

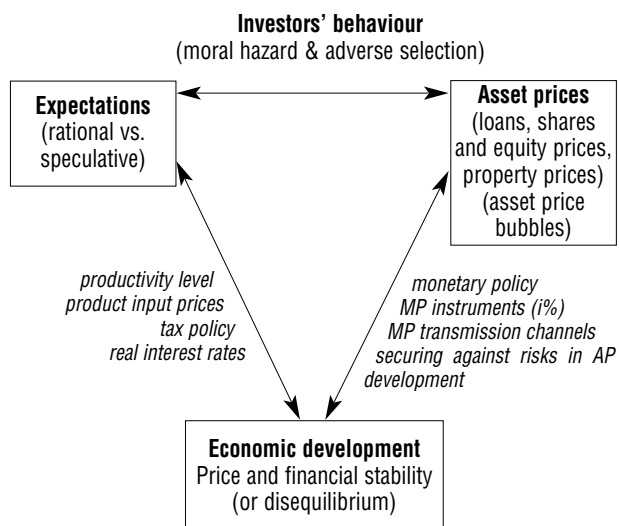
ASSET PRICES IN ECONOMIC THEORY¹

Ing. Silvia Gantnerová, National Bank of Slovakia

Asset prices, though not a goal or instrument of monetary policy, are nonetheless important for its realization, since they are a component of its transmission mechanism. A main instrument of central banks' monetary policy oriented on price stability are interest rates, the changing of which can have an impact on the level of consumer prices also indirectly, and this by means of their influence on asset prices. The development of asset prices is one of the indicators of financial equilibrium, where its disruption can lead even to a financial crisis in the economy as a whole. In the long term, however, price and financial stability mutually support one another, which results from their mutual interconnection. Price stability strengthens at the same time asset price stability, since it reduces the risk of speculative expectations, and consequently leads to a strengthening of overall financial stability. Asset prices may however serve for monetary policy as an important indicator of future expectations and may therefore often provide a central bank the necessary information connected with the future development of risks in connection with price stability, which represents the main goal of monetary policies.

Types of asset prices, channels of their transmission and the influence of monetary policy in this transmission mechanism

In order to gain a better understanding of the working of asset prices it is necessary on the one hand to identify the factors at work in forming asset prices (expectations – rational, or speculative), and subsequently on the other hand to examine the influence of asset prices on the economy as a whole (on its equilibrium and stability).



The formation of asset prices is to a large extent affected by investors' expectations (rational, or speculative) as regards future economic development, which influence the net present value of future asset yields². From this it results that changes in asset prices are affected by the influence from changes in long-term expectations in connection with the future development of the economy and its main fundamentals, such as the productivity level, input prices, tax policy, or real interest rates, etc. Changes in these expectations directly affect not only asset prices, the level of inflation, but via various transmission channels also economic activity as a whole.

From the experience of economic development it can clearly be seen that asset prices are one of the transmission channels by which economic activity and the overall macro-economic level of a country is influenced. Asset price movements are to a large degree reflected in an economy's development by means of their influence on the financial position (wealth) of economic subjects, primarily of enterprises and households, in consequence of which the level of savings and investment changes (the propensity to save, the propensity to invest). Assets value however has an important influence also on the balance-sheet of financial intermediaries (banks) and their willingness, or ability, to provide financial resources, i.e. credit.

Asset prices (or the channels of their transmission) comprise³:

- share prices, equity prices
- real estate prices (housing prices)
- credit to the enterprises and households
- the exchange rate.

The transmission mechanism of monetary policy occupies an essential role in an economy, since a change in interest rates brought about through monetary policy influences also the price level of other assets in the econo-

¹ This article is based on source papers presented at the ECB workshop "Asset Prices", where all materials and sources given in the text are published on the ECB website (www.ecb.int). The opinions stated in the article are those of the author and need not necessarily represent the opinion of the NBS.

² The net present value is based on future cash flows, i.e. on net cash incomes from an investment, where the time value of money is reflected by means of discounted cash flows from the investment at the required rate of return. In ascertaining the net present value of future incomes and expenditures, the so-called discounting of future incomes and expenditures is used. The net present value (NPV) expresses the difference between the current (discounted) value of cash incomes and capital expenditures. If the net present value is negative, i.e. the discounted cash incomes are less than the capital expenditures, the investment is unacceptable.

³ Hans-Joachim Klöckers



my (loans, shares, equities, bonds, and real estate). The transmission of these impulses is dealt with in literature, for example Tobin's Theory of Investment, F. Modigliani's Life-Cycle Theory and the related Wealth effect or Liquidity effect.

Tobin's Theory of Investment

Tobin's theory describes the mechanism of the effect of a change in monetary policy and the subsequent reaction in asset prices (for example equities, shares and other securities), which influences the real economy. It explains how a growth in asset prices may influence investment. In the case of a loosening of monetary policy (low interest rates) equity prices will grow (a preference of investment on the capital market over deposits in the banking sector), whereby the market value of firms is increased in comparison with the acquisition costs (this ratio is measured by the Tobin coefficient – $q = \text{the market value of a firm} / \text{the costs for renewing the capital}$). This situation gives enterprises the stimulus to subscribe new shares at a higher price, where they use the capital gained in this way for purchasing capital goods. The transmission mechanism of monetary policy pursuant to this theory functions as follows: in consequence of a fall in interest rates ($i \downarrow$) equity prices increase ($P_e \uparrow$), which subsequently brings about a growth in the market value of the firm in proportion to the costs for renewing capital ($q \uparrow$) and an increase in capital expenditure ($I \uparrow$), in consequence of which economic activity increases and output grows ($Y \uparrow$).

Expansionary monetary policy $\Rightarrow i \downarrow \Rightarrow P_e \uparrow \Rightarrow q \uparrow$
 $\Rightarrow I \uparrow \Rightarrow Y \uparrow$

F Modigliani – The Life-Cycle Theory – the theory of the influence of wealth on consumption

This theory is founded on the action of the wealth effect, which is based on the assumption that a change in equity and share prices influences wealth and consumption. According to this theory consumption is determined by a consumer's life-long incomes, which are composed of human capital, real capital and financial wealth. The main component of financial assets comprises shares and equities P_e (or other securities), the value of which determines, to a substantial degree, the level of wealth. If equity prices rise significantly (for example in consequence of a loosening of monetary policy), the value of financial wealth (FW) is increased, as are the financial resources of the consumer, in consequence of which a growth in consumption (C) will be seen and subsequently also in economic output (Y).

Expansionary monetary policy $\Rightarrow i \downarrow \Rightarrow P_e \uparrow \Rightarrow FW \uparrow \Rightarrow$
 $C \uparrow \Rightarrow Y \uparrow$

On the basis of the functioning of the monetary policy transmission mechanism perceived in this way it is pos-

sible, through its expansion, to explain also the action of asset prices in the development of the level of consumer prices, since higher equity prices are connected, among other things, with capital costs and the Wealth Effect and thus consequently support domestic demand, which, too, influences the price level.

Action of the Liquidity Effect in the transmission mechanism

The Liquidity Effect is connected with the preference of consumers to spending on goods of various consumption lengths depending on their expectations of the future development of the economy. For example, expenditures on long-term consumption goods are also influenced by the stock market. The arguments of this liquidity effect focus on the illiquid essence of long-term consumption goods (e.g. real estate). In the case of expected growth in equity prices the probability of financial difficulties is reduced and consumers increase their expenditures on the purchase of long-term consumption goods, which in the end result again leads to a growth in economic output.

The opposite situation occurs in the case of expectations of financial difficulties, since in consequence of the expected decline in equity prices there is a tendency to give priority to holdings of liquid financial assets over less liquid goods of long-term consumption. Besides this, equity prices represent an important indicator of the private sector's expectations as to future economic development.

Equity prices (P_e) $\uparrow \Rightarrow$ probability of financial difficulties $\downarrow \Rightarrow$ value of financial assets $\uparrow \Rightarrow$ expenditures on long-term consumption goods $\uparrow \Rightarrow Y \uparrow$

Credit (capital) channel in the monetary policy transmission mechanism

A no less important transmission channel is the so-called capital [6] or credit channel, by means of which the economy is influenced by equity prices, relating to their function as collateral in the provision of loans by banking subjects (the so-called "financial accelerator"). The value of assets has an influence also on the balance-sheet value of financial intermediaries, which in the end is expressed in the ability of the banking sector to provide loans, i.e. in the volume of credit provided.

Real estate prices $\uparrow \Rightarrow$ value of assets $\uparrow \Rightarrow$ value of collateral $\uparrow \Rightarrow$ balance-sheet value of economic subjects $\uparrow \Rightarrow$ willingness of financial intermediaries (banks) to provide loans $\uparrow \Rightarrow$ volume of credit provided by banks $\uparrow \Rightarrow I \uparrow \Rightarrow Y \uparrow$

Financial structure of the economy and financial indicators (indicators of financial stability / instability)

In analysing the financial stability of an economy it is



important first of all to focus at identifying its financial structure, i.e. to ascertain in which financial sector the prevailing volume of financial resources are allocated (economies founded on a functioning capital market versus those founded on a functioning banking system)⁴, or to identify the channels along which finance flows. Although the wealth structure of the population in individual countries is varied, there are many European economies where more than 30% of the financial wealth of the population is deposited in the banking sector (Spain, Germany, France). Conversely, in countries such as Great Britain or Holland receivables towards insurance companies and pension funds make up more than half the population's assets, where these institutions then reallocate these resources by means of the capital markets (cases may be found in history, when for example pension funds recording high profits were not prepared for a financial collapse, in consequence of which they suddenly found themselves without resources).[8]

In identifying the financial structure and the level of the financial system the orientation of an economy may be analysed on the basis of selected indicators, or indices. On the one hand the latter are founded on determining the relative size of financial markets, i.e. the market capitalisation of business companies in comparison with the volume of bank loans. On the other hand, there may be used an index indicative of concentration, or the force of activity on the financial markets, expressed in terms of the ratio of capital traded on stock exchanges in relation to outstanding bank loans.[4]

The financial structure in a bank-oriented financial system may be characterised by quantitative financial variables, such as monetary aggregates or bank loans. On the contrary in the case of economies founded on functioning capital markets an important indicator are asset prices (shares, equities, mutual fund certificates, or other securities, real estate, or housing).[4]

Development indicators of a banking sector-oriented economy

In economies with a less developed capital market (as in the case of most transitional economies) most finance in the economy flows primarily through the banking sector. In the case of an economy functioning in this way its financial stability is founded in particular on the stability of the banking sector, where loans represent the main instrument of allocating financial resources in the economy.

Where the banking system is at a high level, it requires in the provision of selected types of loans collateral with the aim of eliminating, or reducing the risk of default on the loans. In providing loans for housing (mortgages) in

this financial process the function of collateral is played primarily by real estate (in particular apartments, flats and houses). On the basis of this housing prices, or real estate prices, which equally belong to the same category of asset prices, are also a very important indicator of economic and financial stability.

In the case that prices of apartments, flats, or houses, fall the value of the collateral consequently falls, where from this value is usually derived the amount of the loan provided. In consequence of the mentioned effect the lending potential of the banking sector may decrease, which may then lead to a lack of funds in the economy, or a "credit crunch", with a negative impact on economic activity and output.

Development indicators of a financial markets-oriented economy

In an economy with a functioning and developed capital market it is important in connection with identifying financial stability, or the risk of possible instability, to monitor asset prices (securities, primarily shares and equities) created through the trading of these assets on the capital market. In a system functioning in this way, in providing credit to economic subjects (enterprises as well as the households) which own these tradable assets they may also fulfil the function of collateral.[2]

Within the scope of evaluating the importance of the financial structure in the process of identifying financial stability there are claims arguing in favour of the importance and position of asset prices in this process, primarily of prices of assets traded on the capital market (shares and equities). The arguments mentioned are founded on the assumption that the financial and primarily capital markets are more efficient and effective in comparison with financial institutions (banks) in determining asset prices ("price rationing") and consequentially also in credits allocating. Banks as financial intermediaries in this approach determine the price of an asset primarily on the basis of the volume of resources provided ("quantity rationing"). On the basis of this asset prices created on capital markets have a greater predicative ability, since more information is included in them, since market participants should be more sensitive and react more flexibly to changes in demand and supply for credit and to the economic situation as a whole.[4]

In economies with a developed banking sector, but at the same time also an efficiently functioning capital market bank financing is equally important as financing via the capital market and it is therefore necessary to monitor all the mentioned indicators and variables. Unsubstantiated changes in any of them may signal a risk of possible financial instability. On the basis of the stated facts, however, it may be said that the development of loans together with movements in the prices of other assets serve as an important indicator of financial stability.

⁴ Countries historically founded on a common-law tradition are oriented prevalingly on the capital market and, conversely, countries historically founded on the French civil law tradition are prevalingly oriented on the banking system. [4]



Property prices (real estate prices, or housing prices) versus capital market asset prices

Analyses of historical asset price data show that housing prices, or real estate prices are, compared to capital market asset prices (shares, equities and other securities) are more prone to boom and bust cycles and on average 70% of cases, where there occurred a sharp growth in real estate prices, they suddenly dropped in the course of the following two years.[5] Therefore real estate prices appear a more reliable indicator of price bubbles than equity prices.

A reduction in economic activity in connection with the bursting of a real estate price bubble generally has a more negative impact than the bursting of an equity price bubble. It is prices of real estate that trigger high-cost asset price booms [3], where the period following them is characterised by a sharp decline in real economic growth. One of the explanations why it is real estate prices that play such a role is that real estate form a substantial part of households' assets. This fact is probably connected with its importance and position in the framework of households' wealth, as well as with the role of loans (or real estate as their collateral) and their financial intermediaries (banks in the real-estate market).

Despite the fact that a sharp growth both in housing prices, as well as in the prices of shares and equities or other securities, has been accompanied by a growth in the volume of credit provided, a worsening of the situation in the provision of credit has been recorded prevalently in connection with a sharp decline in housing prices. The bursting of a price bubble on the real-estate market has usually had a very strong and quick negative impact on the banking system and its lending capacity. In the period of a fall in the prices of equities and other securities however the growth in lending continued.[5]

Despite the fact that a burst of both the mentioned types of price bubble has the consequence of decreasing economic activity and related economic losses, the prices of shares, equities and other securities have shown to be a less reliable indicator of the risk of financial instability, or crisis. As a result it is important for central banks to monitor, among other indicators, primarily the development of housing, or real-estate prices (or at least to hold them in databases).

Identifying financial disequilibrium, or asset price bubbles

In many cases when economic crises or financial instability has occurred in an economy, this development has been connected with boom and busts asset price bubbles, meaning a significant growth in the real-estate or capital market, followed by their sudden drop when the price bubble burst.

It is often said that it is very difficult to identify a price bubble in real time, or indeed impossible, since from the

essence of asset prices it follows that they are of a forward-looking nature [7]. Therefore it is very difficult to evaluate their development *ex ante*, since we do not know whether the expectations on which the bubbles are founded are realistic. Selected indicators do however exist which could help in analysing their development. For analysing the development of the capital market and its components there is, for example, the P/E ratio (the Price / Equity ratio, which is a coefficient of the financial standing and goodwill of the results, or capitalisation)[7].

In professional literature selected key indicators (or ratios of them) are given, a relatively high growth, or deviation from the long-term trend of which could signal negative movements in asset prices:

- private sector credits to GDP,
- credit equity gap,
- M2 gap (money gap, i.e. money supply to GDP), credit gap (i.e. credit to GDP), exchange rate gap, equity price gap,
- investments (their current development),
- real growth of equity prices and other security prices (growth in inflation adjusted equity prices),
- an aggregate index of asset prices (equity + property = wealth).

In monitoring the development of the banking sector in connection with the possible risk of its instability, or crises, its functioning is evaluated, for example, on the basis of deviations in the growth of credit compared to the rate of GDP growth [1], or the share of credit to GDP [4]. Therefore in a process focused on identifying of disequilibrium in the financial system it is necessary to pay increased attention to this aggregate. Primarily the mutual action of credit together with asset prices can in an economy in certain cases has a negative influence, for example in the context of approaching inflationary pressures. An important indicator of the growing risk of financial disequilibrium is the persistent and significant growth of credit, usually at the same time accompanied by a massive growth in asset prices. Ignoring such signals may in certain cases lead to unexpected fluctuations in both output as well as inflation.

On the basis of experience from the previous development of financial crises caused by the bursting of price bubbles a sharp rise in asset prices may be considered a signal of a possible asset price boom, while a sudden decline in asset prices may be considered a signal of the possible bursting of this bubble.[5]

A financial disequilibrium need not however always lead to a banking crisis. Its source may lie also in partial disequilibrium on the credit market. Banks may be willing to provide loans to creditworthy clients. Debtors however may, conversely, be under pressure to reduce their expenses so as to not over-burden their balance sheets. There thus arises a disequilibrium that is not a consequence of a lack of supply, but rather, low demand and an unwillingness to finance from external sources. Accord-



ding to the opinions of several experts in this field an increased proclivity of economies to financial crises, or disequilibriums, is connected also with gradual growing financial liberalisation.

References:

1. Borio, C.: Should credits come back from the wilderness?
2. Detken, C., Masuch, Smets, F.: Issues raised at the ECB workshop on Asset prices and monetary policy.
3. Detken, C., Smets, F.: Asset price booms and monetary policy: some stylised facts.
4. Djoudad, R., Selody, J., Willkens, C.: Does Financial Structure Matter for the Information Content of Financial Indicators?
5. Helbling, T.: Asset price booms and busts – myths and facts.
6. Helbling, T., Terrones, M.: Asset price booms and busts, stylized facts from the last three decades of the 20th century.
7. Issing, O.: Introductory statement at the ECB workshop on Asset prices and monetary policy.
8. ECB working paper: Asset market effects on economic activity.

To be continued in issue 9/2004