Real Estate Prices, Credit Growth and Implications for Monetary Policy

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The central bank fulfils many functions in every country. It primarily influences the maintenance of price stability by conducting monetary policy. In doing this, the central bank pays attention not only to the development of consumer prices, but also to factors that influence them or can considerably influence them in the future. Asset prices can be included among these factors. The following text analyses in detail issues regarding the origin and identification of price bubbles in general, especially price bubbles in the real estate market

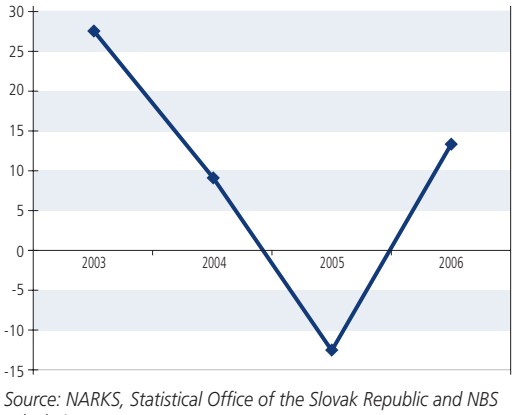
Price Bubbles

At a certain time after a long-term or very fast growth of asset prices, the asset price level seems to cease to reflect the development of fundamentals that should influence them. Such cases are called bubbles (asset price bubbles).A problem in the economy arises then the trend is inverted and the prices of the underlying assets fall sharply. In such a situation, the economy can incur great damages resulting from deflationary trends. The basic task of the central bank is to maintain price stability, therefore, it is also necessary to monitor the development of asset prices. Price bubbles can emerge primarily in stock markets, commodity markets and real estate markets. Since the first two market types are of global nature (central banks donęt have many possibilities to influence them, exceptions being only the FED, ECB and Bank of Japan, which can influence the stock markets to a certain extent) we will pay attention especially to real estate prices in the following parts.

The fluctuation of asset prices can be influenced either by the development of the fundamentals or by the „herd" behaviour effect, under which a growing number of traders or investors enters the market (thereby considerably increasing the demand for a certain asset), because they expect that it will be possible to systematically sell the asset at an increasingly higher price at a short-term horizon (according to income in the present and in the past). In such a case, the traders are motivated by a fast profit from the sale of the asset at a short-term horizon instead of benefiting from income flows at the long-term horizon, so that the asset price increases quickly and deviates from the development of the fundamentals.

Price bubbles can influence the price level also indirectly by means of the wealth effect. Indirectly means that the asset prices are not included in the price index, by which the rate of inflation is measured. In the case of an increase of the price of the underlying asset (stock price, real estate price etc.) the wealth of individuals increases (in some cases, this is only an „imaginary" profit, because the asset must be sold and the profit realized) and the individuals can influence the price level by means of growing domestic demand. It has not been proven so far empirically, however, that the wealth effect leads to higher consumption in each country. In some countries, such as Australia, Canada, the Netherlands, USA and the United Kingdom, this relation works mainly by means of the mortgage equity withdrawal (which consists, in simple terms, in drawing a part of a redeemed mortgage and using it for other purposes – for consumption; this is also related to the price growth of the pledged real estate – where the price of the real estate increases, the price of the collateral increases for the debtor, meaning that theoretically he can borrow more funds). No wealth effect on consumption has been demonstrated in other countries, e.g. in France, Germany, Italy, Japan and Spain. On the other hand, when the price bubble (especially for real estates) deflates, the operation of the banking sector can deteriorate (by means

Chart 1 Real growth in real estate prices (%)



Source: NARKS, Statistical Office of the Slovak Republic and NBS calculations.

of a decline in the loan portfolio quality, which is reflected in financial indicators, e.g. in the profitability), which can even entail macroeconomic instability. When deciding on monetary policy, central banks hence take into account the whole macroeconomic environment including asset prices and above all the development of indicators affecting the asset prices.[1]

Demand and Supply in the Real Estate Market

Real estates make up the most important part of the assets of most households, so that attention is paid to the development of their prices also by the central bank. A more marked growth in real estate prices have been recorded recently. With the exception of 2005, when the decline in real estate prices was due to the base effect of the specific year 2004, real estate prices in the period under review increased on average by 17% in each year in real terms. Overall, real estate prices went up on average by 9.4% in real terms. This high growth reflected mainly the situation in the real estate market, where a high demand for real estates persisted.

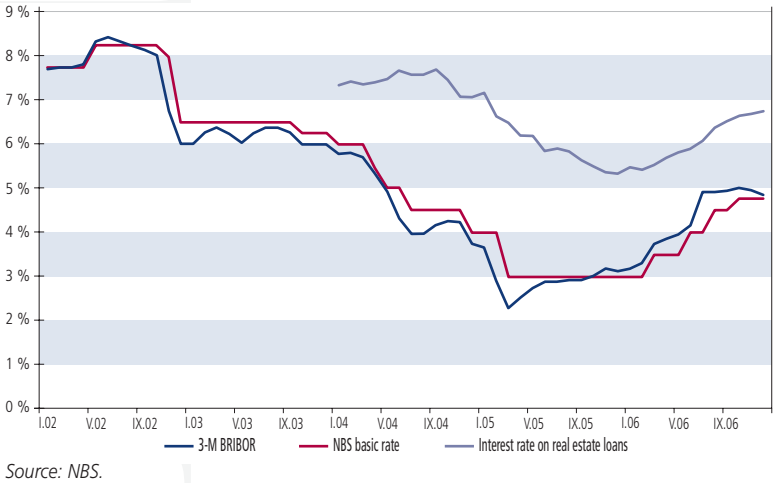
As in any product market, the pricing principles in the real estate market work based on demand and supply. Based on economic theory, the following quantities can be included among the basic factors influencing the demand for real estates:

- real and expected disposable income,
- nominal and real interest rates,
- demographic development,
- foreign demand,
- state support.

Real estate supply and factors influencing the real estate supply:

- the number of building permits issued,
- the number of housing real estates finished,
- construction sector profitability,
- price and availability of construction grounds,
- the amount of qualified labor force

Chart 2 Development of interest rate on real estate loans, 3-M BRIBOR and NBS basic rate (%)



Source: NBS.

It has to be noted that there is no supply function at the short-term horizon due to the specific nature of the construction sector. Supply can be examined at a long-term horizon only.

First of all, it is important to take into account the fact that the real estate price time series is very short, it is made up only of supply prices[2] and Slovakia's EU accession was announced during the period under review – the years 2002-2006. This fact had a decisive impact on the development of real estate prices in that the high expectations of the growth of goods and service prices including real estate prices passed through to a more marked real estate price growth. Mainly due to these three facts, the real estate data has to be taken with caution. However, the time series reflects the development of real estate prices in terms of their trend.

Demand

Gross Disposable Income

Real estate prices are closely related to the business cycle phase, as they experience a growing trend in the growth phase of the economy. Employment and wages grow in that period, which has an impact on the level of gross disposable income of the households. The households can afford to buy a flat or to draw a greater loan, which increases the demand for real estates and their prices. The growth of Slovakia's economy accelerated over the last four years and reached 8.8% in 2006. A marked growth of the real gross disposable income of households[3] was recorded in the 2004-2006 period, which was associated with the dynamic growth of the economy. The rate of inflation went up considerably in 2003, influencing a decline of income in the household sector in real terms (-1.9%), but in the subsequent years the household sector recorded a relatively strong growth of income of 5.9%, on average, for real gross disposable income of households. The stronger growth of household income set the stage for an increase of demand for real estates.

Interest Rates

Another important factor of the demand for real estates are the interest rates. In an environment of low interest rates, more households can afford to take up a loan for the purchase of real estates as a result of lower interest payments. Different developments of interest rates on real estate loans were observed in the period under review (2003-2006). The interest rates were decreasing in 2003-2005, which was also reflected in the growing dynamics of real estate loans. During 2006, the interest rate on real estate loans was gradually growing, which was reflected in a moderate slowdown of the growth rate of real estate loans to households. Despite a more marked growth of the interest rates of real estate loans in 2006, the interest rate in December 2006 still did not reach the level of 2004. The relatively low

1 An example of taking into account the asset prices in decisions on credit terms settings is the Bank of England. The Bank of England increased its basic interest rate in several steps by 1.25 percentage points from November 2003 to mid-2004, and in its statements and minutes it mentioned above all the growth of real estate prices (and assets in general), from which it drew information on future inflation and future economic growth. E.g. the minutes of the Monetary Policy Committee (MPC) from August 2004 state that „when presenting the MPC decision on the rates increase, it was important to make clear from MPC's perspective that this decision does not indicate any price targeting for real estate or any other assets. The unexpected acceleration of real estate prices considerably upheld a stronger short-term outlook of consumption and economic growth and the resulting faster estimated growth of the rate of inflation."

2 The real estate prices are based on the data of NARKS (the methodology and principles of computation have been published in the article „Monitoring residential property prices" by Ing. Mikuláš Cára in the professional journal Biatec, No. 1/2006), which collects data from bid advertisements of its members. Two factors have to taken into account in the case of real estate price statistics. The first one is that they contain almost no new constructions, where the prices are higher than those of old flats, and the second one is the fact that the prices in the advertisements are mostly higher than the actually realized prices.

3 Gross disposable income deflated by HICP.

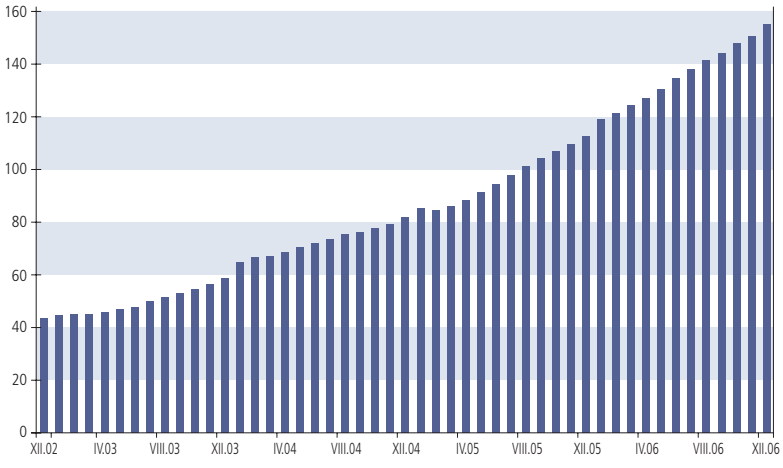
interest rates fuelled the interest in credit products, which entailed an increase in the demand for real estates and thereby also the growth of real estate prices.

Loans

The purchase of housing real estates is funded mainly from credit products that started to be available for a great part of households after the restructuring of the banking sector and after a gradual decline in interest rates (from 2002 onwards). The development of bank products and financial innovations (see the box Financial innovations in the world and state support systems for details) manifested itself in a more marked growth of the loan volume of households. Until 2001, loans assigned to real estates had been only provided by building and loan associations. The boom of mortgage banking launched the taking out of real estate loans, thereby contributing to a higher activity in the real estate market. The volume of real estate loans to households increased from SKK 44 billion to above SKK 155 billion from late 2002 to December 2006. In 2002, loans from home savings banks made up some 73% of the volume of real estate loans. The proportion of mortgage loan, however, was gradually increasing and later on also that of other real estate loans, which made up the majority of the total inflow of SKK 111 billion. Mortgage loans constituted the largest part (46%) of real estate loans at the last day of December 2006; they were followed by building and intermediate loans (30%) and other real estate loans (24%).

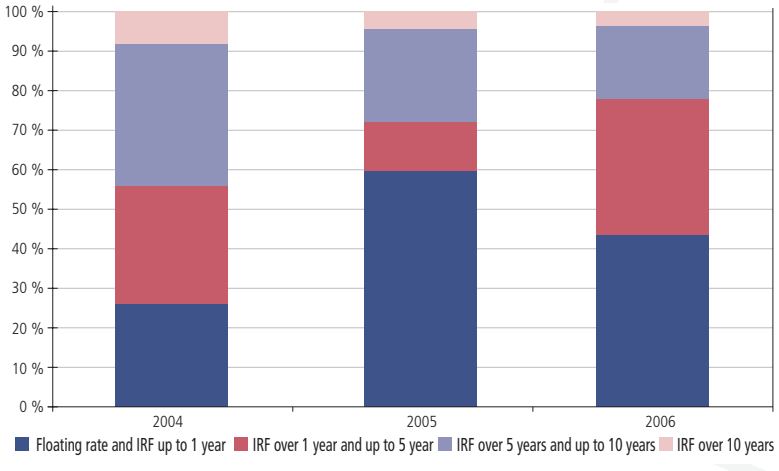
In terms of financial innovations the transition from a fixed interest rate over the whole loan maturity (as it is the case for loans from home savings banks) to various variants from a floating rate up to a differing length of initial rate fixation played an important role in Slovakia. Together with changes in the market interest rates, there was also a change in the preference of households in the selection of a suitable initial rate fixation for real estate loans. While in 2004, loans with a initial rate fixation in the category of over 5 years up to 10 years made up the biggest part, during 2005 banks granted already almost 60% of the loans with a floating rate and an initial rate fixation (IRF) up to 1 years. The proportion of such loans fell to almost 44% in 2006. Under decreasing interest rates, the households should prefer a floating rate (in such a case however the client assumes a part of the interest risk) and, by contrast, under increasing interest rates they should prefer an interest rate fixation. In 2006, the households, in an environment of a moderate growth of real estate loan interest rates, started to fix the interest rate more, as the share of real estate loans with IRF in the category of over 1 year up to 5 years increased to almost 35% by 22 percentage points compared to 2005. This was probably a result of more information being available on bank products.

Chart 3 Development of real estate loans (SKK billion)



Source: NBS.

Chart 4 Share of the individual real estate loan types by initial rate fixation

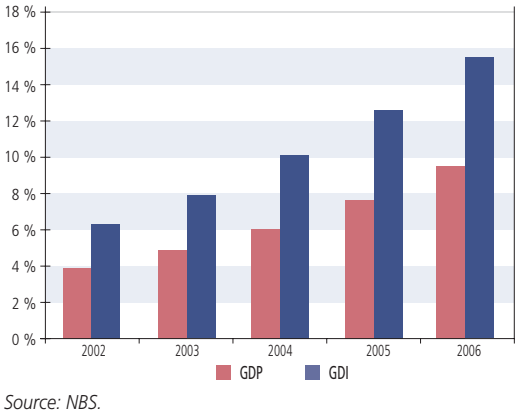


Source: NBS.

Household Indebtedness

Since real estate loans make up the majority of total loans to households, their growth was reflected in household indebtedness. Household indebtedness can be expressed as a ratio to gross domestic product (GDP) or to gross disposable income (GDI). The result is very similar in both cases. Household indebtedness increased by 10 per-

Chart 5 Real estate loans' share in GDP and in gross disposable income (GDI)



Source: NBS.

Box 1

Financial Innovations in the World and State Support Systems

Loan Types in the World

Mainly loans with a fixed interest rate were used to finance purchases of real estates over the last two decades. Recently, however, new loan forms come to the fore. A widespread loan type in the world are floating rate loans or with a short fixation period. This development is likely to have been influenced primarily by the longer-term persisting low interest rate environment. Sophisticated types of loans with options and clauses regulating the installment pattern have been introduced in some markets. In recent years, loans with postponed principal repayment have become widespread. These are for example interest-only loans and hybrid loans. Although such financial innovations are a worldwide trend, differences between the used types of loans remain. In some countries (USA, Canada, Germany, France, Belgium, Switzerland, the Netherlands), fixed rate loans continue to be most frequently granted loans. Countries, in which floating rate loans are used to a quite high extent, include the United Kingdom, Spain, Sweden, Italy, Australia, Luxemburg and Korea.

Innovative Products of Real Estate Loans

There are two basic types of loans. The first type are loans with a fixed interest rate. In the case of such loans, the interest rate is fixed over the whole loan repayment period. The other type are floating rate loans, for which the interest rate changes depending on the market development. In some countries (e.g. in France), the floating rate loan contracts include an interest rate cap. It is typical of both types that the debtor repays the interest and the principal over the loan maturity period.

An interest-only loan is a loan, where the interest payments do not include principal repayments initially. When the non-amortized period expires, the loan installment increases to the fully amortized level. In such a case, however, the new installment is considerably higher than if the loan was repaid by fully amortized installments from the beginning.

Other loan types are loans, whose interest rates are reassessed monthly and installments annually, the debtor having the possibility to choose the level of the installment In some cases, the selected minimum installment is even smaller than the interest rate without principal (the installment is lower than with an interest-only loan), meaning an increase in the loan volume. This represents a negative amortization, which is attractive mainly by the fact that given the lower installments in the first year the debtor can afford a more expensive real estate or spend the saved funds on other purposes (buying goods to satisfy consumption). In the case of some types of loans, the contract contains a clause guaranteeing to the debtor the possibility to change to a fully amortized installment every 5 or 10 years, the installment level being adjusted in such a way that the loan be repaid by the end of the maturity period at the interest rate at the given time. Another clause in the contract can relate to the limit of the indicator "loan-to-value ratio", which can lie with the interval 110%-125% of the original loan level. If the loan value reaches its maximum under negative amortization, the installments are immediately increased to the fully amortized level. These two products entail a considerable increase of loan installments.

An accordion adjusted rate loan is a loan with a floating rate and fixed installments, but with an unknown maturity. The debtor knows his loan installments, which are the same all the time, but loan maturity is not defined. Usually, however, the maximum maturity period of the loan is limited to 40 or 50 years.

There are also loans, under which a part of the installment is made up of interest payments and the other part (principal repayment) is deposited in a fixed rate savings account. Such a type of loan is used primarily in countries, in which saving (including principal repayment) enjoys tax privileges.

Such products are destined mainly for young people, who start with a lower pay in their work. As their pay gradually increases, they can afford higher loan repayments. The spread of such products can be expected also in Slovakia, the provision of some of them having already started (e.g. a mortgage for 120% of the real estate price, postponement of principal payments over the first years etc.)

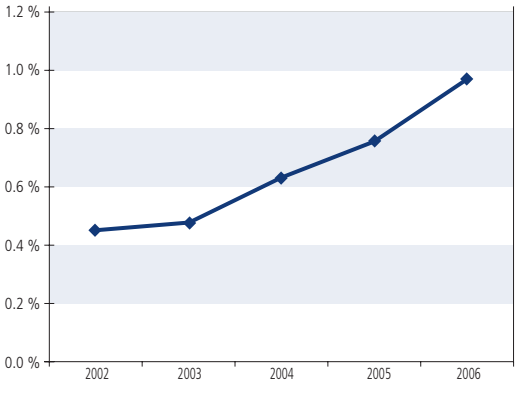
The Policy of Countries in the Field of Housing Support, and Taxation of Real Estates and Real Estate Income

Despite a considerable decline of interest rates and their relatively low levels in recent years in many countries, there are various forms of government support for housing when real estate is purchased. In most cases, however, they relate to people purchasing a real estate for the first time. Such a government support usually takes the form of interest payments for real estate loans as deductible items from the tax base (these are usually mortgages). In some

Box 1

countries, on the other hand, the deductible item can be partially decreased by the real estate tax or by various forms of income tax from imputed rent. The real estate market is also influenced by the level of taxation of capital yields from real estate let. In Germany, for example, capital gains of a flat lessor are tax-free as far as he has owned the real estate for more than 10 years (5 years in Belgium). Various supporting mechanisms, under which the lessor enjoys advantages from the ownership and lease of real estate, fuel the rise of purchases of real estates designed for lease (buy-to-let). However, this can set off a spiral, where an increase of the demand for real estates for lease pushes their prices up, thereby also increasing the volume of loans needed for real estate purchases. To satisfy capital gains from future lease, which depend on the price of the real estate, the lease price must increase automatically, which tempts further investors to invest in real estates. In some countries, such as Belgium and Switzerland, rent increases are restricted and have to be justified by increased costs or inflation.

Chart 6 Household interest expense's share in gross disposable income



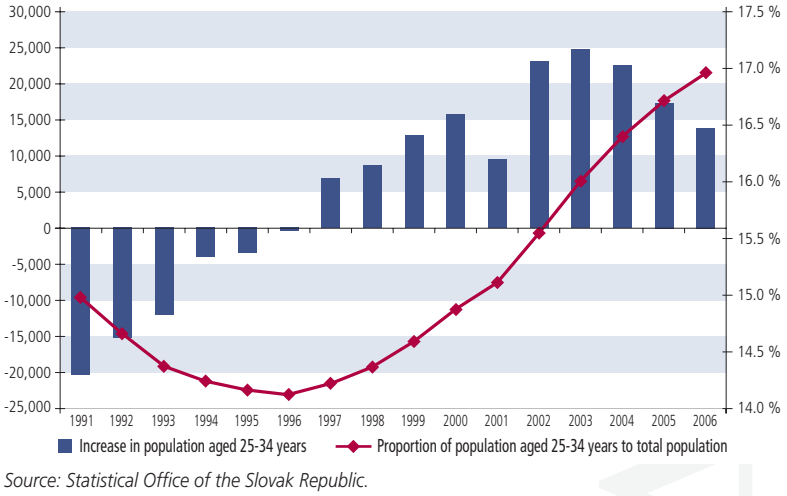
Source: NBS.

centage points to 16% of gross disposable income of the households in December 2006 as compared to late 2002. Along with the increasing household indebtedness, interest expense[4] of households from real estate loans went up over the period under review. The interest expense's share of gross disposable income expresses what part of its disposable income the households spend on the repayment of interests for their debts (not of the principal). This part of repayments is considerably influenced by the determination of the basic interest rate of NBS, which shows a more moderate growth of interest expense of the households until 2005 (decrease of interest rates) than in 2006 (increase of interest rates). The household interest expense's share of the household disposable income more than doubled – from 0.45% to almost 1% during the period from 2002 to 2006.

Demographic Development

A very important factor affecting the demand for real estates is the demographic development. Indeed, if the number of persons aged 25 to 34, which is the age of first-time buyers of real estates for housing, increases significantly, the demand for real estates increases considerably. As the demographic development shows, the number of persons aged 25-34 decreased from 1991 to 1997. In the subsequent years, however, the

Chart 7 Development of the increase in population aged 25-34 years and in its share of the total population



Source: Statistical Office of the Slovak Republic.

increase of the number of potential first-time buyers went up considerably, reaching its peak in 2003. In the 2000-2006 period, which has influenced the demand for real estates most, the number of persons aged 25-34 increased by more than 127000. Given the stagnation of the construction of new flats and houses over the last 10 years, the demographic development together with the growth of household income have created considerable pressure in the real estate market, which entailed a rise in real estate prices (above all in areas, to which investments came).

State Support

The demand for real estates is also considerably influenced by various forms of government measures for housing support. Such fiscal instruments can take the form of state support during saving in home savings banks, a state subsidy on the interest rate of real estate loans, up to various tax relieves (e.g. removal of the interest expense of the real estate loan from the tax base, tax remission during the purchase of the first residential real estate etc.). There are three forms of housing support in Slovakia, using which the state supports the development of the real estate market and, to a certain extent, also the development of the construction sector. The first form of support, at

4 The interest expense has been computed as the interest rate from the outstanding amounts of real estate loans multiplied by the volume of real estate loans. It is an approximation, because the interest income and expense has not been subdivided in terms of loan types.

Box 2

Calculation of the Revenue from the Purchase and Subsequent Renting of Real Estates in the Years 2005 and 2006

The revenues from the purchase and subsequent lease of real estates for 5 types of flats (one-room, two-room, three-room, four-room and five-room flats) and the subsequent weighted average for all types together have been calculated based on processed data on the realization prices and numbers of transactions in the real estate market in Bratislava for the years 2005 and 2006.

The simplified calculation does not take into account the time value of money and expresses only the revenue from the letting of the real estates for the given year (not for each year, because the prices of leases and real estates are dynamic and these values change over time. Similarly, legislature in the field of taxation of real estate lease, e.g. the amount of the non-taxable part). The values have been calculated as the ratio of the annual rent to the real estate price taking into account the income tax from the lease and a non-taxable part of SKK 24,900 annually (five times the minimum living wage).

The table implies that the lease revenue decreased for all types of flats in 2006, which was mainly due to a growth in real estate prices under stagnating lease prices. The lease revenue, however, were much higher than the revenue from a bank deposit product or from a riskless asset in the form of government bond revenue.

	1-room	2-room	3-room	4-room	5-room	Total
2005	8.03%	8.13%	11.80%	13.35%	11.07%	10.85%
2006	7.11%	6.89%	7.76%	10.57%	8.04%	7.45%

the same time the oldest one in our market, is the support of saving in home savings banks in the form of a state premium for deposits in home savings bank accounts. The beginning of saving in home savings banks dates from 1992. A state premium of 40% of the annual deposit, however, not more than SKK 6,000, has been granted from that year onwards. This form of support, however, has decreased (and the assessment basis has increased) over time and from 2005 onwards it reaches the maximum level of SKK 2,000. From 2001 onwards, after the adoption of the mortgage act, the government started to support also mortgage loans as a result of persisting relatively high interest rates; the support takes the form of a state subsidy on the interest rate of mortgage loans. In 2005, the state contribution to the interest on mortgage loans was decreased to 0%. Effective from the beginning of 2007, the government reapproved the mortgage loan contribution. However, the state support only relates to young people up to 35 years of age and the contribution amounts to 1.5% with a parallel decrease of the interest rate by the bank by 1 percentage point at least. Another form of housing support in Slovakia is the State Fund for Housing Development, which grants loans at favorable interest rates not only to households, but also to towns and municipalities, as well as flat owner communities. The support can also take the form of subsidies granted mainly to towns and municipalities for the construction of rented flats and to flat owner communities for the reconstruction and technological improvement of residential houses.

Foreign Demand

The influence of other than domestic factors in the real estate market is visible in recent time. These factors might include foreign investors, who increase the demand for real estates almost in all countries of Central and Eastern Europe. The trend of an annual growth of real estate prices in those countries amounting to tens of percents represents a comparative advantage for the investors as compared to real estate investments in Western Europe.

Purchase and Subsequent Lease of Real Estates

The buy-to-let market has spread in developed real estate markets abroad (and gradually also in Slovakia), meaning that solvent persons (either those having sufficient own funds or those with a sufficient income to obtain a loan) invest in real estates with the aim of their subsequent let. This market contributes to the growth of demand for real estates, to a growth of their prices and ultimately to the growth of let prices. Because the price of real estates has increased every year, the let price had to increase, too, so that the investment yields the expected revenue (balance after subtraction of the mortgage installment and of all costs associated with the maintenance of the real estate). However, a slight decrease of rents was recorded in recent months, which could have been associated with the willingness to obtain smaller revenue, since the supply of real estates for letting increased.

SUPPLY

The real estate supply includes above all new buildings and free flats and houses in the market. Several tens of thousands of flats are missing in the Slovak market (the number of flats per 1000 inhabitants is about 350 in Slovakia, while the EU average is 400 per 1000 inhabitants). The supply of new real estates for housing is influenced primarily by the profitability of the construction sector and by the return on the invested funds. Construction firms decide based on the demand of investors for various forms of real estates depending on their yield. Therefore luxury flats and houses (Bratislava area) are the most frequent type of flats being built in Slovakia, because their yield is usually the highest one. A higher supply of real estates (new constructions) concentrates also to areas, to which new investors come, such as Žilina and Trnava. Another important supply factor is the sufficient quantity of land at reasonable prices. This factor plays a very important role, because the demand for flats and houses has been the highest one in Bratislava over a longer period of time. Since 1993, the town of Bratislava had not have an updated town structure plan[5] with defined areas destined for the construction of flats and houses. This is one of the reasons why the price of land in Bratislava, as well as the Bratislava Region, is relatively high, which ultimately influences the real estate prices. The price of the final constructions is also determined by cost factors, which include the prices of construction works, material and products.

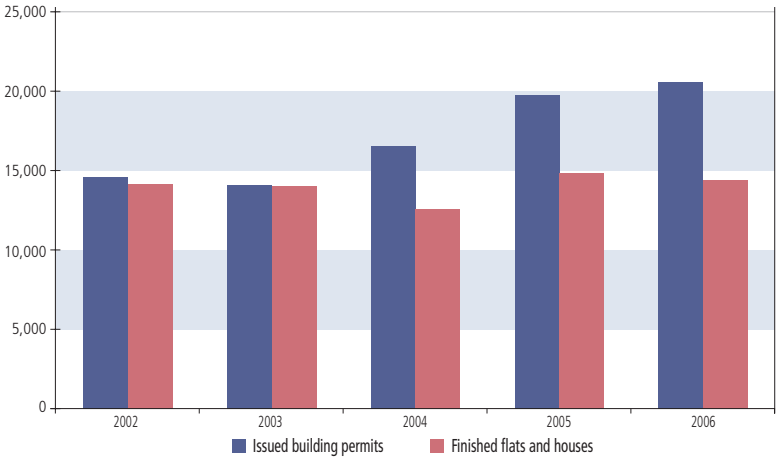
The number of building permits issued has increased slightly in recent years, which enables to conclude that the supply in the real estate market will grow in the following years. The number of finished flats and houses has been reaching an almost stable level for several years, 14000 being finished per year on average. Out of this number, flats constituted almost 47% in 2006, the rest being single family houses. From 2002 onwards, when the flats made up 36% of all finished real estates for housing, the number of finished flats has been increasing and a similar trend is visible also for the issued building permits.

An indicator of the supply of flats and houses for the future can be the ratio of real estates under construction to finished real estates. This indicator was between 2.8 and 3.5 without a marked trend in the years 2002 to 2005. It reached the value of 3.7 in 2006, which could indicate a higher supply of new real estates in the future.

A very important supply factor is the sufficient quantity of building lots destined for construction. Because the most developed real estate market in Slovakia is in Bratislava (8 out of 10 transactions are carried out there), the supply of land at reasonable prices is an important determinant of constructions.

Another phenomenon influencing the supply of new real estates in the market has come to the fore recently (during a construction "boom"). Construction firms have to face a lack of qualified labor, which entails a long construction times and delays in the delivery of new buildings.

Chart 8 The number of issued building permits and the number of finished flats and houses



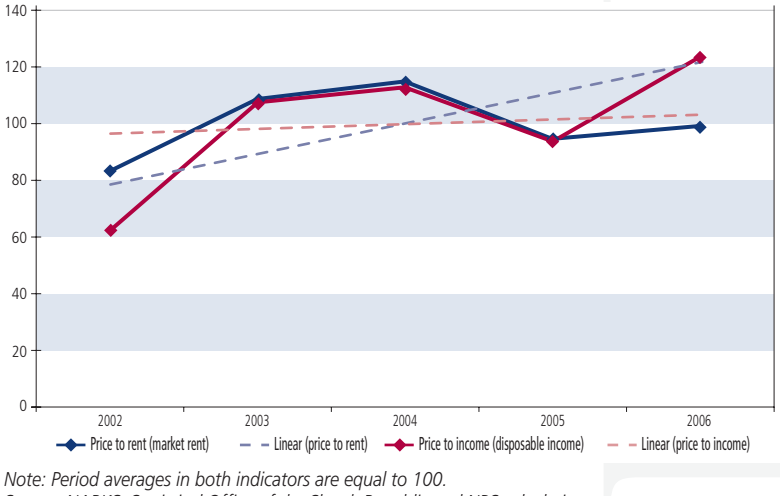
Source: Statistical Office of the Slovak Republic.

ARE THE REAL ESTATE PRICES IN SLOVAKIA HIGH OR DO THEY CORRESPOND TO THE FUNDAMENTALS?

It is not easy to determine if real estate prices are overvalued or if they correspond to the fundamentals. There are various approaches, based on which trends of the development of demand factors are monitored and it can be estimated subsequently, if the real estate prices are overvalued or not. The first approach is to determine the affordability of housing. Using this approach, it can be estimated, if the real estate is affordable for an average buyer. The affordability is determined using the ratio of the real estate price to income (price-to-income ratio). In this case, it is calculated as the ratio of the nominal price of the real estate to the disposable income per inhabitant (the number of inhabitants corresponded to the data provided by the Statistical Office of the

5 The new structure plan of the town of Bratislava was approved on 31 May 31 2007. Note: Towns and municipalities with more than 2000 inhabitants are obliged to have a structure plan as defined by the Building Act, other towns and municipalities only under certain conditions. 68% of towns and municipalities with more than 2000 inhabitants in Slovakia have an approved structure plan.

Chart 9 Ratio of the real estate price to the rent and to income

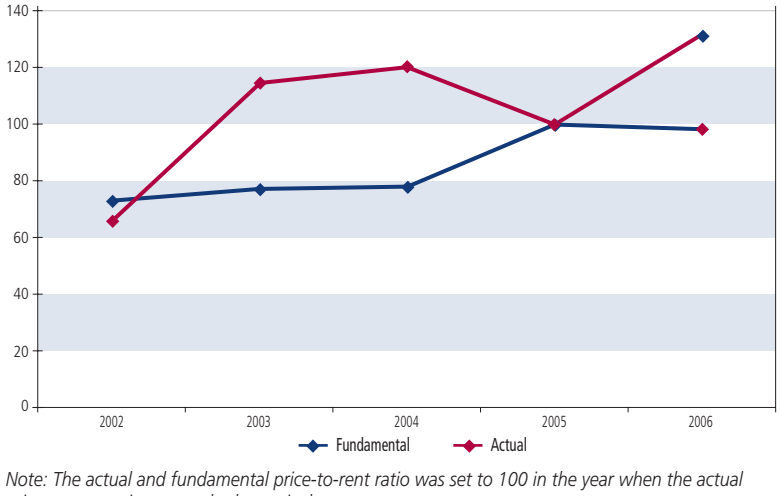


Note: Period averages in both indicators are equal to 100.
Source: NARKS, Statistical Office of the Slovak Republic and NBS calculations.

Slovak Republic for the said period). Chart 9 indicated the development of this indicator over the last five years. The development implies that the affordability of housing has increased slightly over the last two years (as compared to 2004), after a marked fall in 2003-2004, which can indicate that real estate prices correspond to the fundamentals (in this case, of the disposable income). This approach has some drawbacks. It takes into account the aggregated disposable income, i.e. the average quantity for the whole economy and the total population, the real estate prices being determined in the market only by a certain group of sellers and buyers, who have considerably higher income than the population average.

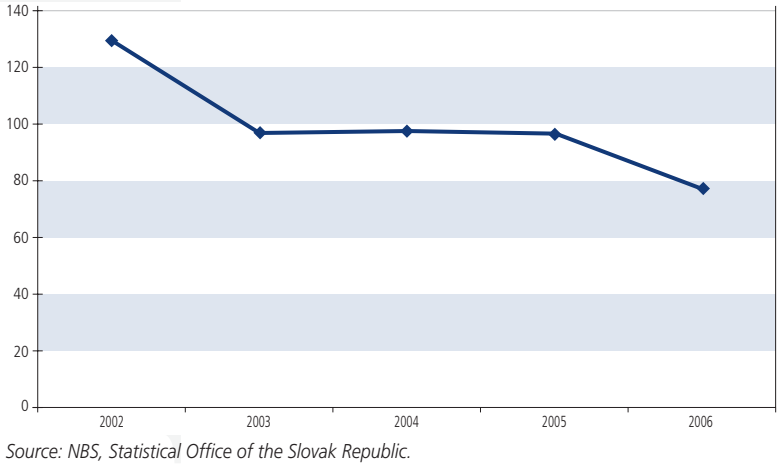
Another approach is the asset pricing model, under which the summary indicator "price-to-rent-ratio" is being monitored. It is usually calculated as the ratio of the nominal real estate price to the rent from the consumer price index. Since in Slovakia the CPI and HICP consumer prices contain only prices for regulated rents and fees for property management to the property manager, this indicator has no informative value. Because the price-to-rent ratio should express, if it pays off to own a real estate or if it is more advantageous to rent it, the market rent from the NARKS statistics has been used in the denominator. When the real estate prices are too high compared to the let prices, a potential buyer should prefer a real estate letting, which should cause the real estate prices to decrease. In the case of Slovakia, the price-to-rent ratio had the same development as the price-to-income ratio, with the exception of the years 2002 to 2006. This ratio reached the value of some 23% above the 2006-2006 average in 2006. When evaluating both ratios, it is important to also take into account that the time series are not sufficiently long, the average covering only the last five years.

Chart 10 Development of the ratio of the real estate price to rent (100=average)



Note: The actual and fundamental price-to-rent ratio was set to 100 in the year when the actual price-to-rent ratio approached most its long-term average
Source: NARKS, Statistical Office of the Slovak Republic and NBS calculations.

Chart 11 Rent-to-income ratio



Source: NBS, Statistical Office of the Slovak Republic.

The ratio of the real estate price and the rent price should express if it is more advantageous to own or to rent a real estate. When calculating the cost of owning a real estate, other indicators, such as the risk, tax relieves, real estate tax, depreciation, maintenance costs and expected capital gains from real estate ownership, have to be also taken into account. In this case, the price to rent ratio is calculated using the formula[6] (the fundamental ratio):

$$\frac{P}{R} = \frac{1}{i^a + \tau + f - \pi},$$

where i^a is the nominal interest rate on real estate loans (in countries where interest payments enjoy tax privileges, that fact has also to be taken into account in the calculation of i^a), τ expresses the real estate tax (in this case, it has been set to 6 SKK/m^2 as a simplified example, because its level is differs across towns), f represents a constant of 4%[7] and includes maintenance costs, depreciation and a risk premium, and the estimate π is the expected capital gain from the ownership of the real estate approximated by the rate of inflation (HICP average over the 2002-2006 period).

A comparison of the development of the current and the fundamental price-to rent ratio implies that real estate prices are slightly above the longer-term average.

The results of both approaches imply that real estate prices in Slovakia are slightly above the longer-term average, which however does not necessarily indicate an overvaluation of real estate prices. This development can be primarily attributed to a high demand.

When evaluating the rent level, the rent-to-income ratio can be used. This ratio should express whether the market rent is affordable for the average tenant. Chart 11 implies that the affordability of the flat lease has been growing since 2002. This was mainly the result of a decline of the market rent and of an increase of household income. The supply of real estates for let (especially that of new buildings) has increased markedly which manifested itself also in the let prices. The average rent level decreased by some SKK 3,000 in 2006 compared to 2002.

6 *Poterba, J. (1992): Taxation and housing: Old questions, new answers. American Economic Review, Vol. 82, No. 2.*
7 *The constant f equal to 4% has been taken over from the OECD material „Recent house price developments. The role of fundamentals" of the authors Nathalie Girouard, Mike Kennedy, Paul van den Noord and Christopher André. In our case, it could correspond to a 2% depreciation and maintenance cost and a 2 % risk premium.*

Implications for Monetary Policy

The monitoring of asset prices and above all of real estate prices is important for the central bank, especially in terms of the fulfillment of the inflation target and in terms of the financial stability of the banking sector and of the macroeconomic stability of the country. Real estate prices influence the economy by means of:

- the wealth effect,
- the construction sector,
- the financial sector.

The wealth effect has ambiguous influence on economic activity. It is higher in countries, in which there is a highly developed financial innovations market. A smaller or no influence can be observed in countries, in which these instruments are not used to a larger extent.

The construction sector plays an important role in every economy and has an important impact on the economic growth, because several further sectors, from the industries up to services, are linked to it. A decrease of the profitability of this sector could have a marked impact on the total economic growth of the country. The construction sector is the "indicative sector" of the economic activity of the whole economy, where multiplication effects manifest themselves.

The financial sector is usually the sector that is most affected by a decrease in the real estate prices, since real estates serve as the collateral when granting loans. A considerable fall in real estate prices could influence the adequacy of own funds of bank entities. No risk of a considerable impact of a decrease (not even a 50% decrease in real estate prices had a negative impact on the banking sector) of real estate prices on the banking sector has been identified based on stress testing of the risk of a decrease in real estate prices in Slovakia.[8]

The central bank focuses on price stability, for which it uses monetary policy instruments. Because prices of assets and above all real estates are not included in the consumer price index, it is very important for the monetary policy to monitor more closely the real estate prices and the fundamentals determining them, so that no price level increase occurs neither in the short-run, nor in the long-run. When deciding on monetary policy settings, it is important to perceive sensitively all the circumstances of how the overvaluation of real estate prices arose, as well as the consequences of prices bubble "deflation" in the real estate market. For this reason, it is suitable to pay more attention to the development of the loan growth (household indebtedness, debt distribution within households based in income groups, and changes in interest payments when interest rates are increased) and to the development of monetary aggregates. Both indicators can indicate future increased inflation pressures or a growth of asset prices (above all of real estate prices). There have been several reflections in theory regarding the inclusion of asset prices in the consumer price index, meaning that the central bank would actually influence the prices also in this market. The best known argument against such a way of influencing asset prices by means of monetary policy of the central bank is the fact that, based on household expenditure, the weight of assets could exceed up to 90% of the basket of consumer goods, which could entails a relatively volatile monetary policy. Another opinion as to how to cope with a too fast growth of asset prices is the burst of the bubble (if indication that a price bubble could arise has been identified). This, however, requires a multiple and considerable increase of interest rates, which can have a very detrimental impact on the whole economy. So far, however, it is impossible to classify any approach of the central bank as a universal solution in the case of a considerable growth of asset prices.

Summary

This text deals with the real estate market, its demand and supply side, based on which it is possible to evaluate real estate prices to a certain extent. The demand side of the real estate market considerably exceeds the supply side, which is the result of the economic situation in Slovakia in the 1990s, when the construction of new flats almost came to a halt. The most important source of the growth of real estate prices appears to be demography and the growth of household income. Other factors of increased demand for real estates are loan products and relatively low interest rates. With the exception of 2006, the interest rates exhibited a falling trend, which has fuelled the availability of loan products in the market. State support systems contributed to the growth of real estate prices in the past, too (especially when loan products were not available and high interest rates prevailed), but currently they do not represent the most important factor of real estate market development anymore. Less important factors on the demand side are foreign demand and the buy-to-let market. These factors should gradually cease to exist or their influence should weaken, because the supply of real estates for let (mainly luxury real estates, in which foreign investors speculating on the growth of their value or on advantageous let invest) is gradually increasing. The rent is gradually decreasing, which entails a decline in the revenue on real estates. On the supply side, a lack of new flats has been an important factor so far. A higher supply of new real estates is concentrated above all in the capital and in towns, to which major investors come. The number of finished flats, however, is not sufficient to cover the increased demand for real estates, therefore real estate prices have been growing considerably in recent years. The supply of real estates (announced projects for the construction of new flats not only in Bratislava, but also in other region capitals) is expected to grow

8 Lintner, V., Rychtárik:, "Stresové testovanie rizika poklesu cien nehnuteľností v slovenskom bankovom sektore". [Stress testing of the risk of decline of real estate prices in the Slovak banking sector] Biatec, banking journal, vol. 15, No. 5/2007.

in the following years, which however need not cover the high demand for real estates. As a result of the growth of income, the number of households being able to afford better housing will rise. For this reason, one can expect a further moderate growth of real estate prices, which should correspond to the performance of the economy and to the resulting growth of household income.

Because it is quite difficult to identify a price bubble in the case of real estates, the analysis has used the best known approaches, based on which the economists in world attempt to assess, whether the prices of real estates are overvalued or undervalued. The approaches indicated in the text above imply that real estate prices are slightly above the longer-term average, which enables to conclude that real estate prices approximately correspond to the economic fundamentals. However, bottlenecks also have to be taken into account when analyzing the real estate market, particularly the fact that the time series are short (only the trend of the ratio of selected indicators to the average of the period, in this case 5 years, is analyses) as well as some simplifications.

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