members. At the first meeting each year, the Monetary Council elects its Deputy Chairman by a simple majority of votes. In the event of expiry of the Deputy Chairman's mandate, the Council elects a new Deputy Chairman at its next scheduled meeting. Members of the Monetary Council, including the Governor and Deputy Governors of the MNB, may not be reappointed within three years after termination of their office. The Government's representative may attend the Council's meeting without a voting right.

The Monetary Council convenes at least twice a month. At the second meeting each month, members decide on the base rate; however, meetings of the Council may be convened at any time if necessary. It has a quorum if the majority of its members are present. The Council takes its decisions by a simple majority of votes cast by members present at the meeting. In the event of a tie vote, the Chairman, or, in his absence, the Deputy Chairman, has the casting vote.

The Monetary Council informs the general public about its decision in a press release issued on the day of the policy meeting. The decision enters into force the next day. The motivation for the interest rate decision reflects the majority view of the Council; however, the minority view is also represented in the abridged minutes published before the next interest rate decision. Support for personal views is also reflected in the vote of each member by name (attributed votes). Members can also express their views in speeches and interviews.

## 3.2 ROLE OF THE INFLATION REPORT IN SUPPORTING DECISIONS

The *Quarterly Report on Inflation*, which is published every three months, presents the inflation forecast also serving as an intermediate target. One of the fundamental roles of the Report is to support the monetary policy decision-making process. The Report presents all those pieces of information in a concise manner which may have a bearing on future inflation developments by analysing a wide array of economic indicators. The Report's forecast is based on an **endogenous monetary policy rule**, which makes it a particularly suitable decision-support tool: the interest rate path laid out in the model not only provides information about the direction of the necessary interest rate actions, but also about the extent to which interest rate should be adjusted. It is important to note, however, that although the forecast is based on a wide range of economic variables and robust economic relationships, several other considerations may arise during the decision-making process which may be relevant for the interest rate decision, but cannot be captured by the model.

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<sup>14</sup> On the operation of the transmission mechanism, see Chapter 4.

During the meeting therefore, the Monetary Council may take into account a number of other pieces of information, in addition to the forecast, before reaching its decision on interest rates.

In addition to the baseline scenario, which is the most likely outcome, **alternative scenarios** are also key elements of the Report. These scenarios highlight the risks which the Monetary Council believes to be relevant or most likely to materialise and which may warrant a different course for policy than that implied by the baseline scenario. In addition, the risk scenarios create an opportunity for individual members of the Council to express a dissenting view from the majority position on the economic outlook or from the current interest rate decision.

### 3.3 TRANSPARENCY AND CREDIBILITY

In addition to the inflation forecast already discussed, the Bank employs a number of other communications tools to inform economic agents and the public at large. There are basically two reasons for this: ensuring the accountability of monetary policy and increasing the efficiency of the **transmission mechanism**.

The accountability requirement is closely related to the birth of the modern central bank. Nowadays, it is widely accepted and desirable that a central bank should be independent from short-term, often politically motivated, interests and that it should fulfil its tasks by focusing on longer-term trends. However, in a democratic state it is important to ensure that the central bank is accountable for its actions. So it needs to be checked whether an institution enjoying independence, but having a significant influence on the economy operates in accordance with law.

This high degree of independence is counterbalanced by an appropriate degree of transparency in the Bank's operations. To complement a large number of intra-year publications, the Governor of the MNB reports at least once a year to Parliament on the Bank's operations, its monetary policy and on economic developments. In addition, Parliament may request the Bank to make ad hoc reports. The Supervisory Board, whose members are delegated by Parliament and the Minister for National Economy, is a body responsible for the continuous supervision of the Bank's operations; however, it may not take a position on monetary policy matters.

The objective of transparent operations is not only to ensure accountability, but also to increase the efficiency of monetary policy. To this end, the Monetary Council's decisions on interest rates are published with a detailed explanation. In addition, most of the forecasts and analyses underlying the interest rate decision are also made public. If economic agents understand and accept the Bank's goal and the actions required to meet that goal, it may increase the credibility of the inflation target and may help anchor inflation expectations around the target. Although a change to the central bank base rate basically affects interest rates at shorter maturities (which means that the Bank intervenes at the short end of the **yield curve**), expectations of future developments in the key policy rate also tend to influence longer-term interest rates. If market participants believe that a change in the key policy rate will be lasting, then it may also affect movements in asset prices over the longer term. Another factor which may contribute to efficiency is that in the possession of adequate information, market analysts will be more successful in anticipating the Bank's actions. This in turn may contribute to the smooth functioning of financial markets. Transparent operations may also have a positive impact on the Bank's internal affairs. Intensive external and internal communications may lead to higher-level analyses and decision-making within the Bank.

### 3.4 TASKS OF CENTRAL BANK COMMUNICATIONS

Increasing the efficiency of monetary policy requires easily understandable, up-to-date communications. The Bank provides the public with a wealth of information on its operations. It does so in a systematic manner, focusing on the essential details, in order to help users process the information. Otherwise, intensive central bank communications could be confusing and prove counterproductive. Data treated as confidential or classified as sensitive for some reason (including, for example, **foreign exchange market interventions**) are excluded from the types of information that the Bank makes readily available to the public.

It is crucially important for the efficiency of the Bank's communications activity that the different channels should complement each other, forming a complete whole. In order to send out clear messages to market participants and ensure

that the messages are capable of adequately influencing their expectations, it is essential that the various pieces of information published by the Bank are consistent with one another. Otherwise, there might be a risk that the messages sent through different channels will lead to confusion. For this reason, there is a need for the Bank to have a comprehensive communications strategy, which provides efficient support to the Bank's work in meeting its objective.

In addition, it is also important to provide signals about any uncertainty arising from different sources. Part of this uncertainty – which is of purely technical nature – is relatively easy to identify. For example, the **fan chart** adequately illustrates the uncertainty surrounding the forecast stemming from technical limitations. In other cases, words can (and should) be used to point out that the stance of monetary policy may change significantly in light of recent events or pieces of information.

The above discussion has shown that there are three main tasks of central bank communications. The first task is to present and assess performance of the Bank from time to time, thereby contributing to greater accountability. The second is to make monetary policy decision-making more predictable by publishing the decisions of the Monetary Council, together with the principal reasons underlying them, thereby reducing the related uncertainty in markets. Finally, the third task is to improve the efficiency of monetary policy through sharing relevant information. In addition, publishing the Bank's view on the economic outlook is also justified by the fact that the Bank has more resources available to produce systematic economic analyses, which may contain extra information compared with other, outside, analyses.

### 3.5 SPECIFIC FORMS OF THE MNB'S COMMUNICATIONS

The MNB uses a number of communication tools to effectively communicate its monetary policy. International best practice shows that in order to make their operations transparent and understandable for the widest possible range of users, central banks must provide the public with a large quantity of information, tailored to the needs of the individual target groups. In addition, central banks produce handbooks for the wider public about the conduct of monetary policy and the role central banks play in the economy.

Of the various publications, the **Quarterly Report on Inflation** (the Report), published four times a year, is the most important communications channel of the MNB. The Report presents the Bank's macroeconomic forecast, its analysis of economic events that are likely to have a bearing on inflation, the risks around the forecast and the expected policy actions. Beyond providing the public with the Bank's detailed assessment of economic conditions, the Report is also one of the most important background materials aiding decision-making. On the day of publication, Bank staff present the Report to market analysts. This not only increases transparency, but also creates an opportunity for the Bank to undertake consultations.

A **press release** is published after each interest rate decision of the Monetary Council. The press releases are short documents communicated to the press and published on the Bank's website, in which the Council discusses the main considerations behind its decision and briefly summarises its views on current conditions in the Hungarian economy. The **abridged minutes** of Council meetings provide a more detailed insight into the decision, contain the main arguments made by members at the meeting and reflect their individual assessments of conditions. Attributed votes help monitor the members' decisions. The minutes are published two weeks after the meeting, but before the next interest rate decision. The **press conferences** held after meetings serve to inform the public and the press as precisely as possible, and to provide further information on the reasons underlying the interest rate decision as well as on the Bank's views about the economy in general. The press conferences are broadcast live on the Internet. The **edited transcripts** of the press conferences are released to the public after the events.

The Bank maintains an active programme of communications between policy meetings. Further information on the Council's views about important events and economic policy issues relevant for the conduct of monetary policy is provided in **statements**. In addition, the Bank's management hold lectures and deliver speeches at various professional forums, the most important of which are made available on the Bank's website.

Meeting its accountability requirement, the Bank publishes two regular reports on its operations. The **Quarterly Report** presents the Bank's activities over a longer period, together with monetary policy decisions and the Bank's other core

activities. The **Annual Report** includes the Bank's annual business report as provided by the Accounting Act and assessments of the Bank's performance in meeting its inflation target.<sup>15</sup> Annual Reports inform the MNB's annual general meeting, Parliament and the general public about the Bank's tasks, organisation and activities performed in the previous year, along with its economic management and financial position.

Stemming from its wide-ranging activities, the MNB not only has publications on the subject of monetary policy, but also produces regular analyses on Hungary's convergence to the euro area and on financial stability. As the Governor of the MNB is also a member of the Fiscal Council, the Bank has regular publications on fiscal issues as well.

Results of high-level research work within the Bank are published in two research paper series for professional economists. Papers published in the **MNB Working Papers** series since 2005 in English are of interest mainly for academics, central bank economists and other researchers. By contrast, the studies published in **MNB Occasional Papers** series present the results of applied research and contain reviews of the tools linked to central bank decision-making. The language of Occasional Papers is Hungarian, but some of them are also published in English. Going through a control process established for their approval, the aim of the Papers is to facilitate the communication of monetary policy decision-making indirectly, by presenting the results of research by the Bank's experts. The articles published in **MNB Bulletins** provide information to the wider public about Hungarian economic developments of interest and the most important results of research work at the Bank in an easily understandable manner.

**Table 1**  
**Publications of the Magyar Nemzeti Bank related to monetary policy**

Frequency	Monetary policy	Research
Fortnightly	Press release on the Monetary Council's meeting	
Monthly	Abridged minutes of the Monetary Council's meeting	
Quarterly	Quarterly Report on Inflation Quarterly Report*	MNB Bulletin
Yearly	Annual Report	
Periodical	Monetary Policy in Hungary Report on Convergence	MNB Working Papers** MNB Occasional Papers**

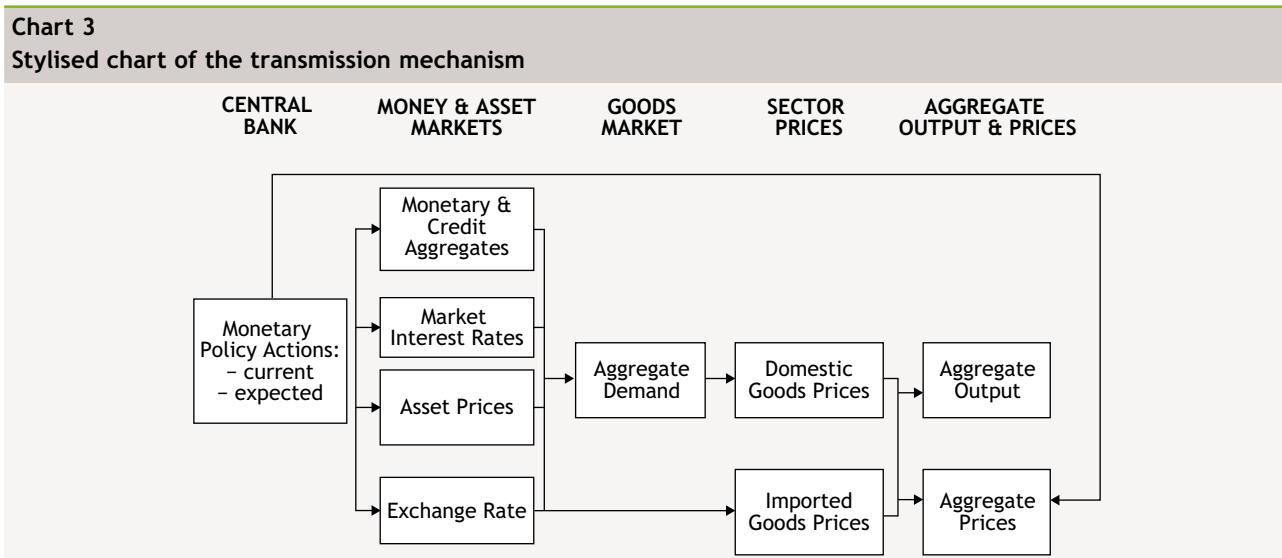
\* Available only in Hungarian.

\*\* Available only in English.

<sup>15</sup> Act C of 2000 on Accounting.

# 4 The transmission mechanism of monetary policy<sup>16</sup>

The previous chapters have shown that the central bank can best contribute to economic growth by maintaining price stability and provided a broad outline of the framework for monetary policy. Within the framework of the **inflation-targeting** regime, maintaining **price stability** practically means that the Bank sets interest rates so as to meet its defined **inflation target**. In order to be able to understand the motivations behind individual interest rate decisions, we need to know how monetary policy affects the economy and how it can influence real economy activity and, ultimately, inflation. The process through which a change to the key policy rate affects the economy is known as the **transmission mechanism** of monetary policy.<sup>17</sup>



Movements in macroeconomic variables (e.g. output, unemployment and inflation) are determined by economic agents' decisions. Just as supply and demand tend to determine the quantity and price of a given product in individual product markets, they also do so at the whole-economy level. In that case, however, we talk about price level, aggregate demand and aggregate supply.

Price level means the average price of products. **Aggregate demand** reflects the total amount of goods economic agents are willing to buy at a given price level. Aggregate demand can be split into several components according to the purpose for which the goods purchased are to be used. We distinguish consumption, investment, government consumption, inventory investment, exports and imports. Finally, **aggregate supply** shows the total amount of goods economic agents would willingly sell at a given price level.

<sup>16</sup> The sources of charts reported in this chapter are: LOAYZA, NORMAN AND KLAUS SCHMIDT-HEBBEL (2002), 'Monetary Policy Functions and Transmission Mechanisms: An Overview', in: LOAYZA, NORMAN ET AL. (eds.), *Monetary Policy: Rules and Transmission Mechanism*, Chile, Central Bank of Chile.

<sup>17</sup> To make it easier to understand the logic of the theory, we present a simplified framework, in which the only challenge facing monetary policy is to influence inflation developments.

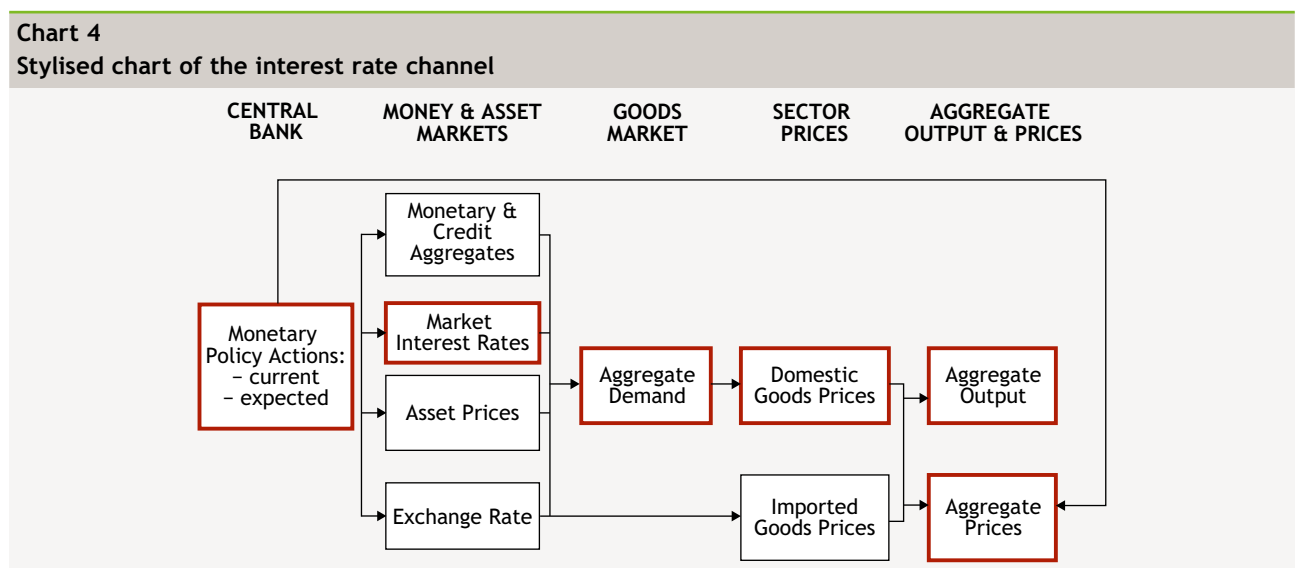
There are a number of channels through which monetary policy can influence economic agents' decisions, and in particular developments in aggregate demand, by changing the **key policy rate**.

Chart 3 shows the entire transmission mechanism of monetary policy. Decisions by the Bank on the policy rate and its communications about future decisions exert their impact first on financial markets; market interest rates, asset prices and the forint exchange rate are the fastest to react to policy decisions. The next stage is product markets: firms and consumers adapt to the new financial market environment, which in turn changes their aggregate demand for goods. Companies respond to any change in demand by varying the quantities of goods produced, on the one hand, and by adjusting their prices, on the other. Hence, monetary policy also affects output and inflation.<sup>18</sup>

In the following, we provide a detailed overview of the individual channels of the monetary policy transmission mechanism and how they operate in the economy. We discuss five different channels: the interest rate channel, the asset price channel, the exchange rate channel, the credit and balance sheet channels and, finally, the expectations channel.<sup>19</sup> In each case, we demonstrate the effects of monetary policy easing, i.e. a reduction in the policy rate. A tightening of monetary policy, i.e. an increase in the policy rate, tends to have the opposite effect.

### 4.1 THE INTEREST RATE CHANNEL

The **interest rate channel** is the 'traditional' channel of the transmission mechanism. A change in the key policy rate affects investment and consumption decisions, i.e. aggregate demand for goods. A change in demand in turn affects output and inflation. However, there is no direct relationship between the policy rate and aggregate demand: a change to the policy rate exerts its influence through several channels.



In the first phase, money market variables will respond to the change in the official interest rate. Suppose that the Bank reduces its policy rate which is the interest rate on a short-term instrument, the two-week MNB bill. This change to the policy rate, passing through to interbank money market rates, will affect banks' lending and deposit rates. Interest rates on most variable rate corporate loans are referenced to money market rates, so, by influencing the latter, the Bank can directly affect the funding cost for firms and, ultimately, the demand for capital goods. In addition, household deposit rates also tend to follow movements in short-term money market rates.

<sup>18</sup> Changes in monetary policy affect output only over the short term, while they influence movements in prices over the longer term. On the long-term neutrality of monetary policy (in real terms), see section 1.6.

<sup>19</sup> It is important to note that the absolute and relative strength of transmission channels may change over time, depending on the actual state and structure of the economy. The strength of the link between certain variables may change in response to significant structural changes or severe shocks, which in turn may have an effect on the transmission mechanism.



Another aspect of the effect on money market rates is that a change to the policy rate also influences interest rates on longer-term financial assets. If they did not fall, investors would borrow over the short term at lower interest rates and immediately lend the funds over the long term, realising a profit. Upon repayment, the difference (interest rate differential) between the interest rate earned on the longer-term loan and the interest rate on funds borrowed over the short term, i.e. a short-term loan taken at the outset, is the investor's profit. It is easy to see that this situation cannot persist for long, as more and more participants will seek to exploit the opportunity to earn a profit, the supply of loanable funds will increase, which in turn will lead to a gradual decline in the price of loans, i.e. lending rates. A reduction in the policy rate therefore leads to lower long-term interest rates.

However, it is the real interest rate rather than the nominal interest rate which matters when making investment and consumption decisions. From the perspective of the lender, the real question is then how much the income earned on a lending transaction will be worth at the time the loan is repaid – in other words, how much goods and services the money will buy. If, for example, the (nominal) interest rate on the funds lent is 5 per cent, but prices meanwhile have risen by 3 per cent, then his/her money will be worth only 2 per cent more a year later. So with a 5 per cent nominal interest rate and 3 per cent inflation, this means a 2 per cent real interest rate. Therefore, inflation expected during the term of the loan is always taken into account in setting the nominal interest rate.

In general terms: the **real interest rate** is the difference between the nominal interest rate and the expected rate of inflation.

$$\text{REAL INTEREST RATE} = \text{nominal interest rate} - \text{expected inflation}$$

The interest rate channel works properly if a reduction in the central bank base rate also leads to a reduction in the real interest rate, at least for a while. It has been observed that prices tend to change only at certain intervals; firms do not change the prices of their products every day.<sup>20</sup> Consequently, inflation will not change immediately in response to an interest rate reduction. So a change in the nominal interest rate will temporarily lead to a lower real interest rate.

When the real interest rate is lowered, both investment and consumption will pick up. Lower interest rates will reduce the costs of funds to finance investment, i.e. more investment plans will turn profitable. Household consumption is also influenced by the level of interest rates. Lower interest rates make it less rewarding to save for future consumption, as savings pay lower returns. By exploiting lower interest rates, households will prefer to borrow, which they will spend in the present. Consequently, rising investment and consumption will boost aggregate demand. This in turn will enable firms to sell more goods and, after a while, to charge higher prices for their goods. So monetary policy easing will ultimately lead to higher inflation and output via the interest rate channel.

## 4.2 THE ASSET PRICE CHANNEL

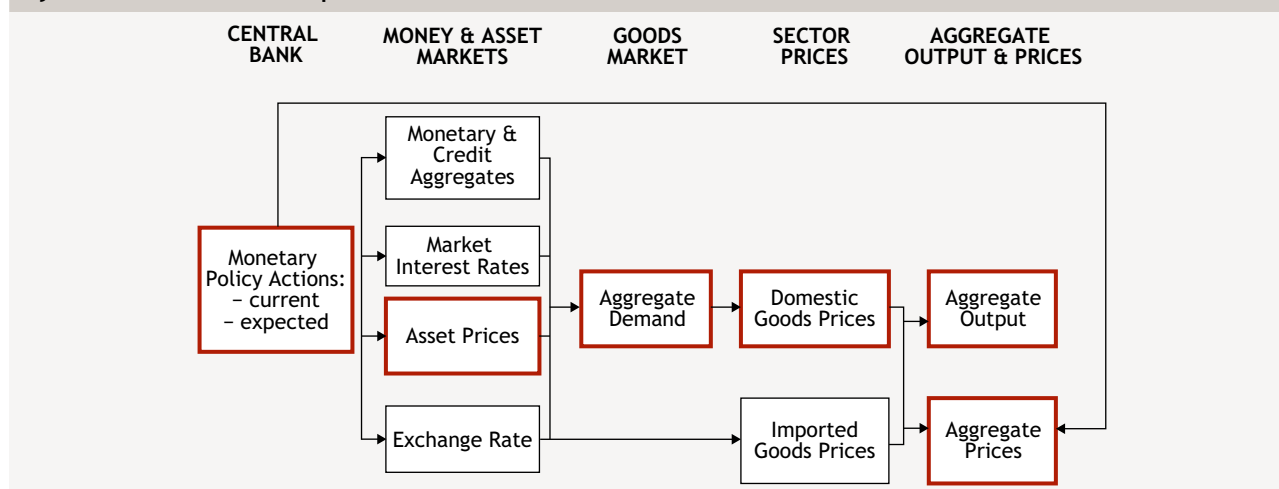
Monetary policy affects the prices of a wide range of investment assets, including various financial assets, such as equities and bonds, real properties and gold, which in turn also influences economic agents' consumption and investment decisions. The branch of the transmission mechanism working through asset prices is known as the **asset price channel**. In the following, we show the workings of this channel through movements in equity prices.

As seen above, a reduction in the key policy rate leads to a decline in longer-term interest rates, which in turn affects movements in equity prices. This is because investors tend to hold a variety of assets in their portfolios, in order to mitigate investment risk. Suppose that investors also hold government bonds and various equities. Due to the lower interest rate, yields on government bonds will fall and other assets will become more attractive forms of investment. As a result, demand for equities will increase, which in turn will lead to rises in equity prices.

At this point, two effects are at work. First, expanding productive capacities at a time when equity prices are higher will generate higher returns, as this provides scope to issue new equity and sell it at a more favourable price. Second, shareholders' wealth will also increase, which in turn will enable them to boost their consumption.

<sup>20</sup> See section 1.5 for details on costs related to repricing.

Chart 5  
Stylised chart of the asset price channel



Accordingly, investment and consumption both increase in response to higher equity prices, i.e. aggregate demand picks up. As a result, firms can sell more goods and can charge higher prices for their products. Consequently, monetary policy easing also leads to higher inflation and higher output via the asset price channel.

### 4.3 THE EXCHANGE RATE CHANNEL

Hungary is a small, open economy, and so it is greatly influenced by developments in the world economy. Through its trade relationships, not only the country's goods market but also its financial market is closely linked to the European Union. For this reason, the exchange rate in general, and particularly the exchange rate of the forint (HUF) against the euro (EUR), plays an important role in the domestic economy and the transmission mechanism of monetary policy. In this section, we present the workings of the exchange rate channel.

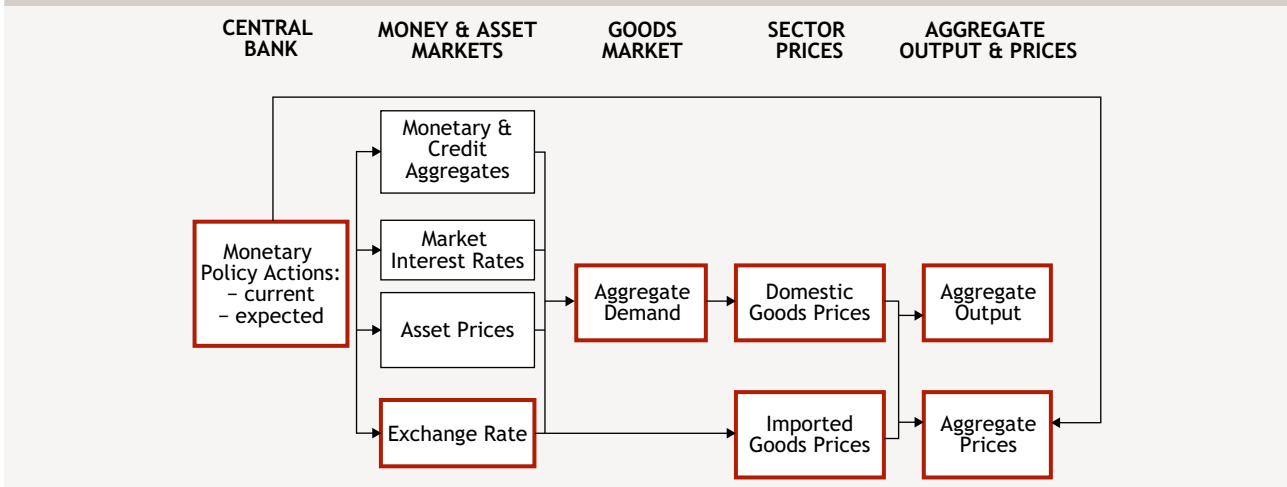
As seen earlier, a reduction in the central bank base rate also leads to lower longer-term market interest rates. As expected returns fall, the attractiveness of forint-denominated investments will decline. Investors will therefore become reluctant to hold forint assets at lower forint interest rates, and will seek to shift part of their funds into foreign currency. In practice, they do so by selling forints in the foreign exchange market. As a consequence, the supply of domestic currency will increase, which in turn will lead to a decline in the 'price' of the forint in terms of another currency, i.e. to exchange rate **depreciation**.

Forint depreciation influences inflation and output in several ways. On the one hand, the exchange rate affects aggregate demand through **net exports** (i.e. the difference between exports and imports); on the other hand, it also affects consumer prices through changes in the prices of imported goods. Because Hungary's economy is most closely linked to the euro-area economy, these effects will be presented through movements in the EUR/HUF exchange rate.

A weaker forint exchange rate boosts exports in the short term, as the value of Hungarian goods expressed in euros will be lower, and therefore foreign demand for them will rise. For the same reason, imports will fall, as goods purchased abroad will become more expensive and it will be more difficult to sell them at home. Reflecting these two factors, net exports will increase. This in turn will boost aggregate demand, which will ultimately lead to higher output.

Forint depreciation also has a direct effect on consumer prices. This is because part of goods in the consumer basket are imported, with their prices directly reacting to movements in the exchange rate. A good example is vehicle fuels, whose prices adjust practically immediately to a change in the exchange rate. But the exchange rate indirectly affects a much wider range of goods. Firms producing for the domestic market, whose products compete with imports (e.g. consumer durable goods), partly adjust their prices to those of their competitors, and so the prices of these domestic products may also rise. Moreover, Hungary is a net importer of some important factors of production (e.g. energy) – i.e. it uses more of

**Chart 6**  
Stylised chart of the exchange rate channel



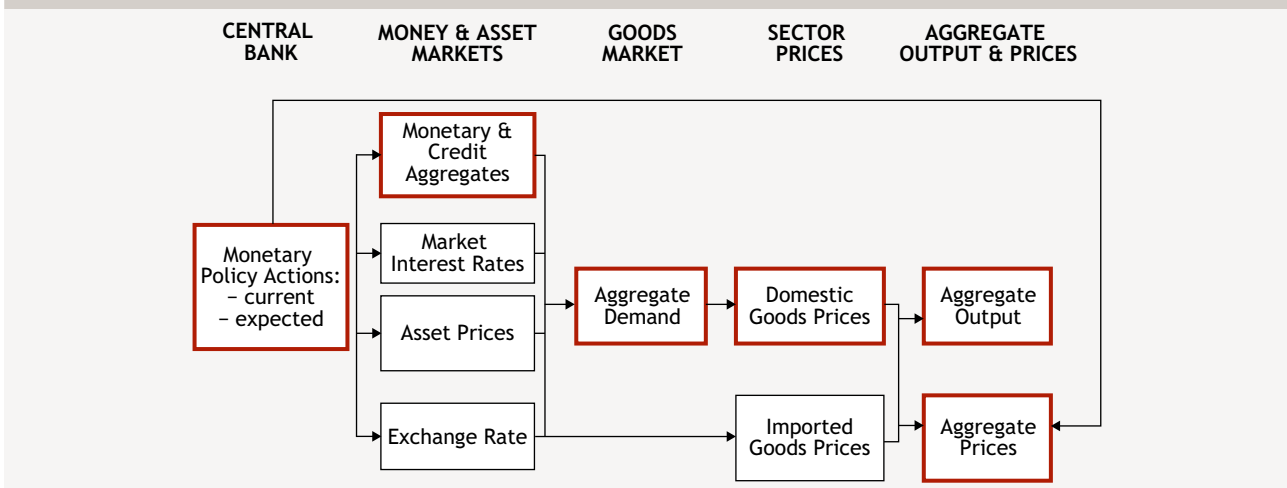
them than it can produce domestically. If energy prices increase, then it will cost more to produce other goods, which in turn will lead to an increase in prices.

Accordingly, a change to the base rate influences inflation on both the supply and demand sides via the exchange rate channel. It affects aggregate demand through its effect on net exports and it also affects supply through changes in the prices of imported goods and of some factors of production expressed in forint terms. In conclusion, a reduction in the base rate may lead to higher output growth and a higher price level via the exchange rate channel.

#### 4.4 THE CREDIT CHANNEL

The **credit channel** is a special branch of the interest rate channel. Monetary policy also affects movements in supply and demand in the credit market. In this way, it enhances the workings of the traditional interest rate channel. Because of the importance of the banking sector's credit standards in driving movements in economic output, it is useful to present the credit channel as an independent channel of the transmission mechanism. Basically, a reduction in the central bank base rate boosts banks' lending activity through two mechanisms: the bank lending channel and the balance sheet channel.

**Chart 7**  
Stylised chart of the credit channel



Movements on the liabilities side of banks' balance sheets are central to the workings of the bank credit channel. Banks provide credit to households and firms from deposits placed with them (private sector deposits) and borrowing from other financial institutions (external funds). It is less attractive to invest for the longer term at lower interest rates, so the ratio of short-term deposits to total deposits will rise. Then banks will have more deposits available. Because external funding is generally more expensive, they will be able to provide credit at lower interest rates.

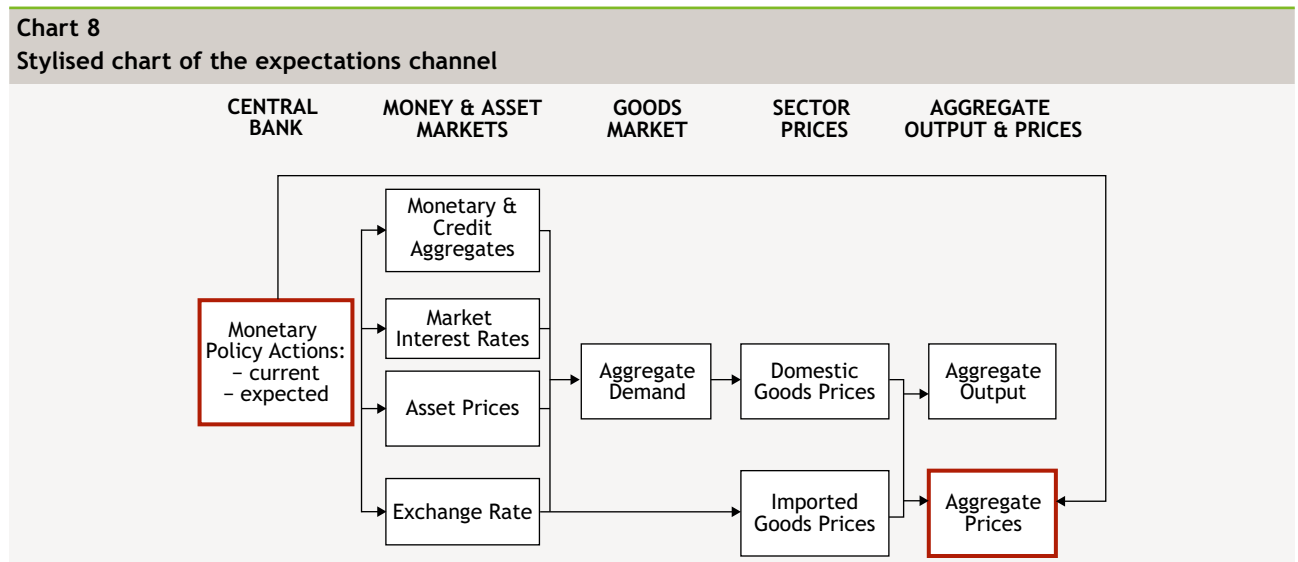
The balance sheet channel describes the effects on the borrowers' side. Commercial banks most often provide lending against some sort of collateral to make sure that the borrower will repay its debt. The greater the value of the collateral, the greater the amount a bank will be willing to lend. As discussed in the section on the asset price channel, monetary policy easing boosts the prices of various assets (equities, bonds, real properties), which often serve as collateral for loans. Thus, at a lower interest rate the value of the collateral will increase, giving borrowers a chance to take out a larger loan.

In summary, after the base rate is reduced, economic agents will be able to borrow at more favourable conditions. This will boost both consumption and investment, i.e. aggregate demand, which will ultimately lead to higher output and inflation.

### 4.5 THE EXPECTATIONS CHANNEL

In making their decisions, economic agents not only take into account actual market conditions, but also their likely future changes. This is most evident in the money market. If, for example, the Bank announces that it will lower the base rate in the near future, then the exchange rate of the forint will react immediately. As developments in money market variables not only depend on the actual interest rate decision but also on expectations about the future path of interest rates, expectations play a role in all of the four channels presented so far.

However, **expectations** have a more special function, which gives reason to treat them as a fifth channel. This channel focuses on firms' forward-looking price-setting behaviour. This means that if firms expect future inflation to be higher, then they will begin to raise their prices now. Thus, expected future inflation leads to higher inflation even in the present.



This is why the inflation target plays an important role: if economic agents believe the Bank is credible, then they will expect inflation over the medium term to be equal to the inflation target, even if current inflation deviates from the target for some reason. In this case we talk about **well anchored expectations**. When expectations are well anchored, economic agents' price and wage-setting decisions are consistent with the inflation target, and so it is easier for the Bank to bring inflation back to the target. Conversely, if economic agents do not trust that the inflation target will be met, then a more robust policy action – implying higher social costs – is required.<sup>21</sup>

<sup>21</sup> For more details on expectations and credibility, see section 2.2.

# 5 Monetary policy instruments of the MNB

## 5.1 BASIC PRINCIPLES FOR DEVELOPING THE BANK'S MONETARY POLICY INSTRUMENTS

A central bank has a wide range of instruments at its disposal to achieve its objectives, i.e. to implement monetary policy. These are known collectively as its **set of monetary policy instruments**. Central banks develop their policy instruments on the basis of a couple of general principles and well-defined criteria for choice.

Monetary policy instruments can be grouped into direct and indirect tools, depending on the degree to which they rely on the functioning of interbank markets. **Direct** controls include, for example, setting a limit on lending and deposit rates: a central bank may set a ceiling on interest rates that banks (credit institutions) charge on loans or a minimum (or maximum) interest rate that they can pay on deposits. In addition, a central bank may also regulate the size of loanable funds and deposits.

By contrast, the MNB strives to use **indirect tools** which require the efficient functioning of financial markets (i.e. they are market conform instruments). Indirect controls include, for example, **open market operations**, when the Bank intervenes in the money market as one of its participants. The aim of open market operations is to ensure the smooth and efficient transmission of interest rate decisions, help credit institutions to manage their liquidity and contribute to the stability of the banking system. Indirect controls include buying and selling various securities (outright transactions or repos, i.e. sale and repurchase agreements), deposit tenders and bond auctions conducted regularly as well as reserve requirements.<sup>22</sup>

Monetary policy instruments mainly affect short-term interbank rates, i.e. interest rates at which banks provide lending to each other for maturities from a few days out to several months. The Bank seeks to achieve its main objective of delivering price stability by influencing short-term interbank rates using the transmission channels already discussed. The Bank must achieve a number of other, intermediate targets in order to successfully influence interbank rates and meet other monetary policy objectives. The MNB uses the principle of 'one goal – one tool', i.e. it always chooses the tool which it believes will be capable of influencing each intermediate, operative goal. In addition, the Bank seeks to develop a simple, transparent instrument structure and, not least, to increase cost efficiency.

Beyond the above considerations, the Bank also seeks to encourage the development of the interbank market. So, for example, in situations when commercial banks could also borrow from or lend to each other, it is desirable that they should do business with each other and use the interbank money market instead of having recourse to the Bank's credit or deposit facilities. Another consideration is that the Bank's set of instruments should conform to those used in the euro area, in order to ensure a smooth euro adoption.

It is also critically important that market participants be treated equally. Therefore, in developing the range of its counterparties the Bank seeks to ensure that all credit institutions that comply with a set of minimum technical requirements should have the opportunity to use the Bank's monetary policy instruments.

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<sup>22</sup> These instruments are presented in more detail in section 5.2.

## 5.2 FUNCTIONS OF MONETARY POLICY INSTRUMENTS

There are four types of instrument within the set of monetary policy tools by function:

- the key policy instrument;
- tools to reduce the volatility of interbank rates;
- tools to directly influence the forint exchange rate; and
- other tools to support financial market liquidity and crisis management tools.

In the following, we discuss in detail the elements and main features of the above four classes.

### 5.2.1 Key policy instrument

A central bank uses its **main policy instrument** to give guidance to market participants about the level of interest rates it considers appropriate. Changes to the policy interest rate (also referred to as the **central bank base rate**) also affect the interest rates banks charge to households and companies on loans and pay on deposits via interbank money market rates (the rates at which banks lend to each other). This is because interest rates on most variable rate corporate loans are linked to money market rates, and thus the central bank is able to directly affect the cost of companies' access to financing by influencing money market rates. In addition, household borrowing and deposit rates tend to follow movements in short-term money market rates. Consequently, the central bank is able to affect demand for capital and consumer goods in the economy as well as households' saving and consumption decisions by influencing interest rates which are important for the corporate and household sectors. This mechanism is known as the **interest rate channel** of monetary transmission. Furthermore, by changing its policy rate, the central bank seeks to influence the attractiveness of the domestic currency relative to foreign currencies by influencing movements in yields on domestic assets (bank deposits and securities). The higher the return offered on a financial asset relative to its risk, the more attractive it will be for investors. As a result, foreign investors' demand for the currency will increase, which will ultimately have an impact on the exchange rate. This mechanism is known as the **exchange rate channel**, which is considered the most important channel of monetary policy transmission in a small, open economy.<sup>23</sup>

One of the most important features of the policy instrument is the direction in which it works, i.e. whether banks receive money from the central bank (the central bank lends to them), or they place funds as deposits with the central bank. A deposit placed with the central bank or a security it issues both can be used as a means of serving the latter purpose: buying a security means that funds will flow from commercial banks to the central bank. The direction of the policy instrument is determined by the amount of **central bank money** (cash and balance on commercial banks' accounts with the central bank) the banking sector holds, which in turn largely depends on economic conditions in the country (e.g. households' currency demand, foreign direct investments, exchange rate regime, etc.). Another important feature of the policy instrument is its maturity. Although movements in longer-term interest rates have greater importance in terms of influencing output and inflation, in practice central banks seek to influence only the level of shorter-term interest rates.<sup>24</sup> In doing so, it first makes speculation more difficult and, second, it supports credit institutions' **liquidity management**. In this way central banks can also ensure that longer-term yields reflect market participants' inflation expectations rather than being directly determined by the central bank.

In Hungary, the main policy instrument is the two-week MNB bill. This means that the Bank remunerates credit institutions purchasing the bill at the central bank base rate. At its scheduled meeting once a month, the Monetary Council decides on the level of the base rate. As the base rate changes, so will other interest rates linked to the interest rate on the two-week bill. Moreover, by changing the key policy rate, the Bank is able to exert direct influence on interest rates at maturities of a few months. This is because these interest rates are mainly influenced by expectations of the future level of the base rate. For example, the three-month money market rate settles at a level where the return on a three-month investment should be equal to the expected return on a two-week investment rolled over for three months, or in other

<sup>23</sup> For an overview of the operation of the transmission mechanism and the various channels, see Chapter 4.

<sup>24</sup> In the case of Hungary, three-month money market rates play a key role. Prices of a number of bank lending products are directly related to movements in the yield on the three-month government bill and the average interest rate that banks charge on loans to one another, known as BUBOR.

words the ‘average base rate’ of the three-month period. Money market rates at maturities of a few months in turn influence (i) companies’ investment decisions and households’ saving and consumption decisions through corporate and household sector interest rates, and (ii) the forint exchange rate.

As the Bank’s counterparties can purchase unlimited quantities of bills from the Bank, the greater part of surplus liquidity in the banking sector usually flows into MNB bills. In simplified terms, this means that commercial banks will place the part of central bank money which they do not intend to use for other purposes in the next two weeks with the Bank by buying two-week bills. The size of surplus liquidity held by the banking sector – and consequently their holdings of two-week MNB bills – are mainly determined by items (so-called autonomous factors) which the Bank is partly unable to influence directly. For example, in recent years the financing of general government deficit by foreign currency borrowing (as the MNB converted the foreign currency into forints and the general government spent it) and transfers from the European Union have contributed to an increase in the forint liquidity surplus of the banking sector. Obviously, a liquidity surplus at the system level does not mean that some banks do not need to rely on liquidity on certain days of the month. Under normal circumstances, the interbank market serves to exchange liquidity between institutions. If, however, a credit institution is unable to obtain the funds it needs via this channel, it will have to recourse to one of the MNB’s credit facilities.

## 5.2.2 Tools to reduce the volatility of interbank rates

The rate on **overnight** lending and deposit transactions is the shortest maturity and is therefore the most sensitive interest rate in the money market. This is the interest rate level at which banks lend to each other for one business day. Central banks whose key policy rate is of overnight maturity (e.g. in the US and Japan) tend to tolerate the lowest volatility in the overnight interbank market. For central banks, including the MNB, whose main policy instrument is of longer maturity, in terms of the monetary transmission mechanism the overnight interbank rate is relevant only to the extent that it is able to move longer-term market rates in one direction or another.

The banking system’s liquidity position has a significant impact on overnight interbank rates, i.e. whether credit institutions hold adequate amounts of central bank money at the aggregate level. The market of central bank money is a unique one: the central bank enjoys monopolistic power on the supply side. Credit institutions’ demand for central bank money has a number of sources. Banks need central bank money in order to satisfy their customers’ cash needs (deposits can be converted into cash), conduct their day-to-day transactions (operational reserves) and meet central bank reserve requirements.

In general, there are two ways in which central banks can intervene in interbank liquidity management. Some central banks control liquidity on a **discretionary** basis, i.e. they decide the amount of liquidity to withdraw from or provide to the banking system. Other central banks influence directly the level of market interest rates. In this case, the central bank stands ready to deal in its daily operations with counterparties, i.e. institutions can deposit reserves with or borrow reserves directly from the central bank at a predetermined interest rate, which they use at their own discretion. The MNB belongs to the latter group of central banks: it tends to be accommodative in meeting demand for central bank money, with most of its facilities being freely available for counterparties. However, the Bank is also able to use discretionary tools (e.g. to purchase government securities, and conduct **tenders** and quick tenders).

The MNB uses two instruments on business days to cushion the effects of liquidity shocks and reduce the volatility of short-term interest rates: (i) the interest rate corridor established around the policy rate helps limit fluctuations in overnight market interest rates and (ii) the required reserves scheme is intended to smooth movements in interest rates within that band. The two instruments are presented in detail below.

### Interest rate corridor

The Bank maintains a symmetric **interest rate corridor** around the two-week policy rate at the overnight maturity, i.e. the floor and ceiling of the corridor are at equal distance from the policy rate, apart from exceptional periods. The role of this corridor is to ensure that overnight interbank market rates remain within a relatively narrow band around the policy rate.

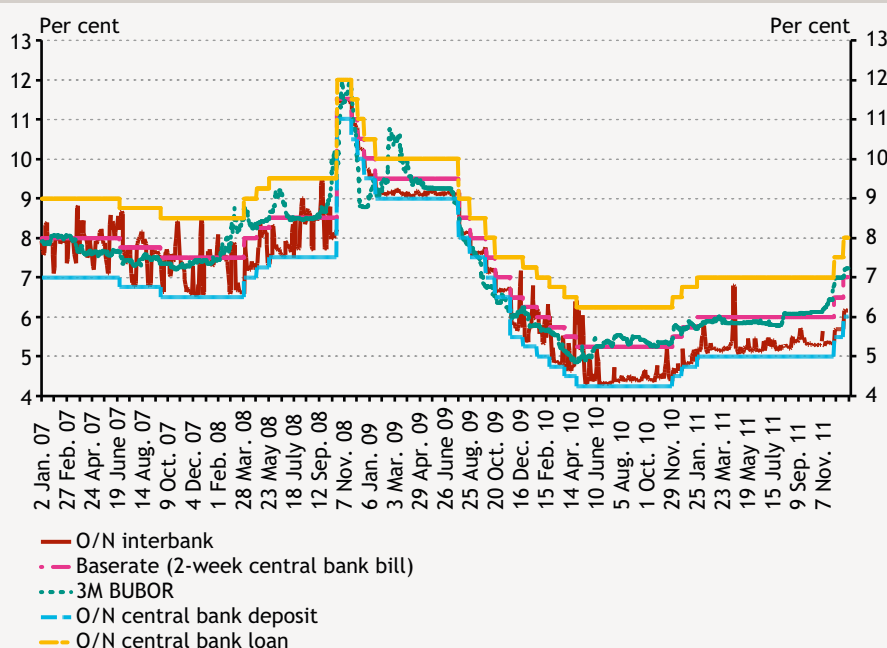
The upper bound of the corridor is the interest rate at which the Bank provides credit to counterparties at the overnight maturity against securities delivered as collateral. If, for whatever reason, credit institutions have a need for short-term liquidity but are unable to have access to it in the interbank market (i.e. at other commercial banks), interest rates will not be allowed to rise to extremely high levels, because the Bank will satisfy all needs at an interest rate functioning as the upper bound of the interest rate corridor. Accordingly, the overnight interbank rate cannot be persistently higher than this interest rate ceiling.

Along similar lines, the interest rate at which banks are able to place overnight deposits with the Bank, is called the lower bound of the interest rate corridor (interest rate floor). At times of abundant liquidity in the market (i.e. the majority of banks hold more funds than they need and want to deposit them), interest rates will fall in the overnight interbank market. The interest rate floor serves to halt this fall at a point. Given that banks are allowed to place unlimited quantities of surplus funds with the Bank at this interest rate, they are not interested to deal at rates below the interest rate floor at the overnight maturity in the interbank market.

The upper and lower bounds of the interest rate corridor are secured each business day. If interest rates on the instruments at the ceiling and floor of the corridor are close to each other, i.e. if the corridor is narrow, it serves to stabilise or smooth movements in interbank rates. It is for this reason that from 1998 H2 the MNB gradually narrowed the corridor. Since 1 September 2002, the corridor has been  $\pm 1$  percentage point wide, consistent with the practice of the ECB at that time.<sup>25</sup> (Chart 9 shows the interest rate corridor since 2007.)

Chart 9

## The interest rate corridor, the overnight and three-month interbank market interest rates



## Reserve requirements

Under the reserve requirement system, banks must hold a proportion of their liabilities (mainly corporate and household deposits) as reserves on accounts with the Bank. Within the framework of the MNB's instruments the most important function of required reserves is to help smooth fluctuations in overnight interest rates.

<sup>25</sup> In the autumn of 2008, the ECB narrowed the interest rate corridor to  $\pm 0.5\%$ , then widened it again to  $\pm 1\%$  in early 2009. Thereafter, the ECB reduced the width of the corridor  $\pm 0.75\%$  in May 2009. The MNB also narrowed its corridor temporarily, during the financial market turbulence of autumn 2008, to  $\pm 0.5\%$ .



Credit institutions are required to meet reserve requirements on average over a monthly maintenance period, but the balance on their settlement accounts with the Bank can never be negative. This averaging mechanism allows credit institutions to reallocate their **liquid assets** within the month and ensures a flexible framework for the banking system's liquidity management.<sup>26</sup> The MNB introduced optional reserve ratios in 2010. Under the new scheme, credit institutions subject to reserve requirements are able to choose the amount of reserves in accordance with their own size and variations in their need for balances. They can set for themselves a reserve ratio in a range of between 2 and 5 per cent and can vary the reserve ratio within that range every six months. Since their introduction, the optional reserve ratios have helped credit institutions to better manage their liquidity, as reflected, for example, in lower use of the MNB's overnight facilities.

### Other liquidity management tools (fine-tuning operations)

Even in a system with an interest rate corridor and reserve requirements, however, severe, unexpected liquidity fluctuations can divert overnight rates persistently away from the Bank's key policy rate. To deal with such exceptional situations, the MNB has at its disposal short-term, variable maturity **fine-tuning instruments** (tenders, quick tenders). By conducting tenders and quick tenders, the Bank is able to reduce the domestic effects of unexpected international events and to help banks manage their liquidity, particularly during the final days of the maintenance period, when forecasting liquidity is difficult. In the event of a temporary liquidity disruption, the MNB may consider whether it will allow interbank rates to move significantly within the bounds of the interest rate corridor or will prevent these disturbing (possibly undue) fluctuations by conducting tenders or quick tenders. Such tenders are part of the MNB's **discretionary** tools, i.e. those which it uses on an ad hoc basis. The Bank may choose their maturity arbitrarily, and they can take the form of either liquidity-providing or liquidity-absorbing operations.<sup>27</sup>

### 5.2.3 Tools to directly influence the exchange rate

The aim of foreign exchange market operations is to maintain a given exchange rate regime and influence the exchange rate of the domestic currency (**intervention**). The Bank may buy foreign currency in the foreign exchange market to prevent an **appreciation** of the domestic currency, increasing the supply of the domestic currency and thereby weakening it. Conversely, the Bank may sell foreign currency using its **foreign exchange reserves**, if it wants to slow the **depreciation** of the domestic currency, increasing demand for the domestic currency. In addition to the indirect impact of official interest rates, the MNB may also conduct foreign exchange market operations to influence movements in the forint exchange rate. In mid-2001, the narrow band exchange rate regime was replaced by an exchange rate regime with a wider band, in conjunction with the introduction of the inflation-targeting framework.<sup>28</sup> This regime was abandoned in early 2008. Since then, a freely floating exchange rate regime has been in operation. However, there remains the opportunity for the Bank to intervene in the foreign exchange market in order to reduce volatility of, or influence movements in, the exchange rate.

**Verbal intervention** can be another tool to influence movements in the exchange rate. It is used by the Bank to express its views about the level of, or movements in, the exchange rate. The Bank can do so if it judges that the level of the exchange rate in the market is undesirable in terms of the inflation target or would prove unsustainable in the long term. Verbal intervention can be credible if, in the event that it fails to deliver the expected results, the central bank is ready to use other tools (change in the policy rate, intervention in the foreign exchange market) to achieve its goals.

### 5.2.4 Other tools to support market liquidity and crisis management tools

There may be circumstances in the market when the continuously available instruments discussed in detail above prove to be insufficient and further central bank actions become necessary. Central bank intervention using non-standard

<sup>26</sup> An instrument is said to be **liquid** if it can be sold quickly and without significant costs. Typically, cash and most securities are considered liquid instruments.

<sup>27</sup> These instruments are rarely used under normal market conditions. However, the MNB, in addition to other measures, introduced forint loan tenders at two-week and six-month maturities in order to cushion the adverse effects on the domestic interbank market of the crisis of autumn 2008.

<sup>28</sup> The fluctuation band of the forint vis-à-vis the euro was widened to  $\pm 15\%$ , with the MNB committing itself to keep the exchange rate within the band using foreign exchange market operations at the two extremes.

measures may be justified in two cases: (i) if market prices become distorted in the market of one or more financial assets in response to specific circumstances (e.g. trading stops, lack of price quotation) and therefore they inadequately transmit the Bank's decisions on its policy rate (i.e. the transmission mechanism becomes impaired); (ii) if a group of banks does not have access to sufficient forint or foreign currency liquidity, which may pose a risk to financial stability.

The financial crisis, which began in 2007 and escalated during 2008, led to a lack of confidence among banks and a decline in demand for risky emerging market – including Hungarian – assets. As a result, the MNB introduced a number of non-standard instruments in order to help individual markets return to normal functioning and make it easier for banks to access forint and foreign currency liquidity. In terms of the latter, **foreign exchange swaps** (FX swap facilities) still continue to play an important role today. In large part, the Hungarian banking sector satisfies its increased demand for foreign currency in this market, which, however, may become more difficult and expensive during times of financial turbulence. The Bank's FX swap facilities make it possible for banks to access foreign currency liquidity even under extreme stress, which in turn facilitates the smooth functioning of financial markets.

# Glossary

**Aggregate demand:** The total amount of goods and services demanded by economic agents – households, companies, government sector. The sum of planned consumption, investment, government expenditure and net exports of goods and services (which is the difference between exports and imports).

**Aggregate supply:** The total amount of goods and services that producers are willing to sell.

**Alternative scenarios:** see [risk scenarios](#)

**Appreciation:** A national currency appreciates (or strengthens) if demand for it increases or its supply decreases. In such a case, less domestic currency must be paid for a unit of foreign currency (and conversely: more foreign currency must be paid for a unit of domestic currency, cf. [depreciation](#)).

**Asset price channel:** One of the channels of monetary transmission. Monetary policy actions also tend to affect economic agents' consumption and investment decisions through asset prices – mainly equities and property prices. A reduction in interest rates leads to an increase in demand for equities. Higher equities prices lead to higher investment and allow higher consumption for their holders. ultimately, both aggregate demand and prices will rise (cf. [monetary transmission mechanism](#)).

**Auction:** A method of selling an asset. A sale where credit institutions as the Bank's counterparties are allowed to submit bids which conform to certain formal and content requirements, and the Bank subsequently decides on the acceptance of bids.

**Baseline scenario:** see [baseline scenario of the inflation forecast](#)

**Baseline scenario of the inflation forecast:** The most probable future outcome for economic developments based on the macroeconomic forecast; the central tendency of the probability distribution of the forecast.

**Central bank:** An independent institution responsible for the conduct of monetary policy. In Hungary, this role is played by the Magyar Nemzeti Bank (MNB). Act CCVIII of 2011 – often referred to as the 'Central bank Act' or 'MNB Act' – sets out the rights and responsibilities of the MNB.

**Central bank base rate:** The interest rate that best reflects the stance of monetary policy and the change in it. It is also equal to the interest rate paid on the MNB's main policy instrument.

**Central bank money:** The narrowest monetary aggregate, which is comprised of currency in circulation and credit institutions' forint balances with the central bank. Central bank money is also often referred to as the monetary base, base money or high-powered money.

**Constant tax index (CTI):** The constant tax index eliminates price changes that occur due to changes in taxes. It shows how much inflation would have risen had tax changes not distorted prices. This measure is especially useful when there are frequent shifts in the regulatory environment, for example, when VAT rates or excise duties are changed.

**Consumer price index:** The most important measure of inflation, compiled and published in Hungary by the Central Statistical Office. It expresses the price change of a representative consumer basket compared to the previous period

observed, thus representing the consumption of the 'average' household. An index can be long-based, i.e. annual (if the change in prices is compared to that of a year ago) or short-based, i.e. quarterly or monthly (if price changes are compared to those of the previous quarter or month).

**Core inflation:** A measure of inflation which consists of goods and services, whose prices are less volatile and are influenced mainly by the markets (it excludes prices of unprocessed foods, fuels and administered prices).

**Cost-push inflation pressure:** Upward pressure on prices resulting from a rise in the prices of production inputs.

**Credibility, central bank credibility:** The extent to which market participants believe that economic policy decision-makers will react to various economic events in accordance with their declared strategy and/or pre-announced actions. An inflation-targeting central bank can be considered credible if economic agents make their decisions assuming that the inflation target will be met.

**Credit channel:** One of the channels of monetary transmission. In addition to having an effect on credit demand due to changes in interest rates, monetary policy actions also influence credit supply. According to the bank lending channel theory, when the interest rate is low, sight deposits rise, and banks can obtain funds necessary for lending at a lower interest rate premium. The balance sheet channel theory states that lower interest rates increase the value of companies' assets, therefore, they can have access to more (and less costly) collateralised credit (cf. **monetary transmission mechanism**).

**Debt deflation:** When there is a general decline in the price level, not only the prices of products but also of properties (flats and houses), provided as collateral used to secure loans, fall. If prices persistently fall, the value of collateral will not be enough to cover the amount of loan, and therefore banks will be interested in renegotiating the contract (e.g. they may request their customers to provide further collateral). If borrowers go bankrupt and banks begin to sell the properties, this will put additional downward pressure on prices in the housing market. This self-reinforcing cycle may have very harmful consequences.

**Deflation:** A permanent decline in the general price level; 'negative' inflation.

**Demand-pull inflation pressure:** Upward pressure on prices resulting from increased demand.

**Depreciation:** A national currency depreciates (or weakens) if demand for it falls or its supply increases. In such a case, more domestic currency must be paid for a unit of foreign currency (and conversely: less foreign currency must be paid for a unit of domestic currency, cf. **appreciation**).

**Direct tools:** A group of instruments which the central bank uses to directly influence the level of interest rates commercial banks are allowed to apply to lending or deposit transactions with their customers, or to set certain quantitative limits (cf. **indirect tools**).

**Discretionary operations:** A group of operations which the central bank announces non-regularly, on an ad hoc basis, if required by circumstances. The central bank determines the term of each operation at its discretion. Discretionary operations can take the form of liquidity-providing or liquidity-absorbing operations.

**Disinflation:** A decline in inflation – i.e. the rate of increase of prices; slowing inflation.

**Elastic demand:** A measure of the relationship between a change in the price of a product and demand for it. Demand for a product is elastic when it changes by more than one per cent in response to a one per cent change – e.g. a rise – in price; in this case demand declines (cf. **inelastic demand**).

**Endogenous monetary policy:** In the model used to produce the forecast, monetary policy – based on a behavioural equation – reacts to a change in the outlook for inflation and the real economy. The result is an interest rate path which shows what actions would be taken to meet the medium-term inflation target.

**Exchange rate channel:** One of the channels of monetary transmission. Monetary policy actions, including interest rate decisions, also affect the exchange rate of the country's currency. Following an increase in interest rates the exchange rate appreciates, which reduces the competitiveness of exports and makes imports cheaper. This in turn results in declining output and lower inflation, due to the lower price of imports expressed in forint terms (cf. [monetary transmission mechanism](#)).

**Expectations channel:** One of the channels of monetary transmission, which focuses on companies' forward-looking price-setting behaviour. If companies expect that future inflation will be higher, then they will begin raising their prices now. Accordingly, expected future inflation leads to price inflation even in the present (cf. [monetary transmission mechanism](#)).

**Fan chart:** A chart expressing the uncertainty of the inflation forecast. Areas marked with different shades show a band of inflation of a given probability. With the increase in uncertainty, the fan chart gradually widens for about one year. The central tendency of bands marks the most probable future path called the baseline scenario.

**Financial crisis:** Disturbance attributable to fundamental reasons, which for a longer period of time prevents the financial system from performing its basic, intermediary function. A financial crisis may result in significant real economic costs.

**Financial imbalance:** Excessive indebtedness of one or more sectors (e.g. households) or exaggerated increases in prices in individual markets (e.g. the stock exchange or property market), which cannot be sustained over the longer term. Spontaneous corrections of these erratic movements carry the risk of market panic and deep economic recession or crisis. It is therefore better to prevent or at least slow their build-up, given the large social loss associated with subsequent adjustments.

**Fine-tuning operation:** An operation executed by the Bank in response to a temporary deviation – within the range defined by the upper and lower bounds of the interest rate corridor – in the level of a market rate (mainly [overnight](#)) from the level preferred by the Bank due to an exogenous factor. In the case of a temporary liquidity disruption of the banking system, the Bank may consider whether it allows interbank rates to shift significantly within the bounds of the interest rate corridor, or prevents their – undue – fluctuations by conducting tenders or quick tenders.

**Foreign exchange market intervention:** see [intervention](#)

**Foreign exchange reserves:** The total amount of foreign exchange assets held by the central bank. The most important reasons for holding foreign exchange reserves are satisfying international investors' requirements for a particular level of reserves, meeting the state's transaction need for foreign exchange, ensuring the central bank's intervention capacity in the foreign exchange market and maintaining the exchange rate regime in certain countries.

**Foreign exchange swap:** see [swap transaction](#)

**FX swap transaction:** see [swap transaction](#)

**Government bond:** A debt security issued by the state. The buyer of a government bond provides credit to the state for a certain period of time and at a certain interest rate. Government bonds can be bought and sold at any time prior to maturity, i.e. they are liquid assets. By contrast, equities provide evidence of ownership in a corporation. Equities can also be bought and sold (i.e. they are liquid), but they have no maturity date and their return varies.

**Independence, central bank independence:** The central bank, as the institution responsible for monetary policy, must have adequate freedom and independence in making monetary policy decisions in personal, financial and professional terms. In most of the developed countries legal independence is declared by law.

**Indexation:** Linking money claims, prices or wages to the past value of some price index in order to reduce potential losses arising from inflation.

**Indirect tools:** A group of central bank instruments which the Bank uses to create the conditions necessary to achieve its goals through market mechanisms, instead of directly influencing the interest rate level which banks use in dealing with customers (e.g. open market operations, cf. **direct tools**).

**Inelastic demand:** A measure of the relationship between a change in the price of a product and demand for it. Demand for a product is inelastic when it changes by less than one per cent in response to a one per cent change – e.g. a rise – in price; in this case demand declines (cf. **elastic demand**).

**Inflation:** A continued and sustained rise in the general price level, i.e. the general level of goods and services prices.

**Inflation expectation:** Inflation expected or planned by economic agents for a future point in time or period.

**Inflation target:** The particular inflation level in an inflation-targeting regime for the achievement of which the central bank undertakes an obligation.

**Inflation targeting:** A monetary policy framework in which the central bank's primary objective is to maintain price stability. In order to achieve this, the central bank sets an inflation target and undertakes an obligation to meet that target (cf. **inflation target**).

**Inflation tax:** The loss suffered by market participants because they can buy less goods due to higher prices.

**Inflationary spiral:** A situation in which economic agents' expectations increase and trigger a self-reinforcing cycle. As agents expect a higher level of prices in the future, they require higher (nominal) wages to ensure that the real value of their incomes – i.e. the quantity of goods and service they can buy – does not fall. However, the increase in wages will lead to an increase in costs for producers, which they may pass on to prices. At this point, the process becomes self-reinforcing, i.e. a spiral will begin.

**Inside lag:** The time between recognising the need for action and making the decision. In the case of monetary policy, this lag is relatively short (cf. **outside lag**).

**Interest rate channel:** One of the channels of monetary transmission. Monetary policy actions lead to changes in market interest rates. A reduction in the key interest rate results in lower lending rates, which in turn boost the demand for credit, and propensity to save weakens in response to lower deposit rates. Consequently, the private sector's willingness to consume and invest increases, which leads to higher inflation (cf. **monetary transmission mechanism**).

**Interest rate corridor:** The corridor designated by the central bank's overnight (O/N, **overnight**) collateralised lending and deposit rates. Its most important function is to limit fluctuations in interbank rates. Using the interest rate corridor, fluctuations in overnight interest rates can be prevented from passing through to longer-term yields.

**Intermediate target:** An economic variable which monetary policy is able to influence directly and which helps achieve the ultimate goal via the monetary transmission mechanism. A well chosen intermediate target is capable of capturing changes in factors that are beyond the direct control of the central bank before they would actually influence the ultimate goal itself. Under inflation targeting, this role is played by the inflation forecast.

**Intervention:** Intervention by the central bank in the foreign exchange market or that of another financial asset. The central bank influences the exchange rate of the local currency by buying or selling foreign currency in the foreign exchange market. As a result of intervention, the amount of central bank money in the economy changes (declining with the sale of foreign exchange and increasing with its purchase).

**Liquid asset:** An asset which can be converted into cash quickly and at low cost.

**Liquidity management:** In a broader sense, an activity whereby financial and non-financial corporations ensure the liquid assets required for administering their businesses at the lowest possible cost. In a narrower sense, an activity whereby commercial banks provide the liquid assets required for executing the transactions of their clients and meeting their reserve requirements at the lowest possible cost.

**Liquidity position:** The relationship between the actual and desired level of banks' reserves. When there is a liquidity shortage, the desired level is higher than the actual and banks have to turn to the central bank for credit.

**Liquidity regulation:** An activity in the money market whereby the central bank influences the demand for and supply of central bank money using its available instruments, in order to make them consistent with its operating target, whether it is a quantitative or interest rate target.

**Long-run neutrality of money:** According to the theory, although monetary policy is able to influence economic growth in the short term and so to smooth fluctuations in the business cycle, its impact on **real variables** (employment, growth, etc.) will disappear in the longer term. This is because the equilibrium level of the latter are basically determined by movements in supply – the use of available technology, demographic factors or the preferences of economic agents. The short-term effects of monetary policy actions will be reflected in changes in the general price level.

**Long term:** see **short vs long term**

**Macroeconomic forecast:** The forecast shows expected future developments taking place in the economy. A macroeconomic model, capturing well the mechanisms at work in the economy, provides the background to the inflation forecast. The aim of the forecast, produced quarterly, is to analyse and forecast the factors affecting inflation. As such, the forecast is the most important source of information for monetary policy decision-making.

**Macroprudential analysis:** Macroprudential analysis focuses on the exploration and communication of systemic risks with the main aim of recognising and preventing the build-up of imbalances and avoiding the resulting real economy costs (cf. **financial imbalance**).

**Main policy instrument:** The primary instrument set by the central bank to ensure an optimal level of interest rates. The central bank influences money market rates through the main policy instrument, which in turn affect companies' and households' borrowing and deposit rates as well as the forint exchange rate. Usually, the main policy instrument is a short-term facility and can be a lending or deposit facility. In Hungary, the main policy instrument is the two-week MNB bill.

**Menu cost:** The cost for producers of repricing their goods in a persistently high inflation environment, after the classic example of changing restaurant menus.

**Monetary policy:** Monetary policy is part of overall economic policy and it is the central bank's responsibility to conduct. The ultimate aim of economic policy is to increase social welfare through influencing and controlling economic output. Monetary policy can best contribute to this by maintaining price stability.

**Monetary policy instruments:** The totality of the instruments available for the Bank to achieve its monetary policy objectives under authorisation by the Central Bank Act. Using its instruments, the Bank is able to directly influence the level of interbank rates and the amount of central bank money circulating in the interbank market with the elements of its instruments. The most important elements are the open market (forint and foreign exchange) operations and the reserve requirement ratio.

**Monetary policy strategy:** A set of guidelines for the conduct of monetary policy, based on past experience and measurable results, which are indispensable for the Bank to achieve its monetary policy objectives.

**Monetary transmission mechanism:** A mechanism through which the central bank's monetary policy actions affect output and inflation through influencing market participants' decisions.

**Net exports:** The difference between exports (goods and services sold abroad) and imports (goods and services purchased abroad).

**Nominal anchor:** An economic variable which is able to stabilise or 'anchor' economic agents' expectations of future inflation. If the nominal anchor is credible, i.e. economic agents trust that the monetary authority is able to meet its objective, then they will form their expectations of future inflation consistent with that anchor (cf. **inflation expectations**).

**Nominal variable:** A variable which reflects the effects of price changes. There are two types of nominal variables: price variables (e.g. the nominal exchange rate, nominal prices) and 'value' variables (e.g. nominal GDP). Price variables only measure the effects of changes in prices, while value variable measure the combined effects of volume and price changes. Real variables, measuring only volume changes, are derived by eliminating the effects of price changes (cf. **real variable**).

**Open market operations:** The activity of the central bank in the course of which it enters the market of a financial asset either as a buyer or seller with a view to influencing the amount of central bank money or the interest rate level or maintaining them at a desired level.

**Output gap:** The difference between current and potential – or natural, long-term equilibrium – output. The output gap is negative if the economy is performing below the potential level of output. In such a case, economic processes point to a decline in inflation, due to lower demand. If output rises above its natural level temporarily, i.e. if capacities are 'over-utilised', the economy becomes overheated, and rises in costs in response to excess output will generate inflationary pressures.

**Outside lag:** The time it takes for the full effect of a decision to pass through the economy after it is taken. The outside lag of monetary policy is quite long (cf. **inside lag**).

**Overnight (O/N) rate:** The interest rate on (mainly interbank) money market (credit/deposit) transactions with one-day maturity, i.e. which commence today and mature tomorrow.

**Policy interest rate:** see **central bank base rate**

**Potential growth:** The highest possible non-inflationary growth rate of an economy. The rate of potential growth is determined by the increase in supply-side factors (technological development, the expansion of available capital and labour, etc., cf. **output gap**).

**Potential output:** A particular level of economic output. A level of production attained by a full utilisation of all available factors of production (cf. **potential growth**, **output gap**).

**Price stability:** The combination of persistently low inflation and well-anchored expectations. Under price stability, inflation is not a factor in economic agents' consumption and investment decisions.

**Rational expectations:** Economic agents make their decisions based on all available information. In addition, they are aware that it may be rewarding for economic policy to make promises which it will not keep after the desired economic effect is achieved.

**Real economy:** The non-financial sectors of the economy.

**Real interest rate:** The difference between the nominal interest rate and expected inflation. The level of real interest rate has an effect on investment and consumption decisions, as well as on aggregate demand and thus, indirectly, developments in inflation.

**Real variable:** A variable adjusted for the effects of price changes, which reflects only volume changes (cf. **nominal variable**).



**Recession:** In general, a period of economic decline. The technical definition of a recession is negative economic growth for two or more successive quarters (i.e. gross domestic product declines).

**Reserve requirement ratio:** Commercial banks are required set aside reserves with the central bank on the deposits and other liabilities collected by them, at a percentage determined by the reserve requirement ratio. Raising this ratio decreases liquidity, whilst reducing it increases liquidity, and thus reduces/increases the money supply of the economy. However, its main purpose is to promote commercial banks' **liquidity management** in order to reduce fluctuations in short-term interbank rates, rather than change the amount of currency in circulation.

**Risk scenarios:** In addition to the baseline scenario, alternative scenarios are also produced, which quantify the risks related to certain assumptions used in the forecast. The risk paths pertaining to the scenarios present events which, if they materialise, may warrant a different orientation of policy relative to that embodied in the baseline scenario. The risk scenarios provide an opportunity for members of the Monetary Council to communicate their dissenting view from that of the majority.

**Seasonality:** Seasonality describes the phenomenon of regular within-year fluctuations in economic variables. In the case of inflation, for example, seasonality is related mainly to seasonal shopping habits around holidays.

**Shoe-leather cost:** When the general price levels is rising persistently, economic agents try to make their purchases as soon as possible, for which they need cash. As their deposits held with pay interest, they will be best off if they maintain their deposits as long as possible. Shoe-leather cost refers to the cost of time and effort that people spend going frequently to banks. With the development of financial literacy and the wider use of bank cards the importance of this cost has fallen significantly.

**Short vs. long term:** In a macroeconomic sense, short and long term are distinguished according to the extent to which variables are able to adjust to changes in economic conditions. Certain variables are unable to respond in the short term, while all variables may change in the long term. For example, prices are 'sticky' in the short term, and production adjusts to changes in supply and demand. By contrast, in the long term it is changes in prices that cause supply and demand to move into balance.

**Swap transaction:** An agreement whereby the contracting parties exchange future cash flows under conditions specified in advance. In a foreign exchange swap transaction, the contracting parties exchange cash flows in different currencies and swap back at a pre-set exchange rate at a particular date in the future. Swap transactions (as well as futures and options) are fundamental instruments of risk management.

**Tax rate:** A percentage which defines the share of income economic agents should pay to the state.

**Tender:** see **auction**

**Transmission mechanism:** see **monetary transmission mechanism**

**Transparency:** Transparency of central bank operations for economic agents. Transparent operation contributes to creating and maintaining the credibility and efficient operation of monetary policy.

**Ultimate objective:** The most important goal within the general objectives of economic policy (e.g. reducing inflation and/or maintaining a high level of employment) from the perspective of the central bank, generally defined by law.

**Verbal intervention:** A unique tool of central bank communication used to guide expectations. Verbal intervention is used when the level or path of a variable (e.g. the exchange rate of the currency), important from the perspective of the ultimate goal, is considered by the central bank as undesirable or unsustainable over the long term, but it does not want to influence it in other ways (e.g. using open market operations or changing the policy rate).

**Well anchored expectations:** Economic agents expect inflation to be around the inflation target in the medium term, even if the current rate of inflation deviates from the target (cf. **inflation target**).

**Yield curve:** The representation of the term structure of interest rates across the entire maturity spectrum. The most frequently used yield curve is that showing the yields on government securities.

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