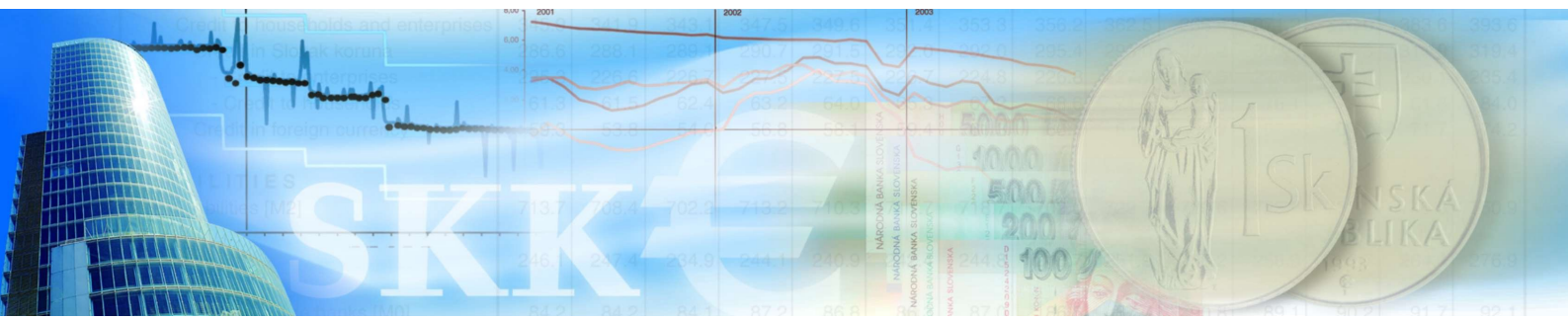
NATIONAL BANK OF SLOVAKIA

THE EFFECTS OF EURO ADOPTION ON THE SLOVAK ECONOMY



NBS Research Department

March 2006

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Executive Summary

Euro will affect all the inhabitants of Slovakia.

Euro introduction will be the largest integration step in the coming decade. This step will affect all the inhabitants of Slovakia. Already when entering the European Union the Slovak Republic has committed to adopt euro once it fulfills the conditions, Maastricht criteria, which the Maastricht Treaty sets for monetary union candidates. Convinced that euro adoption will be beneficial for the majority of citizens and businesses the Slovak government together with the National Bank of Slovakia have set year 2009 as a target date for euro area accession.

Euro adoption will bring both benefits and disadvantages.

In this study we assess the effects of euro adoption from an economic perspective. The benefits and disadvantages of Slovak entry to the euro area were discussed already when the euro adoption strategy was adopted. This analysis utilizes the latest information, using the set euro adoption date and the chosen euro adoption scenario. We attempt to quantify the most important effects, so that the costs and benefits can be compared. The costs and risks related to the euro area entry will depend on economic conditions and policies. Therefore we analyze the economic policies, which should support euro adoption, the issues of optimal timing of euro area entry and the impacts of euro adoption on citizens, businesses and the state administration.

Euro is the most often used foreign currency.

Euro adoption will immediately save some costs or remove some risks, what should permanently increase the gross domestic product. The most important direct benefit is the elimination of transaction costs on trades in euros. Slovakia is one of the most open economies in the EU, with foreign trade turnover over 160 % GDP. More than 80 % of this trade includes trade with European countries settled in euros. Businesses and citizens do not have to buy and sell euros for each foreign financial transaction. If they have both revenues and expenditures in euros, they have to exchange only the net difference. However, the sales and purchases of euros account for 98 % of spot foreign exchange trades.

Elimination of transaction costs on trades in euros …

Currently the citizens, businesses and investors pay fees when exchanging euros or they perform the exchanges at less beneficial exchange rates. The margin between bid and offer exchange rates ranges from 5 haliers on the interbank market to 96 haliers on the commercial banks retail market. We take half of the margin, i.e. the difference between buy/sell rate and the average rate to be the price of exchanging foreign currency. This price has a downward trend, but the volume of transactions is increasing. In total the financial transaction costs of trades in euro are estimated at 0.3 % GDP, which will be saved after euro adoption.

... will save approximately 0.36 % GDP.

On top of the gap between the buy and sell exchange rates the businesses have to bear also administrative costs when dealing with foreign currencies. These include the costs of foreign currency management, accounting of foreign exchange losses and gains, additional reporting and so on. We estimate the euro adoption will decrease these costs by around 0.06 % GDP. Overall we estimate the savings of transaction costs at 0.36 % GDP.

Exchange rate risk against euro will be eliminated.

Euro introduction will eliminate a major part of the exchange rate risk Slovak businesses have to bear. The enterprises can hedge against this risk using appropriate derivatives, e.g. options. The option price of a model option for one euro is 17 haliers. However, most enterprises are not using hedging strategies against exchange rate risk, either the price is too high or they are discouraged by administrative costs. We estimate the true economic price of exchange rate risk is one half of the option price. The volume of transaction exposed to euro exchange rate risk is about 10 % GDP. Overall we estimate the value of exchange rate risk that will be eliminated by euro adoption is 0.02 % GDP. Euro introduction should also slightly decrease the exchange rate volatility against other important currencies, especially the US dollar, since historically the euro/dollar exchange rate is more stable than koruna/dollar rate.

Increased price transparency.

One of the direct benefits of the euro for consumers will be much easier comparability of prices at home and in other euro area countries. This will create pressure on the producers and sellers of traded goods to decrease prices, since the competition in the euro area will be stronger than on the domestic market only. The experiences from current euro area countries show that prices have partially converged between countries, although sizable differences still remain.

Lower cost of capital

Euro adoption should lead to lower cost of capital for enterprises and thus stimulate investment activities. The investment rate in euro area countries was 2.5 % higher than in other European countries. Small and medium enterprises in peripheral euro area countries benefited most from euro adoption. For example, in Greece the euro has led to 4 percentage points decline in interest rates on loans to non-financial corporations. In a similar way we can expect decline in the costs of credit in the Baltic states, Slovenia and Cyprus by 1.4 to 1.7 percentage points. The expected benefit is slightly lower in Slovakia, because the interest rates for corporations have declined significantly already in 2004 and 2005, they can fall by up to 1 additional percentage point before euro adoption. This cheaper financing should stimulate investment. However, lower credit costs cannot be expected to significantly increase the profits of enterprises, because the interest rates from deposits will also decline, although most likely by less than the interest rates on credit.

All the benefits arising from euro adoption will eventually bring much wider indirect benefits. We expect a growth of foreign direct investment and foreign trade of Slovakia, which will contribute to faster GDP growth and increase in the living standards.

Euro adoption will contribute to gradual significant growth of foreign trade ...

Economic literature has dealt mostly with the impact of monetary unions on foreign trade. In his seminal study in 2000 Andrew Rose came to a conclusion that a monetary union may even triple the trade among its members. Such estimates were, however, based on a rather small sample of monetary unions most of which were very small or undeveloped countries. More recent research has focused on making such estimates more precise and realistic, which could be more applicable to such a large monetary union as the euro area. Our estimate is based on Rose and Stanley's cross-section analysis of 2005. We expect that after entry of Slovakia to the euro area its trade with partners within the monetary union will increase by 30 to 90 %. Such growth will not come immediately; it may take even two decades until it is manifested in full. During that period our neighbors – the Czech Republic, Poland and Hungary – will also become

members of the euro area, and therefore, the trade of Slovakia with other euro area countries will represent over 80 % of the total trade. Euro adoption should increase in the long run the total foreign trade by approximately 50 %.

… and foreign direct investment …

Euro adoption will facilitate the inflow of foreign investment into Slovakia. Entry to the euro area will significantly increase the stability of Slovakia as perceived by foreign investors. Investors will also save on transaction costs, they will not be exposed to exchange risk both in placing investment and in exporting output and profit repatriation. Foreign direct investments will be one of the "driving forces" for increasing foreign trade.

... which will consequently increase GDP by 7 to 20 %.

Higher inflow of foreign investment and growth of international trade should ultimately lead to a growth of GDP. Strong links with GDP have been empirically proven both in foreign investment and trade. The growth of foreign trade by 1 % should increase the GDP by one third of a percentage point. Due to the euro adoption we expect total increase of the Slovak GDP by 7 to 20 % in the long run. Such growth will take place gradually; annual contribution of euro to economic growth is estimated to be 0.7 %. The effect will be stronger during the first years following the euro adoption, and it will gradually fade out after a period of approximately 20 years. It should be noted, however, that this estimate involves a rather high degree of uncertainty; the actual impact may be by a half higher or lower, as well.

One-off costs of currency conversion will be about 0.3 % of GDP.

The benefits arising from the euro adoption should be contrasted with disadvantages and costs. Immediately before and after euro changeover the state and entrepreneurs will incur costs on the adjustment of information systems, currency exchange, conversion of prices, dual pricing, personnel training etc. Estimates of such costs for the current euro area member states are in range from 0.3 to 0.8 % of GDP. Slovak enterprises and public administration have not yet devoted much attention to such analyses within their organizations; therefore, we derived our estimates from foreign experiences. Several facts indicate that technical costs of euro adoption in Slovakia should be lower than in the twelve euro area countries. The euro changeover in Slovakia will be done in the "big bang" scenario, i.e. without transitional period, which would have increased the extent of preparations. Short dual circulation period should minimize costs of retailers. Since a large number of the Slovak enterprises have already been actively trading in euro, their preparations will not be as complex as in the case of the creation of a new currency. Moreover, the owners of many enterprises, in particular financial institutions, come from the euro area, and thus their experiences can be utilized. For these reasons we estimate technical costs of euro changeover at 0.3 % of GDP. It should be emphasized that these will be one-off costs. If enterprises took e.g. a medium-term loan to cover such costs, the installments would be less than 0.06 % of GDP per year. Such value is better comparable with benefits from euro adoption, which will be permanent.

After euro adoption banks will lose a part of their activities

Euro adoption will have a partially negative impact on the banking business. Banks operating in Slovakia obtain a significant proportion of their profit from foreign exchange transactions. Cancellation of the Slovak koruna will eliminate transaction costs for enterprises while, at the same time, reduce bank revenues from foreign exchange operations. Having regard of a strong competitive environment within banking sector we do not, however, expect banks to have excessively high profits from exchange operations. Accordingly, after the loss of

the euro-koruna exchange trades banks should be able to reduce some of their expenses or to extend their activities into other areas without significant decrease of the total profit rate. Banks should also indirectly experience benefits arising from euro for the entire economy. Higher profits and better financial situation of enterprises after joining the euro area will also improve credit portfolio of banks.

Loss of independent monetary policy ….

Loss of independent monetary policy is considered to be the most significant cost of joining the euro area. Setting of the common monetary policy by the European Central Bank may not be always adequate for Slovakia. National Bank of Slovakia will not be any more able to respond to external shocks by its interest rates and thus stabilize price level and output. However, the effectiveness of the Slovak monetary policy is limited even now. Slovakia has fully deregulated capital flows, which several times exceed the possibilities of monetary policy to influence them. The Central Bank is not able to simultaneously stabilize the exchange rate of koruna, price level and real economy. The exchange rate of koruna is often affected by foreign impulses, in particular from the neighboring countries. The exchange rate is often rather a source of shocks for the economy than their absorber.

The loss of independent monetary policy will be the less important the more similar the development of the Slovak economy to that of the euro area will be. Till lately the business cycles of Slovakia have been only slightly synchronized with the euro area. Weak synchronization in the past can be partially explained by important government reform and stabilization programs of the past years which should not be repeated any more such strongly. We can also analyze the similarity of shocks affecting the Slovak economy and euro area. These are just slightly symmetric. However, in the future an increased symmetry can be expected since the trade with euro area partners will develop fast, in particular intra-industry trade, and the structure of the Slovak economy will approximate to the core of the euro area.

... will not be a significant loss

We simulate the impact of the loss of independent monetary policy in a prognostic model of the NBS. In spite of an expectation that Slovakia will gradually become more synchronized with the euro area, we use the current estimates for symmetry of shocks. After joining the euro area real economic fluctuations measured as a standard deviation of output gap will increase only slightly – from 1.04 % to 1.11 %. A negative impact on the price stability will be higher; inflation fluctuation will increase from 0.24 % to 0.68 %. These results prove that currently the Slovak monetary policy already has a very limited capability to respond to real shocks. Very indicatively we also estimate the value of a more stable economic environment created by the monetary policy. The abandonment of independent monetary policy represents a loss of approximately 0.04 % of GDP.

The consumers are most concerned about increase in prices after euro adoption

Euro adoption is connected with further risks or concerns which we cannot, however, precisely quantify, but nonetheless we can assess them qualitatively. The consumers are most concerned about increases in prices when converted into euros. In the countries of the current euro area an increase in prices occurred in some areas, caused by incorrect price conversion to euro or by rounding up. However, the overall impact of euro on the increase in prices was very low, according to Eurostat estimates it was about 0.2 %. In Slovakia the competition

within retail trade is very strong, which should prevent unreasonable increases of prices. An extensive program of dual pricing is also under preparation; therefore, consumers should not lose orientation in price levels after euro adoption. Accordingly, we expect that the rounding effects during euro conversion will have only a minimal impact on the price level.

After joining the euro area inflation may increase slightly

A concern about higher inflation in the long-term perspective is more justified. Living standards and price level of Slovakia is only a little higher than half an average of the EU. With fast economic growth Slovakia will be catching up with the EU not only in the living standards, but inevitably also in price levels. Upon After euro changeover, and accordingly upon after irrevocable fixing of the exchange rate, higher inflation in Slovakia will be the only channel for catching up in price levels. Based on several methods we estimate that for several years after joining the euro area our inflation will be on average by approximately 1.5 percentage point higher than the average inflation within the euro area. In case of non-adoption of euro, however, the Slovak inflation would be also slightly higher than in the euro area, similarly as in other V4 countries whose inflation goal is up to 1 percentage point higher than the ECB target.

A slightly higher inflation in Slovakia than the euro area average will be caused mainly by equilibrium factors: by faster productivity growth and consequently Balassa-Samuelson effect and by increasing weight of services in the consumption basket while prices of services will increase faster than prices of goods. Such equilibrium inflation will not represent a risk of instability or loss of competitiveness for the economy nor a negative impact on the living standards of citizens.

Real value of savings ...

An increase in prices, or inflation, respectively, is closely related with a concern about a decline in the real value of savings or pensions. The currency changeover itself does not pose any risk of decreasing the value of savings or pensions because, as we have already noted, currency conversion should not increase the price level. Prices of goods and services will be converted to the euro by the same conversion rate as savings and pensions, thus their purchasing power will remain unchanged. This also shows that real purchasing power of savings and pensions will remain the same regardless of the level of conversion rate. Therefore, some proposals to postpone euro adoption until the exchange rate is more favorable are not justified.

A concern that higher inflation after joining the euro area will decrease the real value of savings is, however, justified. Real interest rate on household deposits is currently negative and it will probably remain negative also after euro adoption. However, interest rates would be very low even if Slovakia did not adopt the euro. Slightly lower interest on savings after euro adoption will be accompanied also by lower interest on credits. While with respect to the entrepreneurs we have argued that a decrease in the interest rate will be for their benefit, because enterprises are net debtors, such decline in interest rate will represent a loss for households which are net savers. However, as long as the current trend of fast growth of credits is sustained, the net position of households will be very low after the euro adoption and consequently also the loss from real interest rates decline will be low.

… and especially pensions will

Potentially higher inflation will not represent a threat to the value of pensions. Pensions are regularly valorized; therefore pensioners will be compensated for

not decrease.

higher inflation by the nearest valorization. A small difference between the time of increase in prices and the date of valorization, which we assess to be valued at approximately SKK 200 in the first year after euro adoption, can be easily compensated by exceptional one-off increase of pensions. Because valorization of pensions depends also on the wage growth which is expected to be higher after joining the euro area, pensioners should enjoy higher real income already in the second year after euro adoption.

The expected higher growth in wages should be taken into consideration in overall evaluation of the development of savings and pensions. High growth in wages will enable an accumulation of higher current and pension savings, which will partially compensate for lower real interest rates caused by higher inflation.

Administrative barriers restrain full development of the euro.

The euro area is not an ideal group with fully open market for all members. There are several administrative barriers limiting and decreasing its attractiveness. There is in fact free movement of goods and capital within the euro area. However, in spite of efforts made by some European institutions, a common market for services has not been established yet. The largest restrictions exist, however, in the labor market where majority of old EU member limited the possibility to enter their labor market for workers from the new member states. Limited labor force mobility weakens member states resistance to potential asymmetric shocks, in particular if such shock was of a very large magnitude. Administrative barriers and other market rigidities mean that the euro area is not an entirely optimum currency area.

A disadvantage of the present arrangement of the euro area lies also in the existence of decentralized fiscal policy with a common monetary policy. Disorderly fiscal policy of one union member may cause damage to all its members, e.g. if it leads to an increase in interest rates or fluctuation of the exchange rate. In order to solve such problem the Stability and Growth Pact has been developed which should prevent excessive government deficits. The effect of the Pact proved to be lower, however, than the pressure of markets on individual countries before their entry to the euro area. From a long-term perspective it will be necessary to support the functioning of the monetary union also by closer political integration and better coordination of economic policies.

Appropriate economic policies are inevitable for the full utilization of potential benefits from euro adoption

The above summarized analyses have shown that in the case of Slovakia the advantages from euro adoption will prevail over disadvantages, but also that the functioning of euro area is not quite ideal. Appropriately set policies will be required for Slovakia to be able to adopt the euro, to fully utilize its advantages and to limit its disadvantages. Their short-term objective is to fulfill the Maastricht criteria, and in the long-term perspective they must strengthen the flexibility of economy.

Main objective of the monetary policy is to achieve low inflation and simultaneously maintain stable exchange rate in ERM II. Along with that, however, monetary policy is gradually more and more limited, what prepares Slovakia for the loss of its own monetary policy after joining the euro area. Therefore, support on the part of other economic policies will be required.

An immediate goal of fiscal policy is to continue in the budget consolidation and to eliminate excessive deficit in Slovakia. Fast economic growth should contribute to a significant consolidation. In order to secure long-lasting sustainability of public finances it will be necessary to continue in the budgetary

consolidation also after joining the euro area and to aim at balanced budget. At the same time, fiscal policy undertakes still more responsibility for the stabilization of the entire economy while monetary policy will lose its independence.

Appropriate structural policies should also support fiscal policy and contribute to the long-lasting sustainable development. Labor market policies are the most important ones. Furthermore, for successful functioning within the monetary union in good times as well as in bad times, flexibility of wages should be increased and in particular, labor force mobility should be supported. The support of science and research and education will be also important.

The Slovak Republic should fulfill Maastricht criteria in 2007.

When all policies are appropriately set, Slovakia should meet all Maastricht criteria in 2007 or at the beginning of 2008 unless it is affected by extremely large external shocks. At present the criterion for interest rates is being fulfilled, and the level of government debt is safely under the reference level of 60 %. Until 2007 further decrease of inflation is expected and also the condition of two-year membership in ERM II will have been fulfilled. General government deficit should also decrease so that fiscal criterion is met also including the pension reform effects. Our predictions show that by the end of 2007 all Maastricht criteria should be met with some reserves. In spite of that, however, inflation and exchange rate criteria contain certain risks which cannot be prevented by domestic policies. Although events like significant impacts on exchange rate from Central-European region, extremely high energy prices or extremely low inflation in some EU countries are unlikely, should they occur it may pose risk to the fulfillment of Maastricht criteria.

Joining the euro area in 2009 is optimal.

Because from the point of view of Slovakia the advantages of euro adoption will significantly prevail over disadvantages, it will make efforts to adopt the euro as soon as possible after the fulfillment of Maastricht criteria. Positive evaluation of the fulfillment of Maastricht criteria will be possible in the first half of 2008. Accordingly, the euro adoption will be optimal in 2009, which has been also officially declared.

Later euro adoption means a loss of potential benefits.

Euro adoption later than in 2009 would mean a loss of net benefits expected from the euro. The size of such loss will depend on the reasons for the postponement. If it were caused by external shocks, and Slovakia continued maintaining sound economic policy, the loss of postponed euro adoption would not be very high. Such external shocks may involve, e.g. further increase in prices of oil and energy supplies, which would delay the fulfillment of Maastricht criteria for a short time. However, if Slovakia changed its economic policy, decided to postpone the fulfillment of Maastricht criteria and set forth other priorities, markets would probably lose confidence in its direction. Such confidence loss would result in a significant weakening of exchange rate, higher inflation, increase in interest rates and outflow of foreign investment. Such unfavorable phenomena would preclude the fulfillment of Maastricht criteria for several years. Potential benefits of euro adoption would get lost for a longer period of time and the existing instability would result also in direct economic damages.

Enterprises should profit most from euro adoption.

Euro adoption will have not only anonymous macroeconomic impacts, but it will be manifested in the life of all citizens. Enterprises will profit most from the euro, which will immediately decrease their transaction costs and eliminate exchange rate risks. One-off direct costs of euro changeover should be covered

exchange rate risks. One-off direct costs of euro changeover should be covered by cost savings already after the first year. The euro will have the most significant impact on international trade and economic growth which will directly increase profitability of enterprises. The effect of euro will, however, vary for each enterprise. For some enterprises disadvantages will prevail over benefits, some enterprises will be exposed to strong competition from abroad, and some will lose their markets. Other enterprises will achieve benefits above average.

Euro should be net profit also for the citizens.

The euro should be a benefit for majority of the citizens. It will be felt in particular by working people whose wages should grow in proportion to the economic growth. Since we expect higher real growth by approximately 0.7 % due to euro adoption, real wages should accelerate similarly. The growth of wages will be reflected also in pension growth with a short delay and with only a half the size. People will also save some resources through the elimination of exchanging korunas into euros. On the other hand, some slight losses will be caused by errors in rounding after the conversion of prices to euros and by slightly lower interest rates on the household savings.

1. Introduction

After the transformation of the Slovak economy into market economy and accession to the European Union, entry to the euro area of Slovakia will represent the last major integration step. The adoption of the European common currency will affect all citizens of Slovakia, involving all business relations and all organizations and institutions. Euro cash changeover will be immediately visible for all the people; therefore this theme is attractive for everybody, not only for experts.

The aim of this study is to evaluate the effects of adoption of the European currency – euro – on the Slovak economy. We analyze in detail specific advantages and disadvantages or risks related to euro adoption. This study summarizes and evaluates the most important arguments mentioned in the discussion on euro adoption in Slovakia. Now we can much better quantify the most significant effects of euro adoption. We made use also of the fact that the date and method of euro adoption in Slovakia is already known, which facilitated to us some estimations. We assess the euro adoption in particular from an overall macroeconomic aspect; however, we take into consideration also specific effects on certain sectors of the economy or on certain groups of the population. However, other follow-up studies will deal with the effects of euro adoption on individual sectors.

This study deals with euro adoption as a purely economic issue. We do not analyze political, sociological and cultural aspects of the European common currency, although they are certainly also very important. We take into consideration, however, important economic and political decisions which have been adopted and which will affect economic benefits, but also disadvantages of the euro.

Slovakia has undertaken to adopt the euro after accession to the European Union. Our Accession Agreement determines that Slovakia must adopt the European common currency in appropriate time and become a member of the euro area. It does not, however, specify any deadline for the fulfillment of this requirement. At present, Slovakia has a status of a country with a derogation, like all the other ten new member states of the EU, including Sweden. We are a member of the Economic and Monetary Union, but we do not participate in the common currency – accordingly, out of the economic and monetary union we use only the economic union.

Slovakia can become a member of the euro area only after fulfillment of the criteria of macroeconomic stability, the Maastricht criteria, and upon abrogation of our derogation. Only after introduction of the common currency will Slovakia be fully integrated into the common market of the EU and will be enabled to fully use such advantages for the growth of its economy and for increasing the living standard of the population.

While the Accession Agreement of Slovakia to the EU deals in no way with the timing of entry of Slovakia to the euro area, the Government of the Slovak Republic and the NBS have determined the exact date when Slovakia would like to adopt the euro, including basic characteristics of the process of euro changeover in the Slovak Republic. The decision on the timing of entry to the euro area had to solve a specific dilemma. On the one hand, early entry to the euro area has a potential to support real convergence, and thus also the rate of the living standard growth. On the other hand, by euro adoption Slovakia will lose a part of independence and flexibility of its economic policy – it will completely lose monetary policy while fiscal policy is already partially limited by budgetary rules of the EU. In principle, there was a possibility to choose from the whole range between two marginal options. One of the marginal options is to adopt euro as soon as technically possible, even with a risk that short-term fluctuations of policies adjustment or economic development will take place (this option

has been chosen in particular by Baltic countries). The other option is to wait first for a more significant progress in real convergence. In this option domestic policies could be used more flexibly, economic fluctuations would be lower, but at the cost of slower convergence.

The first wide discussion on advantages and disadvantages of euro adoption in Slovakia took place in professional circles in the period from 2002 to 2003, i.e. before the accession of Slovakia to the EU. In 2003 the NBS and the Ministry of Finance of the Slovak Republic drawn up the Strategy of Adopting the euro in the Slovak Republic which analyzed economic consequences of entry to the euro area. The Government of the Slovak Republic and the NBS jointly declared in the Strategy that "the Slovak Republic should become a member of the monetary union as son as possible, which means immediately when the Slovak Republic is able to fulfill Maastricht criteria in a sustainable manner. This results in particular from the potential benefit of the membership in the euro area for the economic growth and creation of stable economic environment." At the beginning of 2004 the International Monetary Fund arrived at very similar conclusions (Schadler et al, 2005, p. 123): „Euro adoption is most likely to provide considerable advantages to Central European Countries in the long-term horizon provided that stringent supporting policies are implemented."

In 2004, based on the development of economy and having considered the ongoing economic reforms, the determination of a detailed time schedule of joining the euro area was made possible. The fundamental question was as to when Slovakia would be able "to fulfill Maastricht criteria in a sustainable manner". Concretization of the Strategy of Adopting the euro in the Slovak Republic answered that Slovakia would be able to fulfill Maastricht criteria during the year 2007. Provided that all criteria have been successfully fulfilled, in 2008 the evaluation of convergence will take place and the Council will abrogate derogation of Slovakia from full-fledged membership in the Economic and Monetary Union. Therefore, the target date for euro adoption in the Slovak Republic has been set to 1 January 2009.

Afterwards, the National Euro Changeover Plan for the Slovak Republic was drawn up, which, besides detailed description of the task for successful solution of all technical issues of euro changeover, contains also definitions of all important characteristics of that process. From the viewpoint of an economist the most important characteristics involve a planned euro adoption by "big bang" system – simultaneous euro cash and non-cash changeover. Furthermore, a short dual circulation is important, euro and koruna cash will remain in circulation concurrently only until 16 January 2009. These decisions should contribute to the reduction of the euro changeover costs; on the other hand, the organization of the whole process will be more complicated. Regarding the preparation of consumers for the euro the key is the obligation of the retail traders and employers to use dual pricing of goods and services for approximately a half-year before and minimum one year after euro adoption.

Although Slovakia has very specific plans as regards joining the euro area, the economic effects of euro adoption have not been yet comprehensively evaluated. When considering the effects of such a significant change as euro introduction undoubtedly will be, and moreover, several years ahead, any estimates will be exposed to a certain degree of uncertainty. Economic literature has not been able yet to exactly identify the effects of common currency on those countries which adopted the euro in 1999. We can, however, identify some factors which have not been yet taken into consideration using latest knowledge and taking into account present specific plans of Slovakia for entry to the euro area, and we can specify more precisely more estimates, and we can also assess the objectivity of some hypotheses on the impact of euro on the Slovak economy. It has been proved that advantages of euro adoption prevail over its disadvantages.

In the following Chapter 2 the anticipated direct advantages of euro adoption in Slovakia are analyzed. These are the advantages which will be manifested immediately after economy changeover to the euro. Their impact on GDP growth or saving of costs will be of one-off nature, but the GDP level will remain changed permanently. The most important advantage of the euro is the elimination of some transaction costs in euro transactions, including administrative costs of making payments. The exchange rate risk will be eliminated in payments directed to the euro area, and a slight reduction of exchange rate risk with respect to dollar and other currencies important for Slovakia is possible. Direct advantages of euro adoption include also an increase of price transparency on the European common market and the reduction of interest costs or capital costs for some enterprises.

Chapter 3 deals with indirect benefits of euro adoption. In contrast to direct benefits, they may not be visible immediately after joining the euro area and their effect may be uneven. These general consequences of euro adoption, like increase of foreign trade, increase of foreign direct investment and mainly the improvement of economic performance and living standard of the citizens, represented the main reason for the establishment of the euro and also for the decision of Slovakia to enter the euro area.

Euro adoption, of course, is not associated only with advantages, costs and risks cannot be neglected. Chapters 4 and 5 are devoted namely to them. Costs and disadvantages of euro may be of permanent or one-off nature. Permanent disadvantages will last for the whole duration of the membership of Slovakia in the euro area while one-off costs will occur only at the time of the new currency changeover. In economic literature the loss of independent monetary policy is deemed to be the most serious disadvantage of entry to the euro area. It appears, however, that for Slovakia the estimates of such costs are relatively low. It is also for the reason that the capacity of the monetary policy to stabilize real economy is relatively low. In euro changeover the direct costs of technical conversion of financial systems and of cash exchange will be incurred. Such costs should be considered as investment as they are one-off costs, while direct financial savings of the existence of the euro will recur on annual basis. Entry to the euro area is associated also with some concerns, more or less justified. These threats involve the rise in prices after euro adoption, whether as long-term inflation increase above average in the euro area, or as an immediate jump within price level and a decrease of the value of savings or pensions corresponding thereto, or global concerns about the future of the whole monetary union.

In Chapter 6 the economic policies for the support of euro adoption are indicated. Their short-term goal is, however, to safely fulfill Maastricht criteria by the end of 2007. A long-term goal is, however, to prepare a sufficiently flexible environment in the Slovak economy so that Slovakia could make use of all advantages which the euro will potentially bring about, and in order to ensure that it can, as well as can be, resist to potential shocks after having lost independent monetary policy. Without proper policies and appropriate economic environment euro alone cannot be expected to become the means of economic growth.

Various hypothetical scenarios of euro adoption are compared in Chapter 7. It results from a comparison of advantages and disadvantages that euro adoption will be a net benefit for Slovakia. From practical aspect, the euro can be adopted in 2009 at the earliest, after the fulfillment of Maastricht criteria and finalization of technical arrangements. In comparison with later dates, the year 2009 is an optimum term for euro adoption which maximizes net benefits of euro adoption. The correctness of a decision to adopt euro on that date has been thus proven. Any postponement of euro adoption for later date or indefinitely would mean a loss of such net benefits.

The last Chapter 8 is devoted to the categorization of effects of euro adoption on individual sectors, or respectively groups of population. Although we expect that euro adoption will mean a net benefit for the entire Slovak economy, this will not apply evenly to everybody.

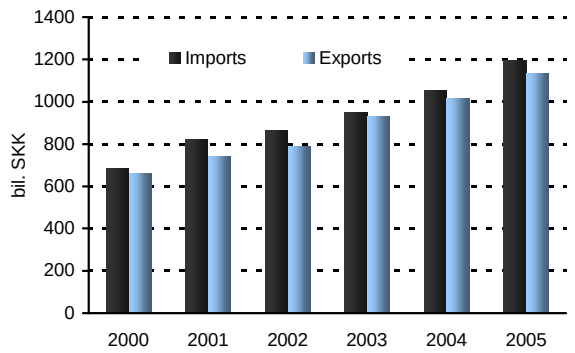
2. Direct Benefits of Euro Adoption

The adoption of European single currency in Slovakia will have several favorable impacts which will be manifested immediately. Such positives will permanently decrease the level of costs or increase GDP. The savings of enterprises and citizens on transaction costs will be the most visible when charges and margins for koruna-euro exchanges are eliminated. Enterprises will be also able to slightly reduce their administrative costs since they will not have to deal with management and accounting of euro exchange transactions. Full elimination of exchange risk against euro and slight decrease of such risk also against other currencies will be felt by enterprises as a decrease of implicit costs, because so far they have rarely hedged against them. In particular smaller enterprises, which have not had so far simple access to foreign financial markets, should after euro adoption enjoy a simpler and cheaper access to credits and stock capital. Consumers should profit from increased transparency of prices on the European market and from expected more intense competition.

2.1 Elimination of transaction costs in euro transactions

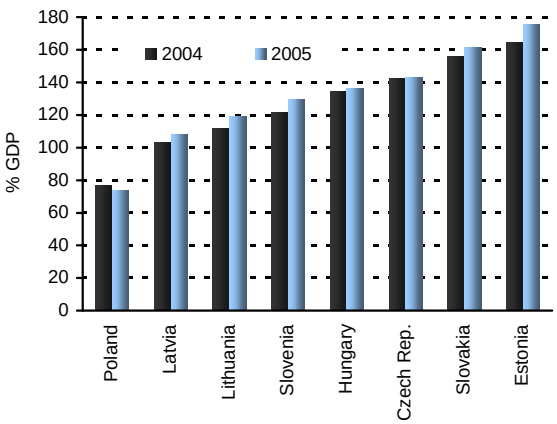
Slovak economy is characterized by high openness (Figures 1 and 2). The share of foreign trade (the sum of export and import) to GDP represented 162 % of GDP in 2005. Since the accession of Slovakia to the EU further intensification of the trade between Slovakia and other EU member states has taken place. After start-up of production in large investment projects within car industry we expect a corresponding growth also in the openness of the Slovak economy.

Figure 1 Development of Slovak foreign trade



Source: Eurostat.

Figure 2 Openness of the new EU member states

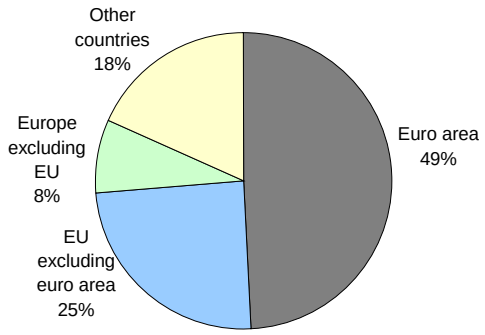


Source: Eurostat.

Import from the EU member states constituted approximately 75 % and import from the euro area constituted almost 50 % out of the total import into the Slovak Republic. 85 % of export from the Slovak Republic was directed into the EU member states.

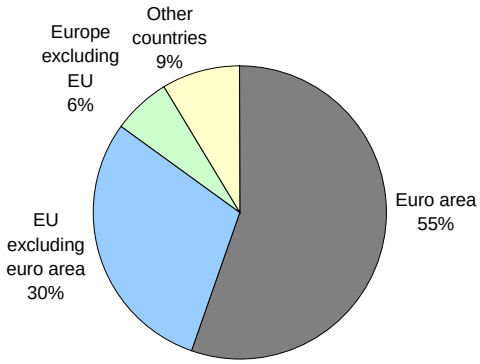
A growing international trade and inflow of foreign investment have been reflected in the growing number and volume of foreign exchange trades. In 2005 the volume of foreign exchange trade in euros exceeded SKK 4 300 bil. while for 2004 it was approximately SKK 2 500 bil. The euro is traded predominately on spot market where its share represented 98 %.

Figure 3 Territorial structure of imports



Source: Statistical Office.

Figure 4 Territorial structure of exports



Source: Statistical Office.

In exchanging domestic currency into foreign currency both households and enterprises have to bear the transaction costs. The highest transaction costs occur in cash exchange performed mostly by the people traveling abroad. Relatively high transaction costs are incurred also in payments by bank cards or, as the case may be, by traveler checks. The volume of such transactions represents, however, only a small proportion of foreign currency and foreign exchange transactions in economy. Most of the transactions are performed on inter-bank market and they occur in connection with international trade and speculations on the exchange market.

Transaction costs incurred in exchange transactions can be divided into financial and administrative costs.[1] Financial transaction costs include a difference between purchase and selling price (spread) and various charges for exchange.

The highest item within *financial transaction costs* is represented by a difference between purchase and selling price of foreign exchange. Currently such difference in spot euro trades on inter-bank market amounts on average to 5.3 haliers and in forward trades to 10 haliers per one euro. We assume that in transactions performed between banks and enterprises/citizens most of transactions are performed at the exchange rate announced by commercial banks. The average difference between selling and purchase price of euro in three largest commercial banks in Slovakia for 2005 represented 96 haliers.

The spread in inter-bank exchange operations, as well as the spread in exchange transactions between banks and enterprises/citizens has been on decrease during the past years. Such decrease has been reflected in the decrease of financial transaction costs in economy. A significant inter-annual increase in the volume of exchange transactions recorded after accession to the EU led, however, to a repeated increase of the volume of financial transaction costs in connection with euro operations (Figures 5 and 6).

Only a half of identified spread is included in the calculation of financial transaction costs, accordingly, only the difference between mid-rate and buy/sell rate is considered as the real cost. It means that we do not take into account the savings which obtain foreign counterparts, or respectively we count on only a part of savings occurring in carryover operations between Slovak parties. Therefore, total savings of financial transaction costs are calculated as a product of a half-spread and the relevant volume of transactions.

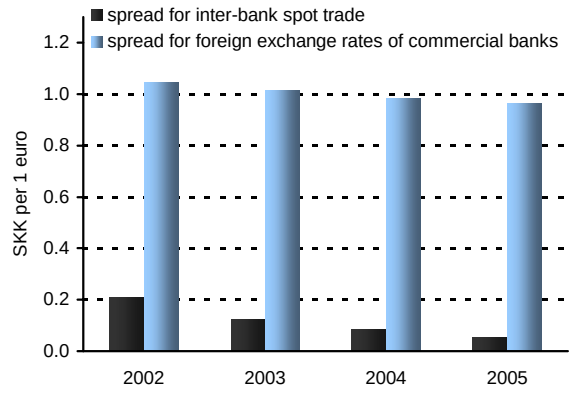
[1] Savings of administrative transaction costs are dealt with in Part 2.2.

In 2005 the volume of spot and forward exchange trades in euro represented more than SKK 3 088 bil. Annual savings of financial transaction costs arising from euro adoption can be calculated to approximately SKK 2.1 bil., i.e. 0.15 % of GDP.

The volume of exchange operations with enterprises and citizens is substantially lower,[2] however, spreads are significantly higher. Savings of financial transaction costs in foreign currency and exchange operations between banks and enterprises/citizens represent also approximately 0.15 % of GDP.

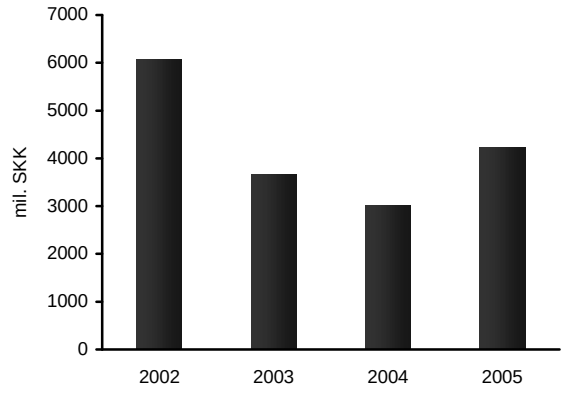
Based on the above calculations we can state that euro adoption will result in the savings of financial transaction costs amounting to 0.3 % of GDP. Such assumption fully complies with the conclusions of the study elaborated by the EC Commission[3] according to which transaction costs in small open economies (among which Slovakia undoubtedly also ranks) which may reach even eightfold of financial transaction costs in large countries (like Germany and France) where financial transaction costs constituted 0.11 % of GDP before euro adoption.

Figure 5 Development of spreads of euro transactions



Source: NBS, own calculations.

Figure 6 Development of financial transaction costs of trades in euro



Source: NBS, own calculations.

2.2 Elimination of transaction costs in administration and accounting

Besides financial transaction costs also *administrative costs* are incurred in foreign exchange transactions. The administrative costs (in-house costs) include also additional costs expended by enterprises on the provision of human and capital recourses required for the performance of foreign exchange operations (costs of foreign exchange administration, costs of additional financial reporting, costs caused by delay in payments etc.).

Estimation of the in-house costs is based on studies elaborated before euro adoption by the current euro area countries. From the conclusions of such studies it appears that administrative transaction costs before euro adoption constituted approximately 0.1 % of export in the EU countries.[4]

[2] Exact volume of foreign exchange and foreign currency operations between banks and non-financial corporations is not available. We assume that it ranges at the level of the volume of balance of foreign trade with the EU raised by revenues and payments for compensations of workers abroad, investment and payments yields and balance of current transfers.
[3] European Commission (1990).
[4] Ernst and Young (1990).

During the first three quarters of 2005 the export in the EU countries amounted to SKK 611 bil. (GDP was SKK 1 056 bil.) based on which it can be expected that euro adoption in the Slovak Republic will lead to savings of administrative transaction costs at the amount of 0.06 % GDP.

Another survey performed on a sample of small and medium-size enterprises in Belgium[5] shows that administrative transaction costs can be in fact significantly higher in small and medium-size enterprises (even 0.3 % of their turnover). If we applied such extreme example to Slovakia, then the administrative transaction costs would represent the value of almost 0.4 % GDP.

The simplification of administration and accounting will be appreciated in particular by those Slovak companies which currently trade mostly in euros, but have to keep accounting in korunas, submit statements in korunas, carry to account exchange losses and profits etc. Thus, apart from simplification of financial reporting itself the companies will have facilitated the forecasting of costs and revenues (cash-flows). Such advantage may include also savings of labor costs.

When savings of administrative transaction costs at the amount of 0.06 % GDP are taken into account, total savings of transaction costs due to euro adoption in Slovakia can be quantified to minimum 0.36 % GDP.

Table 1 Savings of transaction costs due to euro adoption in Slovakia (in % GDP)

Savings of financial transaction costs	Inter-bank spot and forward transactions	0.15
	Foreign currency transactions with corporations and households	0.15
Savings of administrative transactions costs		0.06
Total savings of transaction costs		**0.36**

Source: NBS, own calculations.

2.3 Elimination of exchange rate risk against the euro

Euro adoption will remove an exchange rate risk between the Slovak koruna and the euro. An accompanying effect of euro adoption will consists also in a slight decrease of exchange rate risk against other important currencies (see Part 2.4).

The exchange rate of koruna against euro is, however, relatively stable – for instance in comparison with the exchange rate of koruna against dollar or also in comparison with exchange rate of some other Central European currencies against euro – nevertheless, its fluctuations are not negligible. Higher fluctuations started by the end of 2004, and in the first half of 2005 the exchange rate was rather ambivalent.

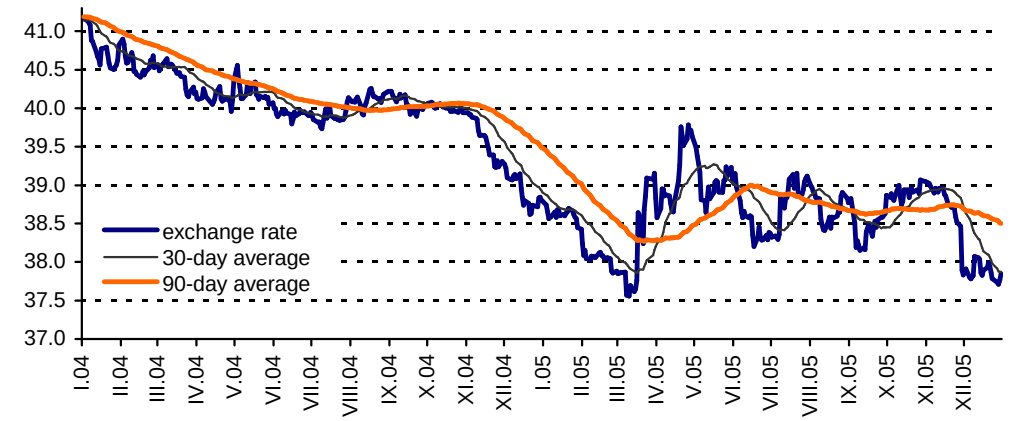
Almost during the whole year 2004 the actual exchange rate did not fluctuate by more than 1 % either from 30- or to 90-day average. However, in 2005 fluctuations reached more than 3 % (Figure 8). In assessing the exchange rate volatility we tried to adjust the exchange rate development for a long-term trend.[6] Total volatility of koruna exchange rate in 2004 and 2005 amounted to 2 – 6 %, but after the adjustment for the long-term trend it decreased to 1.6 %.

Exchange rate volatility poses an exchange rate risk to enterprises and citizens. Decisions on purchase or sale of goods and services in euros are exposed to a risk in case of unfavorable

[5] De Pecunia (1990).
[6] We deduce average yields for the period concerned from foreign currency yields.

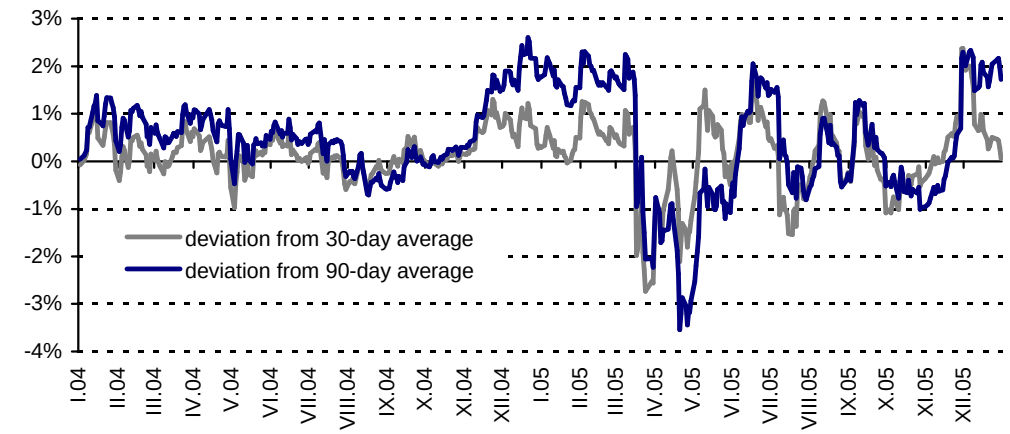
exchange rate development; some trades may not take place because of such risk. We try to express the exchange rate risk financially, as a price in korunas, to be able to compare it with other advantages and disadvantages of a stable exchange rate.

Figure 7 Development of koruna-euro exchange rate in the period 2004 - 2005



Source: NBS, own calculations.

Figure 8 Volatility of koruna-euro exchange rate in the period 2004 - 2005



Source: NBS, own calculations.

Price of exchange rate risk

We attribute price to exchange rate risk with the help of a model of pricing options to foreign exchange designed by Garman and Kohlhagen (1983). This model modifies a standard Black-Scholes model of pricing options to securities for the needs of foreign exchange options (it allows counting with various nominal interest rates for each currency). The following parameters have been used in the calculation:

- current (spot) exchange rate: 38 SKK/EUR,
- option length: 180 days (it corresponds to the time of preparation, performance and settlement of a current transaction in foreign trade),
- exchange rate volatility: 1.6 %.

We determine the future exchange rate (forward rate, or respectively option rate) so that it is consistent with interest rates in Slovakia and in the euro area. Then, any particular value of the interest rates will not affect an option price.

In case of thus selected input parameters the option price is SKK 0.17. Such price is expressed as a price of hedging the value of one euro. When converted to the value of one koruna, the price of hedging is SKK 0.004.

In the real economic life hedging is used only very rarely. This is certainly caused to some extent by low market liquidity. However, hedging price itself is to some extent too high for some traders so they rather accept exchange rate risk than insure against it. Therefore we assume that an acceptable average price for getting fully insured against a risk is half of a theoretically determined price of a foreign exchange option. Regarding some uncertainty in the future volatility of koruna and the length of reasonable hedging period we estimate the price of exchange rate risk to be between 0.09 % and 0.95 % of the volume of the transaction exposed to risk with the average value of 0.22 %.

Volume of transactions exposed to risk

Almost all transactions with foreign countries are exposed to exchange rate risks which are compensated in foreign currency. A part of such transactions is, however, naturally hedged against exchange rate risk. For instance, if an enterprise trading with foreign countries has both foreign exchange income and expenditures, its actual open position against exchange rate risk is represented only by balance of foreign exchange income and expenses.

We try to estimate the volume of transactions exposed to exchange rate risk in the most possible conservative way. Had we counted in all trade transactions, they would have reached even 156 % GDP in 2004. We exclude, however, the transactions which could aspire at natural hedging. We consider the following to be really exposed to exchange rate risk:

- net balance of foreign trade in goods,
- net balance of foreign trade in services,
- yields and payments for compensations of workers abroad,
- net balance of current transfers.

We do not take into account financial and capital transactions (although their turnover is very high), or official exchange rate operations, either. Besides careful procedure, the advantage of the method opted consists also in high stability of the results. The estimate of the volume of transactions exposed to exchange rate risk was 10.11 % GDP in 2004 and 9.35 % GDP in 2003.

Not all those transactions are exposed to risk against the euro. A part of foreign trade and payments is performed also in USD or in other currencies. The trade in euros represents approximately 85 % of Slovak exports and 80 % of imports. We assume that approximately the same ratio applies also to other transactions.

Therefore, we estimate the volume of transactions directly exposed to exchange rate risk to range between 6.36 % GDP and 8.59 % GDP with average value 8.34 % GDP.

The extent of exchange rate risk of koruna against euro

Based on the estimate of exchange rate risk and the volume of resources exposed to risk we assess the extent of exchange rate risk in points to be 0.02 % GDP. The upper limit of the estimate is 0.08 % GDP and the lower limit is 0.01 % GDP.

2.4 Reduction of exchange rate volatility against currencies of trading partners

One of the advantages of joining the euro area is, out of any doubt, the elimination of exchange rate risk and volatility of koruna exchange rate against euro. However, some

countries, in particular Great Britain, argue that after joining the euro area the exchange rate volatility against other currencies may increase. How will exchange rate stability change in Slovakia after joining the euro area?

Table 2 Average volatility of koruna exchange rate against selected currencies (in %)

	EUR/SKK	USD/SKK	CZK/SKK	USD/EUR	CZK/EUR
Volatility 1999 – 2005	0.54	1.10	0.74	1.09	0.70
Volatility 2001 – 2005	0.48	1.20	0.62	1.12	0.60

Note: Volatility is measured as a variation coefficient for comparing exchange rates with different order of values.
Source: NBS, own calculations.

Euro exchange rate against the dollar and the Czech koruna is slightly more stable than the Slovak koruna exchange rate against both these currencies. After Slovak entry into the euro area not only the exchange rate risk against euro will disappear, but such risk with regard to other important currencies will also decrease slightly.

Total effective volatility[7] of koruna against other currencies for the period 2001 – 2005 was on average 0.63 %. After entry to the euro area the volatility will decrease to 0.35 %.[8] Following euro area entry by the Czech Republic (and other neighboring countries) the effective exchange rate volatility will decrease further to 0.17 %.

2.5 Higher price transparency

An immediate effect of euro adoption in Slovakia will result also in a direct comparability of prices on domestic market and on the euro area countries market. The transparency of consumer prices will enable the citizens to better orientate in relations between domestic and foreign prices. Price transparency in corporate sector will function as a factor increasing competition, which will exert downward pressure on prices and prevent their increase.

Despite the fact that high transparency of consumer prices in euros implies the possibility of changing the consumer shopping behavior in their decision of where to buy these or those goods, we can hardly expect that such "shopping tourism" on the part of the Slovak citizens might get wider extent. Currently, in the traded sector domestic prices are in principle equalized with the prices in the euro area (and any potentially "good bargain" should encompass also transportation costs). In non-traded sector (in particular services), where the competition is weak, prices in Slovakia are lower (often substantially lower) than in the euro area and their evolution after euro adoption will be closely tied to the growth of earnings and purchasing power of the Slovak consumers.

Euro adoption revealed differences in prices of related goods in the euro area member states, which remained concealed as long as prices had been expressed in various national currencies (Table 3). It had been expected that making the price differences visible would strengthen competition and lead to regional equalization of prices within the euro area. Such expectations, however, have not come true and regional price differences remained maintained even after euro adoption. Several studies prove[9] that intensive price convergence

[7] Measured as weighed average of individual currencies volatilities where weights are determined by trade shares. Specifically, the euro area weight is 55 %, dollar weight is 15 % and weight of neighbouring countries represented by the Czech koruna is 30 %.
[8] It is assumed that USD/EUR and CZK/EUR cross rate in the future will remain the same as nowadays. Having regard to the economic weight of Slovakia, the entry of Slovakia to the euro area should not markedly influence the euro exchange rate.
[9] For instance: Tabellini (2004).

took place in the EU area during the first half of the 90s in connection with the establishment of the common market when in fact severe competition escalated.

Table 3 Influence of euro on price transparency (Coca-Cola, 1.5 l bottle)

	Currency	Price in domestic currency	Price in euro
Belgium	BEF	48	1.22
France	FFR	65	1.02
Germany	DEM	3.02	1.57
Ireland	IEP	0.93	1.19
Italy	LIT	2 460	1.29
Luxembourg	LFR	42	1.06
Portugal	ECS	199	1.02
Spain	PTA	125	0.77

Source: Euro Information Centre, original source: Bureau européen des Unions des consommateurs.

Neither arrangements for euro, nor its placement in circulation itself did markedly stimulate the continuation of price convergence within the euro area. In principle, the impact of transparent prices in euros on competitors was limited to restraining price increase, but it did not act as a factor of a significant regional (international or national either) price convergence. The dynamics of price convergence on various markets of products continued to be influenced by (imperfect) competition conditions maintained by various enduring administrative barriers. In Box 1 we introduce as an example the development on the euro area car market where partial but hardly full convergence took place.

Nevertheless, a survey in corporate sector has shown that not all companies welcomed positively the increased price transparency after euro adoption. In particular, with regard to international companies, this curtails the possibilities to apply practices of price differentiation and discrimination among countries. Consequently, this proves the advantage of a single currency. More companies confirmed the effect of price convergence, in particular those in frontier areas.[10]

Maintenance of prices of related goods differing by regions also after euro adoption is conditioned by differences of social and cultural traditions of individual countries, differences in tax systems and labor cost, as well as by overall revenue level of the country (region).

Box 1 Price convergence on the euro area car market

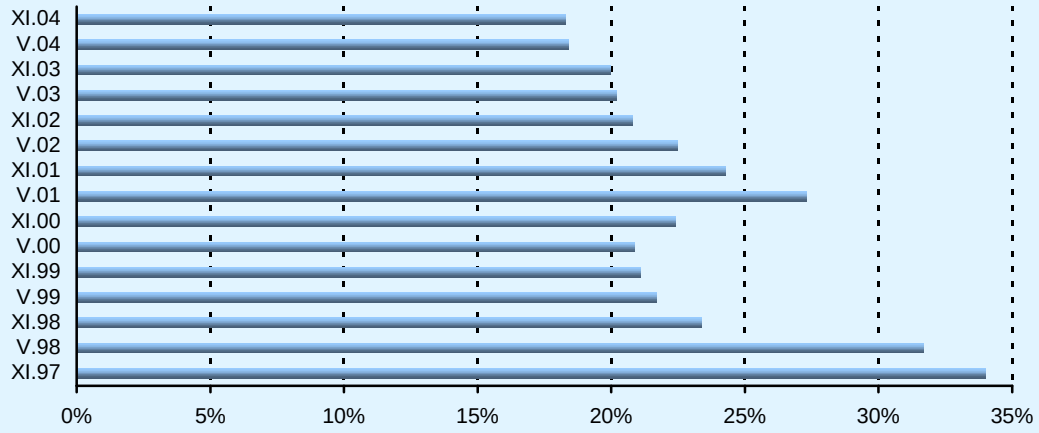
As regards price differences among EU countries, car market is probably one of the most carefully monitored. It covers a significant proportion of household expenditures. In spite of the fact that this is a sector of traded goods where competitors should exert pressure to achieve price convergence, car prices in individual EU countries differ significantly. This is due to legal regulations (in particular tax legislation and safety regulations) which significantly affect prices on national markets. Imperfect competition environment has been long maintained in this segment also due to strictly regulated sales policy by authorized distributors. The European Commission has been monitoring and regularly semi-annually evaluating the development of car prices in the EU countries on a long-term basis putting special emphasis in particular on price convergence on individual national markets.

The chart of price differentials development in the euro area car market in the first sight indicate that the establishment of the euro area (1 January 1999) was an important stimulus for the equalization of price differences between individual countries. Price differential between the cheapest and the most expensive market in the EU went down swiftly in 1998. However, data from the period before 1999

[10]DeNederlandsche Bank (2004).

are not exactly comparable because they do not involve the same sample of countries. The sample for the preceding two years includes also Great Britain having the highest prices of cars within the EU since pricing of producers takes into account the fact that car purchase there is not liable to taxation; on the other hand, the sample does not include Finland, Denmark and Greece where, with regard to high taxes, the producers set very low before tax prices, and thus rank among the lowest ones within the EU. Only a sample starting from 1999 includes all member states of the euro area (11, respectively 12 after accession of Greece in 2001).

Figure 9 Price differentials in the euro area car market



Note: The Figure shows an average value of the price differential[11] in all segments of the 15 most sold car brands.[12] Producers price policy in particular market segments has not differed substantially, although one would presuppose that high demand in case of most common types (segment A and B) should exert more pressure for more competition and thus should lead to a faster decrease of price differential.
Source: Car prices in the EU. Condensed reports. EC DG Competition, 1997 – 2005; own calculations.

The methodological inconsistencies to some extent decrease the actual change of the price differential after creation of the euro area (in particular with regard to the absence of Great Britain). On the contrary, due to the same methodology since 1999, the entry of Greece to the euro area (as a country with the cheapest market) has significantly shifted price differential upwards.

The euro cash changeover (1 January 2002) had obviously no substantial impact on price differential change. It declined more significantly as soon as in 2004 in connection with the EU enlargement by new member states where the prices of cars rank among the lowest ones within the EU. The EU enlargement functioned as a real factor of escalated competition, which has been reflected also on price differential narrowing within a narrowed sample involving only the euro area countries. At the same time, the Report of the European Commission of March 2005 points out that price convergence on the EU car markets achieved a flat character in 2004. Prices of new vehicles in the new member states approximate the prices on the markets of the original EU15, however, still ranking among the lowest ones within the EU.

The most expensive car market in the EU in 2004 continued to be Great Britain, within the euro area it was Germany and Austria. Within the euro area cars were sold cheapest in Finland and within the enlarged EU in Estonia and Poland. For 6 years of the existence of the euro area a difference between the most expensive and the least expensive car market of the euro area decreased on average by 5 percentage points (from 23.4 % to 18.3 %).

The development of prices on the euro area car markets shows in total that making prices transparent alone due to euro adoption, unless accompanied by actual acceleration of competition, is not a sufficient impetus to a fast price convergence. An important competition impetus was the EU enlargement by countries with low car prices, which indicated an increase in price differential

[11]Percentage difference in price on the most expensive and the least expensive national market is measured using the price before taxes.

[12] Small segments A+B (Opel Corsa, Ford Fiesta, Renault Clio, Peugeot 106, VW Polo), middle segment C (VW Golf, Opel Astra, Ford Focus, Renault Mégane, Peugeot 306), big segments D+E+F (BMW 318, Audi A 4, Ford Mondeo, Opel Vectra, VW Passat).

(mitigated by price convergence in the new member states) in the EU area. However, in 2004 it substantially decreased in the euro area. The accelerated approximation of prices in the euro area, like in the whole EU area, was affected, apart from the competition of new cheap markets, also by amendments of 2002 legislation concerning car distribution (allowing entry to unauthorized dealers, e.g. shopping chains). A substantial acceleration of the whole process is expected after radical liberalization of the EU competition rules eliminating obstacles to parallel car import by dealers from various EU member states as from October 2005.

2.6 Decrease of capital costs

Euro adoption will increase the effectiveness and competition on financial markets. Risk surcharges on the grounds of a country risk will be also eliminated. This will reflect in the decrease of real interest rates. More favorable conditions of financing will allow reducing capital costs, which will create additional incentives for investment growth in Slovakia, namely domestic and foreign investments, as well. Accelerated investment growth will facilitate faster growth of GDP. Faster growth of capital investment will simultaneously lead to an increase of overall productivity of factors of production, and thus to the growth of living standard. The growth of living standard will be positively influenced also by favorable impact of investment increase on the employment rate.

Bris et al (2004) showed that since 1999 the investment rate of companies from the euro area member states has been by 2.5 % higher than of the companies from the countries outside the euro area. The main factor of higher investment activity consisted in the decrease of capital costs caused by a decrease or elimination of transaction costs against the euro (including hedging costs against exchange rate risk), as well as by the decrease of interest rates arising from the euro area membership itself. Small businesses benefited most from euro adoption. An increase of investment rate in this group of enterprises was significantly higher than the effect of euro adoption as measured for all euro area enterprises.[13] This was caused by the fact that maintenance of exchange rate risk is more costly for small businesses as compared to large enterprises, while they usually lack sufficient staffing for the performance of relevant operations. Thus, the elimination of exchange rate risk in the euro area environment brought relatively higher savings of capital costs to such businesses, which resulted in above average increase of investment rate within this group of enterprises arising from euro adoption in corporate sector.

We estimate the impact of euro adoption on interest rate for the corporate sector based on the experiences of the euro area countries or the development in ERM II countries. Nevertheless, it should be taken into consideration that experiences of other countries do not have to be directly applicable to Slovakia. The most marked positive effect of euro adoption was recorded by Greece. While in 2000, i.e. before entry of Greece to the euro area, interest rates of short-term corporate loans were by 5.7 percentage points higher than the average of the euro area; in 2001 this difference decreased to 1.8 percentage points. Thus, euro adoption in Greece reduced credit costs of enterprises by almost 4 percentage points. The differences between interest rates in the euro area and in the new member states of ERM II range between 1.4 percentage points (Estonia) and 4.7 percentage points (Cyprus).[14] After euro adoption in these countries a decrease of nominal rates approximately to the level of the euro area can be

[13] The highest increase in investment rate (6.3 %) was recorded by small businesses from the euro area countries with former weak national currency. Such result is explained in particular by the elimination of a permanent threat of devaluation of currency.

[14] Eurostat, non-harmonised interest rate for 2005 on new credits to non-financial corporations within one year.

expected while inflation should remain on average unchanged, since these countries currently have a fixed exchange rate. Accordingly, their real interest rates will decrease significantly.

The expected decrease of real interest rates in Slovakia after euro adoption will be more likely lower in comparison with other countries because the interest rates have already decreased after EU accession, and also with regard to expected euro adoption. Real interest rates on loans to enterprises in Slovakia have been on average by less than one percentage point lower than in the euro area since 1999.[15] Although in 2004 and 2005 real interest rates of enterprises decreased almost to the level of the euro area, after euro adoption further decrease of real rates can be expected, in particular for a higher deflator in Slovakia (see Parts 5.2 and 5.3). While real interest rates on corporate loans are currently at or under the level of 2 %, after euro adoption they may decrease to approximately 1 – 1.5 %. Such decrease in capital costs does not mean, however, the same increase in profits of the corporate sector because interest rates on deposits of enterprises will also decrease. Nevertheless, certain increase of net income will take place, because the net position of the Slovak non-financial corporations is in slightly debt position (approximately SKK 40 bil., i.e. one sixth of gross indebtedness of enterprises). Furthermore, interest margin in Slovakia is by 0.5 – 0.9 percentage points higher than in the euro area, so after joining the euro area a decline of credit interest will be probably more significant than a decline of interest on deposits. The most important is, however, the impact of lower capital costs on the rate of return on investments and subsequent higher investment rate.

[15] Data from Eurostat for the period of 1998-2004. Nominal interest rates for Slovakia are not harmonised. GDP deflator was used as a deflator. Interest rates from the statement of credits to non-financial corporations within one year have been used as nominal rates.

3. Indirect Benefits of Euro Adoption

Direct benefits of euro adoption have also wider effects on the national economy. Lower transaction costs, price transparency, higher competition pressure, and overall higher quality of business environment will create stimuli in various ways for the implementation of long-run benefits of the single currency. New foreign direct investments (FDI) and an increase of foreign trade, which will be the main results of the these processes, will be reflected in enhanced economic growth and thus facilitate overall performance of the Slovak economy. It should be noted at the start that literature on the effects of monetary unions on foreign trade and its subsequent impact on economic growth uses overall import and export data that includes also FDI. For this reason the effects linked to the foreign trade involve also those arising from FDI.

3.1 Growth of foreign trade

A growth of foreign trade can be expected due to a decrease of total costs of its execution. As explained in Chapter 2, two factors will contribute to making mutual trade cheaper, namely a decrease of transaction costs and stabilization of exchange rate.

Studies on the effects of monetary union on foreign trade

The seminal paper by Andrew Rose (2000) stirred up an intensive discussion on the impact of a monetary union on foreign trade. In his study Rose (2000) used a gravity model of bilateral trade for the quantification of the effect of membership in a monetary union, and he concluded that single currency may lead to a tripling of foreign trade. Such finding stimulated further studies since the "trade effect" of monetary unions was extremely high. An increase of international trade as a result of integration in a monetary block is in economic literature informally called also the "Rose effect".

However, there was no consensus on the size of the Rose effect. This resulted in a relatively wide spread of estimates of foreign trade increase in response to a country integration into a monetary union. The original Rose's study was mostly criticized in economic literature for the nature of monetary unions included in his sample of countries. Rose analyzed mainly small and poor countries[16] which started using American dollar instead of their national currencies. The "dollarization" of economy is perceived by the study as a form of monetary integration although the reason might have been effort to stabilize economy. Furthermore, in Rose (2000) panel regression the proportion of countries meeting the criteria of a monetary union is very low. It is somewhat higher than one percent . Due to all the above deficiencies it is problematic to draw general conclusions for a large monetary union like the euro area. In spite of that, it can be concluded that integration of a country into a monetary union has clearly positive effects on the development of the foreign trade. Its size remains a question.

In connection with the issue of the quantification of "average" effect of a monetary union on foreign trade, Rose and Stanley (2005) used a meta-analysis (cross-section analysis) of the results of several tens of existing studies including hundreds of estimates and using various methods and data sources. Apart from an unambiguous conclusion proving a positive effect of monetary integration on foreign trade, they determined an estimate of the contribution of single currency to bilateral trade within an interval of 30 to 90 %. When applied to the membership in the euro area, such estimates are much more realistic because the concerned studies include also the effect of the euro area itself after 1999.

[16] This involved the countries like, e.g. American Virgin Islands, Guam and the Northern Marianas.

Several studies deal explicitly with the effect of euro adoption on the development of foreign trade. Micco et al (2003) analyzed the effect of the euro area on a sample of 22 industrial countries and came to a conclusion that foreign trade of the euro area member states increased due to the single currency by 5 to 20 %. Barr et al. (2003) estimated the effect of the euro area membership on the growth of foreign trade at 29 %. In both cases the authors included among control variables also volatility of the exchange rate. Their findings are hence linked solely to a single currency adoption regardless of the effect which will manifest itself by a decrease of the exchange rate volatility. Accordingly, such estimated growth of trade may be attributed exclusively to strengthening of trade relations.

Baldwin et al. (2005) offered an explanation for relatively high estimated effects of the euro area even after the adjustment for the exchange rate stability. They pointed out to the fact that the relationship between exchange rate volatility and foreign trade is not linear as has been assumed in most studies. Their theoretical model predicts that the relationship is convex, which means that as volatility gradually approaches zero, marginal increment of trade increases progressively. Intuition behind this result is based on two facts. First, exchange rate affects small businesses more than large ones.[17] Second, when categorizing companies according to their size, small businesses prevail in the EU. Thus, the theoretical model assumes that after joining the euro area not only the volume of sales of currently exporting companies will increase, but also the number of exporting companies will increase. Empirical tests show that due to euro area membership foreign trade can be increased from 70 % to 112 %.

Although exact quantification of the increase in foreign trade as a consequence of euro adoption is yet impossible because of a short time of its existence, historical development of foreign trade of the euro area has already proven that monetary integration had an overall positive effect on the development of the domestic trade as well as the trade of euro area member states with third countries.[18]

Empirical tests of the effect of a monetary integration contributed also to the definitions of other criteria for an optimum currency area proposed by Baldwin and Taglioni (2004). Thus, they supplemented traditional economic criteria, like openness of economy, labor market mobility and export diversification.[19] Results of their tests proved that integration rate of a country with the monetary union has a positive impact on the development of mutual trade. The livelier the trade relations between a new member and the monetary union were before integration itself, the more significant was the growth of their bilateral trade. The second finding is that the membership in a monetary union increases bilateral trade in the sectors where the degree of competition is rather low. This finding is directly related to the effect of price transparency.

Estimate for Slovakia

As underlined at the start of Part 2.1, Slovakia is a traditional example of a small open economy, which has been fully- integrated in international trade and financial flows. Slovakia is closely after Estonia, the second most open country of the group of eight new EU member states (see Figure 1). At the same time, it has more open position compared to the countries

[17] Large companies may hedge or self-insure against exchange rate risk, which, however, requires substantial finances. Therefore, hedging is an inaccessible form of protection against exchange rate risk for small businesses.

[18] The estimation of the Rose effect for individual countries of the euro area is given in the study by Baldwin and Taglioni (2004), who disaggregated the total effect for the euro area according to the study by Micco et al (2003).

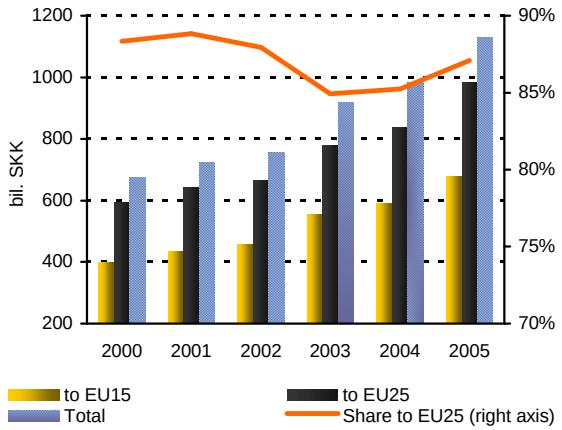
[19] Traditional economic criteria are detailed in Part 5.7 dealing with the theory of an optimum currency area.

currently participating in the exchange rate system ERM II and planning euro adoption in the forthcoming two or three years.[20]

Foreign trade has become one of the corner stones of economic growth of Slovakia which thus utilizes its potential of competitive labor supply and favorable economic environment. The inflow of foreign direct investment and expected launch of the production of the already implemented investment projects[21] are the preconditions for further expansion of export in coming years.

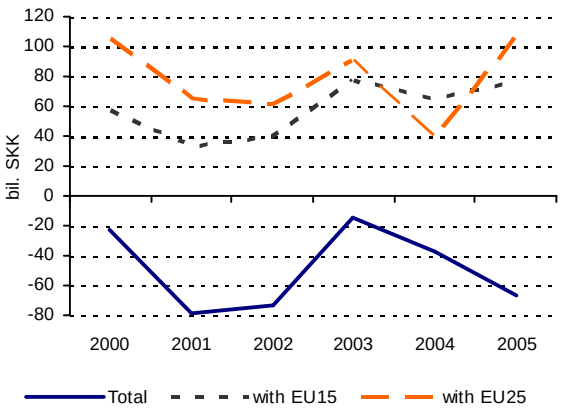
In estimating the impact of single currency on foreign trade it should be noted that over 85 % of the Slovak export (see Figure 10) is directed to the EU member states (EU 25). We will get even more interesting result if we analyze trade balance of Slovakia through the territorial point of view. Figure 11 clearly shows that we achieve positive trade balance with the countries of the "European 15", as well as with enlarged EU. The fact that export to the EU countries increases every year gives us a potential for reducing trade balance deficit (given that exports will grow faster than imports), which is caused by, inter alia, import of strategic raw materials (in particular in energy industry and petrochemistry) or the investment imports.[22]

Figure 10 Development of Slovak exports



Source: Eurostat.

Figure 11 Trade balance of Slovakia



Source: Eurostat.

After integration of Slovakia and other new member states into the euro area one can expect a growth of foreign trade of Slovakia with the euro area by approximately 60 %,[23] which will result in an increase of overall foreign trade by approximately 50 %.[24] In the case of more consistent liberalization of services market, which is for the EU rather a matter of the future than of the present, even higher growth of trade among euro area members can be expected. Nevertheless, an increase in foreign trade by one half is economically significant, especially from the perspective of its impact on the economic performance of economy, as will be analyzed in more detail in Part 3.3.

[20] Estonia, Lithuania and Slovenia entered ERM II in June 2004 and they plan euro adoption in 2007. As regards Latvia, which entered ERM II simultaneously with Malta and Cyprus in April 2005, the adoption of European single currency is planned for 2008.

[21] This regards in particular the investments in car industry and their supply network which are predominantly aimed at exporting their output.

[22] Investment import includes, e.g. import of technologies which are costly, but on the other hand, their implementation will have a stimulating effect on export activity of Slovakia in the future.

[23] In estimation we applied the mean value of the range from the study by Rose and Stanley (2005). Since it is a cross-section analysis of effects of a monetary union on foreign trade, we consider such approach objective.

[24] We used the actual share of export to the EU member states in the total export of Slovakia (0.5 = 0.6*0.85) for this indicative calculation.

3.2 Inflow of foreign direct investment

One of the expected effects of euro adoption is also an increased inflow of foreign direct investments (FDI) in Slovakia. FDI represents an important factor for economic growth and it plays an important role in the development of economy, in particular in transition economies including Slovakia.

Box 2 The effect of euro adoption on foreign direct investment in the euro area

Before euro introduction the elimination of transaction costs and reduction of exchange rate volatility had been considered the fundamental expected effects which should have positively influenced the inflow of FDI and investment environment in the euro area.

Based on data, we can observe at the end of the 90s of the past century an extreme boom of FDI within the euro area , when the volume of financial flows coming from the euro area increased from EUR 110 bil. (1996) to EUR 680 bil. (2000), and the volume of financial flows directed to the euro area increased 11-fold from EUR 60 bil. to EUR 690 bil.

At present, a decrease of FDI within the euro area can be observed, namely in financial flows directed from the euro area to EUR 307 bil. (2001), and in financial flows directed to the euro area to EUR 320 bil. (2001).

However, this trend should be perceived taking into consideration various factors which at the end of the 90s affected the development of economy. The most significant factor was the intensified globalization, when many OECD countries achieved substantial increments of FDI. Another significant factor was a wave of mergers and acquisitions in this time period. Furthermore, during this period an investment bubble occurred on stock markets, which contributed to an increase in stock prices, which had an impact on FDI statistics.

When comparing years 1996 – 1998 with 1999 – 2001 it can be stated that the flow of FDI directed to the euro area countries increased significantly as compared to the flow of FDI to the countries outside the euro area. The flow of FDI directed into the countries outside the euro area decreased from 37 % in 1998 to 20 % in 2001. This decline of FDI in the EU countries outside the euro area corresponded to the increment in euro area countries. The inflow of FDI within the euro area in terms of territorial structure originated in particular from the EU countries alone, i.e. this involved an increase in mutual investment among the EU countries alone. However, an inflow of FDI originating from the countries outside the EU was also recorded (Tabellini 2004).

An analysis of HM Treasury (2003b) for Great Britain, which has not adopted the euro, and therefore it is interesting to compare it with the euro area countries, also states that after euro adoption the mutual flow of FDI among euro area countries increased. However, during the same time period after euro adoption the inflow of FDI into Great Britain decreased in comparison with other euro area members. In this analysis, however, the effects from the end of the 90s should be taken into account. Moreover, the inflow of FDI into Great Britain cannot be understood traditionally only as investment in the establishment of new enterprises (greenfield FDI) or in privatization of enterprises as is the case of transition economies. With regard to investment in Great Britain, these involve, in particular portfolio investments and investment on stock markets. Therefore, when comparing the inflow of FDI to the euro area and in Great Britain after euro adoption, such factors should be taken into consideration.

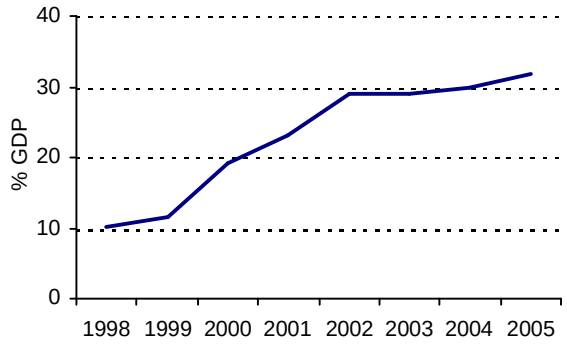
Accordingly, with regard to FDI it is very difficult to empirically detect the impacts of euro adoption in the euro area countries. Based on the analysis of FDI flows to the euro area it can be concluded that after euro adoption it has become more attractive for FDI placement. In spite of that FDI placement is determined by a large number of factors whose effects make the estimation of exact impacts of euro adoption on FDI much more difficult (European Commission, 2003).

Potential impacts on the amount of foreign direct investment for Slovakia after its entry to the euro area

Decision on the placement of an investment is a complex process in which a number of mutually interacting and complementing factors play a role. First of all, an investment plan which investors want to implement in the country of investment placement is essential. An inflow of FDI into the target country is based on efforts (i) to penetrate to new markets (FDI is created in order to serve domestic market or to provide output designed for export), (ii) for the purpose of securing resources (FDI is made with a view gaining access to resources not available in the home country), or (iii) for the purpose of achieving higher productivity (FDI comes to a country where higher productivity can be achieved than in the home country).

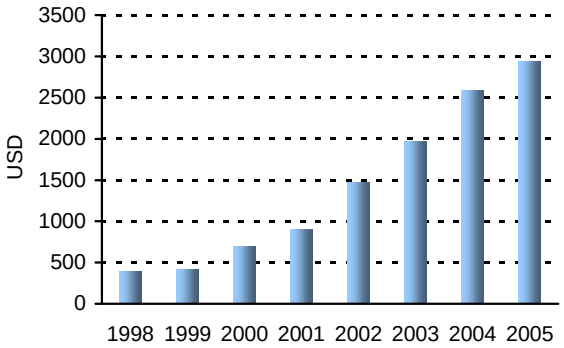
One of the main reasons for FDI inflows into transition economies lied in ensuring access to the market and the possibility to participate in privatization process in these countries (Baniak et al., 2002). Currently the stock of FDI exceeds 30 % of GDP of Slovakia.

Figure 12 FDI, ratio to GDP in Slovakia



Source: NBS.

Figure 13 FDI per capita



Source: NBS.

As regards the territorial structure of the origin of FDI in Slovakia, 88 % comes from the EU countries out of which 67 % comes directly from the euro area countries (Figure 14). So far the inflow of FDI involved predominantly long-term capital, in particular from the EU countries. Euro adoption in Slovakia should therefore, in terms of territorial structure, positively influence the additional increase of FDI from the euro area countries.

From the analysis of the sectoral structure (Figure 15) it can be concluded that majority of FDI was directed into industrial production. FDI in industrial production contributed to the creation of new jobs, but also to the implementation of new technologies, transfer of know-how and manufacturing technologies with high value added. Such positive effects, which are related to the inflow of FDI, have been subsequently manifested in the labor productivity growth, resulted in the improvement of qualifications of the domestic labor force and due to the cooperation with domestic firms also in gradual cultivation of internal economic environment.

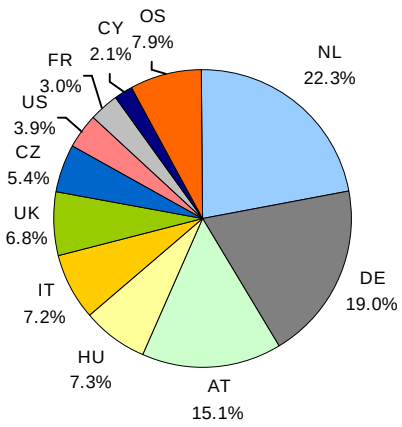
Another important sector, to which FDI was directed, included financial intermediation. This trend was evoked in particular by privatization of banking sector in Slovakia, whereby investment capital originated predominantly from the EU countries.

Based on certain theoretical assumptions and practical experiences from the euro area, it can be concluded that euro adoption in Slovakia may have positive impact on FDI inflow in the future. The main factors which should contribute to an increased FDI inflow after euro adoption include the elimination of exchange rate volatility, lower costs of capital and elimination of transaction costs.

The level of exchange rate is not a negligible factor, which affects the amount of investment, the amount of profit, and thus the total profitability of an investment project. In the country of origin of FDI the exchange rate volatility affects revenues from a foreign branch through the conversion of currencies where exchange rate fluctuations may affect the amount of profit (HM Treasury, 2003a).

The elimination of uncertainty arising from exchange rate volatility affects the reduction of risk premium of exchange rate risk, which results in a decrease of interest rates and subsequently in lower cost of capital (see Part 2.6). Empirical estimates come to the conclusion that in the case of Poland after joining the euro area a long-term interest rate might decrease by 150 – 200 basis points, in the case of entry of Hungary such effect is expected to reach the level of 150 – 300 basis points (Borowski et al, 2004). Therefore, based on such empirical research it can be assumed that also in the case of Slovakia after joining the euro area the cost of capital will decline, which should make investment in Slovakia more attractive for the investors from the euro area countries (in Part 2.6 we indicatively estimate a decrease of real costs of credit for enterprises in Slovakia by approximately 0.5 – 1 percentage point).

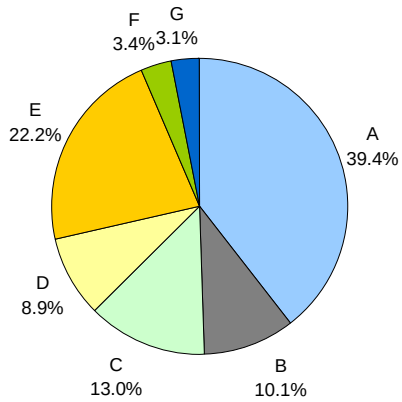
Figure 14 Territorial structure of FDI



NL – Netherlands, DE – Germany, AT – Austria, HU – Hungary, IT – Italy, UK – United Kingdom, CZ – Czech Republic, US –USA, FR – France, CY – Cyprus, OS – Other countries

Source: NBS.

Figure 15 Sectoral structure of FDI



A – Manufacturing, B – Electricity, gas and water supply, C – Wholesale and retail trade, repair of motor vehicles, motorcycles, and personal and household goods, D – Transport, storage and communication, E – Financial intermediation, F – Real estate, renting and business activities, G – Other

Source: NBS.

Apart from the above mentioned effects, the euro adoption will contribute to the elimination of transaction costs and will probably bring about also an improvement of credibility and rating of the Slovak Republic and Slovak business environment, which will also contribute to the reduction of total cost of capital and help to enhanced economic growth. The envisaged entry of Slovakia into the euro area has been currently contributing to the best rating of Slovakia from among V4 countries.

However, the quantification of additional FDI inflow in Slovakia due to euro adoption is rather complex, given the number of factors affecting FDI inflow. A problem in quantification of the effect of a single currency on FDI stems also from a relatively short period of existence of the euro, which consequently results in weak database for long-term effects analyses. A similar problem is also a considerable variability and volatility within FDI, which is related to the problem of investment activities in the 90s leading to the deformation of long-term analyses of FDI flows.

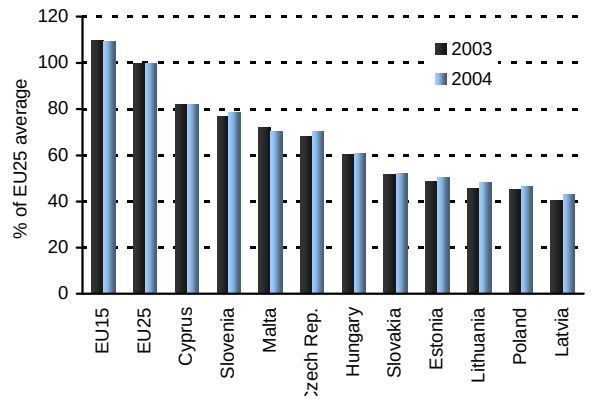
In spite of that it can be concluded that euro introduction had clearly positive effect on the amount of FDI within the euro area and led to an increased attractiveness of the euro area countries for the placement of FDI. It can be expected that euro adoption in Slovakia will have the same positive effect on FDI inflow as in the euro area countries and will contribute to an increased inflow of investment to Slovakia.

The inflow of foreign direct investment represents one of the significant factors of economic growth. It plays an important role in the development of the economy, in particular in transition economies, which include also Slovakia. It is exactly an increased FDI inflow which can accelerate the process of catching up of the Slovak economy with the euro area countries.

3.3 Acceleration of economic growth and improvement of living standards

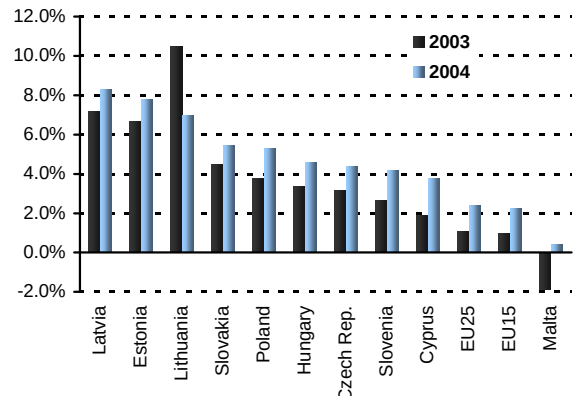
The preceding parts have pointed out to the fact that euro adoption will contribute to a more intensive inflow of foreign direct investment and enhancement of foreign trade of Slovakia and thereby strengthen competition on the Slovak market. Due to these factors we can expect that the single currency will have a positive effect on economic growth, and subsequently it will manifest in the growth of the citizens living standards. The current level of GDP expressed in purchasing power parity amounts to a little more than one half of the average of the EU member states (Figure 16). Through its positive influence on economic growth, euro adoption will facilitate faster convergence of the living standards of Slovakia to the European average.

Figure 16 GDP per capita (in PPP)



Source: Eurostat.

Figure 17 Real GDP growth



Source: Eurostat.

The relationship between a country entry into the monetary union and economic performance is indirect and is much more complex than, for example, interaction between the single currency and foreign trade or FDI. Furthermore, positive effects will be manifested only in the medium- or long-term horizons. If we realize that the economic growth and living standards are target (and hence in a way ultimate) variables for economic policy makers, there is nothing surprising in this finding.

Foreign trade forms the main channel through which direct positive effects of a single currency translate to the overall economic performance, namely by contributing to the reallocation of available resources and their subsequent more effective utilization. With the FDI inflow on the other hand, the transfer of new technologies and processes, which takes

place increases the main component of economic growth – the total factor productivity. FDI thereby supports also an increase in trade, and hence these two channels should be considered as mutually interlinked.

Foreign trade

The theories dealing with the effects of foreign trade say that trade liberalization leads to an increase of effective allocation of the factors of production. This results in higher output specialization of countries depending on comparative advantages. If countries specialize, higher output can be achieved, which then increases economic growth.[25] An increase of output can be achieved due to an expansion of the consumer market, and the positive effect of economies of scale comes into play. In such environment the unit production costs decrease and additional pressure for competition among enterprises is created.

Although euro introduction will not affect the market size, it will definitely have an impact on the allocation of factors of production – in particular capital. As explained in Chapter 2, introduction of the single currency will result in a decline of real interest rates, elimination of exchange rate risk against euro and decrease of exchange rate volatility against other currencies. These factors will subsequently stimulate two key processes. On the one hand, due to reduced costs of capital acquisition the investments will increase, which will contribute to the accumulation of physical capital. According to Wacziarg (2001), the accumulation of physical capital due to an increased domestic investment rate can explain 46 % to 63 % of the overall positive impact of the foreign trade on economic growth. On the other hand, due to the elimination or decrease of exchange rate risks, the output will grow, since it will be beneficial also for smaller businesses to export at least part of their output. In both cases the result will be a positive impact on economic growth of a country.

Beck et al. (2000) studied empirically the role of financial sector with respect to economic growth. In their study they state that financial intermediaries have a significant positive influence on the growth of the total factor productivity, which will subsequently affect the economic growth of a country. In another study Beck and Levine (2002) pointed to a positive role of the financial sector in achieving higher economic growth not only through the banks, but also, for example through the stock markets.[26] Therefore, if a single currency adoption contributed to higher competition in the financial sector, or more pressure for the improvement of fund raising through the stock market, we might expect a contribution to the economic growth also from this source. In Slovakia, however, such possibilities seem to be limited. Majority of Slovak banks and financial institutions are owned by foreign banks which have already taken care of streamlining the operation of the Slovak financial sector. Because the stock market in Slovakia is rather poorly developed, its improvement might bring some benefits. However, the possibilities there are also considerably limited since Slovakia has only a small number of firms with sufficiently high capitalization. Moreover, many firms are owned by foreign investors, that are capable to raise funds abroad.

Much attention in literature has been devoted to the relationship between foreign trade and economic performance of countries. Individual studies highlighted the importance of foreign trade, or on the contrary, its relatively negligible significance for the economic growth of a country. The main reason for such inconsistent conclusions was the usage of various econometric techniques and definitions of economic openness. Recent studies (e.g. Frankel and Rose, 2002 and Irwin and Terviö, 2000) solve many of initial reservations to basic

[25] Wacziarg (2001), pp. 394.
[26] Beck and Levine (2002) similarly as Beck et al (2000) use as the indicator of the development of financial sector a ratio of all bank credits to private sector to GDP.

research and conclude that foreign trade indeed has a positive impact on economic growth. According to Frankel and Rose (2002) the growth of the foreign trade share in GDP by one percentage point may lead to an increase of GDP per capita by one third of a percentage point.

Foreign direct investment

FDI may contribute to the growth of an economy in two main ways: (i) through the inflow of capital and (ii) through increasing the total factor productivity. Accordingly, FDI may, first of all, cause a direct increase in the stock of capital and thereby create a potential for increased economic growth. It should be noted, however, that FDI is not a synonym for additional investment. In many cases this means mainly a change of ownership when foreign investors acquire control over domestic firms either by acquisition or purchase of majority shares in existing businesses. A significantly higher benefit of FDI can therefore be expected in the form of increased productivity, which should be stimulated mainly by (i) the transfer of advanced technologies, methods and procedures, (ii) transfer of new managerial approaches in human resources management (e.g. improved personnel training), and (iii) generally increased competition on the market. The importance of the contribution of such factors to an increase of productivity is obvious, when we realize that in particular productivity is the main source for increasing the growth of potential GDP.

The studies dealing with effects of FDI on the domestic economy have therefore concentrated mainly on the relationship between FDI and productivity (or between FDI and positive externalities) and only to a smaller extent on mutual links between FDI and domestic stock of capital. The available research results focusing on the USA and Great Britain clearly show that labor productivity in companies owned by foreign investors is higher than in domestic firms.[27] However, even more significant difference in productivity has been recorded between transnational and domestic firms.[28] Consequently, regardless of the fact whether it is the effect caused by FDI or rather by transnational companies, in the case of Great Britain about 20 % productivity differential has been detected between firms owned by foreigners and domestic firms. [29]

There is extensive literature focusing on externalities arising from transnational corporations. Baldwin et al. (2005) point out that larger amounts of FDI led to a faster growth of labor productivity, which resulted from side effects of new technologies. While initial studies highlighted high positive externalities,[30] more recent literature offers a little more moderate estimates. Haskel et al. (2002) tested the productivity performance on a large sample of English industrial enterprises and concluded that an increase of FDI by 10 % leads to a 0.5 % increase of the total factor productivity of other domestic firms. This is a small, but statistically significant effect. In the case of Slovakia we may envisage stronger effects since the difference in technologies between foreign and domestic producers is generally higher than in the developed countries. It should be also noted that in this case this is a secondary effect of FDI on domestic firms, and hence not its direct contribution to the productivity of the firms receiving the FDI. A strong positive effect of FDI on the growth of labor productivity in Slovakia can be expected also based on the existing trends where we see that

[27] For Great Britain see Griffith and Simpson (2001); for the USA Doms and Jensen (1998).
[28] Doms and Jensen (1998) came to such conclusion for the USA, and Criscuolo and Martin (2002) for Great Britain
[29] Such comparisons may be problematic with regard to the selection of FDI. Because many FDIs come in the form of mergers and acquisitions, it cannot be excluded that foreign investors choose the best firms with the highest productivity. In such case it is difficult to imply causality between FDI and higher labor productivity.
[30] Caves (1974), Blomstrom (1989), Borensztein et al. (1998).

foreign firms investing in Slovakia implement the same technologies as in their parent companies, whereby they pursue achievement of high productivity.[31]

Regarding FDI inflow it should be noted that its positive effect on the domestic economic environment depends on the level of development of each country. Positive externalities may appear only if the domestic environment is able to absorb them. The extension of benefits of FDI depends on whether the countries are able to provide foreign investors not only with a certain combination of economic advantages, but also sufficient amount of qualified workers able to use advanced technologies. When appropriately qualified workers and the required level of technological knowledge are not available, the costs of investment abroad increase and such country becomes less attractive for the placement of FDI (Blomstrom and Kokko, 2001). In the near future Slovakia, also due to reform efforts in education, should not face such deficiencies. Therefore, in general we might expect that single currency will increase the attractiveness of Slovakia for FDI, which will subsequently contribute to labor productivity and thus to overall economic growth.

Estimation of the effect of euro on economic performance

There are not many studies dealing with the direct effect of single currency adoption on the GDP. For instance, Frankel and Rose (2002) make efforts to quantify such effect. In the first step they estimate the effect of the membership in the monetary union on foreign trade. The second step involves the quantification of the effect of the foreign trade on Gross Domestic Product. It follows from their analysis that an increase in international trade by 1 % should lead to an increase of GDP by one third of a percent. Accordingly, the effect of single currency adoption is a combination of the effect of a monetary union on foreign trade and the effect of the increase of trade on GDP. Regarding this estimate, we assume that it already includes a pro-growth effect of FDI because Frankel and Rose did not adjust their estimates for a change in FDI. In this case we can also state that advantages arising from the membership in a monetary union in the form of dynamic growth of GDP grow proportionally to the openness of economy.

In this connection and with regard to the expected contribution of euro adoption to the increase of foreign trade in the forthcoming 20 years the level of GDP in Slovakia should increase by 7 to 20 %. It means that every year a single currency would increase the domestic economic performance by approximately 0.7 % ± 0.3 %.

[31] This is also the reason why despite relatively high inflow of FDI its impact on the growth of employment rate is rather low.

4. Cost and Disadvantages of Euro Adoption

The disadvantages of euro adoption include one-off costs of euro changeover and a permanent drawback of the loss of independent monetary policy. One-off costs of currency conversion will be incurred during the period of one to three years before joining the euro area or immediately after euro changeover. The loss of independent monetary policy will be a permanent disadvantage arising from entry to the euro area although over time its intensity may vary. We suppose that with gradual synchronization of business cycles and the structure of the Slovak economy with the euro area the losses of abandoning own monetary policy will decline. A specific permanent disadvantage is a decline of revenues of banks from currency exchange activities and foreign exchange trades which will affect also banks profits.

4.1 One-off costs of euro adoption

Euro adoption will imply one-off costs on the part of banks, businesses, but also on the part of the state administration. Such costs will not be covered by public resources and each business will have to cover them by itself. An important factor in minimizing the costs of euro adoption includes a proper organization and timing of arrangements for euro changeover. Entrepreneurs will make arrangements for many steps related to euro adoption 2 – 3 years in advance. In the case of well organized and sufficiently early preparation, most kinds of costs of non-financial companies can be minimized or even fully eliminated. In particular, in the forthcoming three years adjustments of information systems can be incorporated in regular updates and modifications at substantially lower costs than if adjusted exclusively because of (in)compatibility with the euro.

The scope of arrangements of entrepreneurs will depend mainly on the size of the business and also on the type of activities carried out by firms. The most important tasks to be performed by businesses will involve, in particular, adaptation of information systems, changes in relations with employees, contractors, customers and their own bank. Enterprises will also have to get prepared for legislative changes which will concern them, in particular in the area of taxes and accounting. The scope of all such tasks will directly affect the level of costs arising from euro adoption.

Software and information systems

Changes of software and information systems are likely to concern every business. Such changes will affect all information systems and software working with financial information. It is important that entrepreneurs perform audit of their information system good in advance in order to determine steps necessary for their adaptation. The adjustment of complex and large information systems may take two years or more, and therefore arrangements should be undertaken early enough. The extent of information systems conversion will depend also on the type of activity and the size of the enterprise. Special attention should be devoted to mutual interconnection of the systems. Businesses should consider in their investment decisions in the IT area also the necessary conversion to the euro. As has already been mentioned, some changes can be included in annual updates of company software.

In this connection, however, it should be emphasized that IT area should be considered in particular in the context of investment activities of entrepreneurs. Entrepreneurs can be writing-off this proportion of costs for several years. Therefore, such costs cannot be understood as “sunk costs”.

Dual display of prices, dual circulation

Dual display of prices (dual pricing) will represent the expression of financial values in korunas and also in euros. Dual pricing will be always required where financial value, price or value in domestic currency is indicated for a customer. This will involve all prices of goods and services, value of financial amounts on accounts, invoices, bank services, budgeted costs, consumer lending, various payments and charges, wage slips, pensions and social allowances, personal account statements etc. An obligation of dual pricing will apply to legal person, as well as to natural persons.

Dual circulation will represent concurrent cash circulation of the Slovak currency and euro. During that period businesses will be required to accept payments in both currencies. This will lead to higher demands with respect to the handling of cash payments by entrepreneurs. Trade sector will serve as one of the channels of currency changeover. Before this period the adjustment of cash registers and personnel training will be required in particular in trade sector.

Personnel training

The specific content of the training course will depend on the needs of an enterprise. This will include, in particular training courses on changes of the enterprise information systems, on security features of the new currency and its handling. It is expected that training courses for own employees will be delivered in particular by banks and large enterprises.

Quantification of costs

Currently, there exist various analyses of one-off costs of euro adoption. In estimating costs the method applied to their calculation is very important, the particularities of individual countries should be taken into account, for which estimates have been made, as well as economic structure which may cause differences in the amount of costs.

Internal estimates of costs are considered to be the most accepted analyses of one-off costs of euro adoption developed by individual central banks of the euro area countries. Such estimates range from 0.3 % – 0.8 % GDP. The main reason of such range is the length of transition period, which complicates exact determination of the costs.

The costs for the Netherlands estimated by DeNederladsche Bank (central bank) have been adjusted throughout several years while the last estimates of costs were quantified to NGL 7 bil. in 2001, which represents 0.7 % GDP of the Netherlands.

Estimates of costs made on the basis of the Survey of Institut für Mittelstandforschung (IFM 1998) for Germany estimated costs in Germany to DM 21.5 bil. which represents 0.6 % GDP.

A similar estimate was made for Austria where Wirtschaftskammer Österreich (WKO) estimated one-off costs to EUR 1.54 bil., which represents 0.7 % GDP.

There are several studies on one-off costs elaborated in particular for the conditions of Great Britain. British estimates of costs are, however, significantly higher than in other countries. It is in particular because of the systemic importance of the banking and financial system in Great Britain, which is a financial centre of the whole Europe, and also because of a different structure and size of various enterprises.

Table 4 Estimated currency conversion costs

Country	Costs in local currency (in bil.)	Costs in % of country GDP
NCB estimates	0.6 –1.6 EUR	0.3 –0.8
Netherlands (DNB)	7 NGL	0.7
Germany (IFM)	21.5 DEM	0.6
Austria (WKO)	1.54 EUR	0.7
UK (Bannock Consulting)	11.7 GBP	1.26
UK (IFM methodology)	5.7 GBP	0.6

Source: ONB 2005, DNB 2001, 1999, IMF 1998, Bannock Consulting 2001.

Bannock Consulting (2001) in its complex study taking into consideration various other studies and analyses of costs estimates expects total costs of euro adoption to amount to 11.7 bil. British pounds, which represents 1.26 % GDP. From this the costs of the corporate sector have been quantified to 10.3 bil. British pounds, which is approximately 1.1 % GDP. The costs of banking sector should reach about 1 bil. British pounds, while for the public sector they should amount to about 0.4 bil. British pounds. Such estimates are based in particular on the survey done by the Institute of Chartered Accountants in England and Wales (ICAEW).

As stated in the study of Bannock Consulting, had the IFM methodology been applied to Great Britain, the total costs would amount to 5.7 bil. British pounds, which represents 0.6 % GDP. This example illustrates the fact that the methodology used in estimation of the costs of euro adoption matters considerably.

An important factor in assessment of costs is not only their amount, but also the distribution of costs among individual sectors and impact on them. Most of studies and surveys are focused on corporate sector and banking.

The largest proportion of the costs of euro adoption is incurred in particular by corporate sector. Therefore, most attention has been devoted to that sector. Similarly as in the above cases, however, an estimate of costs depended to a large extent on the methodology used and also on certain specific circumstances (IT area).

The study elaborated by IFM (1998) estimates the costs of euro adoption in Germany to DM21.5 bil., which represents 0.3 % of annual turnover of all German entrepreneurs. The costs calculated to one entrepreneur represent the average costs amounting to DM7 700. For large enterprises (annual turnover exceeding DM100 million) they represent 0.04 % of annual turnover, for small businesses (annual turnover not exceeding DM1 million) such costs represent 2 % of annual turnover. In total 94 % of the total costs of euro adoption fall on medium-size enterprises.

Box 3 The costs of British enterprises related to the euro adoption

The estimation made by central banks of the euro area countries envisages that one third of the overall costs will be incurred in particular by banking sector. Such costs represent 0.1 – 0.3 % GDP. Costs estimated for banking sector depend to a large extent on the size of the banking and financial market.

The highest costs of euro adoption within the banking sector are estimated for Great Britain where the British Bankers Association calculated them to GBP1 bil. It should be noted, however, that although Great Britain is not a member of the euro area, a part of its banking sector, with regard to its importance and position within the EU, has already incurred costs due to the euro adoption in the euro area. These involve in particular the costs that the British banks had to spend on their branches in the euro area countries. This factor affected also some British transnational enterprises which have their branches and trade networks in the euro area.

The Central Bank of the Netherlands also dealt with estimates of the costs of corporate sector which made such estimates with the help of surveys involving entrepreneurs. Such costs have been updated several times.

Table 5 clearly shows that the more the euro cash changeover was coming up, the more precisely the costs of euro adoption could have been quantified. It is obvious that most of the costs were born by the retail sector, services. From the study, however, the impacts on individual enterprises according to their size cannot be determined.

Table 5 Estimate of the euro changeover costs in Dutch corporate sector (in bil. Dutch guilders)

Sector	March 1999	March 2000	October 2000	March 2001
Manufacturing	0.5	0.5	0.9	0.9
Wholesale	0.6	1.0	0.9	0.9
Retail	1.0	1.1	1.5	1.4
Services	1.1	0.8	1.7	1.5
Others (without banking sector)	1.3	1.9	1.9	1.6
Total	4.5	5.3	6.9	6.3
Ratio of total costs to GDP (in %)	0.54	0.59	0.77	0.63

Source: De Nederlandsche Bank, own calculations.

Bannock Consulting (2001) expects the costs for corporate sector to amount to 10.3 bil. British pounds. The estimates are based on the methodology used by ICAEW, which consists of the estimates of average costs incurred when implementing new legal regulations in business. Within estimates of impacts such costs are subsequently attributed to individual companies according to their size.

Table 6 Euro changeover costs for UK corporations according to number of employees category

Number of employees	**Total annual turnover (£ mil.)**	**Number of businesses**	**Costs of euro-related conversion**		**Euro-related costs as % of annual turnover**
			Economy as a whole (£ mil.)	Average costs per business (£)	
0	90 463	2 324 340	2 324	1 000	2.6
1 – 9	329 414	1 165 450	4 196	3 600	1.3
10 – 49	289 058	156 235	1 250	8 000	0.4
50 – 199	215 769	22 615	380	16 800	0.2
200 +	1 239 305	8 305	2 182	262 758	0.2
Total	2 164 009	3 676 945	10 332	292 158	0.5

Source: Bannock Consulting 2001.

Euro introduction in Great Britain should have the same consequences for corporate sector as in Germany. Total costs should amount to 0.5 % of annual turnover of all businesses. Identical results have been achieved also in recalculation of costs according to the size of enterprises. Costs of large enterprises represent 0.2 % of their annual turnover, while the costs of enterprises where the owner is also an employee (a sole trader) represent 2.6 % of annual turnover, and for small (micro) businesses (1 – 9 employees) the costs represent 1.3 % of annual turnover. A difference between the UK methodology and German IFM methodology consisted in the following: ICAEW classified enterprises according to the number of employees and IFM classified enterprises according to the amount of their annual turnover.

The Federation of Small Businesses (1988) estimates the costs of euro adoption for small businesses to less than 5 000 GBP. This estimation fully supports the estimates for the amount of costs within this size of business segment drawn up by both ICAEW and IFM in Germany.

Andersen Consulting (1999) based on the survey within the enterprises employing over 500 employees ascertained that 45 % of firms expected the amount of their costs of euro adoption to be below 0.2 % of their annual estimate (34 % of enterprises under survey estimated their costs to range between 0.2 to 0.5 % of their annual turnover).

The estimations and analyses of costs of euro changeover and their impacts on business area clearly share the viewpoint that despite higher costs of euro adoption to be incurred by large enterprises than in small businesses, this will not represent so heavy burden for large companies as for small ones. Large companies will benefit from their large size as they have at their disposal more human resources, a possibility of agreements and lump-sum discounts on the part of suppliers of IT systems and maintenance services etc.

Other estimations done in connection with the costs of euro adoption have been drawn up by individual associations, auditors and consultancy firms or by enterprises themselves.

One of the sectors that will be most affected by euro adoption is the trade sector. Deloitte & Touche developed for Eurocommerce (2002) the estimation of costs after euro adoption where total costs of retail sector were quantified to EUR11.5 bil., which represents 0.75 % of annual turnover of the retail sector within the whole euro area. However, this study states that the estimation of costs applies in particular to larger retailers. The costs of small and medium-size retailers have been estimated to more than 1 % of their annual turnover. The largest proportion of the costs – 40 % is represented by IT area, and specifically in this sector 40 % also the adjustment of points of sale and their systems. Dual pricing had a share of 10 % in the costs and personnel training had an equal share of 10 %.

British Retail Consortium expects average costs within retail sector per one retailer to amount to 1.2 % of annual turnover. For small retailers such costs should represent 2.6 % of their annual turnover.

With regard to the structure of the costs it can be stated that the largest proportion of costs is expected in the area of IT expenditure. According to IFM research (1998) even 60 % of the total costs can be expected namely in IT area. The remaining proportion of costs will, according to IFM, involve marketing, public relations, personnel training. However, the amount of IT costs will depend to a large extent on the size of the enterprise, the type of the software used and whether along with the software also the supplier update services are used.

In its analysis of the structure of the euro adoption costs for businesses Bannock Consulting (2001) refers to the studies performed by Dresdner Bank a DATEV (Association of German tax advisors, auditors, consultants and lawyers). These data are expressed as a percentage of individual components of the total costs of euro adoption for individual businesses.

The British company Severn Trent’s employing over 4 000 employees and conducting activities in the area of water management made an attempt to enumerate costs within the analysis of effects of euro adoption. It enumerated the costs to GBP 10 million which represents 1 % of its annual turnover. Their estimates of the structure of costs have been proved by previous studies which identify IT area as the largest cost item within euro adoption in individual businesses.

Based on the analyzed studies of the costs of euro adoption and their impacts in the euro area countries and Great Britain it can be expected that the situation in the field of costs of euro adoption will develop similarly as in the euro area.

Table 7 Estimated euro changeover costs structure for individual businesses
(in % of the overall costs)

Area	Dresdner Bank	DATEV	Severn Trent`s
IT	55	60	60
Marketing/Public relations	15	15 – 20	20
Personnel training	10	10	20
Office materials	6	–	–
Contracts	4	–	–
Other	10	–	–

Source: Bannock Consulting 2001.

In Slovakia, however, some specific factors will influence the euro adoption, which did not exist in the euro area countries. The main difference will involve a different manner of euro cash changeover and euro non-cash changeover, the "big bang" scenario. The "big bang" scenario should be the factor which will reduce costs of euro adoption. Accordingly, in Slovakia there will be no transitional period which would complicate the arrangements and increase costs. The length of dual circulation will be also different, while in the euro area 6 month had been initially envisaged, then actually two month applied, in Slovakia this will last only for 16 days. It is actually the reduction of dual circulation which is an important factor affecting the costs of businesses, in particular banking and trade sectors. Another essential difference will involve the fact that Slovakia can draw from experience of the euro area countries, but also of newly admitted euro area countries joining it by "big bang" system.

It should be similarly taken into account that the stock of foreign direct investment in Slovakia reaches one third of GDP and 67 % of it comes directly from the euro area countries. Consequently, such enterprises will, to a large extent, utilize experiences of their parent companies from the euro area. There will be transfers of methods and procedures used in the euro area during euro changeover. Similarly, the transfer of software applications and solutions in the field of IT systems can be expected. This factor should contribute to the reduction of euro changeover costs in corporate sector. It will, however, work only in the businesses capital ties to the euro area countries.

The difference of Slovakia from the euro area, which will negatively affect the costs, consists in the fact that many enterprises within the euro area linked together the issues of euro changeover within the area of IT systems with those of the year 2000. Thus, both types of issues had been solved in conjunction, which resulted in partial savings of costs in the area of IT systems. Many suppliers of software offered software applications solving such issues all in one. This effect, however, may be partially eliminated due to the transfer of knowledge and software applications from parent companies operating within the euro area.

An important factor is that many Slovak enterprises have been already using the euro in their activities. As shown by Figures 2 to 4, the turnover of foreign trade in euros exceeds Slovakia gross domestic product. In contrast to current euro area countries, the euro will not be by far a new unknown currency. Many enterprises have information systems able to work with the euro, charge in euros and use euro cash.

In quantification of the costs of euro adoption in Slovakia all such factors should be considered. Had we applied the estimation of costs of euro adoption by individual central banks to Slovakia, they would range between 0.3 – 0.8 % GDP in Slovakia. If we applied IFM methodology (0.3 % of the turnover of all businesses), the euro adoption costs in Slovakia should amount to 0.58 % GDP.

In Slovakia we expect the costs of euro adoption to approximate to the lower limit of the estimated range, i.e. about 0.3 % GDP. The costs might be reduced by the planned "big bang" system of euro changeover without transitional period. A short period of dual circulation will also support the reduction of costs. The experiences of current euro area members can be also used, and before euro adoption in Slovakia the experiences of some other new EU member states are likely to be used. The existence of a very high proportion of owners of the Slovak banks from the euro area, whose experiences may be used by their Slovak subsidiaries, also speaks for relatively lower costs. It is also very important that euro already exists and most of the Slovak companies have experience with it.

Based on the estimated savings of euro adoption (in Chapter 2 they are estimated to almost 0.4 %) the anticipated return of one-off costs will be one year in the case of Slovakia.

Similarly as in the euro area, it is expected that the largest proportion of the costs will be born by banks and large enterprises. However, when recalculated to annual turnover, the highest burden will be borne by small and medium-size enterprises which constitute 99.1 % of all enterprises in Slovakia.[32] Therefore, during euro adoption most attention must be devoted to this group of entrepreneurs.

4.2 Specific costs of banking sector and decrease of revenues of banks

The process of euro changeover within the banking sector will be characterized by certain different features. Besides costs referred to in the previous Part, which are generally applicable to all enterprises, commercial banks will be partially in a different position due to their activity. This covers in particular two areas related to their essential position of an intermediary of financial flows in the economy.

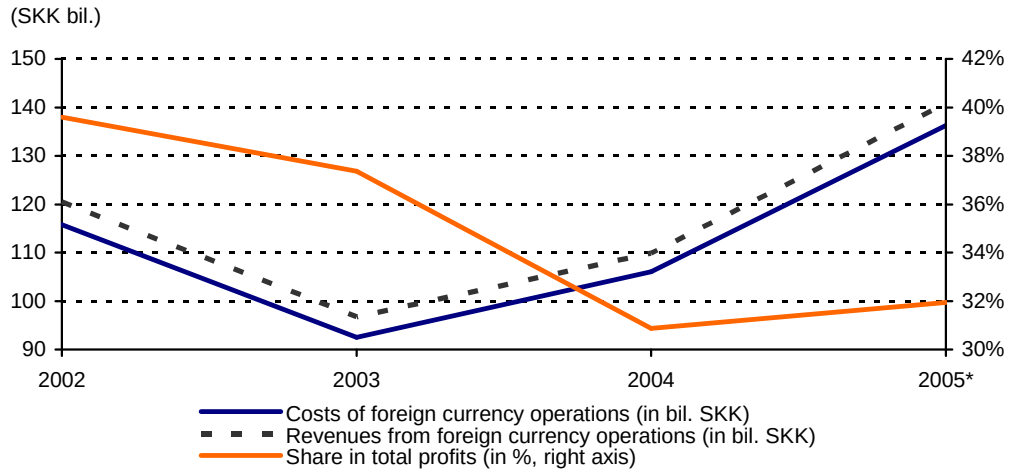
The first one will involve the costs arising from a specific position of banks, in particular in the system of cash flow. This will regard the requirement to ensure free conversion of domestic currency into euro within the system of cash payments in a short period of time. This activity will involve a short-term one-off increase of operational costs. In the area of non-cash payments the position of banks as an important creditor or debtor will reflect in higher requirements with respect to the adjustment of information systems.

The second one will involve changes in the structure of balance, but in particular in the structure of costs and revenues of the banking sector, which are related to foreign currency operations. Basic indices and their development are contained in Figure 18.

As compared to the previous period, during the last two years the share of profit of foreign currency operations in the total profit of the banking sector has significantly decreased. This decline represents on average 7 percentage points. The share of foreign currency assets has been long stabilized at the level of approximately 14 – 15 % at more significant growth of foreign currency resources whose share in liabilities exceeded 25 % in 2005.

[32] Out of that, small businesses represent 94.9 % and medium-size businesses represent 4.2 %.

Figure 18 Development of costs, revenues and profits of foreign currency operations



* preliminary data
Source: NBS, own calculations.

In connection with gradual preparation of the banking sector for euro adoption we can state several positive tendencies:

- At constantly growing rate of backing of foreign currency assets by foreign currency resources the share of net foreign currency yields in overall profit is stabilized. In comparison with the previous period it thus represents a lower effect on possible future decline of overall parameters of profitability. Besides, it can be expected that with the current development of average rate of return and costs of foreign currency operations such trend will continue. The growth of foreign currency assets and revenues thereof, on the one hand, and the growth of foreign currency liabilities and costs linked to them are stabilized.
- The resources currently linked to foreign currency operations can be a potential for the enlargement of new banking activities or for the reduction of costs. With so high level of competition within the banking sector in Slovakia there is no room for achieving above-average profits (rents) from foreign currency operations, so the decrease of revenues of such activities should be redeemable by other activities. Moreover, with regard to capital and financial stability of the banking sector, such possible decline poses no risk.
- Banks will be indirectly affected by overall positive economic impacts of euro adoption. Profitability of enterprises should improve. Such strengthening of the position of non-financial corporations will improve the credit portfolio of banks, and consequently banks will be able to save on adjusting entries and reserves. Similarly, the overall growth of GDP in the longer period will enhance also the utilization of banking services.

4.3 Loss of independent monetary policy

Monetary policy enables the central bank to respond to specific situation in the economy, to curb shocks (internal and external, demand and supply) and consequently to create an environment for sustainable price stability and along with that also to support the stability of real economy. In this sense, the loss of independent monetary policy due to euro adoption may constitute a serious disadvantage.

There are, however, indications suggesting that in small, highly open economy with liberalized fluctuation of capital, like Slovakia, monetary policy has a limited scope for its operation. The loss of independent monetary policy will be therefore a substantially less disadvantageous than for larger or less open economies.

Monetary policy under conditions of liberalized capital flows

International capital flows in Slovakia are fully liberalized due to the membership in OECD and EU. Capital and financial flows considerably exceed imports and exports of goods and services. Slovakia, being a transition economy with low level of capital stock, needs to import capital from abroad. Besides foreign direct investment there are also considerably less stable forms like debt financing and portfolio flows.

Capital flows directed into and out of Slovakia respond to domestic and also external stimuli. Domestic factors include mainly the differential of interest rates between Slovakia and euro area, capital gains, the development of exchange rate and risk premia of the country. Out of these factors domestic monetary policy can affect only short-term interest rate and partially also foreign exchange rate. Other domestic policies are able to partially influence also some other factors, e.g. capital gains in Slovakia, but their capability to respond promptly is considerably lower than in the case of the monetary policy.

Various external factors exert a profound influence on capital flows in Slovakia, absolutely out of the influence of domestic policies. These include the development of world interest rates, regional influences and regional perception of markets by investors, global liquidity supply etc. In 2005 the foreign exchange rate of koruna against euro was strongly affected by the developments in Poland, Hungary and the Czech Republic and it often did not correspond to the domestic economic fundaments. After entry of koruna into ERM II it is expected the region will have a weaker influence on the koruna exchange rate, but given the obligation to maintain the stability of exchange rate within ERM II, nevertheless, monetary policy will not be able to use the exchange rate for influencing domestic economy.

With high openness and high capital flows it is quite possible that net capital flows to Slovakia or their composition will not meet the needs of the domestic economy. However, the possibility of monetary policy to respond to such a situation is limited. If it sets domestic interest rates according to the needs of the domestic economy, foreign capital flows may shift foreign exchange rate to unfavorable level. Disequilibrium of the exchange rate may negatively affect foreign trade balance and also the development of inflation. If the monetary policy tries to set the foreign exchange rate to an equilibrium level, it may become forced to accept interest rates which create or contribute do economic imbalances, too high or too low domestic investment or household saving.

With liberalized capital markets the monetary policy is unable to guarantee both internal and external monetary equilibrium (i.e. to guarantee proper setting of both exchange rate and interest rates). The official interest rates alone are not able to ensure fulfillment of more objectives at the same time. Official foreign exchange interventions appeared to have limited success and, moreover, are an extremely expensive instrument. This is not to say, however, that such equilibrium cannot occur, but it also may not. A proper level of risk premia or favorable development abroad may contribute to a positive development. There is also a possibility to reduce the sensitivity of economy to external influences trough a prudent, consistent and transparent economic policy. A prudent institutional and regulatory regime within financial sector is also important. In general, however, a country exposure to global capital markets confronts the monetary policy with difficult problems and leads to imbalances

which can be reduced through an appropriate adjustment of economic policy, but the risk of their occurrence remains.[33]

Potential of an independent monetary policy to affect real economy

The main objective of the Slovak monetary policy is price stability, but along with that another legitimate objective is the stabilization of real economy, the level of output or employment rate. In contrast to the price stability, however, the impact of monetary policy on real variables is very low. This arises out of the nature of the monetary policy in Slovakia.

Monetary policy exerts influence on real economy via several channels. The interest rate channel is considered traditional – a change of nominal interest rates by the central bank results in a change of real interest, which will affect the aggregate demand, and subsequently inflation and GDP. Large enterprises in Slovakia, which create the largest proportion of value added, have currently easy access to financial markets within the euro area. Therefore, interest rates in euros are more important for them than interest rates in korunas. The Slovak monetary policy affects only the behavior of households and small businesses. However, the volume of the credits of these agents (in proportion to earnings) is considerably lower than in the most developed countries. Therefore, also the players that can be influenced by monetary policy are less sensitive to the changes of interest rates. There is a danger, however, that even these smaller players may transfer their financing into foreign currency, in particular should the interest rates in korunas be very high. A similar development took place in Hungary or in Baltic countries. In such case the monetary policy would almost absolutely lose its impact on the development of real economy.

In Slovak conditions the exchange rate channel of monetary policy transmission is considerably more significant – a change of the central bank rates will change the nominal exchange rate, which will affect relative prices of imported and exported goods having a direct impact on inflation and an indirect impact on aggregate demand.

In the case of strong and fast effects of the exchange rate channel of monetary policy transmission its impact on inflation is relatively high. However, it reduces the capability of monetary policy to affect real economic variables. The real exchange rate against euro is defined as follows:

$$\text{real exchange rate} = \text{nominal exchange rate} * \frac{\text{foreign price level}}{\text{domestic price level}}$$

If in consequence of monetary-policy decisions the nominal exchange rate of koruna against euro moves, this will be reflected also in inflation. For instance, with restrictive monetary policy (decrease in nominal exchange rate) also the domestic inflation will decrease. A decrease of domestic inflation (increase in the relative price level abroad) compensates for the effect of the nominal exchange rate on the real one, and the result is a low effect of monetary policy on the real economy. Thus, when the effects of the interest rate channel of monetary policy transmission are weak, then the options of the central bank to stabilize GDP or unemployment rate are very limited.

Conditions for independent monetary policy of the NBS

Appreciation of real exchange rate

Positive interest differential with respect to investors' home countries, strengthening of credibility of Slovakia due to favorable development in fiscal area, fast growth of productivity

[33] For details see Lipschitz and Mourmouras (2002) and Lipschitz et al (2002).

within traded sector and in general optimistic expectations have been creating pressure for strengthening of exchange rate since 2002. It was capital inflow behind such development which is an accompanying phenomenon of these facts. It is either in the form of foreign direct investment, which with regard to the needed elimination of the physical capital shortage should be welcomed, or it can be the inflow of short-term (speculative) capital with a potential destabilizing effect. In the area of foreign direct investment the inflow of capital is related to privatization activities of the government and to investment in private sector.[34] In general, however, such investment is not problematic. A problem may arise from an inflow of speculative capital. Such inflows are caused by a higher demand for Slovak assets, determined by the growth of their attractiveness, in consequence of which investors play a convergence game. In the background there are still existing differentials in interest rates in comparison with the euro area, but first of all, the expected appreciation of the Slovak koruna. There is also a connection with elimination of political uncertainty (accession to NATO, EU, prospects for joining the euro area).

In the case of strong pressure for appreciation of exchange rate the NBS can opt to apply one of three procedures (or their combination):[35]

- Performing sterilized intervention in order to prevent too strong and too fast appreciation of the koruna. However, with regard to a very small size of the Slovak market relative to the possibilities of large international investors, systematically sterilized intervention is ineffective. Moreover, sterilized large-scale interventions are very expensive for the National Bank of Slovakia, and such costs should be compared with social benefits of more stable exchange rate.
- Allowing appreciation of the koruna, which would reduce the advantages of possible convergence game, and hence the stimuli for short-term capital inflow. There is a risk that appreciation can negatively affect the competitiveness of export sector, in particular.
- Reducing interest rates, which would weaken to a certain extent, stimuli for convergence games, however, the possibility of higher demand pressures should be monitored. This might mean a risk of another increase in the deficit of the current account of balance of payments and an increase of inflation. After considerable reduction of official rates in 2004 the possibilities for further utilization of such option has been limited.

Alternative exchange rate development, inconsistent with economic conditions

The development since March 2005 has shown that concerns about capital flows volatility and its impacts on the exchange rate and the economy in the Slovak Republic are justified. Since October 2004 the exchange rate has appreciated excessively, above equilibrium appreciation. The appreciation has been going on for a longer period of time in spite of gradually lowered basic interest rates of the NBS and interventions by the NBS on the exchange market. Without any changes in economic fundaments and also without any stimuli

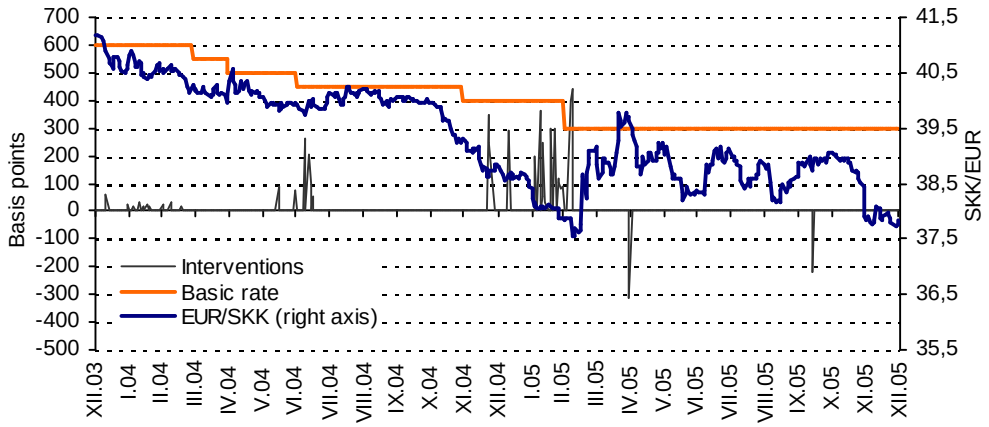
[34] For the reason of preventing volatility of foreign exchange rate the NBS buys foreign currency privatisation revenues from the government, and hence foreign currency reserves are increased. Privatisation revenues equivalent in korunas is depending on their use fully directly or indirectly sterilized. Privatisation revenues thus increase sterilisation position of the central bank; however, they have no influence on the exchange rate fluctuation.
FDI directed into private sector can lead to certain pressure for the appreciation of the exchange rate. On the other hand, however, it improves the competitiveness of the economy, growth of potential product, labour productivity and accelerates the real convergence process. Thus, in medium-term prospect it constitutes a stimulus for the appreciation of real equilibrium exchange rate.

[35] IMF (2002).

from the area of monetary policy a significant reversal in capital flows took place in mid-March, which has been reflected in the change of the development of exchange rate towards a considerable devaluation (Figure 19).

Accordingly, a switch in capital flows was not directly related to the economic development in the Slovak Republic. The immediate reasons for withdrawal of short-term capital were the concerns about political instability in Poland. Polish zloty thus initiated fluctuation of currencies within the whole region (Czech koruna and Hungarian forint also weakened). Such development was connected also with a some new investment opportunities on the global market, including the USA. As a consequence, foreign players started withdrawing capital from the whole region. In the subsequent period the exchange rate fluctuated within quite a large range of more than one koruna.

Figure 19 Development of koruna-euro exchange rate



Source: NBS, own calculations.

The empirical findings show that independent monetary policy does not work universally in the direction towards establishing equilibrium by the adjustment of exchange rate. Borghijs and Kuijs (2004) state with regard to macroeconomic stabilization that the costs and benefits of abandonment of independent monetary policy with flexible exchange rate will depend on the nature of shocks and on the capacity of exchange rate to absorb such shocks. Flexible exchange rate is useful in absorbing real shocks, but does not help in the case of monetary and financial shocks. Borghijs and Kuijs found out that in the case of V4 countries and Slovenia in the past the exchange rate served as an undesirable propagator of monetary and financial shocks rather than a useful tool for absorbing real shocks.

When considering the possibilities of independent monetary policy in the Slovak Republic there is another relationship with the existing monetary policy regime – with inflation targeting. Strict pursuance of inflation target may lead to a high volatility of exchange rate having a potentially strong impact on enterprise profit rate. Such volatility may result – having regard to a fast translation of the effects of exchange rate changes into prices – in a feedback effect on the inflation. Inflation targeting in a small open economy is therefore much more complicated than in large economies, like e.g. the euro area.

Independent monetary policy versus entry to monetary union

The turbulences of exchange rate discussed above represent an undesirable element for all economic agents. The NBS has repeatedly openly expressed its dissatisfaction with the development of the exchange rate. Unpredictable and hardly influenceable development of exchange rate makes it difficult for the central bank to achieve its objectives in the area of

price stability and of overall economic stability, too. Lower capacity of the central bank to achieve its objectives may decrease its credibility. In such a situation the central bank responses must be more resolute than in the situation when having full credibility. This can be subsequently adversely reflected in the volatility of financial and monetary variables, and in the development of real economy. It is therefore appropriate to examine a more favorable option against the autonomous independent monetary policy applied under conditions of free movement of capital. Such option may be an entry into a monetary union. The risk of unpredictable development of similar nature as described above can be minimized by accelerating preparations for joining the euro area in conjunction with ongoing reforms.

The option of joining a monetary union versus the option of independent monetary policy has, apart from the more or less intuitive justification above, also a deeper one. Ravenna (2005) shows that in the case when the central bank is lacking full credibility, then an increase of credibility obtained through joining a monetary union, i.e. guaranteeing a fixed exchange rate, will exceed a loss arising from the abandonment of independent monetary policy. Theoretical conclusions of the analysis have been supported by empirical analysis of the relationship between the credibility of the central bank and the regime of monetary policy on a sample of 81 central banks. If we apply such results to Slovakia, then entry to the euro area represents a fully credible option of irrevocably fixed exchange rate within the monetary union against the option of independent monetary policy with lower credibility of the central bank.

4.4 (A)symmetry of shocks in Slovakia and euro area

One of the risks of joining the euro area is the loss of independent monetary policy. If a country abandons its own currency, it gives up also the possibility to independently influence its economy. If, for instance, a country is in a recession and for its optimum functioning it would need a more relaxed monetary policy, and if the rest of the union is on the upswing and would need a restrictive monetary policy, there appears a problem in the regime of a single currency. The core of the problem consists in non-synchronized development of the economy of the country concerned and the rest of the union. It is advantageous for a country to adopt single currency and thus fix the exchange rate if its business cycle is similar to the rest of the union and if there are preconditions of convergence of business cycles in the future.

Before euro adoption and simultaneous abandonment of autonomous monetary policy, it is important to answer two essential questions:

- To what extent is the economic development in Slovakia synchronized with the development of the euro area?
- What is the probability of sustainability of a similar cyclic economic development?

Synchronization of business cycles

A large body of literature deals with the synchronization of business cycles between the euro area and the countries outside it (including Slovakia). The level of synchronization is assessed according to the extent of correlation between basic macroeconomic indicators. Long-term trend or similar systematic component is removed from the fundamental variables and the residuals are interpreted as indicators of business cycle and reorganized into a new statistical data set arranged according to individual states. Such data set is further statistically analyzed.

In Table 8 we present an overview of the literature dealing with the synchronization of business cycles of the Slovak economy and the euro area.

Although the conclusions of individual papers vary, we can state that business cycles of the euro area and Slovakia are slightly (but still) synchronized and that the costs of introducing single currency should not be high. Moreover, it should be remembered that a certain

proportion of different cyclical development in Slovakia compared to the euro area has been caused by the government reform and stabilization programs. Restrictive reform "packages" reduced the growth in Slovakia in the period of 1998 – 1999 when the growth in the euro area was high. On the contrary, slowdown of reforms and expansive policy in 2002 affected Slovakia at the time when the euro area was experiencing stagnation. After finalization of the most essential reforms such extensive shocks caused by the government will not recur, thus in the future we can expect higher synchronization of cycles.

Table 8 Synchronization of business cycles of Slovakia and euro area

Authors	Applied method	Data Reference region	Conclusions
Boone a Maurel (1999)	Authors determine to what extent the common shocks (obtained by detrending employment) are transmitted to business cycles of particular EMU members and candidate countries.	• monthly, 1991 – 1997 • EU (Germany)	Given the large extent of symmetry that was found, the costs of joining the monetary union will be relatively low for candidate countries and their entry to the EMU will be advantageous.
Artis et al. (2004)	They calculate for individual countries a business cycle indicator on the basis of seasonally adjusted industrial production with the help of a „dating algorithm".	• monthly, 1993 – 2002 • Euro area, Germany, Austria, Italy	Business cycle of Slovakia is not synchronized well enough with the reference countries.
Demyanyk and Volosovych (2004)	Direct comparisons of the GDP growth rate for the period 1994 – 2001, as well as construction of simple correlation coefficients and asymmetry rates taking into account also variance of growth rates.	• quarterly, 1994 – 2001 • EU countries	Business cycle of Slovakia is more symmetric than asymmetric with the EU business cycle although the candidate countries are not as synchronized as the EU member countries.
EFN report, autumn 2003	Correlations of centered GDP growth rates and inflation, which were calculated for 5-year periods.	• quarterly (GDP), monthly (industrial production), 1993,2002 • Euro area	In case of Slovakia and some other candidate countries the report states that after inclusion of last three years the correlations worsened. Nevertheless, the authors admit that an interpretation of this phenomenon is ambiguous.
Komárek et al. (2002)	They define an index of optimal currency area for two countries as the systematic component of foreign exchange rate volatility which is dependent on a number of fundaments. Creation of a monetary union between two countries is easier the lower the value of this index.	• monthly, 1989 – 1998 • 21 industrial countries	Entrance to the monetary union is advantageous because differences between candidate countries are not substantially different that those between euro area members.

Boreiko (2002)	Calculates an indicator of business cycle synchronization on the basis of monthly time series of industrial production, real exchange rate volatility, openness, and inflation differential between the economy and the EU average. The author divides the candidate countries using cluster analysis.	• Monthly and annual, 1993 – 2001 • Germany	In the last period the best prepared countries are the Czech Republic, Estonia, Hungary and Slovenia. Poland and Slovakia constitute a separate group due to the volatile real exchange rate and are hence not as well prepared for entering EMU as the above mentioned countries.

Symmetry of shocks

The direction of the development of synchronization of business cycles of two economies in the future is fundamentally determined by how such economies respond to demand and supply shocks. If they respond rather symmetrically, such economies are likely to get synchronized over time.

The level of correlation of demand shocks is more important for the assessment of the costs of monetary integration, because namely the monetary policy is considered to be a suitable instrument to mitigate asymmetric effects of demand shocks.

Time series of variables examined are decomposed to an inertial component and shocks. Time series of shocks are adjusted so that their construction takes into account economic theory. Therefore, for identification of demand and supply shocks appropriate structural models are required, which formalize assumptions of economic theory. A structural model will be designed (its parameters are estimated separately for each country, its structure is identical for all countries) with the help of which structural (not directly observable) shocks are identified, which will be similarly as in the first approach further reorganized and statistically evaluated. This approach is more sophisticated and theoretically it draws from an assumption that directly observed residuals do not correspond to structural shocks, because they are the result of interaction of such structural shocks within individual economies.

With estimation of the models formalizing these economic assumptions we will obtain two kinds of information: the shocks, which express exogenous effects in individual countries, and parameters of the model which describe the functioning of a particular economy. Time series shocks are used mainly for the measurement of synchronization, but based on the estimated parameters also similarities or differences in the functioning of various economies can be assessed. This approach is focused on ex post analysis of data while it is assumed that the descriptive statistics obtained will be valid also in the future.

Box 4 Identification of structural shocks using the VAR method

We define a vector of variables which will characterize business cycle and adjust them so that they are stationary. For each country we will estimate AR representation of vector autoregressive model for stationary vector x:

$$x_t = A_1 x_{t-1} + A_2 x_{t-2} + \mathbf{K} + A_p x_{t-p} + \varepsilon = A(L)x + \varepsilon$$

where A(L)x is a polynomial with appropriate time lags and ε are random components. Let us call the covariance matrix of such random components Ω. Such formulation corresponds to a reduced form of the model. Invert it to MA form

$$x_t = B(L)e$$

with long term multiplicators B(1), which are free. However, we want to get a structural

representation of the model

$$x_t = C(L)e$$

where random components "e" for one and the same country are mutually independent (they have a identity covariance matrix) and long-term multiplicators C(1) (sum of weights in a polynomial C(L)) take into consideration the economic theory. Random components "e" are structural shocks. Specific formulas for the calculation of matrix C(1) and structural shocks "e" from matrices A, B and Ω and random components ε are introduced by Astley and Garrat (1998).

Most frequent variants of assumptions on structural shocks are as follows:

- Two types of shocks exert influence: demand and supply ones. These shocks are derived from an assumption that GDP growth rate (supply curve) is in the long-term horizon independent of inflation rate, but inflation rate may in the long-term horizon depend on GDP growth rate (Phillips curve, demand);
- Three types of shocks exert influence: supply, real demand (IS) and nominal demand shocks. This is based on an assumption that GDP growth rate (supply) is in the long-term horizon independent of both real exchange rate and inflation rate. Real exchange rate growth rate (real demand) may in the long-term horizon depend on GDP growth rate, but it is independent of inflation rate. Inflation rate (nominal demand) may depend on both GDP growth rate and real appreciation rate.

If we call growth rates of GDP, real exchange rate (RER) and CPI as „g" and structural shocks as „e", matrices C(1) for individual countries will have the following form:

$$C(1) = \begin{bmatrix} \frac{\partial g_{GDP}}{\partial e_{GDP}} & 0 & 0 \\ \frac{\partial g_{RER}}{\partial e_{GDP}} & \frac{\partial g_{RER}}{\partial e_{RER}} & 0 \\ \frac{\partial g_{CPI}}{\partial e_{GDP}} & \frac{\partial g_{CPI}}{\partial e_{RER}} & \frac{\partial g_{CPI}}{\partial e_{CPI}} \end{bmatrix}$$

After calculation of structural shocks for individual countries these shocks will be rearranged and the correlations between shocks of the same type for individual countries will be calculated (e.g. demand shock for the Slovak Republic and demand shock for the euro area). The correlation of structural shocks of the same type for individual countries represents the degree of similarity of national economies.

By this method we have calculated the correlations of structural shocks for the Slovak Republic and the euro area. For the calculation we have used time series of real GDP for the euro area and the Slovak Republic, nominal exchange rates of the Slovak koruna against US dollar and PPI indices for manufacturing for the Slovak Republic, euro area and the USA (we needed it for the calculation of real exchange rates). For the sake of consistency we have calculated the inflation from the same price indices. The resulting correlations are shown in Table 9.

Table 9 Correlation of shocks in Slovakia and euro area

Shock type	1995Q1 – 2005Q2	1998Q4 – 2005Q2
Supply	0.48	0.51
Demand (real)	0.22	0.15
Demand (nominal)	0.1	-0.02

Source: own calculations.

In constructing the model we explicitly took into account the structural break in the fourth quarter of 1998. This necessity was indicated by diagnostic tests, on the one hand, and, on the other hand, we believe that it is not a typical exogenous shock which is considered by the optimum currency area

theory, since it was to a substantial extent a result of domestic economic policy. Taking the structural break into consideration might have affected the correlations for real demand shocks for Slovakia and the euro area; therefore they are not directly comparable with studies that do not take into account such break. In calculating correlations we obtained also structural parameters corresponding to long-term multiplicators (matrix C(1)).

Table 10 clearly shows that supply elasticity of the rate of real appreciation and real demand elasticity of inflation have opposite signs for the Slovak Republic and the euro area. This indicates certain differences in the functioning of both economies, which may cause asymmetric reactions in the future and disrupt the synchronization of business cycle.

Table 10 Long-term multiplicators of shocks in Slovakia and euro area

	Euro area			Slovakia		
	Supply	Demand		Supply	Demand	
		real	nominal		real	nominal
GDP	0.0125	0.0000	0.0000	0.0080	0.0000	0.0000
Real exchange rate	-0.1057	0.0195	0.0000	0.0708	0.0543	0.0000
Inflation	-0.0063	0.0006	0.0034	-0.0146	-0.0057	0.0067

Source: own calculations.

In Table 11 we provide an overview of the literature dealing with the symmetry of shocks affecting the economy of both Slovakia and the euro area.

As seen from the overview of literature and our calculations, the results of individual studies vary and in various aspects they are not unambiguous. This is because of using data for different periods and from various sources. In some studies (Fidrmuc a Korhonen, 2003; Marcellino, 2003) rather strong correlation of demand shocks, which has not been detected yet, is required as a precondition for successful early entry to the euro area. It is, however, necessary to consider the following facts:

Weak synchronization is caused, inter alia, by the fact that while in the EU countries market mechanisms have been in place for a long period of time, the acceding countries are only in the process of transforming their economies. This process is characterized by implementing (in terms of the functioning market economy) non-standard measures – in all areas of economic and social life reforms have to be carried out, which induces enormous costs; various stabilization periods must be implemented so that economic agents adapt to the new conditions. Over time the extent of such measures will fall, which will undoubtedly lead to a stronger synchronization.

The reaction of countries like Spain (and to some extent also Greece and Portugal) is currently in strong symmetry with the euro area although at the time of their entry to the euro area their behavior was similar to the Slovak Republic at present. Thus it can be deduced that as a result of closer cooperation and more intensive trade a higher symmetry of responses to shocks and also higher synchronization of business cycles between the Slovak Republic (and other acceding countries) and the euro area will take place.

Table 11 Symmetry of shocks in Slovakia and euro area

Authors	Applied method	Data Reference region	Conclusions
Fidrmuc and Korhonen (2003)	VAR for GDP growth rate and growth rate of GDP deflator	• quarterly, 1991 – 2002 for euro area and OECD countries, 1993 – 2002 for Slovakia • Euro area	Correlations for Slovakia are close to zero, demand shocks are very moderately symmetric and supply shocks are asymmetric.
EFN report, autumn 2003	VAR for GDP growth rate and inflation rate	• quarterly 1993, 2002 • Euro area	Demand shocks of Slovakia and euro area are asymmetric.
Lättemäe	VAR for growth rate of industrial production, rate of real appreciation and inflation of individual countries. Correlation coefficients for respective pairs of countries are averaged.	• 1990–2002 for EU countries, 1995 – 2002 for candidate countries • individual EU countries	Averages of demand shocks correlations as well as real demand shocks are positive for Slovakia, meaning that the shocks are symmetric.
Frenkel and Nickel (2002)	VAR for output and growth rate of the GDP deflator.	• quarterly, 1993 – 2001 • Euro area, Germany, France, Italy	For Slovakia: negative correlation of demand shocks with the euro area (-0.43) and Germany (-0.1), and positive with France (+0.11). Similar functioning of candidate and member countries of the euro area.

Own calculations	VAR for GDP growth rate, rate of real appreciation and inflation rate obtained from the index of industrial producers (manufacturing).	• quarterly, 1994 – 2005 • euro area	Correlation of supply shocks is significantly positive (+0.48), correlation of real and nominal demand shocks is weaker (0.15 and 0.1 respectively). Signs of long-term multiplicators indicate differences in functioning of the Slovak economy and those of euro area.

Economic openness

For the entry of the Slovak Republic to the euro area the share of the EU in Slovak foreign trade is important. From Figures 1 and 2 we can see that the openness of the Slovak economy is fast increasing and also that the share of foreign trade with the EU countries is growing. Since 2004, when the Slovak Republic together with neighboring countries joined the EU, this share was about 80 %.

However, the thesis that the higher economic openness and closer economic cooperation automatically lead to the convergence of business cycles need not be entirely true. Krugman (1993) presented and alternative view on this issue. In his opinion, closer trade ties result in better allocation of resources and higher output specialization of individual countries. As the industrial production in individual countries is becoming narrowly specialized, economies of such countries become more vulnerable and more predisposed to respond to shocks asymmetrically. It means that as the output specialization of individual countries is growing, the divergence of their business cycles is increasing.

Measures that can prevent such scenario include flexibility of the labor market and the development of intra-industry foreign trade, i.e. exchange of goods among countries within the same branches of industry.

Labor market flexibility dampens asymmetric effects of shocks on the economy. Labor force mobility will ensure migration of workers from regions or industries hit by a negative shock to other regions or industries. The issues of labor market flexibility are dealt with in part 6.4.

One of other methods of preventing output specialization in our country and adapting its structure to that of the EU countries involves the development of intra-industry trade.

Integration of intra-industry trade

To measure the level of integration of intra-industry trade a Grubel-Lloyd index (GLI)[36] is used, which expresses the share of the volume of intra-industry trade in the total trade between two countries.

[36] $GLI_t = 1 - \frac{\sum_i |X_{it} - M_{it}|}{\sum_i (X_{it} + M_{it})}$, X and M denominate export and import of SITC commodities between the Slovak Republic and the EU. A value of this index equal to 0 means that trade is carried out between industries (i.e. trading is getting specialized); a value equal to 1 indicates exclusively intra-industry trade.

Table 12 GLI index for Slovakia in relation to EU

1994	1998	2001	2004
0.80	0.89	0.87	0.88

Source: NBS, calculation on the basis of SITC nomenclature at one digit level.

Table 12 shows that the values of this index for Slovakia (with respect to the EU) has been rather high during the period observed. Although GLI cannot provide full information of intra-industry trade, it seems that the structure of the Slovak economy is getting adapted to economies of the euro area countries, which creates the prerequisites for symmetric effect of external shocks on economy of the Slovak Republic and the euro area.

The following two tables (Tables 13 and 14) provide more detailed information on the structure of trade of the Slovak Republic. Table 13 represents commodity structure according to the classes of SITC nomenclature and its development in time.

Table 13 Commodity structure of Slovak foreign trade (in %)

Commodity type	Import			Export		
	1993	2001	2004	1993	2001	2004
Food and live animals	7.3	4.6	4.0	5.5	2.7	2.9
Beverages and tobacco	1.5	0.8	0.6	0.9	0.4	0.3
Crude materials, inedible, except fuels	5.2	3.7	3.7	4.9	3.3	2.6
Mineral fuels and lubricants	20.9	15.2	12.4	4.9	6.6	6.7
Animal and vegetable oils	0.2	0.3	0.2	0.1	0.1	0.2
Chemicals	11.4	10.3	9.8	12.0	7.3	5.4
Manufactured goods	15.1	18.5	19.0	38.8	27.3	24.9
Machinery and transport equipment	29.3	37.6	39.7	19.4	38.5	46.0
Miscellaneous manufactured articles	9.0	9.0	10.4	13.4	13.5	11.0
Others	0.2	0.0	0.1	0.1	0.1	0.1

Source: Statistical Office.

Table 14 indicates percentage of import from and export to EU countries in foreign trade (before 2004 EU is expanded to include CEFTA).

Table 14 Commodity structure of foreign trade of Slovakia with EU – imports/exports
(in %)

Commodity type	Import		Export	
	2001	2004	2001	2004
Food and live animals	80	80	85	86
Beverages and tobacco	93	94	96	96
Crude materials, inedible, except fuels	49	47	91	92
Mineral fuels and lubricants	15	27	99	99
Animal and vegetable oils	95	95	100	99
Chemicals	84	85	87	84
Manufactured goods	87	87	89	87
Machinery and transport equipment	84	81	91	81
Miscellaneous manufactured articles	81	73	89	89

Others	98	100	23	66

Note: in 2001 EU is extended by CEFTA.
Source: Statistical Office.

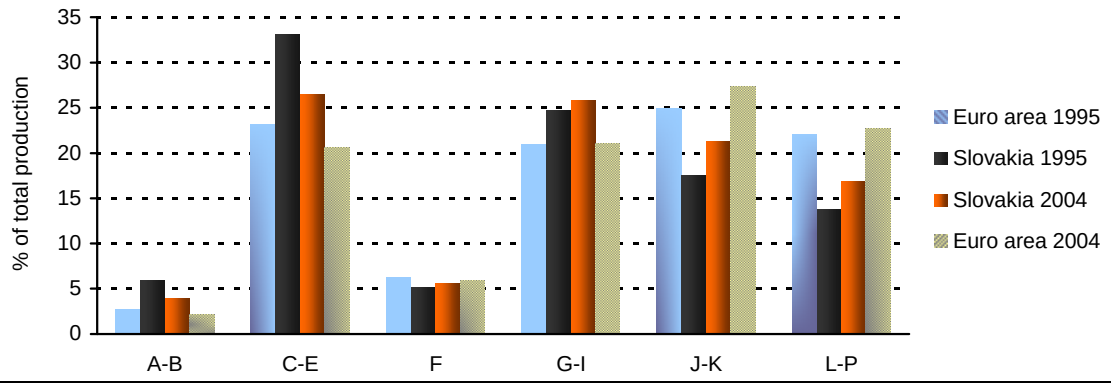
Economic structure

The probability that shocks will be asymmetric or have asymmetric impact depends on the structure of the economy. If the structure of the economy is significantly different from the euro area, even the same shocks may have a different impact on Slovakia and lead to asynchronous business cycle. Similarly, with a different structure of economy there will be a higher probability that shocks from domestic environment will differ from those occurring outside Slovakia.

Since 1995 the structure of the Slovak economy has become significantly closer the euro area. The proportion of individual sectors in NACE-6 classification is shown in Figure 20. In 10 years Slovakia has markedly approached the structure of the euro area in agriculture, industry, financial and public services. The same level has been achieved in construction; differences have deepened only in some private services. With expected growth of car production in Slovakia certain divergence of industry (Box 5) is likely in the future, however, in other sectors approximation to the euro area should continue.

Data in Figure 20 can be expressed also with the help of a summary indicator. The sum of squares of variances between Slovakia and euro area has declined since 1995 from 188 % to 85 %. If such trend of structural approximation continues, Slovakia should become even more synchronized with euro area.

Figure 20 Comparison of economic structure of Slovakia and euro area



A-B: agriculture, hunting and fishing, C-E: manufacturing total, F: construction, G-I: services – wholesale and retail trade, repairs, hotels and restaurants, transport, storage, communication, J-K: financial intermediation, real estate, renting, L-P: public administration, defense, social security, education, health care, social services
Source: Eurostat.

Box 5 Automobile industry and the risk of asymmetric shocks

Automobile sector is the most important export industry of Slovakia and one the fastest growing industries in Slovakia. In the sector of means of transport manufacturing represented mainly by car production value added in 2004 amounted to SKK 26 bil. However, automobile sector is linked to a large amount of other production and a large number of subcontractors; accordingly we estimate the total contribution of car production in Slovakia to be over two times higher. Currently, net car exports amounts to SKK 65 bil. per year. Total gross export amounts to SKK 150 bil., i.e. approximately one seventh of the total export of Slovakia.

By the end of 2006 two more large automobile factories will start producing in Slovakia. After achievement of full production in 2010, Slovakia should product about 900 thousand cars a year, and

thus will become the largest producer of automobiles per capita (approximately 170 cars per thousand inhabitants followed by Belgium in the second place with 90 cars per thousand citizens). Our assumptions indicate the total gross export of automobiles after 2010 will amount to over SKK 420 bil. (in current prices) and value added including domestic subcontractors may reach as much as 10 % of GDP. For comparison, in developed countries car production contributes to GDP by approximately 2 to 3 %.

Shocks in automobile industry may hit Slovakia asymmetrically because the share of car production in GDP in Slovakia will be three times higher than in the euro area. However, in the context of entry to the euro area two questions should be considered: 1) What is the capacity of the Slovak automobile sector to cope with a possible negative shock without reducing output and employment; 2) What would be the capacity of independent monetary policy to help automobile sector and economy in general to cope with such an asymmetric shock?

The answer to the first question is that car production in Slovakia has relatively good capacity to flexibly respond to possible shocks. For at least ten forthcoming years we can expect that should a negative shock occur in the world automobile industry, the factories in Slovakia will rank among the last ones forced to reduce production or dismiss employees. The existing or planned car production in Slovakia is focused on relatively attractive segments. However, even more important is that production costs, in particular labor costs, are relatively low while labor productivity is high.

As regards the second question, it should be stated that even at present the Slovak monetary policy has a limited scope to respond to the development within automobile industry. This sector is almost exclusively export oriented, its import intensity is also very high and it acquires finances on international markets. Since monetary policy is not able to influence this sector, the loss of independent monetary policy will not mean higher exposure of the Slovak economy to the shocks in automobile industry.

Summary

Synchronization of business cycles of Slovakia and euro area, which is currently not very high, is very important for euro adoption in Slovakia. Its increase will be promoted if both economies respond similarly (symmetrically) to external shocks. The process of symmetrization grows with strengthening foreign trade cooperation. This trade, however, should be performed among individual countries within the same industries (i.e. the intensity of intra-industry trade should increase), which would ensure approximation of the production structure of Slovakia to the EU and a narrow specialization of the Slovak economy would be prevented. Since the structure of the Slovak economy is becoming similar to the euro area structure, gradual increase of symmetry and synchronization of Slovakia with the core of the monetary union can be expected.

4.5 Effects of asymmetric shocks and the loss of independent monetary policy on the Slovak economy

The loss of independent monetary policy ranks among the most important disadvantages of joining the euro area. Unless the shocks affecting the Slovak economy are identical with the shocks affecting the whole euro area, the loss of independent monetary policy will increase macroeconomic volatility. The loss of independent monetary policy will be the more important the less symmetric are or will be the shocks in Slovakia and in the euro area.

We simulate the effects of shocks on the Slovak economy under independent monetary policy and under common monetary policy in the euro area. Common monetary policy after euro adoption will not be able to respond to shocks which are specific for Slovakia. Estimates of the correlation of shocks range between 0 and 0.5 (Table 11). After joining the monetary union, however, the correlation of shocks should increase. We use zero correlation in the

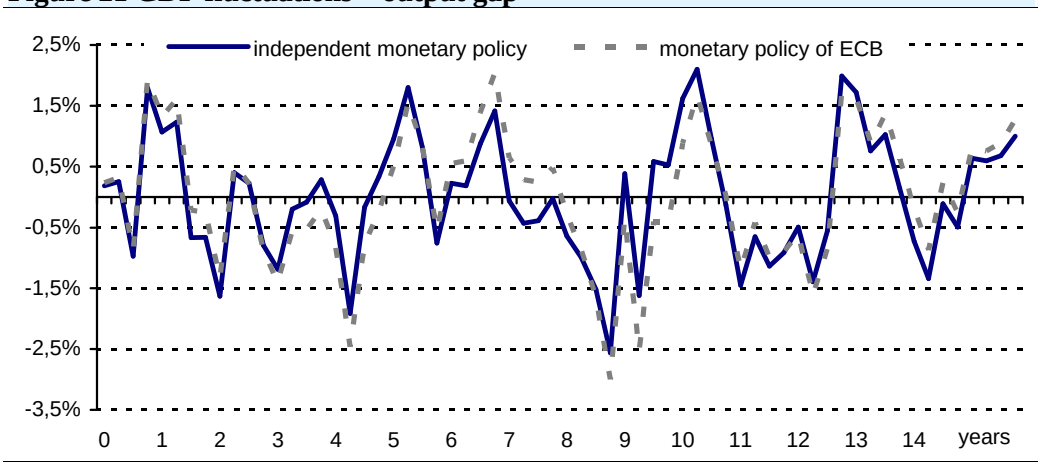
simulation, i.e. we choose the least favorable variant. We simulate the effect of the loss of independent monetary policy on inflation and GDP in Slovakia in the prognostic model of the National Bank of Slovakia (Gavura and Reľovský, 2005). We assume that at the beginning of the simulation the economy is in equilibrium. Every quarter the economy is exposed to demand shocks. We have set standard deviation of shocks according to historical shocks at 0.75 % GDP. It should be noted that in the simulation we have exposed economy only to shocks of usual magnitudes; we do not simulate extremely big shocks, where an independent monetary policy could have been more important.

We compare two simulations: in one of them monetary policy is independent, with an inflation targeting regime and freely floating exchange rate; in the other one the monetary policy is determined by the ECB and the exchange rate is fixed. To be able to compare the simulations the inflation target in the first one has been set so that it is consistent with long-term constant exchange rate against euro (setting the absolute level of inflation target does not influence the real impact of simulated shocks, however, it facilitates comparison of the results of both simulations).

The results of simulations are conditional on a theoretical rule for monetary policy response, which is used by the prognostic model of NBS. The model put more emphasis on price stabilization – lower inflation – than on the stabilization of real economy. However, such setting of the monetary rule is in compliance with monetary policy of the NBS and also with the Act on the National Bank of Slovakia (NBS) laying down the main objective of monetary policy to be the maintenance of price stability. Such emphasis put by the monetary rule on the inflation stabilization is compensated in final assessment of the loss of independent monetary policy where inflation volatility is evaluated mainly from the perspective of the central bank, and hence considered to be a more significant loss than if assessed by an ordinary consumer.

The comparison of both simulations shows that the loss of independent monetary policy has only minor influence on the development of real economy (Figure 21). GDP fluctuations will increase only slightly: standard deviation with independent monetary policy is 1.04 %, and with common monetary policy of ECB it is 1.11 %.

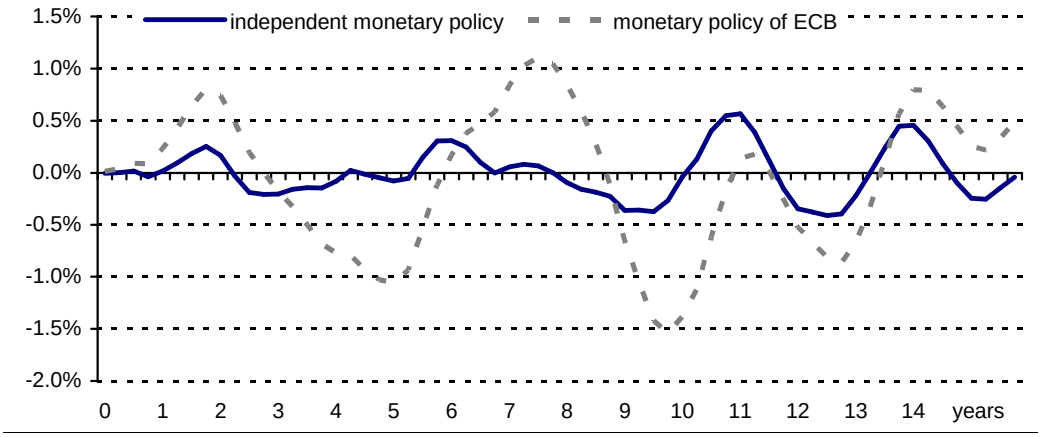
Figure 21 GDP fluctuations – output gap



Source: NBS, simulations.

Independent monetary policy has significantly higher stabilization impact on inflation (Figure 22). It is directly given by the nature of inflation targeting of the current monetary policy. After the loss of independence the standard deviation of inflation will increase from 0.24 % to 0.68 %.

Figure 22 Inflation fluctuations vis-à-vis long-term average



Source: NBS, simulations.

Our results are very similar to the simulation of the International Monetary Fund for the Czech Republic. Schadler et al (2005) analyze euro area entry of the Czech Republic in the International Monetary Fund GEM model. After euro adoption the standard deviation of output gap might increase from 1.7 % to 1.9 %, and standard deviation of inflation from 1.7 % to 1.8 %. With regard to a different structure and source parameters of models, the absolute values of standard deviations are higher than our results, however, differences between the two simulations are much alike – approximately 0.1 – 0.2 % for the Czech Republic (in IMF model), and 0.1 – 0.4 % for Slovakia (in NBS model).

Value of more stable economic environment

The loss of independent monetary policy will lead to a higher inflation volatility in Slovakia and also slightly higher GDP or output gap volatility. The average level of GDP, income per capita and inflation will not, however, change.[37] If the Slovak consumers were risk neutral, higher stability of macroeconomic indicators with independent monetary stability would have no value for them. However, since most people are risk averse, they will prefer a more stable environment.

We estimate the value of more stable economic environment by comparing certainty equivalents of both simulations. We assume constant relative risk aversion coefficients range from 1 to 2.[38] In calculation we have to sum up the benefits of inflation stability with GDP stability. To do so we use the Taylor rule which sums the deviations of inflation from a target and output gap fluctuations in one loss function. Relative inflation weight ranges between 0.5 and 1 (the initial Taylor rule had relative inflation weight equal to one, however, the rule is set up for central banks which put considerably higher weight on inflation than the society would). We also assume that inflation and GDP fluctuations will be directly reflected in consumption fluctuations. In practice, consumers may smooth out the fluctuations by

[37] It is confirmed in the simulations that monetary policy is neutral in the long run.

[38] CES/CRRA utility function (Constant elasticity of substitution, Constant relative risk aversion): $U(C)=(C^{1-\varphi}-1)/(1-\varphi)$; for $g=1$ $U(C)=\ln(C)$.

Estimates of relative risk aversion in literature :

Basic scenario	1.0
Friend and Blume (1975)	2.0
Fullenkamp, Tenorio and Battalio (2003)	0.6–1.5
Van Praag and Booij (2003)	3.7

changing the ratio of savings to earnings; therefore our estimate of the value of more stability under independent monetary policy is overestimated.

Table 15 Value of more stable economic environment with independent monetary policy

					average
Taylor rule – inflation weight	1	0.5	1	0.5	
Risk aversion coefficient	1	1	2	2	
Value of a loss – certainty equivalent (in % GDP)	0.055	0.024	0.058	0.0260	0.041

Source: own calculations.

We estimate the value of a loss of independent monetary policy at 0.41 % GDP with upper limit of the range equal to 0.058 % GDP, and lower limit 0.024 % GDP. In 2005 it represents SKK 586 bil., or respectively between SKK 343 bil. and SKK 829 bil. (lower and upper limit).

5. Risk and Doubts Related to Euro Adoption

5.1 Is there an immediate threat of price increase after euro adoption?

General public in Slovakia is prevailingly of the opinion that euro adoption will be accompanied by price increase. Rise in prices is perceived by citizens as the worst disadvantage connected with euro changeover.[39]

In Slovakia the principles of free price formation apply similarly as in other EU countries. The development (increase) of prices of goods and services depends on the competition within individual segments of consumption basket. In the traded sector (i.e. majority of goods) the competition is high and it works in fact as a reliable instrument of the protection against unjustified rise in prices. In the non-traded sector (i.e. in particular services and especially the ones where supply has specific regional conditions) the competition is weaker and thus allows more space for increase of prices,[40] but also for their higher (international but also domestic) diversification.

The competition in Slovakia can be currently considered strong enough to prevent producers and also dealers from increasing prices excessively. In other words, with weak competition the enterprises would be able to increase prices regardless of whether legal tender in Slovakia is koruna or whether it will be the euro. However, certain problem in connection with euro adoption may appear to be the incapability of understanding the new price environment. Non-transparent prices in euros might temporarily reduce the competition pressure.

Currency conversion, i.e. conversion of the Slovak koruna into euro will be a purely technical operation in which prices, as well as all other financial data will be converted exactly according to the set conversion (exchange) rate. Thus, all relative values will remain unchanged. Therefore, there are no grounds for fears of excessive rise in prices due to euro changeover. Certain price increases may occur only because of the implementation costs and rounding (for details concerning rounding see box 6).

Box 6 Technical rounding and its effect on price changes

In rounding prices into euros mathematic rules should be applied. Prices converted in euro should be rounded to two decimals – to the nearest cent. If the third decimal is figure 5 or higher, prices should be rounded up, if the third decimal is 4 or lower, prices should be rounded down.

One of the concerns of consumers is that retailers will round all prices up. We have analyzed such case using prices since December 2005. We take into consideration the whole consumer basket used for the calculation of CPI, excluding unit prices in network industries (water, sewage, electricity, gas, telecommunications) in which prices will be set to more decimals, and costs of housing in own house or flat. For euro conversion we use the exchange rate of 30 December 2005, however, the results are very similar to other exchange rate variants.

If we rounded all prices in our basket up, the index of consumer prices would increase by 0.73 percentage points. We consider this value to be maximum possible effect arising from the method of incorrect rounding. Since not all prices of goods and services will be rounded up, final effect of rounding will be lower. If prices were rounded correctly in accordance with mathematical rules, the

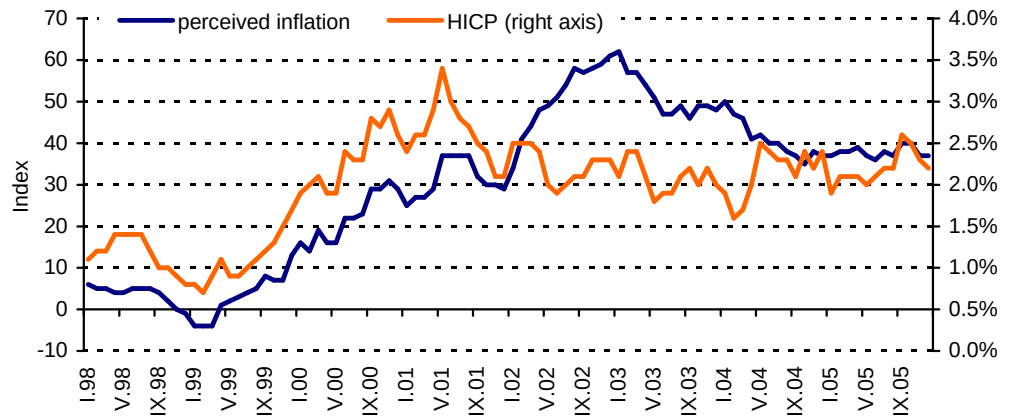
[39] According to the public opinion poll in October 2004, rise in prices after euro adoption is expected by more than four fifth of Slovak respondents. The Institute for the Research of Public Opinion at the Statistical Office of the Slovak Republic (2004).

[40] Accelerated rise in prices in the sector of services is conditioned also by operation of Balassa-Samuelson Effect which is dealt with by the following Part 5.2.

average effect of rounding would equal to zero (with the used exchange rate of 30 December 2005 it would be strictly accurately -0.02 percentage points).

In the euro area countries, where euro cash changeover took place as at 10 January 2002, Eurostat estimated the contribution of the placement of euro banknotes and coins in circulation to 0.12 – 0.29 % while overall inflation in 2002 was 2.3 %.[41] The entire effect was, however, of a very short-time nature. The most important part of it, estimated to range from 0.09 – 0.28 %, was implemented during the period between December 2001 and January 2002. However, the impact nature and a specific and very narrow group of the consumer basket, in which the essential part of price increase in connection with euro changeover was concentrated, resulted in a rapid growth of inflation indicator perceived by consumers (Figure 23). Price increase involved almost exclusively the goods and services linked to the domestic environment and in areas with low level of competition. In some services (restaurants, hairdressers, drycleaners, car repair services etc.) and goods of everyday consumption (e.g. bread, press) with low unit prices the prices optically increased quite significantly. Their share in the summary price index is very low, however, consumers perceived euro through the prices of such goods as a factor of high inflation.[42]

Figure 23 HICP and perceived inflation in euro area



Note*:* Indicator of perceived inflation is a result of the evaluation of consumers answer to the question: "What do you think of price developments during the last 12 months?".[39]
Source*:* European Commission Business and Consumer Surveys, December 2005.

Experiences of euro area countries enable the strategies and procedures for the elimination of potential sources of price increase in connection with euro changeover in Slovakia to be prepared well in advance. The National Euro Changeover Plan for the Slovak Republic published in the summer 2005 envisages two groups of measures:

[41] Eurostat (2003).
[42] For details see Komínková (2005).
[39] Methodology of the indicator calculation for perceived inflation is based on the weighted evaluation of percentage shares of 5 possible answers to the given questions according to the following key:

"What do you think of price developments during past 12 months?"	
++	Prices increased significantly
+	Prices increased moderately
=	Prices increased negligibly
–	Prices remained the same
– –	Prices decreased
N	I do not know (observation is not counted)

- consumer protection against possible misuse of currency conversion by entrepreneurs and retailers for unjustified increase of prices;
- information campaign focused on the general public with special emphasis on the phenomenon of "perceived inflation".

New currency changeover will, for some time, complicate the orientation in price details to the consumers. Euro prices will be in their numerical representation quite different from prices in korunas. Consumers will not be able to immediately consider whether the price converted into euro fully corresponds to the original koruna price. The assessment of how favorable the prices of concrete goods or services are will also become more difficult. Entrepreneurs and retailers might also misuse temporarily reduced ability of consumers to orientate in prices for increasing prices. Dual pricing of all goods and services will be obligatory used for a certain period of time in order to protect consumers against unjustified price increase. Their prices will be denominated in korunas and euros and converted exactly according to the conversion rate.

Dual pricing will start shortly after the publication of koruna-euro conversion rate, i.e. approximately 5-6 months before euro changeover. Sellers will obligatory continue dual pricing until the end of 2009 and optionally for six more months. Thus, consumers will have a chance to get used to the price level in euros. The development of prices in 2008 and 2009 will be consistently monitored. Consumers will be regularly informed of the results of surveys and inspections. In the case of breach of rules the supervisory bodies will take action. Consumers will have an option to have recourse to a court, to settle disputes out of court, or to file a motion or make claims with competent authorities.[40] These instruments for consumer protection should reliably guarantee that euro changeover will not become an opportunity for price increasing for other than market reasons.

In order to suppress some (in particular psychological) aspects of consumer behavior, which might evoke the atmosphere of rise in prices during the period of euro changeover, it will be necessary to simultaneously prepare sound information campaign for the public. The phenomenon of high "perceived inflation" attributed to euro adoption has currently already influenced the opinion of a considerable part of the public in that way that euro adoption will be inevitably accompanied by price increase. This alone may have undesirable affects on the creation of inflation expectations which could graduate as date of euro changeover is coming up, and overflow into wage inflation pressures. The issues of perceived inflation are dealt with in details in Box 7.

The existence of consumer awareness of price increasing effects of euro adoption will complicate the communication with the public. It should be envisaged that official statistics of inflation will be accepted with certain mistrust. Therefore, the provision of correct information of price development and guidance for its unbiased assessment to the Slovak consumers during the period of euro changeover will become even more important. The strategy of communication campaign will have to take into account some typical features of the consumer psychology in the area of price developments. This regards, in particular the fact that consumers tend to record and remember much better price increase than stable prices or decline in prices. This leads as a rule to the assessment of prices as an increase of price level.

[40] For more details see NBS – MF SR (2005).

Therefore, consumers' attention should be directed towards long-term systematic monitoring of prices.[41] to the highest possible extent of their expenditure items, not only in a narrow basket of everyday small shopping. Another important principle consists in the ability to identify what the source of price change (increase) is so that the rise in prices during the period of euro changeover caused by, e.g. unfavorable weather or by price development on the world commodity markets is not attributed to euro adoption. Such confusion of the reason might, in the case of coincidental events, considerably affect perceived inflation, because price increase would involve normally and frequently purchased goods (food, fuel).

Box 7 Why consumers might perceive the inflation rate incorrectly?

Consumers create their own perception of inflation by comparing prices for which they buy the same products over time. Their perception is as a rule of short-term nature – most often it concentrates on the most important shopping. The experience with euro indicated that consumers perceived its impact on prices mainly through the prices of small ware and services which they buy regularly and most often (daily, weekly).

The prices of regularly and frequently purchased goods, like food, newspapers and periodicals, fuel, bus and railway transport, restaurants and cafés, hairdressers and similar kinds of services, had the determining effect on the development of perceived inflation in the current euro area countries. Prices of such goods have increased faster than aggregate price index since 1999. Even half of the difference between the real inflation and that perceived by consumers can be explained by above-average price increase of such goods.

When prices in cafés and restaurants increased in January 2002 (i.e. immediately after euro cash changeover) more than is usual the consumers registered it. Hardly anybody noticed the fact that prices of other goods remained unchanged or even decreased. For instance, only a low percentage decrease of the price of clothes, shoes or electronics and household appliances would be contrasted with each increase of the price of a cup of coffee, which could be attributed to euro changeover, so that such change could be equalized in aggregate price index.

Besides the fact itself of (not) becoming aware of bidirectional price fluctuation, consumer behavior is characterized by a strong asymmetry of evaluating "profits" and "losses" translated by price developments into individuals satisfaction (the level of perceived welfare). Much less benefit is attributed to the "profit" brought by price decrease than to impoverishment arising from the "loss" caused by price increase by the same amount. This is connected with the fact that price increase directly decreases real income of the consumer which she is forced to compensate by reduced consumption of other goods from the consumer basket or resort to savings. With price decline such austerity measures are not necessary.

For common consumers no understandable statistics is available, and they evaluate the situation on the basis of their individual present and past experience. They monitor prices and evaluate inflation on a narrow sample of their most frequent consumer basket. In doing so they are not able to identify the factors which cause price increase of its individual components. Therefore, consumers attributed also high prices of foodstuffs to euro adoption at the beginning of 2001 (although this was caused by unfavorable weather), and they would have similarly attributed to it also the rise of price of petrol if at that time world price of oil had increased, or the rise of price of meat if BSE disease, the price effects of which were manifested in 2001, had broken out a few months later. A considerable increase of prices of alcohol and tobacco not caused by euro, but by an increase of excise tax, exerted a similarly increasing influence on perceived inflation at the beginning of 2002.

At the time of euro cash changeover consumers responded very sensitively to all official and also informal information concerning price increase published by media, but communicated also through occasional "neighbors" experiences. Accumulation of information regarding several cases of price

[41] E.g. in Italy, where perceived inflation achieved enormous size along with euro adoption, the analysis showed that when prices in restaurants increased in 2002 by approximately 9 %, it was only a part of their total increase by 40 % in the period 1998–2003 (Del Giovane et al, 2005).

increase might have evoked in consumer perception also a "snowball effect" which increased the intensity of own experience in price increase and strengthened overall perception of inflation effects of euro adoption.

The intensity of perceived inflation was affected also by the public awareness of the euro. The correlation between lack of information and highly perceived inflation, or respectively sufficient information and lower perceived inflation proved to be convincing (Figure 24). According to public inquiries Finland was the country with the highest number of well informed respondents, their number in Greece was the lowest. In particular in these two countries the lowest (Finland) and the highest (Greece) perceived inflation was ascertained.

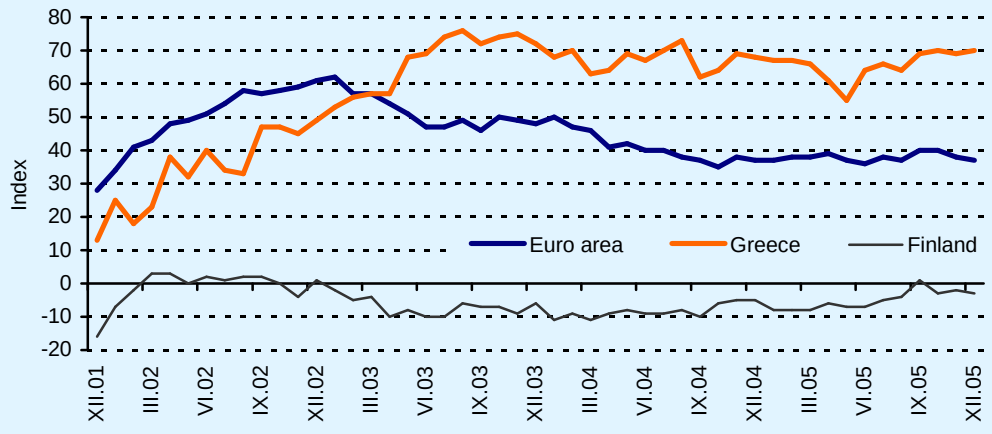
After all, it was also the lack of experience of the population with orientation in new and hardly understandable price environment for consumers, which contributed to an increase of perceived inflation in the context of euro adoption. After the abrogation of dual pricing remembrance of prices of the past, maintained receipts of shopping in national currencies might have caused sometimes a considerable misinterpretation of information about prices in euros when converted with the help of roughly rounded conversion rates.

Main factors of highly perceived inflation after euro changeover were in general as follows:

- subjective evaluation of overall price development using components of individual (narrower) consumer basket;
- price increase of goods and services with low unit prices, which are purchased very frequently;
- asymmetric perception of increases and decreases of prices;
- inclusion of the causes of price increase other than those related to the euro;
- snowball effect which increased personal experience with price increase;
- insufficient awareness of the population of the main aspects of currency conversion;
- long-lasting remembrance of prices of old days;
- inaccurate price conversion according to the rounded conversion rate.

It is therefore desirable that the phenomenon of perceived inflation be monitored and analyzed and all the issues are clearly communicated to the public – having special regard of the selected groups of consumers (e.g. old age pensioners).

Figure 24 Perceived inflation in selected euro area countries



Source: European Commission Business and Consumer Surveys, December 2005.

Mass media will play a key role in this area. The correctness of their information regarding price development with clear distinction of "euro" and "non-euro" factors of possible price increase and critical (not flashy) monitoring of behavior of entrepreneurs and retail sector with regard to pricing may contribute significantly to the suppression of inflation expectations and thus enhance the function of dual pricing as a main legal instrument for the elimination of potential risk of misusing euro changeover for increasing consumer prices.

5.2 Expected long-term development of inflation after joining the euro area

With continued and desirable for the growth of living standard the real convergence prices in Slovakia will gradually approximate the EU average. It is important to emphasize that such catch-up will be gradual. Prices cannot jump up to the euro area average immediately after euro changeover. The demand would not be able to accept such prices. Prices may converge only gradually when such development is supported by the increase of productivity, real wages and purchasing power. There is a high potential of price catch-up in Slovakia since the relative price level in the Slovak Republic reached only 54 % of the EU average in 2004. It will, however, take a long period of time and its pace will depend on productivity growth of the Slovak economy.

The empirical knowledge of inflation development of the current euro area members show that inflation trend in less developed countries (Spain, Portugal, Greece) before and after joining the euro area varied. While before joining the euro area gradual disinflation was taking place, immediately after entry the inflation in some countries had a growing trend. It seems that such growth, however, stopped afterwards. Ireland, which similarly joined the EU being at low level of development and grew rapidly due to massive inflow of FDI, had also high inflation after joining the EU. There is a question arising: what inflation can we expect after joining the EU in less developed countries or in the countries achieving rapid economic growth? Such question concerns also Slovakia as a less developed country[42] whose economy grows fast.

Basic facts

Before joining the euro area inflation is a result of coordinated disinflation policy using various policies and instruments. In the countries where equilibrium real exchange rate is appreciating, the strengthening of nominal exchange rate can be also used for disinflation.

Formal expression: let us denominate e, e_R, e_{R0} (percentage) change of nominal, real and equilibrium real exchange rate, p, p* (percentage) change of inflation in Slovakia and euro area. If before entry to the euro area the inflation in Slovakia approximates inflation in the euro area ($p \cong p^*$), by which inflation differential ($p - p^* \cong 0$) will be in fact eliminated, then the nominal exchange rate will be changing similarly with the changing of the real exchange rate ($e_R \cong e$), because it holds that: $e_R \cong e - (p - p^*)$. If simultaneously the real exchange rate of koruna against euro is around equilibrium ($e_{R0} \cong e_R$), then the nominal exchange rate will be also changing along with the real exchange rate ($e_{R0} \cong e_R \cong e$). If the equilibrium exchange rate of koruna against euro simultaneously appreciates ($e_{R0} < 0$), the nominal exchange rate of koruna against euro will also appreciate.

After euro adoption, given prior fixing of the currency parity of koruna against euro, koruna will stop existing. Appreciation of the **equilibrium real** exchange rate in Slovakia will not, however, stop by euro adoption. Two (marginal) situations may occur:

1. Inflation will remain close (equal) to inflation in the euro area. Current real exchange rate of koruna against euro will not change in such case,[43] and thus it will gradually deviate from equilibrium exchange rate which will further appreciate even after entry to the euro area ($e_R \cong 0$, $e_{R0} < 0$);

[42] Economic productivity of Slovakia in purchasing power parity is only a bit over half in comparison with the euro area average.
[43] Nominal exchange rate will be fixed and inflation differential will equal to zero.

2. Inflation in Slovakia will gradually grow above the inflation level in the euro area so the current real exchange rate of koruna remains at the level of the equilibrium real exchange rate. The inflation differential will be positive at the level of the equilibrium exchange rate appreciation ($(p - p^*) > 0$).

The actual development will differ from the above scenarios. First variant, i.e. inflation close to that in the euro area, with simultaneous growing gap between the real exchange rate and the equilibrium exchange rate, is possible in short-term or medium-term period. However, it is improbable that the real exchange rate will be deviating from the equilibrium level for a long time. Accordingly, long-term materialization of the first variant is unlikely. It the long run it can be expected that after joining the euro area the inflation in Slovakia will be higher than inflation in the euro area by a margin which will be about equal to appreciation rate of the equilibrium real exchange rate of koruna against euro.

Annual inflation in the euro area is likely to be further targeted at the level of 2 %. If the current annual appreciation rate of the equilibrium real exchange rate of koruna was maintained at the level of approximately 2 – 3 % also after entry to the euro area, the inflation in Slovakia could be in a short run higher than in the rest of the euro area by such a difference. However, as the process of the real convergence will gradually finish, appreciation of equilibrium exchange rate of koruna against euro will slow down, and therefore, inflation in Slovakia after euro adoption could be about 3 – 4 % for the first years. In a longer period the inflation will continue to decrease, and finally it will approximate the level in the euro area.

Expected equilibrium appreciation of the real exchange rate of koruna against euro

The development and level of exchange rate are determined by many factors. In a short-term period the exchange rate is most influenced by expectations. In a medium-term period (several months or years) the exchange rate depends on economic fundaments – inflation, GDP growth and productivity, investment, balance of payments, foreign debt etc. Estimates of various types of equilibrium exchange rate, like BEER or FEER take these fundaments into consideration and enable forecasting the direction of the exchange rate development. However, a long-term anchorage for the exchange rate level is its compliance with the domestic price level – maintenance of purchasing power parity.

Medium-term equilibrium of exchange rate

Equilibrium appreciation of real exchange rate of koruna against euro was analyzed with the help of various approaches. We applied the following:

- behavioral approach to equilibrium exchange rate (behavioral equilibrium exchange rate, BEER) – equilibrium exchange rate means such level of the exchange rate which corresponds with equilibrium level of economic fundaments based on the estimated co-integration relationship between the exchange rate and fundaments;
- fundamental approach to equilibrium exchange rate (fundamental equilibrium exchange rate, FEER) – equilibrium exchange rate corresponds to equilibrium fundamentals and at the same time it supports external balance; the relationship between the exchange rate and fundamentals on one side and between external balance and the exchange rate on the other side is estimated; simultaneously a normative level for external balance is set.
- monetary approach to equilibrium exchange rate (monetary equilibrium exchange rate, MEER) – the exchange rate corresponds with the development of monetary aggregates based on extended and adjusted equation of exchange.

Behavioral approach to equilibrium exchange rate

Knowledge from the application of BEER model[44] for the estimation of equilibrium real exchange rate of koruna against euro says that Balassa-Samuelson (B-S) effect (differential of productivity or differential of dual inflation) will be a decisive factor of the appreciation of the real exchange rate. Other factors determining the development of equilibrium exchange rate of koruna against euro include the following:

- interest differential – higher real interest rates in Slovakia as compared with the euro area cause the appreciation of equilibrium real exchange rate of koruna,
- net foreign assets – higher share of net foreign assets in GDP cause the appreciation of equilibrium real exchange rate of koruna.

The catch-up process will make the productivity differential to have an appreciation effect. Upon membership in the euro area this differential will probably increase as a consequence of faster catching-up. The differential of real interest rates will have depreciation effect in consequence of higher inflation in Slovakia than in the euro area. Lower proportion of government spending in Slovakia than in the euro area is expected, which will have appreciation effect. Low real interest rates will stimulate the creation of debts and investment in fixed assets. The ratio of net foreign assets to GDP is likely to stagnate or decline.

Fundamental approach to equilibrium exchange rate

The results of the estimation of equilibrium exchange rate according to FEER models[45] show that higher growth of potential product in Slovakia than in the euro area shifts the equilibrium exchange rate towards appreciation. However, there are additional factors determining appreciation rate of the equilibrium exchange rate:

- inflow of foreign direct investment increases export capacity and has appreciation effect on the equilibrium real exchange rate;
- high import intensity of export(s)[46] deteriorates trade balance and has depreciation effect on the equilibrium real exchange rate;
- high level of sustainable deficit on current account[47] shifts the equilibrium real exchange rate towards appreciation.

After joining the euro area the catch-up of the euro area will continue due to faster growth of the potential in Slovakia, i.e. the appreciation trend of the equilibrium real exchange rate. The inflow of FDI will accelerate such strengthening. Import intensity of export(s) will be a result of two contradictory tendencies – gradual establishment of domestic suppliers for foreign investors and inflow of new FDI whose effects will initially depend on the import of semi-finished products and components. However, with regard to export, the final effect of import on the real exchange rate and its equilibrium level will be depreciating. Euro adoption may significantly shift the limit of sustainable deficit, and thus shift also the equilibrium real exchange rate (according to FEER) towards appreciation.

Monetary approach to equilibrium exchange rate

Knowledge from monetary approach to equilibrium exchange rate[48] say that the equilibrium nominal exchange rate of koruna against euro will change depending on how the differential of money stock growth in Slovakia compared with the euro area will correspond to the differential of the (real) economic growth compared with euro area growth. Relatively fast

[44] Zeman (2004). See also: Maeso-Fernandez et al (2001) and Rahn (2005).
[45] Ondko (2005). See also: Šmídková et al (2002), Coudert and Couharde (2002), and Égert, B (2004).
[46] This involves import of intermediate products, semi-finished products and components for assembly production.
[47] Soft condition of foreign solvency.
[48] Ondko (2005). See also: Fidrmuc et al (2004).

growth of (nominal) money stock in our country, inadequate compared to the differential of economic growth between Slovakia ant the euro area, will cause weakening of the nominal exchange rate of koruna against euro. There are also other facts playing certain roles:

- Interest differential – relatively (compared with euro area) high interest rates in Slovakia may slow down possible weakening of the nominal exchange rate,
- Higher dual inflation of consumer prices in Slovakia than in the euro area[49] – exerts influence towards appreciation of the nominal exchange rate of koruna against euro.

In the situation to come after joining the euro area the interest differential will in fact equal to zero[50] and nominal exchange rate of koruna against euro will be fixed. In general, the growth of money stock may increase (if it is inadequately high in comparison with economic growth) or reduce inflation with respect to the level arising from B-S effect.[51] It is expected that the growth of money stock will be stimulated by liberalized monetary conditions in Slovakia after joining the euro area (interest rates will be almost the same within the whole euro area while inflation in our country is likely to be higher than in the euro area). Therefore, there is a risk that fast growth of money stock in Slovakia will constitute the factor of high inflation.[52] The central bank will have only one possibility to prevent excessive growth of money stock – a stricter preventive (anti-cyclic) bank supervision which should avert excessive credit expansion and subsequent credit restriction and instability on the assets market (e.g. on property market). Fiscal policy can be also effective – its early restrictive adjustment should (along with liberalized monetary policy) create neutral conditions for the financing of economy, and it should prevent its overheating.

Box 8 Overview of knowledge from equilibrium exchange rate models (medium-term equilibrium)

Model Modeled exchange rate	**Sign (direction of influence)**	**Factor (explanatory variable)**
BEER		
Appreciation of the equilibrium real exchange rate of koruna against euro	+	productivity differential (or dual inflation differential)
	+	(real) interest rate differential
	+	ratio of net foreign assets to GDP
FEER		
Appreciation of the equilibrium real exchange rate of koruna against euro	+	potential output differential
	+	ratio of FDI to GDP
	+	sustainable level of current account deficit (% GDP)
	–	imports for export
MEER		
Appreciation of the equilibrium nominal exchange rate of koruna against euro	–	differential of money supply growth
	+	GDP growth rate differential
	+	interest rate differential
	+	dual inflation differential

[49] Dual inflation means here a different inflation of prices of traded or non-traded goods. It is usually a manifestation of the existence of the B-S effect.

[50] Certain (negligible) slight differences of market rates on various money markets will exist.

[51] Of higher dual inflation in our country than in the euro area.

[52] In a monetary equation the equilibrium (nominal) exchange rate will be fixed and high dual inflation will correspond with liberalized monetary conditions (in proportion to economic growth).

Long-term equilibrium of exchange rate – purchasing power parity (PPP)

In its simplest expression a purchasing power parity means that the same goods should cost the same in each country. If price level in any country is higher, its currency should be weaker. However, this simple relationship does not apply in practice. We observe marked and enduring differences of respective price levels among countries.

The main reason for differences among country price levels is that there are many non-traded goods and services. The principle of one price may not apply to non-traded goods and services, because international arbitrage cannot be applied to them. Prices in poorer countries are usually lower than prices in the developed countries. In poor countries the average labor productivity is low, and accordingly, average wages are low. However, differences in productivity within non-traded sector, in particular in services, are not as high as within the traded sector. In services which involve high share of human labor the effect of technical equipment and technological development is lower than in industry. Therefore, less developed countries with cheap labor force have relatively cheaper services. Differences occur also in prices of traded goods due to varying excise taxes, transport costs and barriers to trade. Furthermore, before their sale to a final consumer certain volume of non-traded services, like distribution and retail trade, is added to every traded goods. Finally, overall price level in less developed countries is lower.

Another reason for enduring differences of price levels is a slow adaptation of prices. On international markets capital flows exceed approximately hundred times the flows of goods and services. Therefore, prices of goods in a country have almost no effect on the exchange rate in a short-term period. Frictions, like barriers to trade, inflexible wages, infrastructure varying from country to country etc., usually prevail in a medium-term period. The effect of price levels will be markedly manifested only in a long-term period of several years and decades.[53]

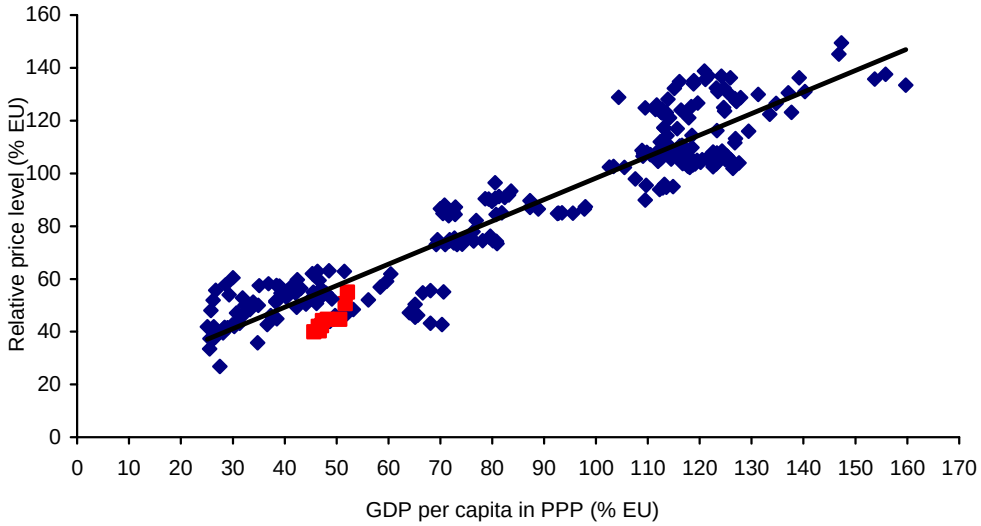
Only when all these reservations are taken into consideration, we can express the theory of purchasing power parity as a relative parity. Price levels in various countries may not be identical. However, if in one country domestic price level increases, we can expect weakening of the exchange rate. If in a country the living standard has relatively increased, we can expect also an increase of price level.

We examine the dependence of price level on the country living standard. Price level is expressed as the ratio of the country prices to the EU average. We apply the ratio of real GDP in purchasing power parity per capita to the EU average as the rate of living standard.

The relationship between GDP and price level is illustrated by Figure 25.

[53] According to our estimates when price level deviates from the long-term equilibrium, only 6.4 % of the differential will improve.

Figure 25 Real convergence of Slovak economy during 1996 – 2004



Note: Data is for the period 1996 – 2004. Red-marked squares symbolize Slovakia.
Regression line is given by the following equation: Prices = 0.82*GDP + 16.7. R^2 = 0.89.
Source: Eurostat, own calculations.

Slovak price level is lower than should be with regard to economic development in Slovakia. In 2004 the living standard in the Slovak Republic represented 52.1 % of EU living standard, and price level represented 54.9 % of EU price level. According to calculations the Slovak price level should be approximately at the level of 59 % of that of the EU.

According to Eurostat forecast, in 2005 the living standard in Slovakia increased to 54 % of that of the EU, based on our calculations the price level increased to 57.2 % of that of the EU (in consequence of exchange rate appreciation and slightly higher inflation). Neutral price level corresponding to GDP is 60.7 %.

In 2005 the relative price level in Slovakia was by 6.1 % lower than the long-term equilibrium level. In other words, real exchange rate was by 6.1 % underestimated. The equilibrium of basic purchasing power parity is, however, of a long-term nature with prospects of decades. A 6.1 % deviation of domestic prices from equilibrium level exerts no immediate pressure for inflation or koruna exchange rate appreciation either.

Table 16 Comparison of the relative equilibrium price level

	GDP per capita, in PPP (%)	Relative price level (%)	Equilibrium price level (%)	Undervaluation of prices in Slovakia (%)
2003	51.7	50.5	58.8	16.4
2004 (preliminary)	52.1	54.9	59.2	7.8
2005 (estimate)	54.0	57.2	60.7	6.1
2006 (forecast)	55.9	59.0	62.3	5.5
Greece in 1996	70.0	86.7	73.7	-
Portugal in 1996	75.1	75.5	77.9	-

Source: Eurostat, NBS, own calculations.

Expected long-term inflation development

After joining the euro area the inflation in the economy of Slovakia will be affected by uncompleted process of real convergence. Such effect will consist of two transmission channels – the equilibrium and non-equilibrium channels.

The equilibrium transmission channel is represented by:

- Balassa-Samuelson (B-S) effect.[54] In view of our knowledge the B-S effect in the Slovak economy was significant. We estimate it at 1 – 1.8 % during the period since 1996. Because the process of real convergence was uneven, B-S effect in various periods did not exert influence of equal intensity. We expect that during the period until 2010 it will increase the appreciation of the equilibrium real exchange rate by on average over 1.5 % per year, and its influence will be uneven. Fast growth of potential product and productivity in forthcoming years in consequence of production start-up in new car factories (PSA Peugeot, KIA Motors) is likely to make its influence temporarily higher. After entry of the Slovak Republic to the euro area, envisaged in 2009, its influence may weaken.
- Growth of the proportion of non-traded commodities (services) within consumption. Since non-traded commodities have higher inflation, by increasing their weight within consumption the total inflation will increase. In medium-term period, for several years, the evolution of the shares of traded and non-traded sectors may be other than in the long-term, i.e. different than the theoretical expectations. In the case of the Slovak Republic the current fast growth of export industrial capacities, in particular car industry, may cause a temporary increase of the weight of traded sector. On the contrary, after entry of the Slovak Republic to the euro area the weight of traded sector may decrease faster.
- Decline of energy-intensity of products. Prices of energy-producing commodities grow faster, and therefore a decline of their weight in output will slow down the growth of overall price level. Current growth of prices of energy supplies is so rapid that it does not cause a decline, but growth of the weight of energy supplies within household expenditure. Furthermore, in Slovakia and also in other new EU member states deregulations took place, which even accelerated the growth of prices of energy supplies for households. With a limited possibility to achieve energy supply savings in the medium-term period the prices of energy supplies should not grow faster than household expenditures. At present this appears to be rather unrealistic even despite fast growth of household expenditures in the new member states. Even after joining the euro area we do not expect a more significant decline of the weight of energy supplies in household expenditures.

[54] Benčík et al (2005). See also: Kovács (2002).

Non-equilibrium channel is represented by:

- Excessively fast catch-up with wage levels – uncritical comparison of domestic wages (when expressed in euros) with average wages of the EU. This effect might be significant if trade unions were highly organized and active. It will be weaker if unemployment rate is high. Fast productivity growth, which will enable fast but adequate increase of wages, may also counteract excessive increase of wages. Fast growth will meet the expectations and mitigate potential impact of possible comparisons of the domestic wage level with EU average. The possibility to work in the developed EU economies will have also positive effect (against excessive growth of domestic wages) as it is envisaged that in 2009, or in 2011 at the latest, barriers for employment will be eliminated and employees will have a chance to reasonably assess advantages and disadvantages of employment within domestic economy and abroad (under the existing conditions).
- Overheating of economy caused by low or negative real interest rates. Such liberalization of monetary conditions may occur as a result of low interest rates in the euro area and higher domestic inflation. A risk of overheating of economy after entry of Slovakia to the euro area should be considered, however, not only in the light of interest rate component of real monetary conditions. In small open economies, among which also Slovakia ranks, a significant, over 50-percentage, weight belongs to the exchange rate component within monetary conditions. High inflation, whether created by the equilibrium or non-equilibrium channel, will have therefore also a stabilizing effect on economy through a strong real exchange rate. Therefore, we expect that despite expected higher inflation the level of overheating in the economy of Slovakia and other new EU member states will not be as significant as in the economies predominated by interest rate component of monetary conditions. The adequate adjustment of fiscal policy should also counteract high inflation.

The declining weight of commodities, whose inflation is highly fluctuating, in overall consumption will mitigate the volatility of overall inflation. This regards in particular food and energy supplies.

Additional factors will modify the effects of real convergence, in particular in the medium-term period, while the results of the estimate of exchange rate models show that in certain cases they may affect even significantly the development of the equilibrium real exchange rate, and hence also the existence of inflation pressures. It will be in particular high dependence of export on import that will counteract the appreciation of the real exchange rate. Gradual building of a domestic subcontractors network may, however, mitigate such effect. Equilibrium appreciation and inflation pressures will be mitigated also by declining effect of those factors which cause the real appreciation – the possible slow-down of catching-up pace and possible slow-down of FDI inflow. The example of Ireland shows, however, that such slow-down need not inevitably occur. If economic policy is focused on supporting long-term growth, and not only on temporary higher FDI inflow, then the stimulation of catch-up also by autonomous factors can be expected. In such case the high growth rate of economy potential will be sustainable for a long period and inflation pressures and higher inflation within economy are likely to constitute an accompanying phenomenon of such development.

Quantitative estimates of a probable long-term inflation differential can be only of informative value. Based on the models of equilibrium exchange rate a real appreciation by 2 – 3 % per year can be expected for the forthcoming years. In the long-term perspective, however, only about 1.5 % appreciation of the real exchange rate will be related to B-S effect, accordingly the equilibrium real appreciation should gradually stabilize at that level.

If for purchasing power parity we draw from the above model and if we assume that in the forthcoming years the differential of productivity growth between Slovakia and the euro area is approximately 3 %, the growth of relative price level would amount up to 2.5 % per year. In the long-term perspective, however, a decline of productivity differential to approximately 2 % can be expected. This is in compliance with the growth of relative price level by approximately 1.6 % per year.

If we do not take into consideration other modifying factors of equilibrium appreciation (which should gradually fade out), then we estimate the long-term equilibrium real appreciation to about 1.5 % for the period after entry to the euro area, and accordingly, additional contribution to inflation to reach the level of 1.5 percentage point. Immediately after joining the euro area such appreciation and inflation pressure will be higher, but with declining tendency.

Box 9 Economic growth and output convergence

Macroeconomic output of economy can be expressed and measured by several methods. GDP index per capita in purchasing power parity is the most suitable and simple to be used for the evaluation of the current level of economy output as compared to the economy of another country (including the EU). According to this index Slovakia currently reaches a bit more than a half of the EU output (Table 16).

In general it can be stated that gradual convergence of our economy output towards average EU output takes place through the economic growth differential. Economic growth means an increment of real GDP in a short period of time.[55] A precondition for real economic growth is the growth of Gross Domestic Product per capita. With regard to the fact that the number of population has not recently significantly changed in Slovakia, GDP growth is more or less identical with real economic growth.[56]

Fast economic growth rate facilitating the approximation of individual economies output to the EU economy has been recently achieved not only by Slovakia, but also by other new EU member states. However, Slovakia by its GDP growth rate ranks among the most dynamic economies, faster growth rate has been achieved only by Baltic states.

It stems from the statements of high representatives of the Slovak Republic and numerous economy-oriented documents drawn up by governmental institutions, but also by outstanding analysts, that in the forthcoming years a fast economic growth will sustain in Slovakia. That will enable more marked output convergence (and hence living standard convergence) of our country towards the EU.

The so far published estimates of convergence rate of Central and Eastern Europe Countries (CEE,)[57] speak of the period of 30 to 40 years necessary to achieve 70 – 80 % of average level of GDP per capita in the EU15 while individual results differ depending on the methodology used and preconditions of the future development of explanatory variables.

One of the first estimates of convergence of transition countries explicitly indicating also the results concerning Slovakia is the estimation published by Denizer (1997). He draws, like most of authors, from the BLR approach.[58] Two estimates of the period necessary to achieve OECD average have been presented. First estimate is based on the assumption that investment rate is identical with real investment rate in a country, and the second estimate assumes (higher) constant investment rate at the amount of 30 % GDP per year. It means for Slovakia that with unchanged investment expenditure it will reach the average GDP value per capita of OECD countries in 18 years, and with investment expenditure amounting to 30 % GDP – in 10 years.

Fischer et al (1998) used for the estimation of output convergence the specification according to Levine and Renelt (1992) (with investment at the amount of 30 % GDP per year) and initial

[55] In the long period the economic growth is identical with the growth of potential product.
[56] GDP growth per capita in purchasing power parity = GDP growth – rise in population + relative price increase
[57] For instance: Barbone and Zalduendo (1997), Sachs and Warner (1996), NOBE (2002).
[58] The approach combines specifications according to Barro (1991), Levine and Renelt (1992).

specification according to Barr (1991) (with government expenditure at the amount of 10 % GDP per year). When using Barr's specification, the estimate is a bit lower than in the specification according to Levine and Renelt. In Barr's specification Slovakia should achieve the average level of Spain, Portugal and Greece in 8 years and in 12 years if the second specification is used.

An interesting estimate of convergence based on endogenous growth is presented by NOBE (2002) study. It is based on the relationship between GDP per capita gap and five explanatory variables (index of political stability, rate of technological gap reduction, index of economic stability, ratio of gross domestic savings to GDP and ratio of public expenditures on education to GDP). The study contains estimates of output convergence for 22 CEE countries,[59] namely in three scenarios of technologies development, demographic development and increase of resources for research and development and education. The results concerning the second scenario say that in 2040 Slovakia will reach approximately 80 % of the output of EU15 countries.

One of the most recent estimates is contained in Wagner and Hlousková (2002). Their approach derives from the publication by Fischer et al (1998). The authors used a panel method and parameters estimated for EU15 countries instead of the ordinary cross-section approach. In the case when the calculation of the time necessary for catch-up is based on the growth of EU15 at the amount of 2 % per year, they have arrived at the conclusion that it will take most of acceding Central-European countries[60] more than 20 to 30 years to achieve the average output of EU15. It follows from their latest estimates[61] that Slovakia will achieve 80 % of average output of EU15 not sooner than in 17 years.

The Institute for International Comparison in Vienna estimates that CEE countries will grow by two percentage points faster than the countries of EU15 and GDP per capita in the Slovak Republic might reach 67 % of the EU15 average in 2015.[62]

The Impact Study of the Slovak Academy of Sciences brings more optimistic estimates saying that Slovakia might reach 75 % of EU25 GDP average approximately in 2013.[63]

Based on the results of qualified estimates presented it can be expected that as regards output we will catch up with the EU15 countries with the lowest GDP per capita[64] sometime after 2020. Throughout 20 to 30 years we might achieve 80 % of EU15 average and in an optimistic case we should overcome the average level of EU25 in 2040.

5.3 Devaluation of savings

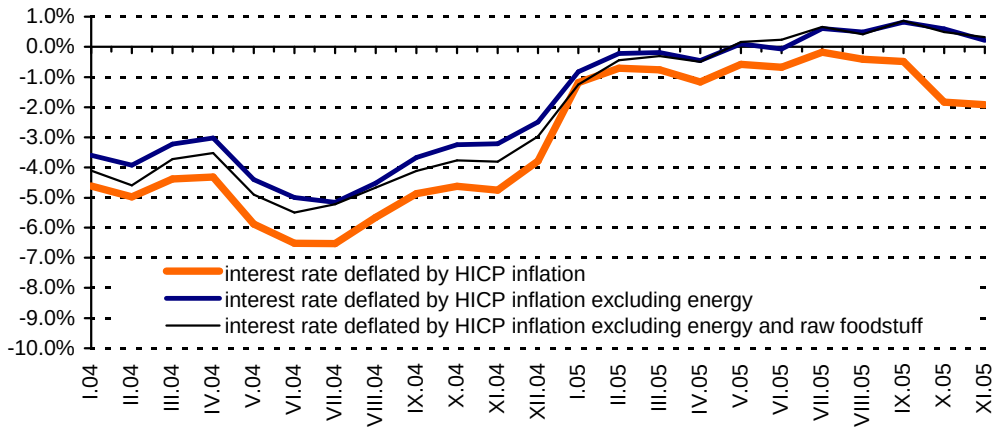
The argument that euro adoption will cause devaluation of household savings is psychologically very sensitive. However, savings in korunas will be converted into euros by the same conversion rate as prices. The immediate value of savings in relation to domestic prices, if spent on expenditure in Slovakia, will not change.

Another concern involves gradual devaluation of savings in consequence of low real interest rates after joining the euro area. Real devaluation of savings in Slovakia has been already taking place. This is caused by negative interest rates on deposits in consequence of higher inflation rate than interest rates on deposits currently offered by banks in Slovakia (Figure 26). Therefore, arguments for devaluation of savings after euro adoption imply that real interest rates on deposits (savings) in conditions of euro area will be even lower than under the current conditions of Slovakia.

[59] 10 new member states plus 12 other from the countries of the former USSR.
[60] 8 new EU member states (without Cyprus and Malta) and Bulgaria and Rumania.
[61] Wagner and Hlousková (2005).
[62] Kvasňovský (2003).
[63] Šikula et al (2003).
[64] GDP average per capita in Spain, Portugal and Greece.

It should be noted that such scenario cannot be fully excluded. By joining the euro area Slovakia will get to the low-inflation environment, however, it should be envisaged that inflation rate in Slovakia will be slightly higher than in the euro area.[65] Real interest rates on household deposits, which are currently negative, will remain so low and can be even lower for a certain period of time than they are at present.

Figure 26 Real interest rate from one-year household deposits



Source: NBS and Statistical Office.

On the other hand, even in the case of euro non-adoption we cannot expect more favorable real interest rates on savings in banks. If NBS made efforts to achieve similar inflation as in the euro area, with expected koruna appreciation[66] the inflow of speculative capital would result in low interest rates, even lower than in the euro area (similarly as it happened in the Czech Republic in 2004). If on the contrary NBS tried to maintain fixed exchange rate, e.g. close to the central parity in ERM II, the situation would not differ much from euro adoption, nominal interest rates would be similar as in the euro area and inflation in Slovakia would be higher. Real interest rates on household deposits will be therefore in any case low even negative also in the case of euro non-adoption.

Faster rate of GDP growth in Slovakia than the real convergence will function as a factor accelerating the increase of wages, and thus allowing higher creation of savings. Households will have at their disposal wider possibilities to opt alternative forms of saving, or respectively investing in other products of financial market within the whole euro area in order to eliminate potential unfavorable effects of the euro adoption on real savings in the segment of bank deposits.

However, most considerations regarding the effects of the euro adoption on devaluation of savings deal with the question of their relative devaluation in dependence on the date of entry to the euro area. The substance of such argument is that with postponement of the date of entry due to the expected appreciation of exchange rate of koruna against euro higher nominal value of savings would be achieved when converted into euros. Accordingly, koruna savings converted into euros, e.g. as at 1 January 2009 in accordance with the relevant conversion rate will have lower value than the same koruna savings converted into euros according to (explicitly assumed) more favorable conversion rate a few years later.

[65] These issues are dealt with in more details in Part 5.2.

[66] If the euro was not adopted and the trend of koruna appreciation continued, it would have a negative impact on household savings in the second pension pillar. A considerable part of such pension savings will be, however, invested in foreign markets. The appreciation of koruna will decrease the koruna value of such foreign assets.

At present, Slovak koruna has approximately 1.75-times higher purchasing power at home than abroad (since prices in Slovakia reach only 57 % of EU average) (see also Table 16). As a result of appreciation of koruna exchange rate and/or slightly higher inflation the Slovak price level may reach 65 % of EU average by 2009. Purchasing power of koruna in Slovakia will be therefore approximately only 1.5-times higher than abroad. Additional postponement of euro adoption (after 2009) with longer lasting catch-up of the domestic price level with EU average would lead to further approximation of purchasing power of koruna on the domestic market to its purchasing power abroad. This phenomenon, however, will have no impact on the real value of koruna savings of the Slovak households if they are intended for spending on the Slovak market.

With koruna exchange rate appreciation, however, purchasing power of the same koruna savings will increase if converted to euros and spent on the purchase of goods and services abroad. Accordingly, our households will buy cheaper abroad, or respectively in the euro area countries they will be able to "afford" more for their savings.

The core of argumentation in favor of later euro adoption (with stronger SKK/EUR exchange rate) consists probably in this fact. In its interpretation, however, the key moment is not taken into consideration: it does not differentiate where such savings are to be used, whether on the domestic market or abroad. It is out of any doubts, however, that euro adoption will not cause any essential changes in the consumer shopping behavior and that they will continue to realize an essential part of their expenditure (savings) in Slovakia. The question of higher or lower relative purchasing power of koruna abroad is therefore in terms of maintenance of the value of savings almost irrelevant.

Proposals of postponing entry to the euro area, which are substantiated by the effect of euro on devaluation of savings and low purchasing power of koruna, are not correct either from another important reason. They deal exclusively with the side of assets. But the same conversion rate as applied to the conversion of prices and savings applies also to all debts (loans, credits) of households (but also of enterprises and the state). Therefore, their value relative to domestic prices, similarly as the value of savings, will not change.

When using the argument that euro will cause devaluation of savings, it should be simultaneously stated that its impact on debts and loans will be quite opposite. If euro was going to devaluate savings, it would have to equally "devaluate" loans and credits, their real value would thus decrease. The effect of wealth arising from the decline of debts would be positive for the population of Slovakia also with regard to increasing indebtedness of the population of Slovakia (Box 10). Loans and credits of households reach so far only about a half of their savings; households still continue to be the most important net savers. However, if the trends of fast grow of household credits continue, by the end of 2008 the volume of savings and credits of households in banks could be almost in balance.[67]

Over time still more savings of the Slovak households will be in euros, or they will be related to the euro. This regards in particular the savings in the second pension scheme and investment in the shares in mutual funds. Because the Slovak capital market has very low liquidity, pension and investment companies will be forced to place abroad a substantial proportion of their fast accumulating resources. Of course, savings in euros will remain the same in their nominal value also after euro adoption in Slovakia. Their real value will, however, depend on the conversion rate by which Slovak prices will be converted into euros. If we accepted arguments for devaluation of savings at "too fast" euro adoption – with

[67] Households increase their savings in banks only very slowly and they prefer investment involving higher risk, but higher yields, e.g. shares in mutual funds.

hypothetically weaker conversion rate, for euro savings the impact of conversion rate would be quite opposite. At fast euro adoption with weaker conversion rate the real value of euro savings would remain the highest.

Box 10 Indebtedness of the Slovak households

Household indebtedness in Slovakia is currently low compared to the developed EU countries. In 2004 the indebtedness of the Slovak households reached approximately 18 % of their available income,[68] while the average for euro area slightly exceeded 100 %.[69] In 2004 the indebtedness rate of the Slovak households, measured as a ratio to GDP, represented less than 9 %, while in the euro area countries it was about 50 %. Recent years are, however, characterized by faster indebtedness rate of households in the Slovak Republic than in the euro area.[70]

Household loans (in particular mortgage credits and consumer lending) constitute the most dynamic part of credit activities of banks in Slovakia. Household loans (and loans of non-profit institutions serving to households) increased inter-annually until December 2004 by the rate 36.9 % and until October 2005 even by 43.3 %. Although the fast growth of household credits could raise a question of how much it is a manifestation of absolute shortage of resources or rather a manifestation of essential changes in the way of life (imitating effect), there is a high potential for increasing the households debts in Slovakia. It can be expected that the debt growth rate will remain high.

Favorable conditions for increasing credit encumbrance of households of the Slovak Republic are created by currently low real interest rates and the growth of household earnings due to fast economic growth. Households sector is gradually becoming more important for financial stability of the Slovak economy. With relative low indebtedness rate the households have been so far able to pay back their credits, however, credits are growing fast and simultaneously the rate of household savings is decreasing.[71]

At the end of 2005 the volume of koruna deposits of households in banks amounted to SKK 327 bil. and the volume of their credits amounted to SKK 165 bil. In 2005 the growth of household credits exceeded 40 %. If we expect gradual slow-down of credits growth rate to 38 % in 2006, 32 % in 2007 and 28 % in 2008, at the end of 2008 the volume of credits will amount to SKK 390 bil. Growth rate of household deposits for the last two years represented on average 5 %; if such growth rate is maintained, by the end of 2008 the volume of household deposits will amount to almost SKK 380 bil.

5.4 Devaluation of pensions

Concerns about devaluation of pensions are in their substance very similar to the concerns about devaluation of savings. If euro adoption resulted in price level increase or inflation increase and if pensions remained unchanged, their real value would decrease. The question of impact of euro adoption on relative difference between the rate of return on pensions from the pay-as-you-go and from capital pension pillar is also very interesting.

Value of pensions in the pay-as-you-go pension pillar

The most important question for existing pensioners is how the real value of their pensions will change after euro adoption. In Part 5.1 we have shown that euro changeover should not

[68] NBS (2004).
[69] La Caixa (2005).
[70] In the period 2000–2004 the indebtedness of households in the SR increased from 5 % to 9 % GDP, in the euro area countries from 46 % to 50 % GDP. Within the new EU member states, however, the development in the Slovak Republic is slower, the indebtedness rate of households in those countries for the above period increased from 7 % to 12 % GDP. (UniCredit bank, 2005).
[71] Savings rate of the household in Slovakia has been on decrease in the long term, during the period 1993–2004 it decreased from 10 % to 4.5 % (measured by the ratio of gross savings to current income of households) (NBS, 2004).

have any significant impact on increase of price level in Slovakia. Prices of goods and services will be converted to euro by the same conversion rate as pensions. Therefore, the real value of pensions will remain maintained after euro changeover.

We expect that after euro adoption the average inflation in Slovakia will be higher than in the current euro area for several years or even decades (Part 5.2). We cannot, however, say what such inflation would have been in Slovakia if euro had not been adopted. We can realistically suppose that had the euro adoption not been planned in Slovakia, the inflation target would have been set to a slightly higher level than ECB target. For the following calculations we therefore assume that in case of the strategy of euro non-adoption the NBS would have set an inflation target with regard to a fast growth of the Slovak economy and its continuing transformation at the same level as the Czech National Bank or the Hungarian National Bank, i.e. at 3 %. We will also deal with an extreme alternative, the most disadvantageous in terms of euro adoption, i.e. in case of euro non-adoption Slovakia would be able to maintain inflation at the similar level as the euro area and accordingly that euro adoption will result in a long-term increase of inflation rate. How would real pension develop in such cases?

According to the Act on Social Insurance[72] pensions are regularly valorized as at 1 July of the calendar year. Pensions are increased by the average between inflation and average wage increase for the preceding year. Let us divide an increase of average wage to an increase of real wage and rise in prices:

$$\begin{aligned} \text{increase of pensions} &= 0.5 * \text{inflation} + 0.5 * \text{increase of wages} \\ &\approx 0.5 * \text{inflation} + 0.5 * (\text{inflation} + \text{increase of real wages}) \\ &\approx \text{inflation} + 0.5 * \text{increase of real wages.} \end{aligned}$$

Hence, an equivalent expression of the method of valorization of pensions is that pensions are every year increased by inflation rate plus a half of average increase of real wages. Accordingly, even if after joining the euro area the inflation in Slovakia was higher (in comparison to the scenario of euro non-adoption), in case of pensions valorization this effect would be fully compensated and real value of pensions would be maintained. Certain slightly unfavorable impact on the living standard of pensioners may occur due to the time shift between the increase of prices and valorization of pensions. Pensions are valorized with half-year delay after the period for which inflation is counted. In case of a long-lasting higher inflation such delay may slightly decrease the real value of pensions. In realistic option with respect to euro adoption (with 3 % inflation per year) the real value of pensions would decrease only slightly – by 0.25 % after euro adoption. In the worst option, i.e. if inflation in Slovakia after euro adoption was by approximately 1 – 2 % higher in comparison to the option of non-entry to the euro area, the real level of pensions could be, on the grounds of the time shift of valorization, lower by 1 % at the most.

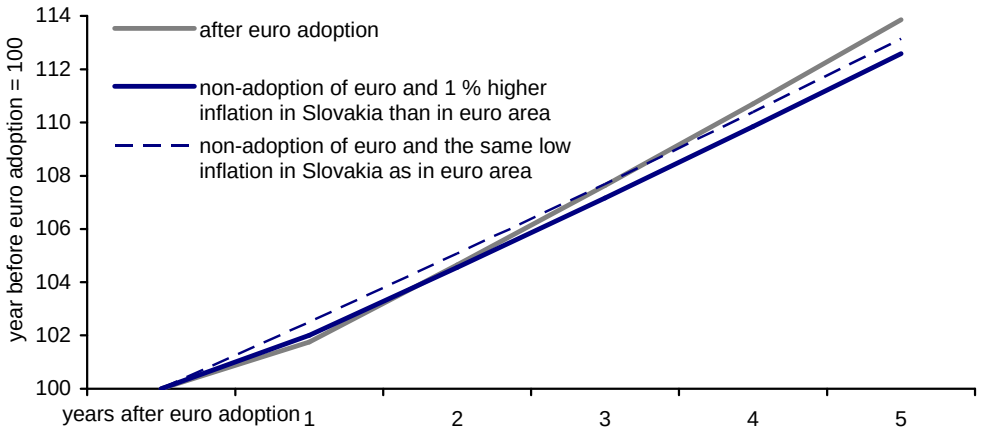
Negative impact of the delay of valorization of pensions is likely to be more than only compensated by the second component of valorization – average wage. After joining the euro area we expect increase of the real economic growth (Chapter 3) and also of real wages. We assume that euro adoption may enhance the growth of real wages by approximately 0.7 % per year. With the current method of valorization of pensions maintained this would mean an additional growth of pensions by 0.35 % per year. With the most probable alternative scenario even in the second year after adoption real pensions will be higher than if euro had not been adopted. With the alternative scenario, which is least advantageous for the euro, the negative impacts of euro on the level of real pensions will be eliminated not sooner than after two or

[72] Act No 461/2003 Coll. on social insurance as amended.

three years. After the first year, or after two years at the worst, pensioners should feel positive impact of the euro on their living standard (Figure 27).

A possible temporarily unfavorable effect of euro adoption on the social status of pensioners represents in absolute expression less than SKK 20 per month (in the negative scenario up to SKK 70), i.e. approximately SKK 200 per year. Such drop-out can be easily compensated by a single valorization of pensions, similarly as one-off allowance in 2004.

Figure 27 Index of real income level



Note: It is assumed that after euro adoption the inflation in Slovakia will be 1.5 % higher than in the rest of euro area and the growth of real wages will be 0.7 % higher in comparison to the situation when euro is not adopted. In the scenario with low inflation in Slovakia we expect the same inflation as in the euro area.
Source: own calculations.

New pensions

The situation with respect to pensions awarded after the euro adoption will be absolutely unambiguous. The real value of new pensions is derived from the average real wage in the national economy. Because euro adoption should accelerate the growth of real wages, new pensions awarded after entry of Slovakia to the euro area should be also higher.

Relative rate of return on the pay-as-you-go and capital pillars

It can be expected that in horizon of ten to twenty years the entry of Slovakia into euro area will change the relative rates of return between pension insurance in the first (pay-as-you-go) pension pillar and pension saving in the second (capital) pillar. This is caused by different nature of these pillars – while the rate of return on the first pillar depends in particular on productivity growth and real value of labor force, the rate of return on the second pillar depends on the value of capital.

The effect of euro adoption on the rate of return on contributions in the pay-as-you-go pillar has been already indicated in this Part. Real appreciation of payments of insured persons into the first pension pillar is made according to the growth of average real wage in the national economy. Since we expect positive effect of euro on real wages, pensions from the first pillar will also improve. This regards in particular those insured with longer period of time before retirement, therefore positive effects of euro on the gradual growth of wages will prevail in them.

The rate of return on pension saving in the capital pillar will be affected by euro to the same extent as any other savings (these issues have been dealt with in Part 5.3). Real investment

yields after euro adoption will be rather lower than if euro had not been adopted. Therefore, euro adoption will make the first pension pillar relatively more advantageous in comparison to the second one. A part of savings in the second pillar has been already invested abroad, in particular in the euro area. Yields of such assets will be almost unaffected by euro adoption, however, we can expect a positive slight contribution due to elimination of transaction costs of currency conversion.

These arguments are in no way aimed at casting any doubts on the inevitability of pension reform or advantageousness of participation in the second pillar, in particular for younger savers. However, they warn that some too optimistic expectations with regard to profitability of the second pillar may not be met and that euro adoption slightly increases the attractiveness of the first pillar.

5.5 Obstacles to taking full advantage of the existence of common euro currency

One of the expected impacts of euro adoption was that single currency (monetary union) would ensure full implementation of positive economic effects arising from the existence of common market (European Commission, 1990). It was envisaged that lower transaction costs and higher price transparency and elimination of uncertainties arising from exchange rate fluctuations would lead to a full integration of markets of products and financial services within the EU.

Fully integrated market of products should further intensify international trade and increase competition and support cross-border investment. Better integrated European market of financial services should ensure markets of higher liquidity, better possibilities of sharing (diversifying) risks[73] and lower costs of capital acquisition. Furthermore, the single European currency should, by enhancing its role within international financial system, ensure income in the form of seignorage and strengthen Europe's resistance to external economic shocks. These positive effects should result in higher competitiveness of the euro area economy, and subsequently in faster economic growth and living standard growth.

Overall macroeconomic productivity of the euro area is in contrast to optimistic expectations just disappointing. It is similarly too early to speak of the extent to which the expected advantages arising from euro adoption have been implemented. Various empirical analyses (e.g. Tabellini, 2004) evaluating the above described expected effects arising from euro adoption give a mixed picture and it is not always clear whether the effects identified are the results of euro adoption or rather of the existence of the common market alone.

Basic challenges for the current euro area countries

If we look first at the expected final effect of monetary unification, which is to be higher economic growth, we have to admit certain disappointment. The reasons of such situation have in fact nothing to do with euro itself or monetary union. For instance, Tabellini (2004) considers that the reasons consist in defects on the demand side of the largest euro area economies (in particular on labor market) originating in improper national policies implemented in the 70s and 80s. Euro was introduced into the environment of insufficiently reformed national economies, and although it brought advantages in some areas (growth of

[73] The theory says that economic agents may insure against fluctuations in their income through trading in assets with appropriate structure of returns. If, e.g. GDP growths in two countries are negatively correlated, it means that the rates of return in country A are high when they are low in country B and vice versa, citizens from either country may invest into foreign assets in the other country with a view to compensate fluctuations of its income, and subsequently of its consumption.

international trade and reduction of costs of capital acquisition for large enterprises), its effects could not have reflected in productivity increase of the euro area in its entirety. Despite in general optimistic expectations euro did not exert direct influence on the elimination of structural defects (insufficiently flexible labor markets, unsustainable social systems in long-term perspective, non-effective markets of services) with which some countries joined the euro area in late 90s. The impact of euro on the progress in reforms had motivating effects only before euro adoption in 1999 when preparations for euro stimulated in particular fiscal consolidation and reduction of inflation. The progress in structural reforms was poorer, and after euro adoption the reforming process retarded.

In consequence of insufficient reforming initiative, in particular in the area of increasing flexibility of their labor markets, some euro area countries are negatively exposed to the effects arising from globalization, integration of markets within EU and EU enlargement towards East. If such countries enhanced competitiveness of their employees and renewed confidence of investors and consumers, they would have to adapt to new international environment through essential structural reforms.

In some countries after euro adoption direct pressure of financial market on sound budgetary policy disappeared. With their own currency markets they were able to punish faults of fiscal policy very effectively by increasing government debt or weakening the currency. After euro adoption this market pressure was replaced by administrative pressure of the European Commission which is not, however, equally effective and what is the most important, the Commission is much slower. The governments, which made enormous reforming efforts before euro area establishment, became often passive and under the euro area shelter they loosened their policies. In 2004 a half of euro area countries breached EU fiscal rules, including the three largest countries. Sooner or later, these governments will have to recover their policies.

Six years after euro establishment is too early to assess its success or failure. Six years after the establishment of the Slovak koruna, in 1999, its value was historically the weakest and economic growth was very slow. After another six years, in 2005, koruna was by 12 % stronger than in 1999 and growth of the Slovak economy was historically the highest.

Administrative barriers

Common internal market brought advantages for business, but also for consumers in the EU. Some barriers, however, still persist, in particular in the areas where no common standards have been agreed and national rules apply. Barriers for free movement of goods, services, capital and workers on internal market prevent the implementation of common market and euro advantages.

Free movement of goods

In the field of trade (movement of goods) this regards various technical barriers imposed by national governments, or non-regulatory barriers created by consumers groups, trade associations or by non-mandatory government guidelines and recommendations to consumers. Such trade barriers lacking legitimate objectives (health protection, environment protection and consumer safety), but serving for the protection of national or departmental interests, impose additional costs on import which are not incurred by domestic producers. Thus, not

exceptionally the existing rules in the field of free movement of goods and services are breached on the part of member states.[74]

Free provision of services

Services participate in the total value of EU25 output by 60 to 70 %. Although trade in services among members states is on increase (in contrast to trade in goods, which is on decrease), it amounts only to 20 % of the value of mutual trade in goods (European Commission, 2005a). Despite backup by the Treaty establishing the European Union,[75] „the common market of services is still rather a far-away dream than reality" (McCreevy, 2005). Opening of the market of services by eliminating numerous legislative and administrative barriers is aimed at a new ambitious draft Directive on services („Directive on Services in the Internal Market") prepared by the European Commission in January 2004. Although estimated economic effects of the adoption of the Directive on Services are very favorable,[76] the development so far shows that significant difficulties can be expected before a final consensus is reached. The subject of Directive is politically very sensitive area.

Financial services and financial integration represent a huge agenda within the issues of EU internal market. Its substance consists in the creation of uniform regulatory legislation for the sector of financial services with a view to integrating European financial markets. It is contained in Financial Services Action Plan and in the related document Green Paper on Financial Services Policy 2005 – 2010 published in May 2005. Euro contributed to the integration of money markets, bonds markets and stock markets and brought in advantages in the form of lower costs of capital acquisition for enterprises. Retail bank market is, however, further segmented based on the national borders (ECB, 2005). This is reflected in a very limited volume of real cross-border lending (it means in absence of an organizational unit of a foreign bank). Positive effects for households and small enterprises are still lacking. Although supporting measures[77] have been implemented in legislation, the existence of national rules in the area of consumer protection is hampering the development of the common market for consumer crediting. At the EU level it is especially for this reasons discussed Directive on consumer lending which is aimed at harmonizing laws, regulations and administrative measures in the field of consumer lending. Besides legislative barriers the integration is hampered by natural language and cultural barriers and other factors (preference given to local service providers by clients, problems in estimating risk level of a client from other EU member state, difficulties in assessing client accounts in other member state[78]).

[74] According to press release of the European Commission of 18 March 2005 („Free movement of goods: too many infringements are hampering economic growth") by the end of 2004 146 procedures had been commenced for infringements of the principles of free movement of goods.

[75] Freedom of establishment laid down by Article 43 of the Treaty allows a natural or legal person to pursue economic activity in a stable and continuous manner in one or more members states. Freedom to provide cross-border services laid down in Article 49 of the Treaty allows a natural or legal person providing services in one of the member states to temporarily provide services in another member state without being obliged to establish an organisational unit in that country. These two fundamental freedoms are crucial for the functioning of EU internal market.

[76] The Study on economic effects of the draft Directive on Services drawn up by the independent Copenhagen Economics forecasts the growth of productivity, employment rate growth, growth of wages and decrease of prices. According to conservative estimates economic impact of the Directive will reflect in the growth of gross value added of the EU by 0.8 %, in the growth of net employment rate by 0.3 % and growth of average real wages by 0.4 %. By eliminating the barriers which protect large firms against competitors, it will open new business opportunities within cross-border activities for small and medium-sized enterprises.

[77] Second Banking Directive was crucial for the elimination of legislative barriers for cross-border banking.

[78] The integration of credit registers and retail payment systems can help solve such complications. Currently, the Single Euro Payment Area is being built for retail payments, but we cannot expect its practical utilisation in this decade.

Universal problems preventing further integration of the common financial market involve slow transposition of European rules into national regulations, inconsistent implementation of European standards at national level and non-harmonized by supervision lacking unambiguous mechanisms for cross-border cooperation of European financial supervisions.

Free movement of capital

Free movement of capital in the form of foreign direct investment is hampered by certain national rules, by which the member states concerned breach Article 56 of the Treaty guaranteeing free movement of capital. The rules which limit the acquisition of an equity share or otherwise restrict the opportunities for effective participation in the management of or control over the company, the rules which dissuade investors from other member states and thus restrict access to the market, or the rules requiring a permission for a foreign direct investment represent concrete examples of the breach of Article 56 of the Treaty by member state (European Commission, 2005a). Despite persistent deficiencies described herein Moser et al (2005) state[79] that during the last decade Feldstein-Horioka puzzle (which underlines high correlation between domestic savings and domestic investments) has practically vanished. This proves a significant growth of capital mobility.

Labor force mobility

After EU enlargement majority of old member states limited free movement of workers even for the period seven years. Only Great Britain and Sweden opened their labor market and from among euro area countries only Ireland. Finland, Spain, Portugal and partially also France are going to open their markets in three years. We can expect that until entry of Slovakia to the euro area the group of opened countries will further expand. However, more than a half of the euro area countries have yet closed their labor markets to us, among them also the most important countries for the Slovak Republic – Germany and Austria. There are, however, no economic grounds for such restrictions.[80] On the contrary, they represent additional barriers for higher economic growth of Europe and contribute to the preservation of unsound and non-flexible economic environment in some old member states. Moreover, in the environment of free movement of capital the restriction on the movement of workers creates additional stimuli for transfer at least some parts of output from old member states to new member states to rationalize of operating costs.

According to the theory of optimum currency area (Mundell, 1961)[81] the advantageousness of a monetary union is conditioned by mobility of labor force and capital between the countries constituting monetary union. This is so, because if real economies of the countries constituting monetary union are affected by asymmetric shock, the instrument for its absorption in the form of bilateral nominal exchange rates is not available anymore. In this regard, Mundell's model counts on non-flexibility of wages and prices downwards in a short-

[79] Referring to non-published manuscript by Blanchard and Giavazzi "Current account deficits in the euro area. The end of Feldstein-Horioka puzzle? " of 2002.

[80] To be objective it should be noted that in accession negotiations the new member states also achieved a reciprocal restriction towards person from the old member states in the area of real estate acquisition, in particular of farm and forest land (non-reproducible factor of production). In this case, however, this involves rather political than economic reason. Nothing prevents a foreign national from the EU member state from establishing a company in Slovakia. Such a company would be eligible to acquire land. However, the acquisition of land in Slovakia is hampered by natural barriers, language and cultural (these are the same also in case of fears of inflow of cheaper labour force from the new to old member states), and in particular practical non-existence of the land market due to numerous case of unclear and very particled ownership.

[81] The theory of the optimum currency area is dealt with in details by Part 5.7.

time horizon, therefore a short-time response to asymmetric shocks involves only the replacement of a part of labor force. If the mobility of labor force is restricted, asymmetric shocks will increase unemployment rate in the countries concerned.

Hochreiter et al (2002) point out to the fact that while labor force mobility in Europe is low and since the establishment of common market it has not practically changed, flexibility of real wages has increased. Thus, according to the authors labor force mobility is not an inevitable precondition for smooth functioning of the euro area. In their opinion flexibility of real wages and price flexibility on the markets of goods and services are essential factors for adapting to asymmetric shocks. Tavlas (2002) in discussion with the above authors expressed disagreement with their conclusion. He says that low labor force mobility in the euro area is alarming. Although labor force mobility is not crucial for the establishment of a monetary union, it is an inevitable precondition for full-fledged implementation of advantages arising from the existence of common currency.

We consider the insufficient labor force mobility, administrative obstacles on the part of majority of the old member states for free movement of workers and also uncompleted building of common market in the sector of services to be a significant disadvantage in euro adoption in Slovakia. If we managed to eliminate such barriers at least partially, the loss of independent monetary policy would be lower than our estimation in Part 4.5. The existing administrative barriers may be particularly limiting in the case of a big negative shock which the Slovak economic policies alone will not be able to cope with flexibly.[82]

5.6 Common monetary policy with decentralized fiscal policy

One of the concerns and possible risk of entry of Slovakia in the euro area is associated with skepticism about the project of monetary union itself. Factually it is a problem of consistency of the common monetary policy and national competences in fiscal policy. This problem has been solved by the Stability and Growth Pact (SGP[83]) which lays down rules for fiscal policy. The Pact was (should have been) designed so that the decentralized fiscal policy in its entirety would be consistent with the common monetary policy. Recent discussion on SGP proposal and results, which resulted in amendment of its rules, and numerous theoretical papers showed that "optimum" proposal of fiscal rules has not been achieved yet, while a key for successful implementation of the common monetary policy with decentralized fiscal policy is that national governments not only formally approve the rules, but they also adopt them in fact.

Reasons and substance for the existence of rules

Main reason for the existence of fiscal rules is the deficit bias which is manifested in the implementation of fiscal policy by almost all countries and governments. Due to the not uniform political process within euro area, a tendency to spend more and put the burden of current expenditure on the future taxpayers can be seen in general in individual governments.

Main negative consequence of such policy consists in the accumulation of government debt and pressure for the growth of interest rates. This has a negative long-term impact on economic growth and within a monetary union negative impacts of such policy are spilled

[82] As an example of such highly improbable event the hurricane Katrina in New Orleans can serve. In the USA many people from the damaged area immediately started to seek jobs in other states and the federal government placed to the areas destroyed by hurricane substantial fiscal transfers. In the case of a similar event in the euro area people from the damaged areas would be blocked by the rules limiting the movement of workers to other countries and the capacity of the European Commission to make financial transfers is incomparably lower than the capacity of the American government.

[83] Stability and Growth Pact.

over also to other union members. However, other negative impacts of irresponsible fiscal policy are also significant. Excessive increase of government expenditures creates demand pressures and accompanying inflation pressure in economy. In such case the monetary policy, which is price-stability-oriented (or exchange-rate-stability-oriented), is incredible.[84]

Although the European system of central banks does not allow for financing by central banks, without additional rules a responsible fiscal policy will not be guaranteed. Clear and enforceable fiscal rules and contractual obligations for their observance are necessary.

Within the euro area the exchange rate risks do not function as an instrument which would discipline the lending of individual government by immediately increasing the costs of their debts. Financial market cannot directly sanction loosened fiscal policy and its costs pass on other members of the euro area (governments, households and also enterprises). Even for highly indebted countries the risk premia against other euro area countries debts are almost negligible. This facilitates lending. There occurs a risk of „free riding" – implementation of bad fiscal policy without bearing all of its consequences.

Another reason in support of fiscal rules consists in the stabilizing function of fiscal policy in the course of economic cycle. Under certain circumstances, if there is enough scope, fiscal policy can function as an automatic stabilizer (it mitigates cyclic fluctuations in economy). A precondition for such functioning is that fiscal deficit created in the course of economic cycle is not so high that its reduction would require discretionary interventions. Discretionary fiscal policy is, as a rule, less effective, it is more difficult to time its measures and estimate its effects, and its effects are usually pro-cyclic. In order to make automatic fiscal stabilizers work the level of fiscal deficit must be on average low enough or close to zero during the cycle so that the fiscal deficit could be maintained within acceptable limits also during the recession.

SGP fiscal rules

Fiscal rules must meet certain conditions in order to become effective. They must be adequate. Their application should not represent an inappropriate burden or restriction for economy. They must be consistent enough to support confidence in fiscal policy. They must be flexible enough to enable adoption of measures in urgent situations; otherwise there is a risk that governments will tend not to abide by them. They must be simple enough to make possible their supervision, however, not too simple to avoid in their application frequent contradictions with complex economic reality.

SGP involves 25 EU countries. This requires from it to respect differences of their economies, and at the same time, to guarantee equal treatment within enforcement of the rules. It may not be in conflict with sovereignty of individual countries.

SGP itself has been designed as a two-pillar Pact. The preventive arm consists in the setting of appropriate fiscal goals and in adoption of convergence program, or respectively the stability program which ensures the achievement of such fiscal goals. Fiscal goals should ensure sustainable indebtedness, which in fact means aiming closely at balanced budget.

The corrective arm of the SGP solves the situations when fiscal policy has diverted from the set goal and requires a correction. The discipline within the corrective arm of the SGP is ensured by the rule of maximum 3 % deficit and the procedure of excessive deficit.

[84] An example of such conflict in out country was incompliance of expansive fiscal policy with restrictive monetary policy before monetary crisis in 1998.

Common monetary policy and political union

Economic and monetary union is built on non-homogenous fundaments. Monetary policy in the euro area is centralized with explicit responsibility of the ECB. Fiscal policy is decentralized, but nevertheless the problems of coordination are to a certain extent covered by the Stability and Growth Pact. Furthermore, the European Commission has certain although limited options to implement fiscal transfers and through the structural funds to support regions affected by negative shocks. Other economic policies are, however, almost exclusively at the national level with a very low level of coordination.

From a long-term perspective the stability of the monetary union will be endangered unless a stronger political union is established. The achievement of a common position of all EU countries currently means a very complicated and long-lasting process. One day, however, a very significant asymmetric shock will affect the euro area, which will require a sharp response.[85] The EU is currently unable to react rapidly and vehemently, which is proved by the failure and subsequent reform of the Stability and Growth Pact, or non-adoption of the European Constitution by France and the Netherlands.

The question of a closer political integration is not an urgent problem of the euro area. It can function in its present form for many years, even decades. For a long-term stability of economic and monetary union, however, it will be necessary to create a mechanism of fast decision-making in crisis situations, possibilities for effective correction of asymmetric shocks by fiscal transfers and to strengthen coordination of structural policies.

Box 11 Is Maastricht criteria fulfillment a burden for the economy?

At the time when regular evaluations of the preparedness of the current new member states for accession to the EU (based on Copenhagen criteria) started, there appeared concerns that the next logical step of the integration process – the fulfillment of Maastricht criteria along with related stabilization efforts leading to inflation decrease and consolidation of public finance – might endanger the economic growth. Within the convergence process leading to entry to the monetary union nominal convergence may cause economic costs for a short-term period, but in medium- to long-term horizons it supports real convergence.

An important element of decision-making on inflation involves the decision-making on disinflation strategy promptness. Permanent decrease of inflation should be repaid by the temporary product decrease. Too fast decrease of inflation may evoke defects of real economy through evoking product decrease within a short period of time and thus evoking recession. The dilemma – low inflation or economic growth – should respect natural threshold for the reduction of inflation. At present the research observations,[86] saying that the inflation exceeding a certain threshold is harmful to economic growth, are widely accepted. Apart from the costs of high level of inflation alone the economy has to bear also the costs of high volatility of inflation and thus generated uncertainty in decision-making by economic agents. The efforts aimed at reducing inflation under such threshold are also harmful to the economic growth. Such optimum inflation rate for developed countries ranges between 1 – 3 %.

Disinflation monetary strategy depends on the existing transmission mechanism of the monetary policy. The central bank has to consider benefits and costs of a particular strategy and the trade-off between inflation volatility, on the one hand, and volatility of other variables – product, output gap (losses of the performance of economy versus its potential), interest rates, trade deficit, on the other hand. The study on these issues for the Czech Republic[87] shows that fast disinflation achieves better results with regard to output gap, but at the price of higher trade deficit, and slow disinflation resulted in high output gap with low trade deficit.

[85] From historical viewpoint all monetary unions not accompanied by close political integration were disintegrated after very serious shocks, e.g. after war.
[86] E.g. Bruno and Easterly (1998), Barro (1996).
[87] Mahadeva and Šmídková (2001).

A priority goal of consolidation of public finance is to ensure its long-term sustainability. In the theory and also in practical economic policy we can encounter two opinions on short-term effects of fiscal consolidation on economic growth. Keynesian approach says that fiscal consolidation associated with reduction of expenditure has a negative effect causing a short-term contraction of demand and economic activity. More recent non-Keynesian approach says that the effect is positive, because a fiscal restriction changes economic agents expectations on their future income and wealth (which increases, not decreases demand) and/or increases labor market effectiveness and competitiveness of economy (thus increasing demand).

Non-Keynesian effect of fiscal consolidation has been identified, e.g. in ECB study[88] where with respect to the new EU member states a positive contribution of fiscal consolidation to the acceleration of output growth in a short time horizon, in particular through export growth, has been ascertained. Other empirical studies[89] trying to identify relationships between GDP and the consolidation of public finance with the help of a financial multiplicator revealed that at the beginning of the consolidation losses in GDP occurred – even though low – and later on the impacts on GDP were positive.

The costs of nominal convergence to the euro area – in particular the costs of reduction and consolidation of public finance – are associated mainly with credibility of the whole process. It is influenced both by the quality of the proposal for the strategy of disinflation and consolidation and in particular by confidence of economic agents and domestic and foreign markets in the commitment of the government and central bank to actually implement that strategy. Credibility of the whole process means, inter alia, that the disinflation strategy will become a guidance for the formation of inflation expectations and that inflation expectations have a strong influence on price decision making. It also means that confidence in the process of consolidation of public finance affects also long-term expectations and interest rates and enhances the process of consolidation by reducing the costs of funding the deficit and government debt.

Direction of the Slovak Republic towards the euro area is not an end in itself. Although our direction towards the euro area can be considered advantageous for the economy, the steps to be taken in connection with it and possible costs of such process are necessary anyway. Disinflation and fiscal consolidation are the preconditions for the stable economic environment, reduction of financial and exchange rate risks and for the provision of long-term sustainability of public finance. The reforms associated with that should have to be implemented regardless of our decision to join the euro area. It is more advantageous for the economy when such reforms are implemented within the program of Maastricht criteria fulfillment which ensures a consistent framework of the entire process.

In the case of inflation criterion there is a possibility that its fulfillment at certain time will be very demanding for the economy. Under certain circumstances the reference value of inflation criterion may be very low, and simultaneously the Slovak inflation may be in consequence of, e.g. external shocks (high prices of oil, energy supplies, foreign demand shocks etc.) high. In such case the fulfillment of the inflation criterion would require significant increase of interest rates, which would be, however, at the price of the loss of economic growth. The occurrence of the situation when postponement of the deadline for the fulfillment of Maastricht criteria will be more advantageous is therefore possible, however, very improbable.

5.7 Does economic literature perceive euro area as an optimum currency area?

Basic theory of optimum currency area

Optimum currency area (hereinafter referred to as OCA) means a group of states whose economic shocks are of symmetric nature, or which have at their disposal alternative

[88] Rzonca and Cizkowicz (2005).
[89] Briotti (2005).

mechanisms for elimination of asymmetric shocks in the case when such states irrevocably mutually fix their exchange rates. Bases of the theory of optimum currency area have been founded by Mundell (1961) and McKinnon (1963), including important extensions to which in particular Kenen (1969) and Krugman (1991) contributed.

Basic Mundell's question arose from the discussion on advantages of flexible versus fixed exchange rate in the environment of Bretton-Woods system. It included the identification of economic effects of permanent fixing of a nominal exchange rate between currencies of two countries, i.e. whether and when it is advantageous for the two countries to abandon their monetary autonomy. The initial version of OCA theory assumed low international mobility of capital and rigid wages and prices. Based on that it identifies an optimum currency area as such within which labor force is perfectly mobile.

After many amendments the OCA has become a complex theory associating and mixing various aspects of international macroeconomic processes. Within OCA theory various authors emphasize various criteria:

- price and wage flexibility (Friedman, 1953),
- mobility of factors of production, including labor force mobility (Mundell, 1961),
- integration on the financial market (Ingram, 1962),
- economic openness rate (McKinnon, 1963),
- diversification of output and consumption (Kenen, 1969),
- integration in the fiscal area (Kenen, 1969),
- political integration (Mintz, 1970),
- inflation differential (Fleming, 1971),
- symmetry of shocks (Cohen and Wyplosz, 1989; Weber, 1990; European Commission, 1990).

Views on monetary integration in terms of OCA theory

The largest number of studies, which tried to quantify monetary integration process, was carried out in the 90s after the conclusion of the Treaty in Maastricht where convergence conditions and the path towards establishment of common currency had been laid down. The results of various quantitative approaches and methods pointed out to the existence or non-existence of an optimum currency area, by which they provided a wider base for discussions on the extent of the future euro area.

Based on OCA theory Taylor (1995) identifies the basic group of countries which create an optimum currency area and suitable for the membership in the euro area. He included Germany, Benelux countries, Denmark, Austria in this group, and as the case may be, also France. According to this study Spain, Portugal, Italy and Greece were included at that time into the second group.

Canzonieri et al (1990), based on VAR methodology, is seeking within a smaller group (Austria, the Netherlands, France, Spain, Great Britain and Italy) an answer to the question whether changes of the nominal exchange rate fulfill the role of an absorber of shocks of market deficiencies. The entirely negative answer to this question led the authors to identification of an internal basic group where Austria, the Netherlands and France can create a currency union with Germany. With regard to significance, Spain and Great Britain are slightly lagging behind this group, while Italy represents a really extreme case in this analysis.

Five well-known economic tests are aimed at assessing the advantageousness of euro adoption in Great Britain, It draws from OCA theory, however, simultaneously underlying limitations of the theory, in particular with regard to it backward nature, price adjusting

mechanism, importance of capital markets, focus on structural problems and consideration of the role of policies mix. It is clear from this document of the Exchequer (Ministry of Finance) of Great Britain that OCA has certainly a role in the assessment of euro area in the context of optimum currency area, but this theory should be perceived in particular as a conceptual basis with the scope for necessary extensions.

Artis and Zhang (2001) tested OCA criteria in EU countries (including Switzerland and Norway) with the help of cluster analysis. Their results were again similar to those achieved in other studies. They also identified a basic group clustered around Germany, and other countries were included into two peripheral groups: northern (including Great Britain and Ireland) and southern (including Mediterranean countries). Circumspection of individual countries (like Great Britain, Sweden and Denmark) with respect to euro adoption is partially underpinned also by the results of such studies. On the contrary, enthusiasm of Finland, Ireland and Mediterranean countries is the consequence of higher weight of economic and political benefits promised by participation in the euro area, but not taken into consideration in that study.

Regardless of the approach, the result of majority of studies is that before euro area establishment a basic group of countries existed which could be characterized as an optimum currency area, including Germany. However, at least a half of the current euro area members were identified as countries not constituting OCA along with the basic group.

Based on the results of those studies a question arises, namely to what extent non-homogeneity of euro area members may, from the viewpoint of OCA theory, endanger the sustainability of the monetary union, and to what extent is, within the meaning of OCA theory, common monetary policy suitable for its individual member states. It is also questionable to what extent this problem is of interim nature as stated by endogeneity theory (Frankel and Rose, 1997).

Synchronization of business cycles and OCA endogeneity

There are two contradictory views on the relationship between economic integration and synchronization of business cycle. De Grauwe (1997) defines them as a viewpoint of the European Commission and Krugman's viewpoint. According to the European Commission (1990) a closer integration leads to a lower risk of being affected by asymmetric shocks. This viewpoint is based on argument that international trade of EU countries is of intra-industry nature, and therefore tighter integration leads to harmonization of effects of shocks and to synchronization of business cycles among countries. On the contrary, Krugman (1993) using the example of the USA claims that closer integration leads to a higher regional concentration of industries (economies of scale), and thus the growth of trade results in divergence of the output structure among countries, and hence to a higher risk of being affected by asymmetric shock.

Frankel a Rose (1997, 1998) intervened into ambiguous interpretation of economic theory in this field arguing that trade links result in the convergence of business cycles, i.e. that the composition of international trade and correlation of business cycles among countries depend on the existence or non-existence of a monetary union (they are endogenous) and that any monetary union will create ex post an optimum currency area (this implicitly proves that examination of historical time series gives a deformed picture of the capacity a country to join the monetary union, because OCA criteria are endogenous). Most of the empirical studies justify the findings of positive correlation between intra-industry trade and synchronization of business cycles, but it does not justify the correlation itself between the growth in trade and harmonization of business cycles (e.g. Fidrmuc, 2004).

Babetski (2004) confronts these contradictory views by estimation of coefficients of asymmetry of deferring supply and demand shocks and indicators of intensity of trade and exchange rates. Findings of this study prove that the growth of trade leads to a higher symmetry of demand shocks and the effect of integration on asymmetry of demand shocks varies from country to country. Moreover, a decline of exchange rate volatility has s positive impact on the convergence of demand shocks. He comes to the conclusion that the development of demand shocks is in compliance with the viewpoint of the European Commission which followed from the discussion on OCA, and he says that international trade reduces asymmetries among countries. In principle, however, he supports Kenen's argument (2000) that the impact of economic integration on asymmetry of shocks depends on the type of shocks.

Views on the euro area as an OCA

From a global perspective Artis et al (1998) identified four large optimum currency areas in the world on the basis of two OCA criteria (high rate of bilateral trade and symmetry shocks). One of them covers almost the whole Western Europe. The identification of a currency area tends to characterize the area as a geographic area, which contradicts to the fundamental Mundell's definition.

On the other hand, Ghosh and Wolf (1994) found only a little correlation between geographic vicinity and grouping of countries into optimum currency areas. Their model gives evidence of the fact that by the limitation of monetary unions to a geographical basis high costs associated with the adoption of a single currency occur. Their study concluded that while a single currency for the whole world would bring about prohibitive high costs, based on the aforesaid finding neither Europe, nor the United States form an OCA, because the costs of introduction and maintenance of a single currency exceed the savings of transaction costs.[90]

The perception of euro area as an optimum currency area is focused mainly on the question of asymmetry of shocks. That is to say, in terms of OCA theory the asymmetry of shocks represents an essential factor for the choice of the mode of exchange rate. The main issue in question is whether the euro area members and candidates for membership in the euro area are regions where country specific idiosyncratic shocks exist, or whether they are regions where shocks have similar impact on all countries.

Bayoumi and Eichengreen (1992) summed up correlation coefficients between individual pairs of countries where they identified lower supply shocks and higher demand shocks between USA regions than between EU countries. However, they also found out that interregional correlations for both types of shocks were higher than correlations between countries, which indicates that USA regions were closer to an optimum currency area than EU countries. In their more recent paper Bayoumi and Eichengreen (1997) extended criteria and identified three groups of countries according to their suitability for participation in the euro area. They identified a basic group of fully convergent countries around Germany which included Austria, the Netherlands, Belgium, Ireland and Switzerland, but France. Then they identified second converging group which included in particular Mediterranean countries, and the third non-converging group which included Great Britain, Finland, Denmark, Norway and France. Drawing from a similar study with different data[91]Whitt (1995) has shown that

[90] They estimate the costs of common currency in the euro area to 2.5 % GDP per year. For three currencies within the euro area (which correspond with three groups of currency areas identified in majority of studies) they estimate the costs to less than 1.5 %GDP per year.

[91] Instead of the real GDP and deflator GDP he used monthly data on industrial production and price index.

France, Italy and the Netherlands achieve high enough coefficient of correlation of shocks against Germany.

Bofinger (1994) points out that OCA is not an ideal concept for the assessment of euro area, in particular on the grounds of unrealistic assumptions, narrow concentration on asymmetric real shocks and imperfection of predictive characteristics of the changes of real exchange rate in the past into real shocks in the future. Therefore, he introduced the monetary approach to OCA theory in which he analyses the suitability of the monetary union in terms of effectiveness of the monetary policy. He comes to the conclusion that euro area achieves better results in terms of credibility, capability to respond to asymmetric shocks[92] and effectiveness of monetary goals and instruments than the national monetary policy.

Chamie et al (1994) categorize shocks as shocks arising on the part of the real demand, real supply, and as nominal shocks within VAR system with growing output, prices and money supply.[93] They come to the conclusion that within Europe symmetric components of shocks are sharply correlated only in Germany and Switzerland.

On the other hand, Bayoumi and Prasad (1995) by comparing eight USA regions with eight selected EU member states provided evidence that the relative dependence of overall specific shocks originating from a certain sector, region or a certain country on volatility of output growth is approximately the same in both Europe and the USA.

Recently many studies analyzing optimum level of the currency area with regard to the new acceding EU countries have appeared. Horvath (2000) pinpoints that idiosyncratic shocks exist both in the current euro area and in the new EU25 member states. On the contrary, Fidrmuc and Korhonen (2001) show that the correlation of demand shocks varies from country to country, however, some new EU25 member states are at least as well synchronized with euro area shocks as the euro area member states. Frenkel and Nickel (2002) come to the conclusion that there are significant varieties of shocks and adaptation mechanisms against shocks between the euro area and new EU25 member states.

Babetski et al (2002) measure deferring correlation instead of measuring correlations of shocks. Their results highlight the process of convergence of demand shocks and divergence of supply shocks. Moreover, Babetski (2004) identifies the growing trade intensity and decline of volatility of exchange rate as sources of convergence of demand shocks, and he interprets such result as an argument of endogeneity of an optimum currency area.

Summary of OCA arguments

Large numbers of research tries to evaluate the euro area or its part in terms of the existence of an optimum currency area. A prevailing number of such sources came to the conclusion that only a certain part of the euro area meet the set criteria, whether classical criteria of OCA theory or the analysis of symmetry of shocks. The assessment of sustainability of the euro area in terms of the suitability of common monetary policy within the range of the theory of optimum currency area is, however, from the theoretical aspect confronted with the theory of OCA endogeneity which does not condition the common monetary policy by the existence of an optimum currency area. The applicability of this theory is, however, conditioned by the source of economic shocks.

[92] He claims there is no evidence of a reliable response of a flexible exchange rate to asymmetric shock. This argument follows from the fact that exchange rate depreciation does not always have a positive effect on output, and sometimes this effect can be also negative.

[93] Monetary shocks are achieved by introduction of restrictive long-term neutrality of money supply.

As already indicated by Frankel and Rose (1998) the indicator of trade intensity in time grows. It can be expected that in the era of globalization (i.e. after 1998) the growth of this indicator id of exponential nature. If we simultaneously take into account the conclusions of Babetski (2004) that asymmetry coefficients of demand shocks support the argument of endogeneity, according to which more intensive trade enhances the synchronization of business cycles (and hence, with closer integration countries tend to meet the criteria for the membership in the euro area ex post), with passing time and membership in the euro area a natural synchronization of business cycles and reduction of the probability of being affected by asymmetric shock can be expected. Darvas and Szapary (2004) even proved a significant synchronization of GDP and its components in the euro area countries since the date of its establishment. However, besides confirming the correctness of the theory of OCA endogeneity, the existence of business cycle of the world economy should betaken into consideration.

The OCA theory represents an intellectual basis for the discussion on a monetary union. As concluded by Willett (2001) and Horvath (2003) the OCA theory represents a basic approach when considering a mode of exchange rate. From practical aspect we cannot expect that based on the OCA theory we will obtain some quantitative criterion determining the suitability of abandoning monetary autonomy.

6. Economic Policies to Support Euro Adoption

Credible and consistent economic policies represent a cornerstone for the fulfillment of Maastricht criteria and for the progress of real convergence. In the course of accession process into monetary union the current euro area member states were successful due to the credible monetary, fiscal and pension policy, and also due to the implementation of certain structural policies in support of nominal and real convergence. The application of that system of policies contributed significantly to the credibility and positive expectations with respect to inflation and low interest rates. The achievement of the same situation in our conditions requires the consolidation of instruments and potentialities of individual policies, as well as their optimum combination.

The requirements for individual types of policies which should support overall economic and financial stability in the period before joining the euro area, in particular within ERM II, and also during the period after entry, have been dealt with in details by the document of the NBS and the Ministry of Finance of the Slovak Republic "Specification of the National Euro Changeover Plan for the SR".[94]

The fulfillment of Maastricht criteria, exchange rate stability around central parity without serious tension and instability of the economy in the course of functioning within ERM II and subsequent euro changeover and adoption of the ECB policy without destabilizing the economy require that the economy and its individual elements (institutions, markets, sectors) passes the development which:

- will enable nominal convergence through a sustainable mode within the meaning of Maastricht criteria;
- will support the stability of convergence process, the functioning of economy within ERM II and euro adoption, namely also by using automatic stabilizers;
- will support the stabilization of economy after a potential shock through the coordinated application of policies;
- will support the of economy after a potential shock through the flexible respond of institutions, markets and sectors of the economy.

Slovakia has been already meeting convergence criteria regarding the level of the government debt and the level of long-term interest rates. The achievement of the required nominal convergence requires first of all the consolidation of the budget so that we are able to maintain the deficit under the limit of 3 % GDP, reduction of average inter-annual inflation under the reference value at the time of evaluation by the EU Council and the exchange rate stability within ERM II.

6.1 Monetary policy

Monetary policy under standard conditions allows the central bank to create the environment for the sustainability of price stability. Under the conditions of a small, highly opened transition economy with liberalized capital movement, like the Slovak economy, the effects of the monetary policy are but limited despite the fact that the NBS can, in principle, still make use most of the standard instruments and procedures.

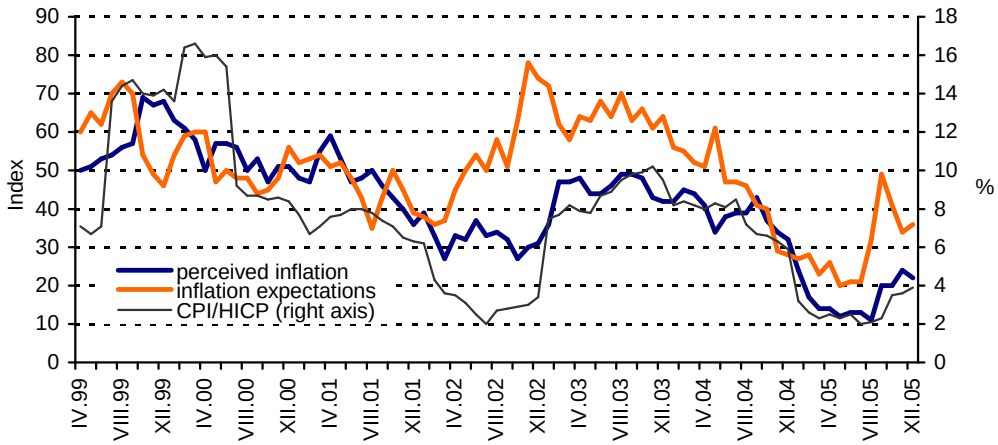
Under the conditions of a limited autonomy monetary policy has to solve a difficult question before entry to the euro area. On the one hand, long-term interest rates and inflation should converge to the euro area levels. Short-term rates should be also at the level close to that of the euro area so that immediately after joining the euro area (adopting the ECB rates)

[94] Approved by government decree No 678 of 16.7.2003.

a currency shock from a sudden liberalization of monetary policy could not occur. On the other hand, as a result of efficiency catching-up to the euro area the real exchange rate – and also nominal exchange rate (as the experiences of recent years prove) – both tend towards appreciation. A specific situation occurs – interest rates not allowing for interest arbitrage[95] result in low or negative real interest rates in Slovakia (Figure 26). Low real rates increase the risk of a credit boom and through it also the risk of domestic demand and overheating of the economy (for details see Part 6.5).

The current monetary policy of the NBS, since 2005 based on explicit inflation targeting, set the goal to enhance the implementation of convergence policy. The transition from implicit to explicit targeting of inflation has been enabled by the accomplishment of the largest price deregulations, significant improvement of transparency of fiscal policy, quality improvement of statistical data and the creation of a formal prognostic mechanism in the NBS. These changes allow better forecasting and influencing the future inflation. Another important reason for explicit setting of goals with respect to inflation is the intention of Slovakia to join the euro area at 1 January 2009. NBS will bear the responsibility for the fulfillment of inflation criterion in 2007, or respectively at the beginning of 2008. Because the reference value is constructed as a 12-month average of inflation HICP, the evaluation of inflation will involve also changes of price level in 2006. Therefore the NBS set inflation goals explicitly for the years 2006 to 2008. The objective of the NBS is the year-end value of inflation HICP to be under 2.5 % in 2006 and under 2 % in 2007 and 2008.

Figure 28 Indicators of price development in Slovakia



Source: European Commission – Business and Consumer Surveys, Eurostat.

Monetary policy of the NBS within ERM II

The entry to ERM II is the next stage of limiting the scope of influence of the monetary policy: inflation must converge to the area which means the fulfillment of the respective Maastricht criterion, and the exchange rate which is more important within ERM II must range within the defined fluctuation band without marked tensions.[96] For the achievement of inflation convergence the factors affecting it will have to be considered – effects of other

[95] I.e. a combination of currency trades utilizing the interest rate differential against foreign markets and the expected change of koruna exchange rate.

[96] Slovak koruna must move within the range of ±15 % around the central parity 38.4550 set with the effect from 28. 11. 2005; accordingly it has a fairly wide range of SKK/EUR 32.6868 – 44.2233. It will not be able to use the whole range of this band for the fulfilment of the condition for the exchange rate development without severe tensions, in particular in the depreciation area,

policies, in particular fiscal and wage policies, external effects, including also factors associated with the real economy convergence (Balassa-Samuelson effect). NBS will retain the authority to make use of short-term interest rates, but their use will have certain limitations.

During the stay of koruna within ERM II the scope and effect of administrative interventions against inflation will be considerably eliminated and other factor will come forward as determining for further disinflation. Besides classical ones, like costs (wage, energy supply, imported costs), these will involve in particular the nature of macroeconomic policy (in particular fiscal), mutual adjustment and arrangement of individual policies, rigidity on markets (e.g. on the labor market), the level of competition in some sectors of economy, external shocks. However, factors related to the catch-up, which cause Balassa-Samuelson (B-S) effect, will continue functioning. A significant role for disinflation will be played by (dis)inflation expectations, which consists in particular in reducing economic costs of disinflation.[97] For instance, in Greece, Spain, Italy and Portugal their direction towards the euro area, and thus created confidence in low-inflation goals, had a positively impact on wage discipline, pay negotiations and labor cost. Another example involves agreements concluded between the government of Slovenia and the representatives of the trade unions of public administration and the private sector on more flexible (moderate) wage development for 2004 – 2006, i.e. for the period of the membership of Slovenia in ERM II.[98] The reduction of inflation depends also on the capacity of monetary policy to considerably affect (or possibly also change) old habits and behavior of economic agents. The experiences of many euro area countries show that the membership in ERM/ERM II itself stimulated accelerated disinflation.[99]

Since along with inflation the NBS bears responsibility also for the stability of the exchange rate of koruna in the Exchange Rate Mechanism ERM II, the NBS has not defined its monetary policy as pure inflation targeting, but rather as inflation targeting under the conditions of ERM II. It practically means that NBS in its decision making takes into account also the exchange rate development. In the case when the exchange rate development is not stable enough, the NBS will have to make efforts to stabilize it first by verbal notices and if necessary also by exchange interventions. If even direct interventions were no sufficient, NBS might also undertake changes of its interest rates. A significant fluctuation and volatility of the exchange rate represents in the last resort one of the exceptions for non-fulfillment of the inflation criterion. If the exchange rate development is in compliance with the development of economy, the monetary policy will function as in the regime of standard inflation targeting.

For the purpose of achieving simultaneously both price stability and exchange rate stability and in order to avoid any conflict between those goals, the NBS will have to carefully undertake the changes of the monetary policy setting and their communication to experts and lay public. Because these goals may come into conflict which the monetary policy alone may not be able to solve, the orientation of other economic policies will be very important. Monetary policy must be supported by fiscal policy, but also structural policies and labor market policy which respond, however, relatively slowly. Correctly set structural policies may function as prevention against the occurrence of conflicts between inflation and exchange rate targets.

[97] Costs of disinflation are usually measured by a decrease of the product or slowdown of its growth.
[98] Banka Slovenje (2003)
[99] It has been clearly manifested in the countries which had high inflation in the past, like Greece, Spain and Portugal.

Monetary policy should also correct more significant short—term deviations of the exchange rate from its equilibrium trajectory caused by speculative movements of capital. NBS can use also interventions on the exchange market in support of the stability of the exchange rate. Participation of the ECB in interventions (at the limits of fluctuation band) is very important because it can discourage unjustified speculations against koruna and thus prevent hampering the fulfillment of both exchange rate and inflation criteria.

Besides NBS monetary policy instruments and participation of ECB in interventions the disinflation strategy and stability of the exchange rate will be supported also by a credible mix of other domestic policies, as well as by effective functioning of the financial sector.

Stability of the exchange rate might be negatively affected by a potential break in the capital movement (in particular short-term capital). A substantial elimination of such risk is possible namely by an entry into the monetary union. Benefits of a fixed exchange rate in this respect will outweigh the disadvantage of the loss of independent monetary policy of the NBS also in the case of Slovakia. Therefore, this fact is one of the main motives for early euro adoption and transfer of the implementation of the NBS national monetary policy to the ECB common monetary policy.

6.2 Fiscal policy

In the forthcoming years fiscal policy will play a crucial role in maintaining the economic stability. During the period of proceeding to the euro area it will have to:

- ensure in particular nominal convergence – consolidation of public finance and sustainable fulfillment of the criterion for general government deficit and government debt;
- support monetary policy in the fulfillment of inflation criterion;
- support stabilization of the real economy development in the case of occurrence of internal or external shocks.

Although the performance of such tasks will not fall exclusively under the scope of fiscal policy, it is obvious that even before euro adoption the requirements on it will grow. After joining the euro area the role of the fiscal policy will become even more important since in the case of asymmetric shocks it will have to (in collaboration with structural policies) replace stabilization functions of the NBS monetary policy as the European Central Bank will assume the execution of monetary policy.

The fulfillment of the deficit criterion is sustainable when in the course of a business cycle the general government deficit does not exceed the limit of 3 % GDP with free functioning of automatic stabilizers and normal fluctuations of economic activity. Under the conditions of the Slovak economy a structural deficit under 2 % GDP should be sufficient for the sustainable fulfillment of the deficit criterion in the medium-term horizon.

However, there applies the principle that responsible fiscal policy should aim at the achievement of a long-term sustainability of public finance. In fact this requires that public finance gradually proceed to balanced budget. The Convergence Program of the Slovak Republic for 2005 to 2010 (CP) confirms the determination of the government to achieve this objective, and it set the goal for 2010 to reduce the general government deficit under 1 %. That would make way for free operation of automatic stabilizers without a threat that fiscal deficit would exceed the critical threshold of 3 %.

The problem of budget consolidation

The consolidation of budget situation has been taking place at quite a high rate for several years. It accelerated in 2003 – 2004 as a part of a consistent strategy based on structural

reforms and whose objective is the fulfillment of the conditions for entry to the euro area. Current level of the deficit of the government budget (3.1 % GDP in 2004, ESA 95) is, however, still higher than the reference value of 3 %.

The consolidation of budget is based mainly on fast economic growth. It allows for increasing the ratio of the deficit to GDP without reducing real expenditure. The Convergence Program anticipates that the ratio of budget revenues to GDP will stabilize roughly at the level of 37 %. High economic growth rate (on average about 5.7 % per year[100] in the medium term horizon) will enable the achievement of the necessary reduction of the deficit at the rate of at least 0.5 % GDP per year[101] even with the real growth of budget expenditure.[102]

A certain problem of budget consolidation involves uncertainty with respect to the volume of costs of pension reform. After launching the capitalization pillar in 2005 it appeared that more insured persons engaged in it than initially anticipated. It means redirecting of a larger part of contributions into private pension insurance companies and higher drop-out of revenues. With regard to uncertainty about the number of insured persons who will decide to join the second pillar (they can decide until half-year 2006), which directly determines the amount of costs of the reform, fiscal goals for 2005 – 2006 had been set in the form of the general government deficit excluding the costs of pension reform.[103]

The objective with regard to deficit was set for the year 2007 at the amount of 3 %GDP, including costs of pension reform. A certain reserve for the fulfillment of this goal is represented by the revised Stability and Growth Pact which allows for counting 60 % of revenues of the second pillar into the sector of public administration (under the conditions that the amount of deficit is close to the reference value) in the case of unexpected effects.

Cyclic development of budget and risks of exceeding deficit threshold

Aiming at the balanced budget may seem to be a pretentious goal for public finance. This goal formally stems from the obligations under the Stability and Growth Pact. The real reason for the targeted reducing of the deficit is the achievement of a long-term sustainability of public finance. Of course, economic fluctuations may deflect the level of deficit against its structural level in both directions. If we want a guarantee that despite such fluctuations the budget deficit will not exceed the threshold (3 % GDP), it is necessary that the structural deficit in the long-term average ranges under this threshold or directs to an equilibrium position. Furthermore, it is necessary to have in mind that the measurement itself of such fluctuations and their anticipation is difficult and inaccurate with regard to the result of the budget.

The determination of budget development in the course of a business cycle is based on the knowledge of how the budget responds to the (cyclic) development of the economy. It usually stems from a simplified assumption that budget revenues change linearly with the changes of the Gross Domestic Product and that their response is immediate without any time shifts. Cyclic movement on the side of expenditure is associated with the changes of some components of expenditures. For instance, social benefits or pensions paid react to the development on the labor market, in particular to unemployment. Other components on the

[100] Medium-term prediction of the NBS (P1Q-2006) dated January 2006 anticipates in the period from 2006 to 2008 the GDP growth at the level 6.2 %, 6.9 %, and 5.1 % respectively.

[101] Revised Stability and Growth Pact requires the countries, which has not yet achieved their medium-term goal, to reduce their structural deficit in such rate.

[102] High growth rate of economy allows even – with maintained real volume of expenditure – a decrease of budget deficit by up to 1.5 % GDP per year.

[103] This approach complies with Eurostat Decision on the introduction of transition period for the implementation of the Decision on classification of pension systems until March 2007.

side of expenditures are usually determined autonomously and they have no direct relationship with the development of economy, accordingly the do not have a cyclic nature.

Product variability in the course of a business cycle in Slovakia ranges within the interval 1 – 2 %. The elasticity of overall budget revenues per product is less than 1, we estimate it to 0.8 – 0.9. It means that cyclic fluctuations on the side of budget revenues should range between 0.3 – 0.7 % GDP.[104]

The reaction of employment rate to the economic growth of Slovakia is rather weak. The economic growth is underpinned predominantly by the growth of overall productivity of factors of production, and therefore high growth of economy increases employment rate only to a small extent, and vice versa, slowdown of the growth has less impact on the employment rate than in the developed EU countries. Moreover, high unemployment rate in Slovakia is mainly of structural nature and payments of a large proportion of benefits are of permanent nature (linked to the high proportion of long-term unemployment). Business cycle has certain impact on expenditures of the Social Insurance Company. Changes on the side of expenditures of the budget in the course of a business cycle are relatively small in our country. We estimate the relevant impacts on budget expenditures to 0.1 to 0.2 % GDP.

We estimate overall impact of a business cycle on the budget deficit within the interval of 0.4 – 0.9 % GDP. We consider more probable rather the values not exceeding 0.5 % GDP.

Budget as an automatic stabilizer of shocks

If, on the one hand, it is possible that cyclic fluctuations of the budget will not be extensive, it means, on the other hand, that budget will play the role of an automatic stabilizer only to a limited extent. In the period of boom only a small volume of additional resources is drawn from the economy to the public budgets through higher taxes and contributions, and in the period of recession only a small volume of additional resources is released to the economy through lower taxes, social system and unemployment benefits (we estimated the overall impact to less than 0.5 % GDP). In terms of the stability of real economy it is important that Slovakia as a very open economy does not absorb such stimulus in internal economy – a prevailing part, approximately 60 – 70 %, of the fiscal stimulus is absorbed within import.

A disadvantage of weak automatic stabilization through the budget is that one instrument for the stabilization of economy will not be effective enough. Economic policy must envisage such fact. In connection with entry to the euro area not only the completion of budget consolidation will be required, but it will be necessary to create the scope for discretionary interventions of the fiscal policy in the case of occurrence of unfavorable shocks. It will be therefore necessary to consider the strengthening of automatic stabilization by appropriate measures.

Overall evaluation of the sustainability of budget development

We anticipate that even in case of possible negative shocks and slowdown of GDP growth the growth should not decline under 2 – 3 %. Output variability due to the effects of short-term shocks or a longer lasting slowdown of the growth of economy should not exceed 2 – 4 % GDP, and hence the fluctuations in the budget deficit arising from it should not exceed 0.8 to 1.8 % GDP. We expect that fluctuations in economic activity will be rather lower than 2 % GDP and the impacts on the budget should not then exceed 1 % GDP. That means that if we manage to reduce the general government deficit under 2 % GDP, the excess over 3 %

[104] 0.4*(0.8 to 1.8)% = 0.3 to 0.7 % GDP, where: 0.4 is the ratio of budget revenues to GDP,
1 % GDP fluctuation * elasticity 0.8 equals 0.8;
2 % GDP fluctuation * elasticity 0.8 equals 1.8

threshold in the course of the cycle or in consequence of normal fluctuations of the economy is rather improbable. If we reach the position close to the balanced budget (deficit under 1 % GDP), the excess over 3 % threshold of the deficit is highly improbable.

Short-term or several years lasting slowdown of the growth of economy and/or deep cyclic fluctuations represents the most serious potential risks for the consolidation of public finance. The variation of economic activity with regard to the trend may have the character of a standard cycle, or it can involve a several years lasting slowdown of the growth of economy. However, possible worsening of the budget deficit should not, however, endanger proceeding to the balanced budget. After the achievement of approximately balanced structural budgetary position the cyclical fluctuation of budget should not pose a threat with regard to the maintenance of budget deficit under the threshold of 3 % GDP or in terms of sustainability of indebtedness.

An accelerated budget consolidation can be considered, namely when the economy grows faster than envisaged by the Convergence Program. In such case it will be desirable to be mindful of the observance of budgetary discipline, otherwise the structural deficit might become worse. The resources beyond the framework of the agreed budget should be preferably used to reduce the general government deficit.

Government debt

The consolidation of public finance is also a precondition for the sustainable development of the government debt. The fulfillment of the criterion for government debt is sustainable if in normal fluctuations of economic activity the indebtedness rate does not exceed the threshold for indebtedness (60 % GDP). A stricter condition for debt sustainability requires that with free functioning of automatic stabilizers and normal fluctuations of economy the rate of indebtedness does not increase in the long run. In our conditions a sustainable fulfillment of the criterion for the general government deficit should be sufficient for the sustainable fulfillment of the criterion for government debt. Fast growth rate of the potential of economy (5 % and more in stable prices) will enable not to increase the indebtedness rate above approximately 35 % GDP in the forthcoming years if we fulfill the deficit criterion in a sustainable manner.[105]

6.3 Structural policies

Structural policies may enhance the fulfillment of Maastricht criteria and support nominal and real convergence in two main directions. The first one involves structural reforms (reform of public finance management, tax reform, reform of health service and social system) which increase the effectiveness and adaptability of the economy and thus create favorable conditions for the creation of job opportunities and increase of growth and simultaneously bring about fiscal effects to support budget consolidation. The second one involves development policies focused on more effective support of the development of knowledge economy. The Government of the Slovak Republic has defined in this sense its strategy of the competitiveness of Slovakia (National Lisbon Strategy).[106]

Slovakia adopted several laws which significantly change the philosophy on the side of public finance expenditure. In the medium-term or even long-term horizon the reforms should bring

[105] In the long-term prospects, however, the effects of demographic changes should be taken into account, which will be manifested in aging of the population. This may result in a situation when we will pay the costs of transformation of the pension system in conditions of slower economic growth. The Program for the consolidation of public finance provides enough scope for the sustainable fulfilment of the debt criterion.
[106] MF SR, Strategy of competitiveness until 2010, February 2005

about also savings. Their benefits should not be seen only in the savings of budget expenditures. There are other areas (education, science and research, infrastructure) where, on the contrary, the expenditure should be enhanced in order to achieve desirable effects – the development of human capital, support of productivity growth and competitiveness of our country.

Investments in science and research in Slovakia compared to the EU15 average are very low. Yet, a systematic training and implementation of innovations in practice are the main preconditions for sustaining the competitiveness of a country. In this area the National Lisbon Strategy sets out to implement a system of financing supporting high quality scientific work of scientists and research institutions and strengthening the connections between research, university education and corporate sector.

Therefore, appropriate attention should be paid to the conditions supporting the development and improving business environment. Better law enforcement, easier access of small and medium-sized enterprises to financing and reduction of administrative burden of business rank among the most needed preconditions in this context.

6.4 Labor market

Besides flexible economic policy a key role in the monetary union will be played by the flexibility of the markets of factors, in particular labor market. A critical consequence of any economic instability consists in effects on employment rate. They will be more moderate if the instability in the development of economy is promptly eliminated or suppressed so that it not directly translated into higher unemployment rate. On the other hand, it is very important for the labor market to be able to absorb fast growing demand for labor force of a specific nature which can occur as a result of fast growth of economy, and that without any accompanying wage inflation pressures. Yet, such functioning of the labor market must respect the applicable rules of cross-border movement of workers.

After joining the euro area the Slovak economy will be exposed to potential shocks which are currently partially absorbed by the exchange rate and which are eliminated by the monetary policy. Therefore it is necessary to know to what extent the labor market in Slovakia is prepared for such new situation.

This involves in principle the assessment of certain characteristics of labor market flexibility, including the following:

- flexibility of wages (their nominal and real flexibility,
- mobility of labor force (flexibility of labor force reaction to the situation on the market, scope of migration of workers for jobs),
- functioning of the institutes of labor market – adjustment of legislative environment regulating labor demand and supply),
- absorption of shocks (capacity of wages to absorb short-term shocks to the prejudice of unemployment).

Employment growth is currently contributing to reducing unemployment. The dynamics of contributions to employment growth is decreased to a certain extent by simultaneous growth of labor supply.[107]

Labor market in the Slovak Republic is burdened with some structural problems. The unemployment in Slovakia is characterized by a high and growing proportion of the long-term

[107] This regards in particular the effect of retirement age extension resulting from the pension reform and demographic development.

unemployment in the overall unemployment.[108] Thus, in reducing the overall unemployment in the Slovak Republic the short-term unemployment is involved. A large group of unemployed remains compact and to a large extent it becomes unemployable. Only in regions with developed economy the capacity of immediately usable labor force is to a large extent used or very low. Accordingly, the employment growth draws here from migrating labor supply and from a much smaller group of long-term unemployed persons.

Wage flexibility

It is the response of wages and employment rate to a possible disequilibrium that will decide on how the labor market will fulfill its stabilization function in the case of demand or supply shock. The problem consists, in particular in the direct dependence of wages on last inflation. Wage growth embodied in collective agreements of enterprises in Slovakia is not usually indexed, but in fact it is to a large extent influenced by past or current inflation rate and wage growth in the past periods. Then, the outcome of enterprises and the growth of labor productivity are usually reflected in remunerations (bonuses) of employees for a current period. The growth of wages linked to the growth of labor productivity represents in terms of economy the most acceptable form of wage agreements with regard to wage flexibility. It can be expected that with the inflow of foreign investment in particular this form will be applied more often.

Flexibility of real wages expresses their capacity to exert stabilizing influence on the economy hit by a demand or supply shock. It is in particular the flexibility of both real and nominal wages downwards which is important therein. Stabilization measures of fiscal policy of the past (e.g. from 199 and 2003) and the accompanying decline in real wages indicated that real wages in Slovakia can be characterized as sufficiently flexible. In the environment of high and volatile inflation 5 – 10 %) such flexibility, however, could have been the result of rigid or by past inflation evoked growth of nominal wages. It is exactly such growth of wages evoked by the past which was identified in transformation into the low-inflation environment in 2005 when the effect of wage requirements arising from high inflation of the past years was still felt. The low-inflation environment creates a different framework for the interpretation of the flexibility of wages, because their nominal flexibility becomes a precondition off the real flexibility of wages.[109] The nature of the nominal rigidity of wages should thus gradually change its form.

At present, nominal wages flexibility downwards in Slovakia is significantly differentiated with respect to regions and sectors. The analysis of the growth, or respectively decline in nominal wages under the classification by regions and sectors points out to a partial flexibility of nominal wages downwards. With higher unemployment rate and in sectors with higher proportion of contracts of part-time employment the growth of nominal wages is becoming limited and their flexibility downwards is growing.

Another dimension of wage flexibility is the flexibility of relative wages. It represents the capacity of wages to adapt to the market conditions in response to a change of demand or supply between individual regions, professions or industries, and it mitigates negative

[108] The number of the long-term unemployed (over one year) in absolute expression has been long on increase even in spite of overall decrease of the number of unemployed persons (according to VZPS).

[109] The high-inflation environment is less transparent for wage creation, because a real decline in wages can be partially evoked by a limitation of the domestic demand, while employees often cannot estimate the level of their demands so that they ensure the growth of their real wages. The achievement of such effect is in fact also the objective of the relevant fiscal measures. In low-inflation environment and consequent more credible inflation expectations wage creation will be determined to a larger extent by economic fundamentals, labour force demand and supply. The equalisation mechanism of the real wage should thus become more transparent.

consequences of discrepancies within the structure of demand and supply on the labor market.[110] It can be stated that relative wages in Slovakia are flexible. However, costs of transport and infrastructure, long-term nature and expensiveness of the education process, uncertain anticipated return on investment in a particular sector and other factors create barriers which yet partially limit the closing of wage differences caused by flexibility of wages. However, flexibility of relative wages may play an important role in the near future when free labor capacities in advancing regions are run out.

Labor force mobility

The level of labor force mobility is one of he preconditions of effective functioning of the labor market. The mobility of labor force depends on the benefit provided by the employment with respect to economic and social costs of commutation, moving and housing (cost of transport, prices on property market, easy accessibility of lodging etc.) and on incentives offered to encourage it. At present migration of labor force by moving is low in Slovakia, but it is markedly differentiated by regions.[111] Moreover, it is supposed that in Slovakia there is a high rate of unrecorded long-term commutation (inside the country and also abroad) which has no effect on the official statistics of the balance of moving for job opportunity.[112] Accordingly, the reported extremely low figures of labor force mobility cannot be perceived as a plausible handicap with regard to the rate of migration for jobs in the Slovak Republic in comparison with the rates achieved by the euro area countries.

In the medium-term horizon it can be expected that inside migration for jobs will slightly increase. This could, to a certain extent, fulfill the function of a stabilizer in the case of local asymmetric shocks. However, it will not be possible to fully rely on the stabilizing function of international labor force mobility in eliminating asymmetric shocks in respect of sectors in the medium-term horizon either, namely in particular for traditional reasons (similarly as in the whole Europe), language and cultural barrier.

Functioning of the institutes of labor market

Reforms of the social system, tax reform, as well as the amendment of the Labor Code supported flexibility of the labor market, in particular by enhancing the motivation to work. The amendment of the Labor Code brought in the Slovak labor market more flexibility,[113] and along with Act on illegal work they create a system fitting the European standards which also in comparison with many euro area countries ensures in principle a flexible institutional environment for the functioning of the labor market in Slovakia.

Nominal and real wages in Slovakia contain certain signs of rigidity, however, compared to the euro area countries they are on average more flexible.[114] Nominal wages, in particular, are characterized by a substantially higher flexibility downwards. Higher wage flexibility should

[110] In an extreme case of full flexibility of the relative wage the entire adaptation to the labour market would be carried out trough the change of wage differentials even in the case of zero mobility of labour force. Wage flexibility between individual regions, professions or industries would thus ensure balanced employment in such segments under otherwise unchanged conditions.

[111] Balance of moving being one of partial indicators of the population movement reached only 1.67 % in 2002.

[112] As regards migration for jobs abroad, this trend is confirmed by the data from Labour Offices from the EU countries which opened their markets to persons seeking jobs from the new EU member states. Similar findings are provided also by current information from VZSP on the employment of Slovak citizens abroad. With regard to internal migration, a growing trend is not statistically monitored due to Act on permanent residence, which does not reflect the actual situation of residents.

[113] For instance, extended rights of the employer to terminate the contract of employment, reduction of the period of notice and in some cases the implementation of flexible forms of part-time employment etc.

[114] Hagen and Traistaru (2004)

compensate the reported lower labor force mobility. These two characteristics of the Slovak labor market combined with more flexible institutional environment should be sufficient to prevent an increased risk of ineffective stabilization through the labor market after entry to the euro area should the economy be hit by a demand or supply shock. Moreover, it can be stated that the development of the conditions of labor market functioning in Slovakia directs towards its higher flexibility and capability to correct potential volatile impulses.

Although an ongoing high unemployment rate will apparently mitigate the need of making the labor market more flexible, measures to this end are inevitable, because qualitative and structural aspects of equilibrium will be still more prioritized on the labor market.

6.5 The role of financial sector

Liberalized financial market with free movement of capital may substantially compensate potentially insufficient labor force mobility or mitigate the impact of asymmetric economic shocks on individual regions. Capital movement towards unused and cheap labor force, and its use on the national territory allow for avoiding extremely negative effects of real and nominal shocks in the national economy within the monetary union on the economic activity, that is even in spite of the fact that the conditions for the movement of workers from Slovakia to the rest of the EU have not been yet fully liberalized. A precondition for such effects of the financial market is, however, its full and effective integration (Part 5.5. deals with the obstacles to integration). Preparation and entry itself to the euro area will further change the conditions of the functioning of the financial market (including banking sector) in Slovakia by eliminating the exchange rate risk within the movement of goods and services and capital between the euro area and the Slovak economy. We can therefore anticipate that competition, in particular cross-border competition, on the domestic financial market will further grow. At the same time, market area will expand and the allocation effectiveness and competitiveness of the domestic financial sector will be strengthened.

Accession to the EU has had for Slovakia a predominantly positive impact on internal financial stability. However, accession to the EU and euro adoption does not mean the solution of all problems with respect to the strengthening of financial stability for the new member states, but it may bring about also new risks. The risks quite often quoted which may occur after joining the euro area involve the risk of overheating the economy. The overheating of economy poses risks for the financial sector arising from the financial (lending) boom.[115] Although the current macroeconomic and financial indicators in Slovakia do not signalize the existence of such risks, we cannot exclude that we will have to face them more or less in the near future.

In order to mitigate, or respectively eliminate such potential risks it is necessary that the credit policy of the financial sector intermediaries strictly follows the prudential criteria. Prudence is important for the following reasons:

- Euro adoption and other factors (ongoing internationalization of financial sector, technological progress and financial liberalization) will further facilitate the movement of capital to and from the economy (financial sector) of the Slovak Republic. A growing financial integration may cause changes in the volumes and structure of capital flows.

[115] The overheating of the economy is the consequence of inadequate, excessive level of economic activity, above the potential. Macroeconomic reasons of overheating vary, e.g. excessive domestic demand (whether consumption or investment), or a demand shock. A specific risk is a credit boom. A credit boom represents a high, uncontrollable growth of credits compared to the long-term trend of credits.

- Entry to the euro area is associated with nominal convergence involving also a decline in interest rates to the level of euro area which enhance the accessibility of credits.
- An ongoing economic growth (real convergence) and in general improving economic situation may evoke optimistic expectations of the future development, and subsequently more willingness of economic agents to contract debts.
- Low effectiveness of monetary policy before joining the euro area and the loss of monetary autonomy after euro adoption limit the capacity of domestic policies to respond effectively to a business cycle.

Stability of the financial sector and general economic stability of Slovakia in the forthcoming period will be ensured by the following:

- Strong and sound financial institutions with good management and administration (corporate governance). They will exert pressure also on the standardization of corporate sector.
- Flexible and forward-looking and risk-diagnostics-oriented financial supervision. A good quality legal framework for financial regulation and supervision performance in compliance with best standards.
- Good legal framework regulating creditor rights in the case of bankruptcy and insolvency. This is closely associated with the need of effective work of courts in enforcing relevant rights.
- Adequate mix of macroeconomic policies, in particular fiscal and monetary policy which in its entirety should be slightly restrictive.
- Prudent wage policy and flexible employment policy on the labor market.
- Economic strategy focused on the building of a potential for sustainable economic growth which should involve the support of stable FDI as an important component.

6.6 Optimum mix of policies

Although the fulfillment of Maastricht criteria is not quite free of risks, they can be eliminated with the help of individual economic policies and their appropriate combination. Reduction of the effectiveness of monetary policy will require activation and coordination of other policies. After joining the euro area other policies will fully assume the stabilization tasks of the monetary policy of the NBS in order to eliminate potential asymmetric shocks which the common monetary policy of the ECB will not be able to take into consideration in its performance. The requirements, in particular on the fiscal policy will increase. Reforms on the labor market and flexible wage policy will have to be conducive to reducing the consequences of potential economic disequilibrium for the employment rate. Supervision over the financial market will have to counteract preventively and anti-cyclically the risks of the occurrence of excessive increase in prices of assets. In coordination with fiscal policy it will have to participate also in identifying and eliminating the risk of potential overheating of the economy.

Provided that through the combination of fiscal policy and other domestic policies a highly effective mix of policies is created, after entry to the euro area it should result in fast economic growth with sustainable fulfillment of fiscal criteria of the Stability and Growth Pact.

Summary of economic and political preconditions for the fulfillment of Maastricht criteria

The fulfillment of the criterion for the general government deficit is sustainable if in the course of a business cycle the deficit does not exceed the limit of 3 % GDP with free functioning of automatic stabilizers and normal fluctuations of economic activity. In our

conditions a structural deficit under 2 % GDP should be sufficient for the sustainable fulfillment of the deficit criterion. Fast growth rate of the economy and the implemented structural reforms create preconditions for public budgets consolidation in compliance with objectives of the Convergence Program. The planned consolidation is feasible also in the case of economic growth slowdown and with normal cyclic or other fluctuations in economic activity.

The fulfillment of the criterion for government debt is sustainable if in normal fluctuations of the economic activity the indebtedness rate does not exceed the threshold for indebtedness (60 % GDP). A stricter condition for debt sustainability requires that with free functioning of automatic stabilizers and normal fluctuations of economy the rate of indebtedness does not increase in the long run. In our conditions a sustainable fulfillment of the criterion for the general government deficit should be sufficient for the sustainable fulfillment of the criterion for government debt. Fast growth rate of the potential of economy (about 5 % and more in stable prices) will enable not to increase the indebtedness rate above approximately 35 % GDP in the forthcoming years if we fulfill the deficit criterion in a sustainable manner. In view of long-term horizons, however, we have to take into account the effects of demographic changes which will be manifested in aging of the population.

The fulfillment of inflation criterion requires that inflation in Slovakia in the year when Slovakia is to be evaluated will be under the reference value. This will be set by three EU countries with the lowest inflation.[116] The fulfillment of inflation criterion could be endangered in particular by the following situations:

- If the elimination of secondary effects of the most important price deregulations and price increase of energy supplies fails. It will be necessary to persuade the public of anticipated low inflation (to form low inflation expectations) and ensure that the anticipated low inflation becomes a cornerstone for the projects of budgetary expenditures, wages in public and private sectors, pensions and business contracts in general.
- If the pressures from Balassa-Samuelson effect are manifested excessively. Maintenance of low inflation and enforcement of low inflation expectations, in particular in the sectors with slow productivity and cost-effectiveness growth, will be crucial.
- If the exchange rate development turns towards depreciation. It will be therefore necessary to keep the interest of foreign investors to invest in Slovakia. The appreciation of exchange rate must be proportional to the performance of economy and it should not be based on instable foreign capital.
- If the efforts to prevent a credit boom potentially resulting in the overheating of economy in the evaluation period of Slovakia fail, and in particular in the case of failure to sustain in general restrictive mix of fiscal, wage, pension and monetary policy. It will be therefore necessary to plan budgetary expenditure, wages and other revenues in the economy so that their development in aggregate corresponds to the targeted low inflation.
- If an asymmetric shock causes a significant deviation in the development of inflation in Slovakia from other EU countries, or if the inflation criterion is made significantly stricter. Although significant negative effects (e.g. oil price shock, dollar exchange rate etc.) have partially symmetric impact on the economy of Slovakia and on economies of EU countries, the inflation goal for Slovakia was set with a certain

[116] The lowest positive inflation (not deflation) is considered as the best inflation, however, the countries with unusually low inflation can be excluded if they reach it due to exceptional circumstances.

reserve just in case of such (asymmetric) development. With regard to anticipated fast rate of the consolidation of public finance and overall restrictive mix of budgetary, wage, pension and monetary policy an asymmetric demand shock initiated from inside should not occur either.

- If during the evaluation period more considerable adjustments of regulated prices take place. The introduction of competition in network industries and simultaneous liberalization of prices should suppress such risks. For the purpose of compensating potential negative impacts it will be important that before convergence evaluation the Office for Network Industries Regulation will undertake the changes of regulated prices very transparently and plan them well in advance.

The fulfillment of exchange rate criterion will require the exchange rate to remain close to the agreed central parity without any serious tension and without devaluation of the central parity. In particular remaining longer in the depreciation zone for exchange rate fluctuation is considered as s manifestation of tension. The risks for the fulfillment of the criterion of exchange rate stability are as follows:

- Inappropriate loosening of the mix of budgetary and monetary policies,
- Sudden turn of the capital movement, in particular its outflow. Besides correct setting of the monetary policy and overall mix of policies, it is necessary not to lose credibility of the direction of the economy in order to prevent such turn.

The fulfillment of the criterion for (long-term) interest rates means that long-term interest rates in Slovakia will be higher than the criterion level, which is by 2 % higher than the average of long-term interest rates in three EU countries with the best results in the field of inflation. A risk of non-fulfillment of this criterion might occur in the case when the overall development of economy endanger the fulfillment of other convergence criteria and postpone entry to the euro area, as the case may be, even indefinitely. The long-term expectations, in particular the prospects of membership in the euro area, are crucial for the level of long-term rates in Slovakia. Fluctuations of short-term interest rates and inflation fluctuations, unless they endanger general directing to the euro area, should not endanger the fulfillment of this criterion, in particular as the date of entry is coming up.

Basic precondition for the fulfillment of Maastricht criteria is further progress in the real convergence. It is important, in particular, to sustain current fast economic growth based on the growth of productivity and competitiveness. If the government and NBS fulfill their commitments in implementing reforms and directing monetary development in compliance with the Convergence Program of Slovakia for 2005 to 2010 and Monetary Program of NBS until 2008, then Slovakia should fulfill the criteria for the general government deficit and inflation in a sustainable manner since 2007. The consolidation of public finance until 2010 in accordance with CP will enable Slovakia to fulfill the criterion for government debt also in a long-term horizon when the economy and public finance will be negatively affected by demographic changes.

7. Timing of Euro Adoption

Having regard of the commitment of Slovakia to join the euro area, which is a part of the Accession Agreement of the Slovak Republic to the EU, the fundamental question at present is not whether to adopt or not to adopt the euro, but when to adopt the euro in Slovakia. Based on advantages and disadvantages of euro adoption we can compare the suitability of the officially determined date of euro adoption with alternative dates. The timing of entry to the euro area must respect the procedure of euro adoption which is long and demanding.

7.1 Comparison of advantages and disadvantages of euro adoption in Slovakia

Advantages and disadvantages of euro adoption in Slovakia described in Chapters 2 – 5 prove that advantages prevail over disadvantages. Based on the comparison of such advantages and disadvantages that we are able to at least indicatively quantify we can make an overall estimation of the effects of the adoption of a single currency on the Slovak economy (Table 17, the summary of all significant advantages and disadvantages, including non-quantified effects is contained in Annex). Some costs will be only of one-off nature. We should consider them as investment that will be repaid on a long-term basis (written-off). For the purpose of comparison with permanent effects the quantitative estimate of one-off costs can be divided by seven to ten.

Table 17 Estimation of some of the benefits and costs of euro adoption in Slovakia

Euro adoption effects (% GDP)	One-off	Long-term (annually)
Benefits		
Saved financial transaction costs		0.30
Saved administrative costs		0.06
Elimination of exchange rate risk against euro		0.02 (range 0.01–0.08)
Increase of the GDP level/growth due to the growth of foreign trade and FDI		level 7–20 %, higher GDP growth by 0.4–1 % annually
Costs		
Technical and organizational costs of euro conversion	0.3	
Loss of independent monetary policy		0.04 (range 0.02–0.06)

Source: own calculations.

The comparison clearly shows that benefits of euro adoption prevail over accompanying costs, or respectively costs incurred. In the medium-term horizon the net benefit of euro adoption for the Slovak economy should represent the acceleration of GDP growth up to 1 % per year. Such estimation has been done based on data until 2005 or on estimates until 2009. Therefore, they are applicable mainly to the case of entry to the euro area in 2009.

7.2 Procedure for entry to the euro area

For the purpose of euro adoption an EU member state has to fulfill four Maastricht criteria.[117]

1. Public finance criterion: The country may not have an excessive deficit according to the decision of the EU Council. It means that the deficit of public finance should not exceed 3 % GDP and total debt should not exceed 60 % GDP. If, however, the debt amounts to over 60 %, a declining trend of the debts towards the reference value will be satisfactory. The new rules of the Stability and Growth Pact of spring 2005 allow

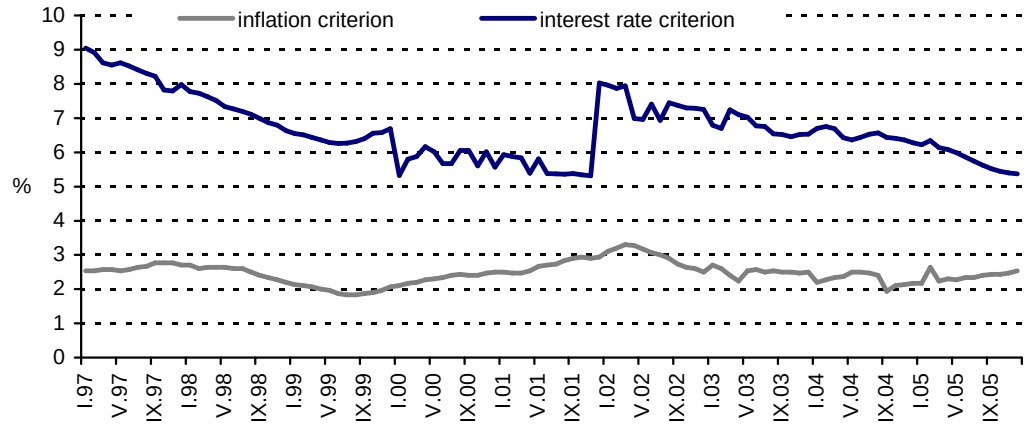
[117] Protocol on convergence criteria pursuant to Article 109j of the Treaty establishing the European Community

a slight excess over 3-percentage deficit limit under certain circumstances (in particular in the initial phase of pension scheme implementation, but also in other cases).

2. Price stability criterion: Average inflation measured by HICP for the 12 months preceding the evaluation may not exceed the average of three countries with the best achievements in the area of inflation by more than 1.5 percentage point. Reference value of that criterion changes depending on the EU countries having the "best" inflation and depending on its value (Figure 30). Moreover, it is not quite unambiguous what the EU Council will consider being the "best inflation"; presumably, it will be the lowest inflation, but not deflation.
3. Interest rates convergence criterion: Long-term interest rate for the preceding 12 months measured, as appropriate, on the basis of ten-year government bonds may not exceed the average of interest rates of the three countries used for inflation criterion by more than 2 percentage points. Similarly as with inflation criterion the reference value for interest criterion changes over time.
4. Exchange rate stability criterion: A country's currency must be in ERM II for minimum two years before the evaluation, central parity for that period may not be devaluated on the initiative of a member state and the development of the exchange rate must be without any marked tensions. With respect to this criterion it is uncertain what the EU Council will consider as serious tensions in the exchange rate development. Based on precedents of the past we can suppose that the exchange rate fluctuation within the appreciation zone will receive better evaluation than a longer lasting fluctuation deeper within the depreciation zone.

In the case when domestic economic policies are appropriately set for the fulfillment of Maastricht criteria, the fulfillment of exchange rate criterion will take the longest time – minimum two years.

Figure 29 Reference values of Maastricht criteria



Source: Eurostat.

Upon fulfillment of all convergence criteria they are to be positively evaluated by the European institutions. The procedure of the European institutions for admission of a new euro area member (Articles 121 – 123 of the Treaty establishing the European Community) is as follows:

1. ECB and the European Commission shall draw up a convergence report evaluating the fulfillment of Maastricht criteria. The convergence report shall be drawn up at the country request or every two years.
2. The Commission shall make a proposal to the Council for abrogation of the derogation to that country, and accordingly to admit it into membership of the euro area.
3. The Council shall consult the Commission's proposal with the European Parliament.
4. The Council composed of the heads of state or government shall discuss the Commission's proposal.
5. The Council (presumably composed of the ministers of finance) shall decide on abrogation of the derogation by a qualified majority (upon adoption of the Constitutional Treaty the Council will be able to decide only after recommendation adopted by a qualified majority of the euro area members – these countries will have a six-moth time limit to take decision).
6. The Council, on a proposal from the European Commission and after consulting the ECB, shall decide unanimously being composed of the members of euro area and the acceding country.
7. The Council will amend certain regulations concerning the euro (1103/97 on certain provisions concerning the euro introduction and 974/98 on the introduction of the euro).

In the case of Greece (1) the ECB has drawn up the convergence report on 18 April 2000, the Commission has drawn up its convergence report on 3 May and (2) at the same time it advised the Council to abrogate the derogation, (3) the European Parliament provided its position on 18 May, (4) on 30 May the Commission made proposals with regard to the conversion rate of the Greek drachma, (5, 6) on 19 June the Council took decision on abrogation of the derogation and on the conversion rate, (7) on 27 November the Council amended other regulations regarding the euro. Greece adopted the euro on 1 January 2001.

The whole procedure of convergence evaluation and admission of a new country to the euro area under favorable circumstances takes at least two months. Moreover, the evaluation may begin in April at the soonest since data on the development of public finance under ESA 95 methodology will not be available earlier.

Box 12 Estimate of the inflation criterion reference value in 2007

We estimate the inflation criterion reference value as at the end of 2007 to 2.4 % in points. In estimating we draw from the forecasts of inflation according to the autumn prediction of the European Commission for all 25 countries of the European Union. If the predictions of the European Commission had been exactly fulfilled, the reference value would be 2.9 %. However, actual values of inflation will differ from the current point estimates; they can be both higher and lower. In determining the reference value, however, only the countries with the lowest inflation will be taken into account, i.e. in particular the countries which will undershoot their prediction. The actual reference value will be systematically lower than the estimation based exclusively on predictions. Based on simulation results we anticipate the inflation criterion reference value to range between 2.2 – 2.6 %.[118]

Background

Inflation estimates according to the Commission for 2007 are indicated in the following Table:

Country	AT	BE	DE	EL	ES	FI	FR	IR	IT	LU	NL	PT	
Estimated inflation	1.7	1.9	1.1	3.0	2.6	1.3	1.9	2.4	1.9	2.2	1.9	2.2	
Country	DK	SE	UK	CY	CZ	EE	HU	LT	LV	MT	PL	SI	SK
Estimated inflation	1.9	1.8	2.0	2.1	2.6	2.6	3.0	2.9	4.8	2.2	2.5	2.5	2.1

If the predictions of the Commission had been exactly fulfilled, the inflation criterion reference value would be 2.9 %. Three best results in the area of inflation would be achieved by Denmark (1.1 %), Finland (1.3 %) and Austria (1.7 %).

The actual results of inflation, however, will not coincide with the present estimates. Final inflation may be both higher and lower. For nine countries the anticipated inflation in 2007 is under 2 %. If in some country the final inflation value is higher than estimated, such country will not be included among the three countries with best results in the area of inflation, and hence it will not affect the reference value. If, on the contrary, some country has lower inflation than anticipated, its result will affect the reference value. The actual reference value is systematically lower than the calculation on the basis of point estimates.

For instance, in 2002 member states anticipated the lowest inflation for 2004 in Finland (1 %), Italy (1.3 %) and France (1.5 %). The reference value calculated based on those estimates would be 2.8 %. The actual reference value as at December 2004 was only 2.2 %, the lowest inflation was achieved by Finland (0.1 %), Denmark (0.9 % although in 2002 it was estimated to 1.8 %) and Sweden (1.0 %, in 2002 it was estimated to 2.0 %). On the contrary, Italy and France achieved equally 2.3 % inflation.

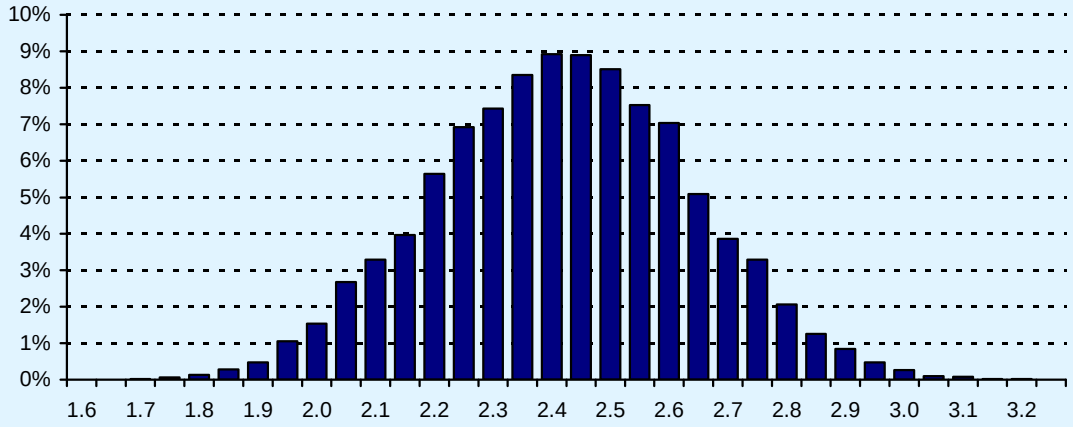
Simulation

To estimate the reference value we simulate inflation outcomes. We assume that inflation estimates of the Commission do not suffer from systematic errors, and thus that actual inflation may be with equal probability both higher and lower than estimate. Furthermore, we assume that inflation is normally distributed with variance coefficient 0.4. This coefficient was calculated based on actual variance of inflation of the EU countries for the period 2000 – 2004. Inflation variation is lower for the countries with lower inflation; variance coefficient is, however, approximately the same. It is furthermore anticipated that inflation shocks for individual countries are mutually independent. Of course, there are inflation shocks, which are the same for EU countries. We can, however, neglect such shocks since they have equal effects on the reference value and on the Slovak inflation and they do not affect their difference.[119]

Based on such parameters we simulate, using Monte Carlo methodology, 10 000 tests for inflation results and the corresponding reference value. If in the simulation the inflation for some country is negative, we consider it exceptional and do not include it in the calculation of reference value.
Reference value based on the simulation is a random variable with the following distribution:

[118] The probability that the reference value will be 2.9 % (calculated directly) is almost 1 %.

[119] Formally, if we decomposed the shocks into a common and idiosyncratic component, the simulation uses only the idiosyncratic part of the shock.



We anticipate the average reference value to amount to 2.4 %. With 60 % probability the reference value will range between 2.2 % and 2.6 %. The probability that the reference value will be lower than a certain threshold is shown in the following table:

Inflation ceiling (in %.)	2.02	2.10	2.20	2.27	2.33	2.39	2.45	2.51	2.57	2.67	2.75	2.88
Probability that the reference value will be lower (in %)	5	10	20	30	40	50	60	70	80	90	95	99

The probability that the reference value will be lower than 2 % is less than 5 %. Monetary Program of the NBS anticipates the inflation under 2 % for 2007; if maintained the probability that Slovak inflation will exceed the reference value is minimum.

Sensitivity analysis

A key parameter in the calculation id the variance coefficient which was calibrated to the value 0.4. If inflation estimates of the Commission had been more precise than we expect (lower variance coefficient), the estimate of inflation criterion reference value would have been higher.[120]

Variation coefficient	0,2	0,25	0,3	0,35	0,4	0,45	0,5	0,6
Reference value estimate	2,7 %	2,6 %	2,5 %	2,4 %	2,4 %	2,2 %	2,2 %	2,1 %

Inflation criterion and the principle of equal treatment

Inflation criterion is not in full compliance with the principle of equal treatment of all countries. Such inequality occurs in conjunction with an increase of the number of the European Union member states. In 1998 when decisions on accession of the first countries in the euro area had been taken, the inflation criterion was assessed on the basis of the Union consisting of 15 members. At present the three countries with best results in the area of inflation will be selected from among 25 countries, in several years they will count 28 and later even more. With an increased number of countries the probability that some of them will have exclusively low inflation increases, which will lead to a more stringent reference value.

For instance, in 2000 when the fulfillment of the criteria by Greece had been evaluated, the inflation criterion reference value was 2.4 %. Had the Union had at that time the current 25 members, the reference value would have been 2.2 %. The average reference value since EU enlargement has been 2.2 %, but if we had counted only the original 15 countries, that would have been only 2.3 %. In September 2004 the difference would amount up to 0.4 % (1.9 % vs. 2.3 %).

In distant future we anticipate the average reference value for the EU25 to reach the level 2.3 %. Had the Union had only 15 members, that value would have increased to 2.6 %. After enlargement of the Union to 28 members the anticipated reference value would become more stringent achieving 2.2 %.

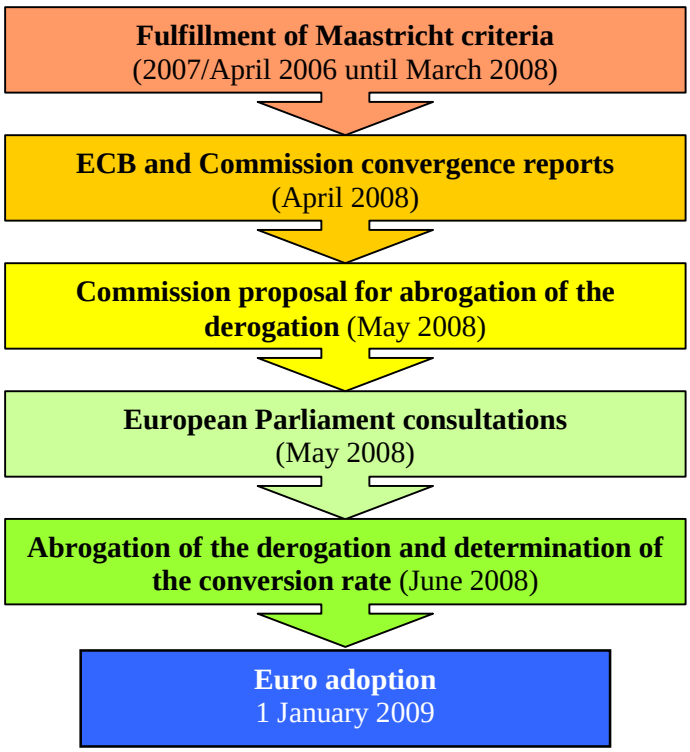
[120] Takže dodržanie referenčnej hodnoty bude jednoduchšie.

7.3 Entry in 2009 and prospects for Maastricht criteria fulfillment

Untroubled and smooth euro adoption requires approximately a 6-month period of technical and organizational arrangement for the changeover of korunas to euros. Therefore, individual steps described in the above Part 7.1 will have to be completed in June 2008 at the latest.

If we take into consideration that the steps involving the evaluation and decision-making procedures will take about 2 months, in order to adopt the euro in 2009 it will be necessary to arrange that the ECB and the European Commission will have prepared Convergence Reports in April 2008. Following a positive evaluation the European Commission will advise the EU Council to abrogate the derogation, which can be expected sometime in May 2008. After consulting the European Parliament the EU Council will undertake to abrogate the derogation in June 2008 and the conversion rate will be determined.

Figure 30 Sequence of steps and deadlines for their fulfillment



A crucial precondition for euro adoption is, however, the fulfillment of the first step, i.e. the fulfillment of Maastricht criteria. In the interest of euro adoption in 2009 the period of 2006 and 2007 will be essential for assessment of Maastricht criteria fulfillment.

As regards the fiscal criterion the development in 2007 will be taken into consideration. Having regard to the complexity of GDP measurement and closing of the state budget, first data on the ratio of general government deficit to GDP for 2007 can be expected in April 2008 at the earliest. Data concerning the fulfillment of other criteria will be available much faster, accordingly we can expect that Convergence Reports will draw from the average inflation and long-term interest rates for February or March 2008. Two last years of the participation in ERM II will be used for the evaluation of exchange rate stability.

Slovakia has been quite long fulfilling the long-term interest rate criterion. In connection with a decline in inflation expectations, growth of credibility and reduction of risk premium the long-term interest rate is on decrease. The average long-term interest rate is currently considerably lower than the reference value (5.4 %). Despite anticipated increase of the long-

term interest rate in the forthcoming years, based on updated estimates of the future development Slovakia will fulfill the long-term interest rate criterion with a reserve also in 2006 and 2008.

Table 18 Fulfillment of the Maastricht criteria

<table>
<tr><td colspan="2" rowspan="2">Criterion</td><td>2005
(actual values)</td><td>2006</td><td>2007</td><td>2008</td></tr>
<tr><td colspan="3">(estimate)</td></tr>
<tr><td rowspan="5">Fiscal criterion (% GDP)</td><td>General government deficit including the impact of the pension reform</td><td>(3,5)</td><td>(4,2)</td><td>3,0</td><td>2,7</td></tr>
<tr><td>General government deficit without the impact of the pension reform</td><td>2,9</td><td>2,9</td><td>(1,6)</td><td>(1,3)</td></tr>
<tr><td>General government debt</td><td>35,2</td><td>35,5</td><td>35,2</td><td>35,0</td></tr>
<tr><td></td><td colspan="4">is fulfilled and will be fulfilled</td></tr>
<tr><td colspan="2" rowspan="2">Inflation rate (HICP %)</td><td>2,8</td><td>3,6</td><td>1,9</td><td>2,0</td></tr>
<tr><td></td><td></td><td colspan="2">will be fulfilled</td></tr>
<tr><td colspan="2" rowspan="2">Long-term interest rate (%)</td><td>3,5</td><td>3,4</td><td>3,8</td><td>4,8</td></tr>
<tr><td colspan="4">is fulfilled and will be fulfilled</td></tr>
<tr><td colspan="2" rowspan="2">Nominal exchange rate</td><td>ERM II since
28 November 2005</td><td colspan="3">ERM II membership</td></tr>
<tr><td></td><td></td><td colspan="2">will be fulfilled</td></tr>
</table>

Note: We use the general government deficit for 2005 and 2006 without the impact of the pension reform, in line with Eurostat decision. Since 2007 the deficit has to include the pension reform impact.
Source: MF SR, NBS, Eurostat, own calculations.

In 2005 Slovakia fulfilled for the first time also the fiscal criterion when the general government deficit declined closely under 3 % GDP. The deficit has been so far reported without the impact of the pension reform, which is allowed by the transition period determined by Eurostat. The other part of the fiscal criterion, government debt, has been long lower than the reference value and does not pose any risk.

A few-month decline in inflation has been markedly reflected also in the average inflation value, the twelve-month average of inflation measured by HICP exceeded the reference value by 0.3 percentage points in December 2005.

On 28 November 2005 the Slovak koruna joined ERM II. Central parity was set to the level SKK 38.455 for one euro. In several days since entry to ERM II the nominal exchange rate strengthened by approximately 1.5 % to the level SKK 37.8 for one euro, and until the end of 2005 it remained within the appreciation zone.

Because the membership of koruna in ERM II has been very short yet, the exchange rate stability in the longer period can be evaluated only informatively based on its variances from the stimulated mean value. In compliance with convention adopted by ECB Convergence Reports we evaluate the exchange rate stability with respect to the average for the first month of the two-year period concerned, i.e. with respect to the average for January 2004. A ten-day moving average for the last two years was moving within the range from -0.7 % (depreciation) to +7.75 % (appreciation) versus the average for January 2004, i.e. safely within the standard fluctuation band ±15 %.

In the interest of the fulfillment of the conditions for euro adoption in 2009 the consolidation of public finance will have to continue and in 2007 at the latest the general government deficit not exceeding 3 % GDP will have to be achieved also when the impact of pension reform is included. The inflation measured by HICP should decline under the anticipated reference

value of approximately 2.4 % with a sufficient reserve.[121] Following the official documents of the Ministry of Finance of the Slovak Republic[122] and the National Bank of Slovakia, Slovakia will be able to fulfill those criteria.

General government deficit (including the impact of the pension reform) in 2006 will increase, but in the subsequent years it will gradually decrease. The ratio of the government debt to GDP will slightly decrease, too. Slovakia will be fulfilling the public finance criterion in 2007.[123]

According to the current medium-term prediction of the NBS[124] and reference value estimate, the inflation criterion should be also fulfilled in 2007. In 2006 the average inter-annual inflation measured by HICP should, under the influence of a rise in regulated prices, increase to 3.6 %. In 2007, however, the inflation should not exceed 1.9 % while the probability that the reference value will be lower than 1.9 % (which is the current inflation estimate in Slovakia) is quite negligible – approximately 1 %.[125]

The nominal exchange rate of SKK/EUR has been recently strengthened, which is underpinned in particular by the improving economic development. Following from the so far relatively stable development of the nominal exchange rate, and also in connection with the anticipated positive macroeconomic development it can be expected that in the forthcoming years the fluctuation band ±15 % will not be exceeded and that koruna will not remain deeper in the depreciation zone.

7.4 Postponement of the date of euro adoption

Postponement of entry by one or more years

The adoption of the euro later than in 2009 would be less advantageous for Slovakia. First of all, the economy would not be able to use longer the resources released from the elimination of transaction costs and costs of insuring against the exchange rate risk. However, all positive effects of euro on the economy would be postponed.

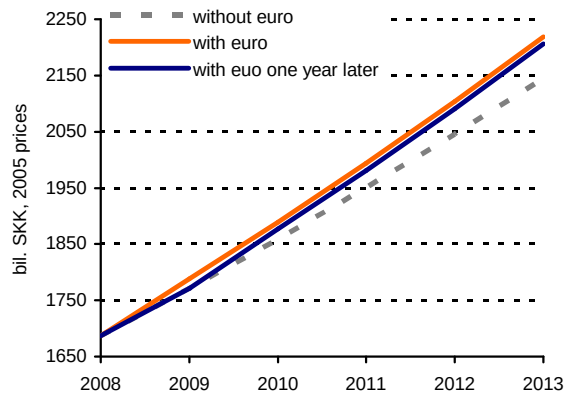
Provided that Slovakia is prepared for entry to the euro area within the meaning of the Strategy of Adopting the euro (the economy will be able to fulfill Maastricht criteria in a sustainable manner) at 1 January 2009, we estimate the total amount of lost benefits when euro adoption is postponed just by one year to approximately 0.7 % GDP per year (for the period of approximately 20 years). The postponement of euro adoption would mean a loss of potential benefits of its adoption.

The date of euro adoption can be postponed, except if based on a political decision on the change of the date of euro adoption, in the case of non-fulfillment of Maastricht criteria. Such situation may come even despite good prospects for the fulfillment of all criteria based on the current data. Non-fulfillment of any of Maastricht criteria may be caused by external factors beyond the scope of domestic policies. For instance, further considerable increase in prices of oil and energy supplies might prevent the fulfillment of inflation criterion since energy

[121] Analýza konvergencie slovenskej ekonomiky k Európskej únii, NBS, August 2005.
[122] Convergence Programme of Slovakia for the period 2005 to 2010, MF SR, November 2005.
[123] In our evaluation of the fulfilment of Maastricht criteria we focus mainly on the feasibility to fulfil fiscal criterion in 2007 when the accounting of the general government deficit will not be possible without the impact of pension reform. Therefore, in the evaluation of the fulfilment of fiscal criterion we draw from the general government deficit including the effect of pension reform.
[124] Medium-term prediction (P1Q-2006), NBS, January 2006.
[125] The probability that the reference value will be under 2 % (which is the ceiling of the inflation goal of the NBS for 2007) is also very low – only 4 %.

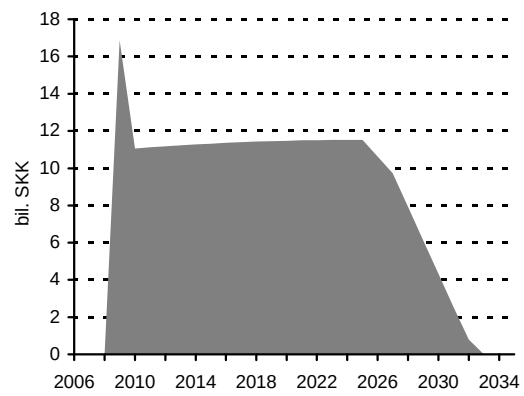
supplies have considerably higher weight in the Slovak consumer basket than in majority of other EU countries. There may also appear the situation that under unfavorable circumstances the fulfillment of Maastricht criteria would require extremely high costs and the government decides rather to postpone the fulfillment of all criteria (see also Box 11). It will be important how the markets will react to a possible postponement of entry to the euro area. If the markets believe that the reasons consisted in external shocks and the Slovak policy continues to remain responsible and credible, losses of the postponed euro adoption will not be considerable. If the markets assess the situation as a change of official policy and lose confidence in it, the loss from the postponement of euro adoption may be, however, much higher.

Figure 31 GDP development under postponement or non-adoption of euro



Source: own calculations.

Figure 32 Lost benefits under postponement of euro adoption by one year



Source: own calculations.

Loss of credibility under non-fulfillment of the Strategy of adopting the euro

The postponement of the date of euro adoption would mean not only a loss of potential income, but it would lead also to direct losses, because the credibility of the Slovak economic policy in the eyes of foreign investors would decrease. The Strategy of adopting the euro currently represents an important anchor for the expectations of international investors. Based also on such expectations, the exchange rate of koruna has been recently appreciated, long-term interest rates have decreased and the inflow of foreign investment has increased. The euro non-adoption in the planned deadline, unless replaced by equally credible option, would mean a loss of positive effects.

In the case of cancellation of the euro changeover plans for 2009 we cannot count on the trend of koruna appreciation. On the contrary, significant fluctuations or depreciation of koruna exchange rate might occur.

Another highly probable effect in case of the postponement of euro adoption is an increase of interest rates and margins. For instance, in Poland or Hungary where the prospects of euro adoption are uncertain, the long-term interest rates on the government debt are by 1.5 % to 3 % higher than in Slovakia. If after postponement of euro adoption the interest rates in Slovakia were to increase just by 1 %, it would mean higher costs of the servicing the government debt by approximately 0.4 % GDP and equivalently higher general government

deficit.[126] Higher interest margins would be negatively reflected also in the investments of Slovak enterprises.

Foreign investors could also react to a change of the plans regarding euro adoption. The inflow of FDI might slowdown or reverse.

With regard to high openness of the Slovak economy, the effect of such foreign shocks on the domestic development would be significant. With restricted possibilities to independently exercise monetary policy the NBS would not be able to eliminate such shocks effectively. This might result in destabilization of macroeconomic development, which might endanger for a long time the fulfillment of Maastricht criteria and euro adoption in the future.

In case of postponed date of euro adoption the extension of the time of membership in ERM II would also pose a risk. Slovakia being a fast growing economy tends to strengthen the real exchange rate (Part 5.2, in particular Figure 25), and with low inflation also the nominal exchange rate is appreciating. Under two-or three-year membership in ERM II the exchange rate appreciation will not be strong enough to exceed 15 % limit of the fluctuation band. Under longer membership in ERM II the range for appreciation of the exchange rate might be used up and the exchange rate stability and low inflation might come into conflict. There is even a threat that short-term capital could make use of such situation for speculative attacks against koruna. If such attacks succeeded and koruna was excluded from ERM II, the prospects of euro adoption in Slovakia would get even worse; the whole process of the fulfillment of Maastricht criteria would have to start again.[127]

Postponement of entry indefinitely or refusal of the euro

The postponement of entry to the euro area by over ten years can be in fact considered as a refusal of the euro (although Slovakia is still obliged to adopt the euro one day, but theoretically this day can be very far away). The refusal of euro would certainly result in the loss of credibility of the Slovak economic policy.

The most serious loss, however, would a loss, or respectively non-achievement of all advantages which the euro will bring about. First of all, this regards the medium-term impact on GDP growth. A long-lasting lower level of GDP without euro adoption and the slowdown of real convergence would considerably reduce the living standard of the citizens of Slovakia (as compared to the option of euro adoption).

7.5 (Non)coordination of entry of V4 countries to the euro area

The dates planned for entry of Slovakia, Czech Republic, Poland and Hungary to the euro area often compared and the possibility of coordinating entry of V4 countries to the euro area is under discussion. From the viewpoint of Slovakia it would be certainly advantageous if other V4 countries introduced euro simultaneously with it. Firstly, it would facilitate the fulfillment of Maastricht criteria. Secondly, the anticipated advantages of euro adoption are also based the adoption of euro also by the neighboring countries. If other countries adopted euro later than Slovakia, the benefits of euro adoption would be temporarily lower.

[126] A similar situation has been simulated by Kraemer and Chambers (2005) for the euro area countries. After disintegration of the euro area, in particular Italy or Greece would be exposed to a decline in ratings, interest rates growth, and the general government deficit and debt would increase.

[127] Csajbók and Rezessy (2005) study the effect of the postponement of the date of euro adoption in Hungary. They arrive at similar conclusions – interest rates would increase and the exchange rate would weaken. They recommend not to enter ERM II earlier, than the prospects of the fulfilment of other Maastricht criteria are clear. In contrast to Hungary, however, Slovakia is already a member of ERM II.

Slovak koruna was in the past, at least before entry of koruna in ERM II, under a strong regional influence. At present, koruna is in ERM II, and hence it is necessary to stabilize the exchange rate against euro. If regional effects on koruna continued also in the future, it might worsen the prospects of the fulfillment of the criterion of exchange rate stability. If all V4 countries planned to adopt euro at the same time, they would be simultaneously also ERM II members, and hence they would have a common interest in stabilizing their exchange rates against euro.

Czech Republic, Poland and Hungary are important trade partners of Slovakia. They altogether represent approximately one fourth of the trade of Slovakia. If those countries did not adopt euro jointly with Slovakia, the benefits of euro adoption, in particular the decrease of transaction costs and increase of foreign trade of Slovakia would be temporarily lower.

Although joint entry to the euro area of all V4 countries would be advantageous for Slovakia, it is not an argument for the postponement of euro adoption. Slovakia is currently planning to adopt the euro one to three years earlier than the neighboring countries. Despite later adoption of euro by other V4 countries, the earliest possible adoption of the euro is advantageous for Slovakia. It would be more advantageous if other V4 countries accelerated their procedure. But postponing the euro adoption and waiting for other countries would be, however, disadvantageous. Moreover, in some countries the euro changeover plans have been repeatedly postponed because their governments are not able or willing to take appropriate steps towards fulfilling Maastricht criteria. Waiting for them would mean a threat of unforeseeable extension of waiting period.

8. The Effects of Euro Adoption on Citizens, Enterprises and the Public Administration

8.1 Effects of euro adoption on citizens

The main benefit of euro adoption for the citizens of Slovakia will consist of acceleration of economic growth, which will subsequently reflect in the growth of living standard, employment rate, wages, consumption and savings. We estimate the growth of foreign trade by 60 % after euro adoption, which will subsequently, with regard to the high rate of openness of the Slovak economy, contribute to the growth of GDP. We estimate such additional growth due to euro adoption to reach the level 7 to 20 % in the medium-term horizon. Every year the common currency should increase the domestic economic performance by 0.7 % ± 0.3 % GDP.[128]

The increased rate of economic growth will affect the citizens in several ways. One of the main anticipated effects involves the growth of employment rate and wages. Due to the inflow of foreign capital and know-how, including the standardization of economic environment of the Slovak Republic, we expect gradual approximation of wage formation to the conditions in the developed economies where wage formation reflects approximately 50 – 60 % of the growth labor productivity.[129]

Provided that the additional increment of GDP by 0.7 percentage points per year is entirely a consequence of the growth of labor productivity, we can expect that after euro adoption the real wages will grow faster approximately by additional 0.7 % per year. Therefore, euro adoption will have a positive impact on working population.

The effects of euro adoption on income of unemployed and weak social groups of the population will be, with regard to the currently existing method of determining social benefits and support, neutral. Provided that a model of their valorization based on the development of nominal wages and inflation has been adopted, with regard to the additional growth of nominal wages and low inflation environment of the euro area positive effects can be expected.

Euro adoption will have a positive impact also on the growth of pensions, although not so significant as in the case of working population. The existing pensions are valorized according to the Swiss methodology (50 % growth of nominal wages, 50 % inflation growth). Therefore, the anticipated additional growth of nominal wages will gradually be reflected in additional growth of pensions due to euro adoption by 0.3 to 0.4 % per year.

Major concern of the population in the context of euro adoption is that after its adoption a considerable inflation growth will take place. In the euro area countries the euro has become a synonym of rise in prices despite the fact that actual inflation was much lower than the inflation perceived by the citizens. Many analyses are devoted to that effect.[130] The contribution of currency conversion has been estimated to 0.12 – 0.29 percentage points out of the overall inflation. The currency conversion itself has therefore minimum impact on the growth of inflation and no decrease of either real wages or pensions of the households will occur due to currency conversion.

[128] For details see Part 3.4.
[129] For details see Part 6.4.
[130] For details see Part 5.1.

A concern that immediately after euro adoption the price level will equalize to that of the euro area countries is also unjustified. Price convergence will be implemented gradually with real convergence, and therefore, it will be broken down into a long period of time. Its pace will depend on the real growth of economic performance of Slovakia. An immediate price convergence will be prevented by existing national barriers and restrictions. The anticipated price convergence did not happen in the euro area either, and regional differences in price levels have been maintained.[131]

The knowledge from inflation development in the euro area countries show that inflation trend in less developed countries (Spain, Portugal, and Greece) before joining the euro area was different. While before entry gradual disinflation was taking place, after entry the inflation had a growing trend. Based on estimates[132] we expect a long-term inflation differential for Slovakia after entry to the euro area to reach the level about 1.5 %. Such inflation differential of Slovakia versus euro area will be, however, fully mitigated by higher growth of real wages, and accordingly also by nominal wages. In case of pensioners and persons dependent on social support the inflation differential will be compensated by automatic valorization of pensions and social benefits, however, there occurs a little negative effect due to the time-lag of valorization. Despite higher anticipated valorization by 1.5 percentage points as compared to the euro area, inflation in Slovakia should not have a negative impact on the social and economic situation of the households.

Getting aware of a new value of money and orientation in new prices will be also associated with euro adoption. An important role in this process will be therefore played by dual pricing, dual statements and information campaign focused on the public.[133] In the initial period, the awareness of a new value of euro may lead the consumers to be more cautious when buying goods and services and result in a short-term fall of spending. Such effect may negatively affect corporate sector. However, such phenomenon will be of a short-term nature, and it is negligible. The suppression of this phenomenon will depend on the awareness level of the consumers.

One of the economically unjustified concerns arising from euro adoption is also the devaluation of wages and savings of the households as a result of their conversion into euros. Wages and savings of the households will be converted by the same single conversion rate as prices of goods and services. In the conversion of pensions, social benefits, taxes, contributions and charges (in the relation “a citizen – the state”) the principle not to harm a citizen will apply. In cases when a citizen is the beneficiary of such payments, the rounding up will apply. On the contrary, for the payments whose beneficiary is the state the rounding down will apply. Fears of the devaluation of wages and savings are therefore unjustified. The conversion of wages and savings will be a purely technical operation having a neutral impact on the citizens, or even slightly positive in relations with the state. In a long-term horizon the euro contribution to additional growth of wages and also pension will eliminate all short-term effects arising from conversion and rounding.

In household savings the fact that households have, besides koruna accounts, savings also in euros should be taken into consideration. The actual level of such savings depends of the exchange rate. With appropriation of the exchange rate the household savings in foreign currency are depreciated. When considering the exchange rate in 2004 when koruna appreciated (5.75 % against euro and 13.44 % against US dollar) the aggregate decrease of household savings represented SKK 9.5 bil. After euro adoption the exchange rate risk in euro

[131] For details see Part 5.5.
[132] For details see Part 5.2.
[133] For details see Part 5.1.

accounts will disappear and in the rest of accounts in foreign currency will depend only on the exchange rate of euro against foreign currency concerned.

A positive impact on citizens will consist also in elimination of transaction costs of foreign currency and foreign exchange conversion. At present the citizens of the Slovak Republic when traveling to the euro area countries pay various charges to banks and exchange offices which will be eliminated by euro adoption. Similarly, a certain proportion of prices of goods and services (e.g. package holiday and holiday abroad) is derived from the euro and thus depends on volatility of exchange rate against koruna. After euro adoption citizens should not be affected by such volatility, which will positively contribute to their decision-making on consumer spending.

The last anticipated impact on citizens will be the cash changeover itself. The euro cash and non-cash changeover in Slovakia will take place on 1 January 2009. Cash payments in Slovak korunas will be allowed only until 16 January 2009, i.e. during the period of dual circulation. After the end of dual circulation the exchange of coins will be allowed in banks until June 2009 and banknotes until the end of 2009. Coins and banknotes will be exchanged in banks free of charge unless the number of banknotes or coins to be exchanged exceeds 50 pieces in one exchange operation. After 2009 only the NBS will exchange Slovak korunas. Coins will be exchanged until 31 December 2014 and banknotes for an indefinite period of time. The exchange will be performed free of charge. This phase of euro adoption (technical currency exchange) will have a neutral impact on citizens with regard to their income or expenditure.

8.2 Effects of euro adoption on enterprises

With regard to the effects of euro adoption on enterprises we can state that individual effects will be manifested in short-term, medium-term and long-term horizons. Individual effects will be mutually linked and they will interact.

Short-term effects should include one-off effects which will occur immediately after euro adoption and they will affect businesses directly. These involve the elimination of transaction costs, elimination of exchange rate volatility within thee euro area, increased price transparency within the euro area and one-off costs of euro changeover.

The most important short-term benefit for corporate sector from euro adoption will involve the elimination of *transaction costs* incurred by entrepreneurs in foreign trade and investment with euro area countries. The savings of transaction costs for Slovakia are estimated to amount to 0.36 % GDP.[134] Therefore, the fact that entrepreneurs conducting business in the euro area will not have to maintain bank accounts in foreign currency should be also taken into consideration within the saving, and similarly, the bookkeeping for businesses will be also simplified. This effect will be the more significant for the corporate sector the more new EU member states will become also members of the euro area.

Mainly small businesses and medium-size enterprises (SMEs) will derive profit from the elimination of transaction costs. At present, with regard to the volume and size of transactions, SMEs have very little scope to make agreements with commercial banks regarding transaction costs compared to large firms ranking among top clients of banks, and banks willing to keep such clients usually give them a chance to negotiate charges. Another factor due to which SMEs will derive higher profit from the elimination of transaction costs than large enterprises is that due to lack of capacities SMEs are not usually well oriented in charges and fees in individual banks, and therefore they often fail to choose a bank with the lowest charges.

[134] For details see Part 2.1.

The elimination of transaction costs should annually contribute to the reduction of corporate sector costs by 0.36 % GDP. Such saving will even increase in connection with additional growth of foreign trade which is expected in the medium-term horizon after euro adoption. The elimination of such costs may be therefore considered as a positive benefit for corporate sector.

Another positive effect for corporate sector arising from euro adoption to be manifested in the short-term period involves *the elimination of exchange rate volatility.* All impacts arising from the elimination of exchange rate[135] will directly affect also the corporate sector. Both SMEs and large enterprises will derive profit from the elimination of exchange rate volatility against euro area. Currently, hedging is the only available possibility of hedging against currency fluctuations. This form of insurance, however, can be applied only on a short-term basis. Long-term hedging is currently commercially unavailable and given the exchange rates volatility risk it is not very feasible. After euro adoption the need of large enterprises to hedge against exchange rate fluctuations in euro transactions will cease to exist. Thus, large enterprises will eliminate the costs of the hedging. SMEs in Slovakia do not currently use hedging against exchange rate fluctuations, namely because of its high costs, but also because of existing conditions on the domestic capital market. Therefore, euro adoption will mean a significant benefit for SMEs embodied in the elimination of exchange rate volatility.

We estimate the savings arising from the elimination of exchange rate volatility to amount to 0.02 % GDP. Both the elimination of volatility and elimination of transaction costs can be considered as a positive benefit for corporate sector.

A sensitive issue in the context of euro adoption will be the question of *one-off costs* to be incurred by Slovak businesses due to euro adoption. A principle that costs associated with euro changeover will not be covered by public funds has been adopted. Each enterprise, as well as each public organization will have to bear such costs alone. It should be therefore in the interest of each company to reduce its euro changeover costs as much as possible, i.e. to apply the principle of costs minimization. Certainly, the amount of costs will vary from company to company, and it will depend mainly on the size of the enterprise and scope of activities which individual enterprises will have to perform due to the euro changeover.[136] Obviously, the costs of sole traders and small businesses will be lower than, e.g. those of large enterprises and banks. One-off costs are estimated to approximately 0.3 % GDP. Based on estimated savings due to euro adoption (transaction costs 0.36 % GDP and the elimination of exchange rate volatility 0.02 % GDP) the anticipated return of one-off costs for corporate sector in Slovakia will be about one year. If we add also expected additional GDP growth by 0.7 % per year to the anticipated savings due to euro adoption, we can state that the recovery of costs of euro adoption should be much less than one year. However, the recovery period will depend to a large extent on the size and other factors concerning a particular business.

Medium-term and long-term effects will be reflected in the growth of foreign trade with euro area countries, growth of foreign investment inflow and subsequent accelerated GDP growth. Due to euro adoption we expect *a growth of foreign trade* with the euro area by 60 %. Subsequently, this should bring about *additional increase of GDP* by 7 to 20 % in the medium-term horizon.[137] The Corporate sector should benefit most from the euro adoption. Euro adoption will bring most positive effects for companies conducting foreign trade with euro area countries. However, the accelerated growth of GDP should increase profits of all businesses in Slovakia.

[135] For details see Part 2.3.
[136] For details see Part 4.1.
[137] For details see Part 3.4.

The GDP growth should be reflected in a long-term horizon in the form of the strengthening of common market integration and in the form of investment activity within the euro area countries. The increased growth of GDP resulting from euro adoption should, in the long-term horizon, help transition countries to *accelerate the process of catch-up* with euro area countries. The elimination of trade barriers within the common market and elimination of transaction costs, exchange rate volatility and increase of price transparency due to a single currency should in the long-term horizon contribute to *enhanced competition* in the area of goods and services. With continued elimination of administrative and national barriers gradual price convergence should take place in the long-term horizon. Gradual price convergence, which, however, depends to a considerable extent on the elimination of the aforesaid barriers, should induce *specialization and concentration* of sectors in which individual countries have comparative advantages in comparison with other euro area countries. Such effect is, however, rather a theoretical prediction which has not yet manifested in the euro area countries.

The introduction of common currency will also enhance the effectiveness and competition on financial markets, which will eliminate risk premia generated by a country risk. This will be manifested in the decline in real interest rates on corporate credits. More favorable financing conditions will allow for the *reduction of cost of capital*, which will constitute a positive stimulus for the growth of investment in Slovakia.[138]

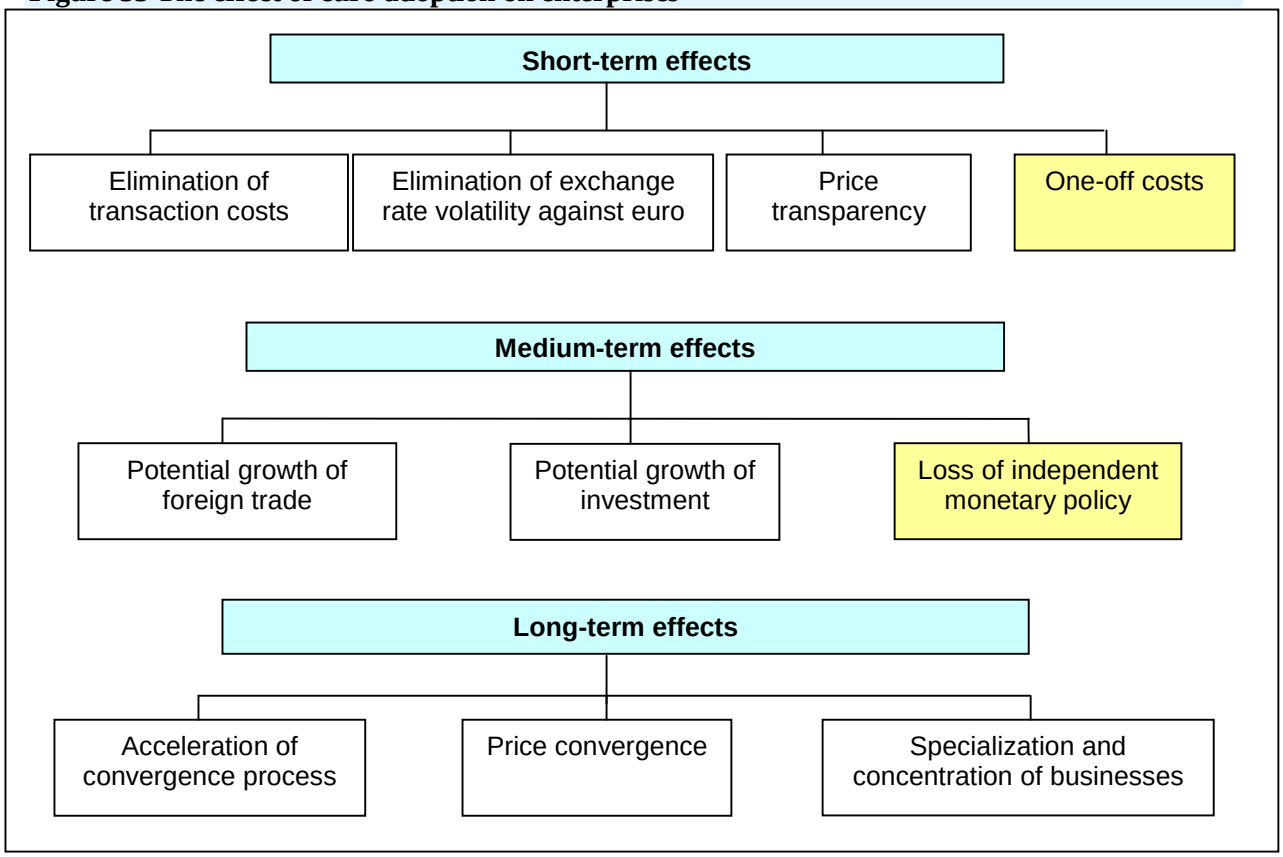
Foreign trade growth in the euro area will lead also to the increase of *foreign direct investment ((FDI)* inflow, in particular into exporting industries. Empirical research proves that since 1999 the investment rate of the firms from euro area member states has been by 2.5 % higher than from countries outside the euro area. The main factor of more intensive investment activity consisted in the reduction of the cost of capital which was caused by the reduction or respectively elimination of transaction costs (including costs of hedging) and also by the decline in interest rates evoked by the membership itself in the euro area.[139]

A negative phenomenon, which may manifest itself in the long-term horizon in corporate sector, is *the loss of independent monetary policy,* in particular the impossibility to flexibly respond to potential economic shocks on the part of the central bank.[140] We estimate the value of the loss of independent monetary policy in points to 0.04 %GDP. The loss of independent monetary policy should not represent a serious problem for the Slovak economy.

In general we can state that the corporate sector will benefit most from the euro adoption. The main contributions to its growth include the elimination of transaction costs and higher certainty in the planning and calculations of future costs and revenues. In the long-term horizon the adoption of euro will be reflected in faster economic growth of the Slovak economy, which the corporate sector will benefit to a considerable extent from. Despite the fact that for the corporate sector euro adoption is associated also with one-off costs, positives will prevail over negatives, and we can conclude that euro adoption will be undoubtedly beneficial for the corporate sector.

[138] For details see Part 2.6.
[139] For details see Part 3.2.
[140] For details see Part 4.4.

Figure 33 The effect of euro adoption on enterprises



8.3 Effects of euro adoption on the public administration

Euro adoption will affect not only citizens and corporate sector, but also the public administration and government budget. Such effects can be divided into several areas.

Similarly as each citizen and enterprise will have to prepare for euro adoption, public administration will also have to implement technical and organizational measures in connection with euro adoption which will enable its euro changeover. This involves a wide range of measures detailed in the National Euro Changeover Plan for the Slovak Republic. It contains, apart from tasks descriptions, also deadlines for the commencement of implementation of individual tasks, including deadlines of their accomplishment.

Within the implementation of such technical and organizational measures in public administration certain expenditures are expected to be incurred. Expenditures to be incurred in 2006 and 2007 will be covered within the limits of chapters of the budget of the public administration for 2005 to 2007. The expenditures in 2008 and 2009 will be covered within the budget authorized for the respective year. It is not envisaged that the implementation of technical and organizational measures in the context of euro adoption should increase capital expenditure of the public administration in the forthcoming years. Within the quantification of the costs of the public administration arising from euro adoption it can be concluded that expenditures in 2006 and 2007 will not constitute an increase of the government budget. However, at present it is impossible to predict the level of expenditures for 2008 and 2009. In order to determine the level of such expenditures the costs of organizational and technical support and impacts on the government budget, which will occur as a result of the application of the principle “not to harm a citizen”, will have to be taken into account.

Another important area of the public administration, which will be affected by euro adoption, is the area of drawing resources from the European Union. The resources drawn from the EU

are transferred by the European Commission to a special non-budgetary account of the Ministry of Finance of the Slovak Republic with the State Treasury. Such payments fro the EU arrive in euros, but they are disbursed in Slovak korunas to the beneficiary in Slovakia. Thus exchange-rate differences are created, which are caused by conversion alone between currencies and also due to the existence of two exchange rates applied to the conversion of individual amounts. For the purposes of financial reporting by the European Commission the ECB exchange rate from the end of the preceding month is applied. For the conversion of the amounts from euro into koruna, however, the State Treasury applies exchange rates effective on the date of transfer.

The exchange rate loss/profit arises in the transfer of resources from the account of the payment body to the account of the payment unit in the case when last-moth exchange rate of the ECB effective on the date of transfer is higher/lower than the exchange rate of the State Treasury.

Ministry of Finance of the Slovak Republic opens equalization accounts for individual structural funds kept in SKK for the payment body. Such accounts serve for reimbursement of the costs of compensation of exchange-rate differences incurred, bank charges and tax on interest. The exchange-rate differences incurred in reimbursement of summary payment claims will be settled, from time to time, on the credit/debit side of the equalization account for the relevant structural fund.

After euro adoption the payments from the EU, and subsequently payments between a payment body and payment beneficiary, will be performed only in euros, and thus the exchange rate loss/profit will be eliminated, which is currently covered from equalization accounts funded by resources from the government budget.

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Annexes

Comparison of advantages and disadvantages of euro adoption in Hungary

The study „Adopting the Euro in Hungary: Expected Benefits, Costs and Timing“[141] elaborated by the Hungarian National Bank has come to the conclusion that the final effect of euro adoption on the Hungarian economy will be positive. It results from it that the savings of transaction costs slightly exceed the loss of income due to seignorage. The study also states that in the long-term horizon the euro adoption will lead to acceleration of GDP growth in line with a decline in real interest rates, but in particular due to the growth of foreign trade. The abandoning of own currency will, however, represent a loss of an instrument for mitigation of asymmetric shocks, but Hungary is not exposed to asymmetric shocks more than currently less developed countries of the euro area. At the same time, a risk of shocks of financial contagion will decrease. Long-term advantages of euro adoption significantly prevail over long-term disadvantages. Overall benefits of euro adoption are highly above costs and losses.

Table Benefits and Costs of euro adoption in Hungary

Euro adoption effects	Estimated impact
Benefits	
Reduction of financial transaction costs	One-off increase of the GDP level by 0.11 – 0.22 %
Reduction of administrative costs	One-off increase of the GDP level by 0.07 – 0.08 %
GDP growth stimulated by decrease of real interest rates	Increase of the GDP growth rate by 0.08 – 0.13 % annually in the long term
GDP growth stimulated by increase of foreign trade Reduction of exchange rate risk	Increase of the GDP growth rate by 0.55 – 0.76 % in the long term
Reduction of the risk of financial system instability due to contagion from the neighboring markets	
Costs	
Loss of income from money emissions (seignorage)	0.17 – 0.23 % GDP
Abandoning the currency – loss of an instrument for mitigating asymmetric shocks	This loss is not higher than in less developed countries of the euro area member states. This is due to similarity of economic structures, high degree of integration and synchronization of the business cycle. The loss can be reduced by increasing flexibility of remaining policies (especially labor market policies).

Source: Csajbók and Csermely (2002).

[141] Csajbók and Csermely (2002)

Comparison of advantages and disadvantages of euro adoption in Poland

The research study „ A Report on the Cost and Benefits of Poland's Adoption of the Euro",[142] elaborated by the National Bank of Poland expressly shows that from a long-term prospect the euro adoption will bring positive benefits for the Polish economy and advantages significantly prevail over disadvantages.

Table Benefits and costs of euro adoption in Poland

Euro adoption effects	Estimated impact
Benefits	
Reduction of financial transaction costs	One-off increase of the GDP level by 0.14 %
Reduction of administrative costs	One-off increase of the GDP level by 0.07 %
GDP growth after euro area entry in 2007	Increase of the GDP growth by 0.21 – 0.42 % annually in the long term
GDP growth after euro area entry in 2010	Increase of the GDP growth by 0.19 – 0.40 % annually in the long term
Growth of the overall consumption until 2030	Increase of the GDP growth by 0.16 – 0.37 % annually in the long term
Reduction of the real interest rates	Reduction by 150 – 200 basis points
Increase of growth of domestic investments and increased FDI inflows as well as integration into the euro area financial markets	It will contribute to an increase of the GDP growth
Reduction of the exchange rate risk, elimination of risk of monetary crises, increase of macroeconomic policies credibility	It will contribute to an increase of FDI inflows and reduction of capital costs
Increase of price transparency and competition	It will have a positive influence on improvement of labor productivity
Costs	
Additional disinflation efforts by 1 percentage point	Reduction of GDP growth by 0.3 – 0.8 % GDP in the two-year horizon
Increase of the trade deficit	Increase by 1.3 – 3.0 % GDP annually. This increase, however, does not endanger macroeconomic stability.
Loss of the independent monetary policy – abandoning an instrument for mitigating asymmetric shocks	The risk of asymmetric shocks is moderate and the costs of its elimination should not be significant.

Source: Borowski et al. (2004).

[142] Borowski et al (2004).

Summary of advantages and disadvantages of euro adoption in Slovakia

Table Benefits and costs of euro adoption in Slovakia

Euro adoption effects	Estimated impact
Benefits	
Reduction of financial transaction costs	Savings amounting to 0.30 % GDP
Reduction of administrative costs	Savings amounting to 0.06 % GDP
Elimination of the exchange rate risk against euro	Savings due to risk elimination amounting to 0.02 % GDP (range 0.01–0.08 % GDP)
Reduction of exchange rate volatility against currencies of other trading partners	Reduction of the overall effective volatility to 0.35 % (from 0.63 % in 2001-2005), after entry of all V4 countries to euro area to 0.17 %
Reduction of capital costs	Decrease of current real interest rates for business from approximately 2 % to the level of 1 – 1.5 %
Increase of foreign trade	Increase of foreign trade by 50 %
Increase of the GDP per capita due to increases in trade and FDI inflows	Increase of the GDP per capita between 7–20 % in the long term. Increase of the annual GDP growth by 0.7 % (range 0.4–1 % annually)
Increase of FDI	
Increase of price transparency and competition	Increase of pressure on prices and prevention of their growth
Costs	
Technical and organizational costs of euro conversion	One-off costs of 0.3 % GDP
Specific costs of the banking sector	Costs in connection with the task of providing free conversion of the domestic currency to euro and reduction of the range of activities and revenues of banks.
Loss of the independent monetary policy – abandoning an instrument for mitigation of asymmetric shocks	The value of the loss of the monetary policy is estimated at approximately 0.04 % GDP
Possibly higher inflation rate in the long term	Additional contribution to the inflation in comparison with the euro area average amounting to 1.5 percentage point annually.