LOSS OF INDEPENDENT MONETARY POLICY AFTER EURO ADOPTION

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In March 2006 the NBS Research Department has published an extensive analysis of the effects of euro adoption on the Slovak economy.[1] Selected topics from this study are being successively presented in BIATEC. In this article we concentrate on the loss of independent monetary policy after Slovak entry into the euro area, what will be the most important long term disadvantage of the common currency.

Introduction

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.

Loss of independent monetary policy

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 favo-

[1] http://www.nbs.sk/PUBLIK/06_KOL1.PDF

rable 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.[2]

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:

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

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.

Independent monetary policy versus entry to monetary union

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 opti-

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

on of independent monetary policy with lower credibility of the central bank.

(A)symmetry of shocks in Slovakia and euro area

A risk of joining the euro area is the loss of the possibility to independently influence the 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.

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.

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.

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.

Simulation of the effects of asymmetric shocks and the loss of independent monetary policy on the Slovak economy

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. 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).

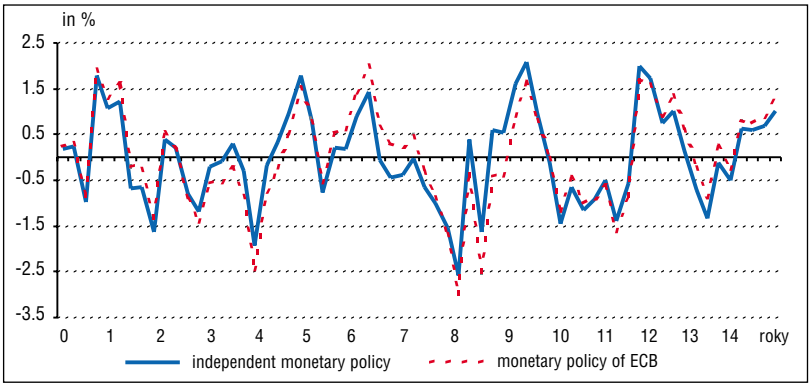
The results of simulations are conditional on a theoretical rule for monetary policy response, which is used by the prognostic model of NBS. The model put more emphasis on price stabilization – lower inflation – than on the stabilization of real economy. However, such setting of the monetary rule is 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 1). 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 %.

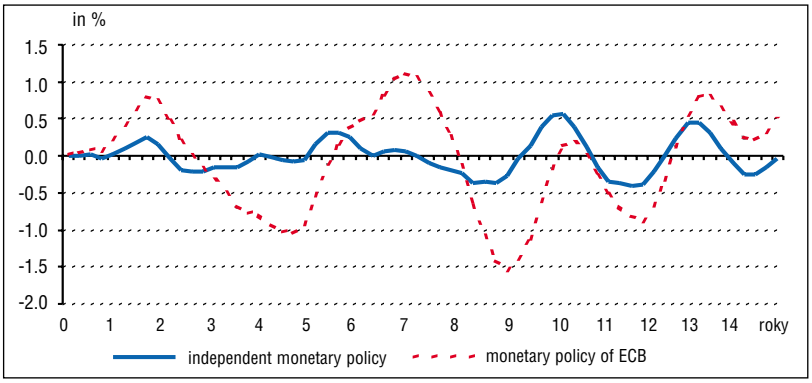
Independent monetary policy has significantly higher stabilization impact on inflation (Figure 2). It is directly given by the nature of inflation targeting of the current monetary policy. After the loss of independence the standard deviation of inflation will increase from 0.24 % to 0.68 %.

Figure 1 GDP fluctuations – output gap



Source: NBS, simulations.

Figure 2 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.[3] 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.[4] 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 changing the ratio of savings to earnings; therefore our estimate of the value of more stability under independent monetary policy is overestimated.

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 %

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

[4] 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)=1n(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

GDP. In 2005 it represents SKK 586 bil., or respectively between SKK 343 bil. and SKK 829 bil. (lower and upper limit).

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.

Towards higher synchronization

Economic openness

For the entry of the Slovak Republic to the euro area the share of the EU in Slovak foreign trade is important. The openness of the Slovak economy is fast increasing and 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.

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)[5] is used, which expresses the share of the volume of intra-industry trade in the total trade between two countries.

The values of this index for Slovakia (with respect to the EU) has been rather high and from 1994 to 2004 it has ranged between 0.8 and 0.9 (calculation based on single digit SITC nomenclature). The index cannot provide full information of intra-industry trade, but 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.

Economic structure

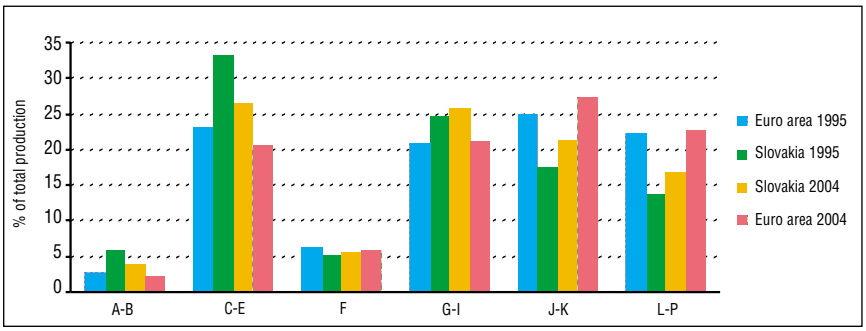
The probability that shocks will be asymmetric or have asymmetric impact depends on the structure of the economy. If the structure of the economy is significantly different from the euro area, even the same shocks may have a different impact on Slovakia and lead to asynchronous business cycle. Similarly, 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 3. 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

[5] $$GLI_t = 1 - \frac{\sum_i (X_{it} - M_{it})}{\sum_i (X_{it} - M_{it})},$$

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.

Figure 3 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 1 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.

production in Slovakia certain divergence of industry (Box 1) is likely in the future, however, in other sectors approximation to the euro area should continue.

Data in Figure 3 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.

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.

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