The Challenges of EMU Accession Faced by Catching-up Countries: A Slovak Republic Case Study

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THE CHALLENGES OF EMU ACCESSION FACED BY CATCHING-UP COUNTRIES: A SLOVAK REPUBLIC CASE STUDY

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ABSTRACT

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The Maastricht criteria for accession to the euro area can be difficult for any economy to achieve, not least because of the challenges posed by the "impossible trinity", which suggests that it is not possible to target both a stable exchange rate and stable inflation at the same time as maintaining free capital mobility. But for poorer economies which are catching up to the living standards of the wealthier EMU members, the challenges are magnified. This is because economies with very high productivity growth may have larger Balassa-Samuelson effects, resulting in higher steady state inflation rates as well as gradually appreciating equilibrium real exchange rates. While some nominal appreciation is permitted during ERM-II membership, the rules do not make it easy to signal the magnitude of expected appreciation. This may lead to poorly anchored exchange rates, making the catching-up economies more vulnerable to the challenges of the impossible trinity. Moreover, countries that have recently introduced fully-funded pension pillars which involve high transition costs, may find it difficult to meet the Maastricht criteria for government finances. It is unclear whether recent changes to the Stability and Growth Pact will alleviate the short-term fiscal pressure on countries that have improved the long-term sustainability of their government finances at the cost of short-term deterioration to their fiscal deficits. The example of Slovakia is used to illustrate these points, and a number of policy guidelines are proposed to minimise the risks.

This Working Paper relates to the 2005 OECD Economic Survey of the Slovak Republic (www.oecd.org/eco/surveys/slovakia).

JEL classification: F31, F33, O52
Keywords: Impossible trinity; Balassa-Samuelson effect; EMU accession; Maastricht criteria; Stability and Growth Pact.

RÉSUMÉ

Problèmes posés aux pays en phase de rattrapage par l'adhésion à l'UME : la République slovaque

Toute économie peut éprouver des difficultés à répondre aux critères de Maastricht pour adhérer à la zone euro, surtout en raison des problèmes posés par l'«impossible trinité», selon laquelle il n'est pas possible de poursuivre à la fois les objectifs de stabilité du taux de change et de l'inflation tout en maintenant la liberté des mouvements de capitaux. Cependant, pour les économies plus défavorisées qui sont en train de rattraper le niveau de vie des membres les plus riches de l'UME, les difficultés sont encore amplifiées. Cela s'explique par le fait que les économies dont la croissance de la productivité est très rapide peuvent enregistrer des effets Balassa-Samuelson plus marqués, se traduisant par des taux d'inflation constamment plus élevés ainsi que par une appréciation progressive des taux de change réels d'équilibre. Si une certaine appréciation nominale est autorisée durant la phase de participation au MCE-II, les réglementations applicables ne permettent pas aisément d'indiquer l'ampleur de l'appréciation attendue. Cela peut se traduire par une instabilité des taux de change et rendre les économies en phase de rattrapage plus vulnérables aux défis de l'impossible trinité. De plus, les pays qui ont instauré récemment des piliers de système de retraite par capitalisation entraînant des coûts de transition élevés pourraient éprouver des difficultés à respecter les critères de Maastricht en matière de finances publiques. On ne sait pas encore si les modifications récentes du Pacte de stabilité et de croissance allègeront la pression fiscale à court terme sur les pays qui ont amélioré la viabilité à long terme de leurs finances publiques au prix d'une détérioration à court terme de leurs déficits budgétaires. L'exemple de la Slovaquie est utilisé pour illustrer ces points et un certain nombre d'orientations de politique économique sont proposées pour minimiser les risques.

Ce Document de travail se rapporte à l'Étude économique de l'OCDE de la République slovaque, 2005 (www.oecd.org/eco/etudes/slovaquie).

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Mots clés : Impossible trinité ; effet Balassa-Samuelson ; adhésion à l'UME ; critère de Maastricht ; Pacte de stabilité et de croissance.

THE CHALLENGES OF EMU ACCESSION FACED BY CATCHING-UP COUNTRIES: A SLOVAK REPUBLIC CASE STUDY

Anne-Marie Brook[1]

1. Introduction

1.   In May 2004 ten new countries joined the European Union (EU) as Member States with a derogation on euro area membership. This means that, while not yet adopting the euro, they are committed to striving towards the eventual adoption of the euro upon fulfilment of the four convergence criteria laid down in Article 121 of the EC Treaty. These criteria, typically referred to as the *Maastricht criteria*, are: low inflation; a stable exchange rate; a sustainable budget position without an excessive deficit; and low long-term interest rates.[2]

2.   The process of fulfilling these four convergence criteria is by no means simple, for several reasons. First, the "impossible trinity" sets a challenging backdrop for policy-makers who are, essentially, required to simultaneously achieve three contradictory objectives: to stabilise the exchange rate within narrow bands; to have free capital mobility; and to maintain low and stable inflation. Second, many of the new EU member states are currently experiencing some degree of *catch up* of their standards of living to the higher income levels of the wealthier western euro area members. In turn this implies both higher inflation rates than their more western counterparts, and some trend appreciation of their equilibrium real exchange rates. These economic features make meeting the Maastricht criteria more difficult, since the rules for accession to the Economic and Monetary Union (EMU) were designed to best fit economies that are more homogeneous with respect to the pre-existing euro area members. Finally, several of the new EU members have recently introduced costly pension reforms, which may jeopardise their achievement of the Maastricht fiscal criterion.

3.   This paper discusses each of these challenges from the perspective of a high-productivity-growth new EU member economy, with a floating exchange rate, which wishes to join the EMU as quickly as possible. The case of Slovakia which, following the successful implementation of a very impressive reform agenda,[3] is now coming close to joining ERM-II and meeting the other Maastricht convergence criteria, is

used as an illustrative example. Since the institutional framework is taken as given, it is assumed that the euro will eventually be introduced and the costs and benefits of euro adoption are not explored.

2. The impossible trinity

4.   Economic theory suggests that it is not possible to simultaneously target both a stable exchange rate and stable inflation at the same time as maintaining free capital mobility. For most countries, the fact that only two out of these three policies can be mutually consistent leaves policy-makers having to decide which one to give up: this is what Obstfeld and Taylor (1998) termed the *trilemma*. Each of the Baltic states, for example, has chosen to give up an independent monetary policy by fixing their currency or by adopting a currency board. Many other countries give up control over the exchange rate by choosing a free float (e.g. the UK). Much less common is the imposition of capital controls. However, despite evidence in support of the trilemma[4] there are also a large number of policy-makers - such as the Slovak authorities at present - who tread a middle path without directly confronting the implications of the trilemma. To some extent Slovakia has little choice; capital controls are not permitted by the European Union[5] and the criteria for joining the EMU include both stabilising the exchange rate and controlling inflation. Besides, since Slovakia and the other new EU members have the ultimate exit strategy (conversion to the euro), ERM-II is likely to be less subject to the weaknesses usually attributed to intermediate regimes.

5.   The Slovak government's timetable foresees euro adoption in January 2009, implying ERM-II entry by mid-2006 at the latest,[6] and a need to fulfil the fiscal and inflation criteria by 2007. The convergence examination of the Slovak Republic would take place in mid-2008.[7] In early 2005 the impossible trinity appeared to be presenting problems for the smooth achievement of these goals: Slovakia's impressive reform process had encouraged high levels of FDI investment; portfolio flows had also been considerable; and the central bank was struggling to limit the exchange rate appreciation. At that time, there was a growing risk that the central parity for the koruna entry into ERM-II would be too high, resulting in a significant loss of economic competitiveness. The central bank had found it increasingly difficult to maintain local short-term interest rates at levels that diverged significantly from the 'euro area' interest rate without encouraging upward pressures on the koruna.

6.   Fortunately, the pressures of the trilemma in Slovakia have eased in two respects. First, inflation outcomes for the first few months of the year were significantly lower than expected, signalling that the extent of spill-over from high headline inflation rates in 2004 was minimal. Second, the upward pressure on the koruna eased. If this situation of benign inflation and limited exchange rate appreciation persists, then the impossible trinity is unlikely to threaten Slovakia's prospects for smooth entry to the euro zone. But there are risks to this outlook. The worst case *trilemma* scenario would be a resumption of excessive exchange rate appreciation combined with a rebound in inflation, perhaps due to an over-heating of the

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4.   *E.g*., Obstfeld, Shambaugh and Taylor (2003).

5.   Council Directive 88/361/EEC enshrined the principle of full liberalisation of capital movements between Member States with effect from 1 July 1990, although some countries (Spain, Greece, Ireland and Portugal) were given transitional arrangements for some time. The directive does, nonetheless, make provision for a "safeguard clause". Under this clause, protective measures can be taken for up to six months, if capital movements are judged to impose a very severe strain on foreign exchange markets, leading to serious disturbances in the conduct of a Member State's monetary and exchange rate policies.

6 .   Since a two year membership in ERM-II is normally required.

7.   The examination is based on European Commission and European Central Bank reports to the Council of Finance Ministers. On the basis of a proposal from the Commission, the Council decides, after a discussion by Heads of State or Government, whether the member state has fulfilled the necessary conditions for adopting the euro. If it is agreed that the conditions have been met, the date and rate at which conversion will take place are fixed at the same time.

economy. The following discussion, while focussed primarily on the challenges posed by rapid productivity growth, will continue to draw out the implications for Slovakia of, and possible responses to, the impossible trinity.

3. The additional challenges of EMU accession faced by *catching-up* economies

7.   By definition, catching-up economies are those that are narrowing the per capita income gap *vis-à-vis* wealthier economies, by investing in better human and physical capital and by adopting more efficient production processes. As the productivity gap narrows it is natural to expect the price level gap to narrow also, reflecting the gradual convergence of living standards to those of Western Europe. However, as discussed below, this process poses particular challenges for the catching-up countries' goals of meeting the Maastricht criteria of low and stable inflation together with stable exchange rates.

3.1 Meeting the Maastricht criterion for price stability

8.   The criteria for price stability is fulfilled if the candidate country's inflation rate is no more than 1½ percentage points higher than the average inflation rate of the three "best-performing" Member States in terms of price stability. This definition of the reference value makes compliance challenging for three reasons. First, to the extent that the Balassa-Samuelson (BS) effect is significant, it may create a more challenging goal post for "catching-up" economies than it did for the core EMU economies, resulting in the boxer effect (Box 1).

Box 1. The Balassa-Samuelson effect and the boxer effect

The Balassa-Samuelson (BS) effect stems from the fact that 'catching-up' countries will typically experience significantly faster productivity growth in the tradable goods sector than in the non-tradable goods sector. Higher productivity in the tradable sector allows wages to be bid up in that sector without increasing the price of the tradable goods being produced. If labour is mobile, the non-tradable sector must also raise wages in response, but since productivity is lower, firms in this sector must fund the higher wages by raising the price of non-tradable goods. This will result in real exchange rate appreciation through a higher overall inflation rate in the economy (if the nominal exchange rate is fixed), or through some combination of nominal appreciation and CPI inflation (if the exchange rate is flexible).

The BS effect is relevant to the topic of EMU accession, since it implies that the catching-up economies have higher *steady state* inflation rates than do the wealthier economies of the euro area.[1] Because of this, it has been argued that the Maastricht criterion on inflation may be inconsistent with the catching-up process. One concern is that accession countries may be forced to achieve the required inflation reduction by allowing greater nominal exchange rate appreciation, which (all else equal) could lead to a loss of competitiveness and risk attracting speculative capital flows. Another concern would be that an accession country may be forced to deliberately slow the economy below its potential growth rate, leading to a loss of welfare. Of course, some countries may avoid these costs by using more devious techniques, such as the freezing of administered prices, the limiting of public sector wage increases, or the lowering of consumption taxes during the reference period for accession.

Perhaps the most famous proponent of the inconsistency view was György Szapáry, advisor to the President of the National Bank of Hungary, who argued that the inconsistency between the Maastricht criterion on inflation and the BS effect would encourage a "weighing-in" syndrome: like the boxer who refrains from eating for hours prior to the weigh-in only to consume a big meal once the weigh-in is over, the candidate country will do whatever is required to squeeze down inflation prior to accession, only for repressed pricing pressures to re-emerge once it has joined the EMU.[2] Consequently, this phenomenon has come to be known as the boxer effect.

The recent batch of EU accession countries are not the first to have faced this challenge. Ten to fifteen years ago, the countries of the current euro area with the lowest levels of GDP per capita were Greece, Ireland, Spain and Portugal. These countries have all recently run inflation rates at least one percentage point higher than the inflation rate they achieved in the year that they were required to meet the inflation criterion, and significantly higher than the average inflation rate for the euro area as a whole (Table 1). This is consistent with the idea that the steady state

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inflation rates of these countries were higher than the reference rate.

The importance of Szapáry's argument obviously depends on the size of the BS effect, as well as the expected inflation reference rate. Much of the most recent BS literature has undermined the empirical foundations of earlier studies and concluded that the BS effect is relatively small. Instead of attributing most of the inflation differentials in the Central European countries *vis-à-vis* the euro area to productivity differentials, this literature has instead attributed them to other factors such as demand-side pressures, increases in administered non-tradable prices as part of price liberalisation, and the dominance of backward looking inflation expectations. For example, compared with some initial estimates of up to 3 or 4%, one of the more recent comprehensive studies concluded that the productivity differentials in six central European economies contributed on average only between 0.2 and 2.0 percentage points to annual inflation differentials with respect to the euro area between the early-to-mid 1990s (depending on country data availability) and 2001 Q3.[3] The estimate for Slovakia was at the low end of this range (0.2 percentage points). However, a higher estimate for Slovakia could perhaps be expected for a later time period that captured the productivity acceleration brought about by the recent reforms. Indeed, Kovács (2002) has suggested that strong FDI investment can push the magnitude of the BS effect up significantly, and the National Bank of Slovakia (NBS) has estimated that the BS effect for Slovakia has recently picked up to around 1 percentage point, after averaging closer to 0.5 percentage points since the mid-1990s.[4]

Table 1. The boxer effect in selected euro area members

	Greece	Ireland	Spain	Portugal	*Euro area*
Weigh-in year (date for meeting the Maastricht inflation criterion)	1999	1997	1997	1997	*1997*
Average inflation rate over the 5 years prior to weigh-in	7.5	2.3	5.3	4.7	*3.0*
Inflation rate at weigh-in	2.1	1.2	1.9	1.9	*1.7*
Average inflation rate since weigh-in	3.4	3.6	3.0	2.9	*1.8*

Since the upper edge of this range is not as large as suggested by some earlier estimates, some economists have concluded that the impact of the BS effect is unlikely to be a major determining factor in the ability of the Central European countries to satisfy the Maastricht inflation criterion.[5] Strictly speaking this may be true, but not without a boxer effect. For example, if the size of the BS effect is around 1%, then the steady state inflation rates of these countries should be around 1 percentage point higher than steady-state inflation in the wealthier EMU members. If the BS effect is larger, the additional efforts that the economy must make to meet the Maastricht inflation criterion will be multiplied accordingly.

1. *i.e.,* if the output gap was closed and both interest rates and the exchange rate were at their equilibrium levels, average inflation would be expected to be higher in those accession countries with high productivity growth than in the rest of the euro area.
2. Szapáry (2001).
3. Mihaljek and Klau (2004). Similar results have been obtained by other researchers (*e.g.*, Kovács (2002) and Égert (2002)) although some of these studies have found a higher lower bound, concluding that the magnitude of the BS effect probably averages around 1-2 percentage points per annum in the transition countries.
4. National Bank of Slovakia (2004).
5. *e.g.*, Mihaljek and Klau (2004).

9.　　　　Second, even for countries without a significant BS effect, the definition of the inflation reference value creates uncertainty about the definition of "best performing" in the context of price stability. Initially the "three best-performers" were simply identified as the three EU countries with the lowest inflation rates. In 2004, however, the Commission decided to exclude Lithuania on the basis that "countries with negative inflation are not considered to be best performers in terms of price stability".[8] This leaves open the question of whether countries with positive, but very low, inflation rates would be considered best performers.[9] Finally, this definition provides a moving target for compliance with the criteria, since the composition of countries that meet the "best-performing" criteria will change over time, and their inflation

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8.　　　　European Commission (2004), page 3.

9.　　　　Most economists agree that an optimal inflation rate is higher than zero, given considerations such as measurement bias, downward nominal price rigidities, and the potential negative consequences of deflation.

rates cannot be predicted with certainty. Figure 1 (panel A) indicates that the reference value has tended to fluctuate around the average euro area inflation rate or slightly higher. However, the variance has been relatively large, with the reference value ranging between a low of 1.9% in 1999 Q2 and a high of 3.3% in 2002 Q1. Moreover, the decision to exclude negative rates can lead to discrete jumps in the reference value when a country moves between positive and negative territory. For example, Finland lost best performer status when its inflation rate moved from 0% in 2004Q4 to -0.1% in 2005Q1, causing the reference value to jump from 2.1% at the end of 2004 to 2.5% in 2005Q1, but it would clearly subside again if Finland's inflation passes back into mildly positive territory.

Figure 1. Convergence of inflation and interest rates to euro area levels
Year-on-year percentage changes
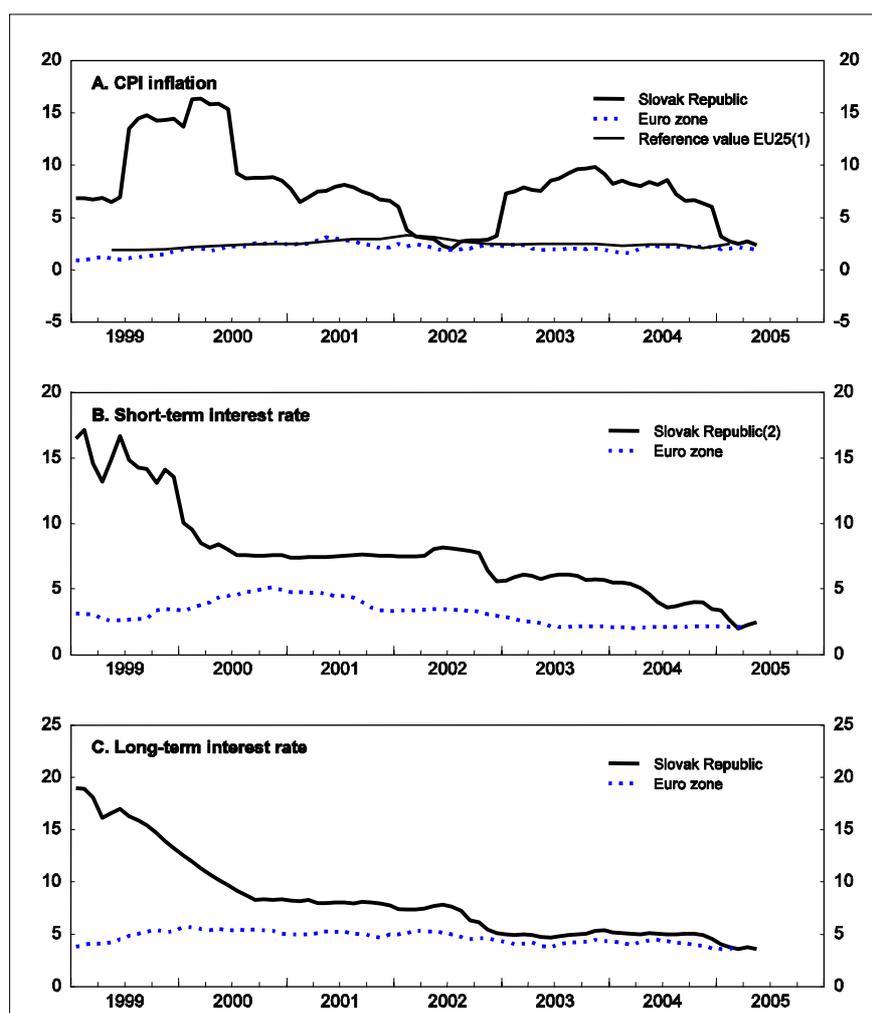
1. Average of the three lowest inflation rates (excluding negative inflation rates) plus 1.5 percentage points.
2. An inverted yield curve at the short-end, associated with NBS rejection of repo tender bids, temporarily pushed the short-term inter-bank lending rate in Slovakia below the euro area interest rate in early 2005. However, the policy interest rate in Slovakia remains 100 bps higher than the euro area policy rate of 2%.
Source: OECD, Main Economic Indicators.

10.   Given uncertainties about the strength of economic demand, and wage demands in particular, it is too early to tell how difficult it will be for Slovakia to achieve the Maastricht inflation criterion in the year 2007 (assessment is based on calendar year inflation outcomes). Recent inflation outcomes have certainly been very good. As the impact of the increase in the value added tax (VAT) rate dropped out of the year-

on-year rates of change, HICP inflation fell sharply from 5.8% in December 2004 to 3.1% in January 2005 and subsequently to 2.3% by May, before picking up slightly to 2.5% in June. These outcomes were much better than expected, suggesting little second-round effect on core inflation and easing the challenges of the trilemma, as discussed above.

11.   The National Bank of Slovakia (NBS) has assumed a target value for meeting the Maastricht criterion of approximately 2%.[10] With this goal in mind the NBS announced inflation targets of between 3.0 and 4.0% for the year ended December 2005, of below 2.5% for December 2006, and below 2% for December 2007 and December 2008. However, with HICP inflation having now fallen to 2.3% in May, the NBS has stated that inflation may come in below 3.0% for 2005.

12.   Compared with larger and more industrialised economies, the inflation transmission mechanism in Slovakia is dominated by the exchange rate channel, although the interest rate channel has been growing in importance.[11] Figure 2 indicates the extent to which disinflation in tradeable goods (as well as reduced inflation of regulated prices) has dominated the recent disinflation process. Whereas strong retail sector competition, together with exchange rate appreciation, pushed the inflation rate of tradeable goods into negative territory in late 2004, the inflation rate of non-tradable market services has remained around 7%.

Figure 2. Inflation of tradeable goods and market services continue to diverge (1)
Year-on-year percentage changes
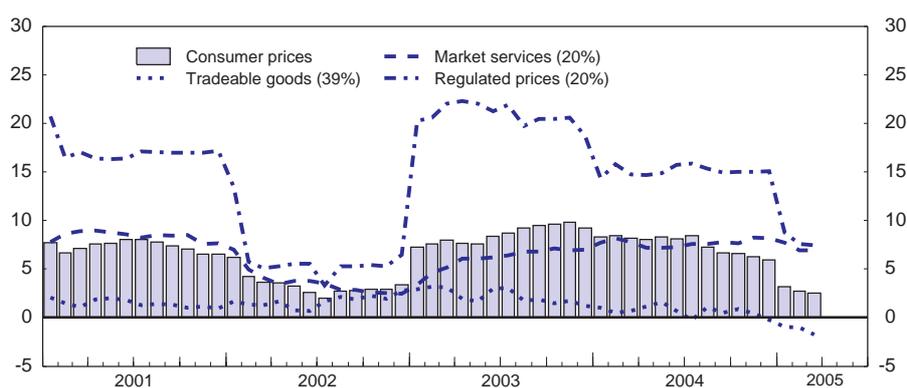
1.   Numbers in parentheses represent the component's average weight in the consumer price basket over the period. The components do not sum to total CPI inflation since food prices and the effect of changes in indirect taxes are not shown.
Source: National Bank of Slovakia and OECD, National Accounts.

13.   Although the interest rate /aggregate demand channel of monetary policy is estimated to be relatively weak[12], it is likely that it is becoming stronger over time (given higher debt stocks and a significant increase in access to credit for both households and businesses). In turn this suggests that low interest rates may increasingly stimulate domestic demand. Structural change has made the output gap particularly difficult to estimate for Slovakia, although most analysis suggests that the extent of excess capacity in the economy is low and diminishing.[13] Thus, any sign of inflationary pressure, particularly at a time of renewed exchange rate appreciation, would thrust monetary policy back into the dilemma of

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10.   December 2004 Monetary Programme of the NBS, covering the period until 2008.

11.   Kuijs (2002).

12.   The weakness of the interest rate transmission channel stems from low levels of household debt, increasing access of firms to European credit markets, and the role of FDI as a substitute for business sector credit.

13.   See IMF (2005) for a comparison of estimates.

whether to raise interest rates to dampen aggregate demand (to the extent that the interest rate channel of monetary policy is important) or cut interest rates to discourage portfolio capital inflows that may put further upward pressure on the exchange rate. If such a scenario emerges tighter fiscal policy may help to dampen aggregate demand. In the meantime, an emphasis on flexible wages and further structural reform to facilitate productivity growth, particularly in the non-tradables sector, would permit low inflation outcomes without any loss of competitiveness.

14.   Slovakia's strategy for ensuring low inflation outcomes must, therefore, have several strands.[14] First, the inflation rate of non-tradable goods (*i.e.* market services) should be damped through significant further structural reforms to promote productivity growth in these sectors. Second, tighter monetary and fiscal policy may be required in order to slow aggregate demand in the event of an emerging positive output gap. Without an acceleration of productivity growth in the non-tradable sectors, or a slow-down in demand it may be difficult to achieve a significant drop in the inflation rate of market services, which are affected by the Balassa-Samuelson effect through wage inflation spill-over from the more productive tradeable sector (as discussed in Box 1). Third, the risk of high wage growth emphasises the critical importance of maintaining flexible labour markets. Finally, it would be desirable for the Slovak authorities to allow some nominal exchange rate appreciation within ERM-II. While this would permit some appreciation of the *real* exchange rate, in line with Slovakia's fundamentals, without jeopardising the inflation target, it should be emphasised that nominal exchange rate appreciation is not a panacea for all inflation woes, since it has an important cost for competitiveness unless matched by strong productivity growth.

3.2 Meeting the Maastricht criterion for interest rates

15.   The interest rate criterion requires that the average nominal long-term interest rate be no more than 2 percentage points above the average nominal long-term interest rate of the three best-performing EU Member States in terms of price stability. In the year to August 2004 only two of the 10 new EU member states (Hungary and Poland) did not have interest rates lower than the reference value of 6.4%.[15] With Slovak long-term interest rates averaging around 5% in 2004, well below the reference value, the interest rate criteria has already been fulfilled, and there is little risk that this situation will change in the next few years. Indeed, the spread between Slovak and euro-area bond rates has narrowed further in the first part of 2005 and is now (May 2005) only around 30 basis points (Figure 1, panel C).

16.   Interest rate convergence does, however, pose certain other risks for the economy. Slovakia's price deregulation and higher growth rates have, until very recently at least, implied higher inflation rates than in the core euro area countries (Figure 1) and very low real interest rates (Figure 3). In combination with a high marginal return on capital, these low interest rates could fuel a credit boom that, owing to supply-side constraints, could give rise to asset bubbles or a boom-bust cycle. While the Slovak housing market is in need of liberalisation to facilitate labour mobility, housing market liberalisation at the same time as an expansion in credit is a combination to watch very carefully. Inappropriately low interest rates may also result in an excessive expansion of domestic credit, excessive aggregate demand, and excessive inflationary pressures, which would not only put fulfilment of the inflation rate criterion at risk but would also result, if not matched by productivity growth, in a loss of export competitiveness. Moreover, the foreign liabilities in the Slovak banking system grew very rapidly (around 60% per annum on average) over the 2002-2004 period, raising potential concerns about the (unhedged) foreign exchange exposure of

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14.   We assume that the authorities would avoid more under-hand techniques such as freezing administered prices or lowering consumption taxes. Note also that the NBS does not anticipate further significant inflation of regulated prices, given that most distortions to these prices have now been eliminated.

15 .   The EC has attributed higher interest rates in these two countries to concerns about the authorities' resolve to tackle mounting government deficits.

firms and banks. Sound prudential regulation and supervision of the banking system is clearly of crucial importance.

Figure 3. Real interest rates in Slovakia and the Euro area[1]
As per cent
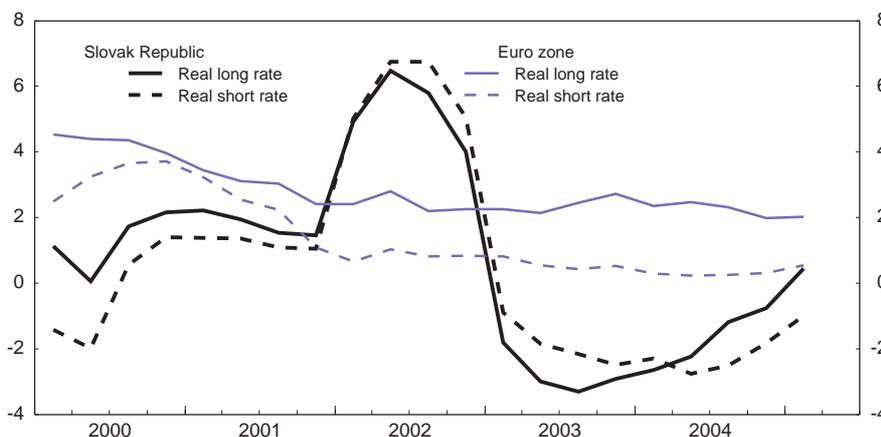
1. Nominal rates less core inflation.
Source: OECD, Main Economic Indicators.

3.3 Meeting the Maastricht criterion for exchange rate stability

17.   The Maastricht exchange rate criterion requires at least two years of membership in the exchange rate mechanism (ERM-II) without severe tensions and, in particular, without devaluing the central rate against the currency of any other Member State.[16] Ideally, this should involve the exchange rate remaining relatively close to the *central rate*, which is determined prior to entry by mutual agreement of the ministers of the euro-area Member States, the ECB, and the ministers and central bank governors of the non-euro area Member States participating in the new mechanism. The procedure to be followed in reaching this decision also involves the European Commission and requires consultation of the Economic and Financial Committee.

18.   Conceptually, the ERM (and subsequently ERM-II) was designed to serve as a testing ground for the central rate as well as for the sustainability of convergence in general. In other words, the framework has been designed to help in identifying any potential misalignments in the central parity that have not been detected before.[17] If the exchange rate remains very close to the central rate during ERM-II membership, and if the other Maastricht criteria are met, then this is seen as a positive sign that sustainable convergence has been achieved. Catching-up countries do not easily fit this framework, in its simplest form, since a significant productivity gap is likely to require some real exchange rate appreciation during the course of ERM-II participation. However, it is clear that some deviations from the central rate can be accepted. Based on the experiences of other countries, and as confirmed in the ECB Position Paper,[18] factors that lead to an exchange rate appreciation can be taken into account. Thus, although there is no official reference defining concrete exchange rate bands, some economists (for instance Égert *et al*, 2003)

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16 .   Three of the 10 new EU currencies – the Estonian kroon, Lithuanian litas and Slovenian tolar – have already joined ERM-II (on 28 June 2004), suggesting that these economies may be the first of the new members to accede to the euro area, potentially as soon as January 2007.

17 .   ECB (2004), p. 22.

18 .   ECB (2003).

have concluded that the degree of fluctuation around the central rate that could be deemed as compatible with the Maastricht criterion is asymmetric: depreciations should be no greater than 2.25%, although in the ECB convergence report this edge was made softer by the 10-day moving average rule,[19] while appreciations may be permitted up to a magnitude of 15%.

19.   For economies with floating exchange rates, this framework presents the national authorities with a number of challenges. First, although the central rate should ideally be set as close as possible to the estimated *equilibrium* level, there is considerable uncertainty about where the equilibrium level is. This is particularly true for Slovakia, which has unusually short time-series and significant structural breaks in the data (see Appendix). Second, there is a risk that speculative capital flows could push the exchange rate to an uncompetitive level. It is well documented that fully floating currencies often deviate very substantially from their fundamental values[20] and even monetary authorities such as the NBS, who run a *managed* float, have only limited tools for controlling the exchange rate if it deviates significantly from its fundamentals (Box 2). Finally, as discussed above, some appreciation of the nominal exchange rate within ERM-II may be necessary, in order to achieve some real exchange rate appreciation without sacrificing the inflation criterion.[21]

Box 2. The (in)effectiveness of foreign exchange intervention

Intervention in the foreign exchange markets may be either unsterilised or sterilised. Unsterilised intervention is viewed as an instrument for implementing monetary policy changes, and results in changes to the domestic monetary base.[1] In contrast, sterilised intervention directly targets the foreign exchange markets (either the level or volatility of the currency) and involves adjusting the domestic monetary base to offset the change in foreign currency reserves. Following the focus of the economic literature, as well as NBS behaviour, this box focuses only on the role of sterilised intervention.

Unfortunately, data limitations and the endogeneity of changes in the exchange rate and intervention make it very difficult to measure the effectiveness of foreign exchange intervention. Nevertheless, most recent studies have reached similar conclusions: that the level and volatility of the exchange rate can be influenced in the short-term, but that most of the impact occurs on the day of the intervention, with only a smaller impact on subsequent days. There is no evidence of a statistically significant longer-term impact on the level of the exchange rate.[2] There is also some evidence that foreign exchange intervention may increase volatility. Nevertheless, these results have led many (especially in central banks) to conclude cautiously that official intervention can be effective, especially if the intervention is publicly announced and concerted and provided that it is consistent with the fundamental stance of monetary and fiscal policy. Some countries in emerging Asia present evidence of this -- but only through very significant and repeated intervention efforts.

Some economists have argued that foreign exchange market intervention may be more effective in emerging market countries.[3] They give three possible reasons for this: lower market turnover; the existence of capital controls in some countries; and the possible informational advantage that a central bank may have over a less sophisticated domestic market. In such a setting, smart timing of interventions may increase their effectiveness. Again, however, most studies of intervention in emerging markets have concluded that when effective, the impact is very short-lasting, and there is no evidence to suggest that central banks can use intervention to have a lasting impact on exchange

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19.   See, for instance, Égert and Kierzenkowski (2003). Note also that additional flexibility may be permitted in certain circumstances, since a depreciation of more than 2.25% is not *automatically* viewed as a non-fulfilment of the criterion on exchange rate stability.

20.   Floating exchange rate cycles often exhibit very substantial amplitudes. For example, the yen, the euro and the US, Canadian, Australian and New Zealand dollars have all experienced fluctuations of at least 20% in their effective exchange rates in recent years. Some exchange rate cycles are much larger still.

21.   As discussed in the Appendix, the real equilibrium exchange rate is expected to gradually appreciate in "catching-up" countries such as Slovakia. Prior to EMU entry, therefore, this must be achieved mainly by nominal appreciation, since inflation must remain low in order to meet the Maastricht inflation criterion. In contrast, real exchange rate appreciation after EMU entry must be driven by higher inflation rates.

rates, independently of monetary conditions. However, the results with respect to volatility are more positive (reduced volatility in some cases). Similar results were found in a study of the effectiveness of Koruna-euro foreign exchange interventions in the Czech Republic between September 2001 and October 2002.[4] Like the NBS recently, the Czech National Bank (CNB) has followed an explicit inflation targeting regime and during this period, interventions in the foreign exchange market were relatively frequent. Also, like the NBS, the CNB tended to intervene to counter upward pressure on the exchange rate. While the results suggested that intervention did have some statistically significant impact on the spot rate, the size of the impact was very small.

In light of the fact that monetary authorities continue to conduct foreign exchange interventions, despite their long-term ineffectiveness, some researchers[5] have focused on identifying which strategies may increase the short-term effectiveness, given that the decision to intervene is taken.

1. In general, a strong consensus exists that unsterilised intervention can influence the exchange rate in the same way that monetary policy influences it.
2. See, for instance, Sarno and Taylor (2001), Kearns and Rigobon (2005).
3. See, for instance Disyatat and Galati (2005).
4. Disyatat and Galati (2005).
5. Such as King (2003)

20.   While the first two ERM-challenges mentioned above are relevant for all euro accession countries, the final challenge is particular to *catching-up* economies. If a catching-up economy has a significant productivity growth differential with respect to that in the euro area, then some appreciation of the real *equilibrium* exchange rate will occur over the period of participation in ERM-II. Given the inflation objective, this may require some nominal exchange rate appreciation.[22] However, ERM rules do not permit an economy to participate in ERM-II with a "crawling" central rate. Instead, "catching-up" countries have the scope to achieve nominal exchange rate appreciation within ERM-II by re-valuing their central rates (as was the case for Ireland in ERM and Greece in ERM-II).[23] Nevertheless, if the magnitude of re-valuation is not known in advance, financial market expectations may be poorly anchored, leading to excessive volatility in the exchange rate. Moreover, for economies with particularly strong exchange rate channels for inflation, such as Slovakia, large exchange rate fluctuations in ERM-II would also inject volatility into the inflation rate, potentially putting the price stability objective at risk.

21.   In order to better anchor financial market expectations during ERM-II for catching-up economies with floating rate regimes, good communication will be essential, underpinned by a consistent macroeconomic policy mix and consistent exchange rate intervention policy. While financial market expectations could perhaps be better anchored if the accession country's central bank were to indicate the magnitude of real exchange rate appreciation that would be consistent with productivity differentials, the ECB advises against such announcements and notes that any unilateral announcements would not prejudice the final choice of the conversion rate.[24]

The Slovak case: recent trends and tensions in the path of the Slovak koruna

22.   Since the start of the economic reform process in the late 1990s the Slovak real exchange rate has been on a general appreciation trend, except for a short-lived reversal in 2000 and again in the first half of

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22 .   Indeed, the ECB (2003) states that there should be no presumption that the initial central rate, at which a currency enters ERM-II, will be the ultimate conversion rate for euro adoption.

23.   See De Grauwe and Schnabl (2004) for further discussion of the Irish case. Note that revaluation may also be desirable in the event of country-specific shocks or if it becomes clear that the original central rate was poorly chosen.

24.   ECB (2003) states that "Unilateral announcements about the intended central rates are not in line with the multilateral nature of the arrangement and should be avoided. In any case, they would in no way prejudice the ultimate choice of the central rate".

2002 when pre-election uncertainties and economic imbalances re-emerged.[25] This real appreciation has been much more significant in terms of relative CPI inflation than in terms of relative unit labour costs (Figure 4) -- a consequence of the fact that real wage inflation has been relatively moderate, in relation to productivity growth, whereas CPI inflation has been pushed up by higher indirect taxes and by the adjustment of many administered prices to market levels. However, the appreciation of both measures has accelerated since late 2002.

Figure 4. Nominal and real exchange rate trends
Index 1999 Q1 = 100
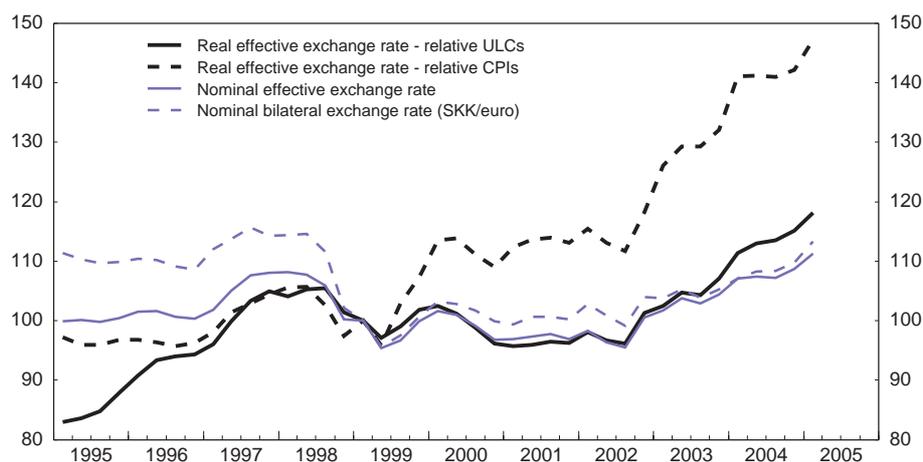
Source: OECD, Economic Outlook No 77.

23.   This does not automatically imply a significant loss of competitiveness, since the *equilibrium* real exchange rate has undoubtedly also appreciated over this time (partly as a result of the BS effect).[26] Still, since the extent of real appreciation has exceeded most estimates of equilibrium real appreciation, it is reasonable to conclude that Slovakia did indeed lose competitiveness over this period.[27] Importantly, however, the competitiveness loss is not distributed evenly; the heaviest burden will have fallen on the most traditional manufacturing firms who have experienced the lowest rates of productivity growth in recent years, while the most productive firms may even have gained competitiveness.

24.   Concerns that Slovakia might be forced to enter ERM-II with an over-valued exchange rate picked up in 2004, around the time that more studies of the equilibrium exchange rates suggested that it might be becoming overvalued (see Appendix). In response, the NBS used a number of strategies to slow

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25.   During most of the 1990s the koruna was managed under a fixed peg system, resulting in only limited exchange rate fluctuations. Subsequently, following progressive current and capital account liberalisation the peg was abandoned in October 1998 resulting in a substantial depreciation of the currency.

26.   To the extent that the BS effect is responsible, real exchange rate appreciation need not necessarily be detrimental for competitiveness. The BS effect stems from higher relative productivity growth (than that in trading partner countries), which pushes up total CPI inflation, or total unit labour costs (in the BS model prices and unit labour costs rise in the non-tradable sector but not the tradable sector) relative to that in trading partners. Nevertheless, the competitiveness of the tradable sector is not directly affected.

27.   Oomes (2005) concludes that the equilibrium real exchange rate appreciation has been proportional to the *relative productivity differential* (around 3% per annum), whereas the actual (ULC) real exchange rate appreciated by around 6-7% per annum since late 2002. Note that a 3% relative productivity differential means that productivity growth in the tradeable sector has exceeded productivity growth in the non-tradeable sector by 3% more than in the euro area.

the pace of appreciation. These included: policy interest rate cuts; sterilised foreign exchange interventions; the practice of rejecting all bids in the regular repo tenders in order to leave excess liquidity in the banking system and push inter-bank interest rates lower; and public announcements designed to affect exchange rate expectations (see Figure 5).[28]

Figure 5. Recent developments in the Koruna and NBS actions
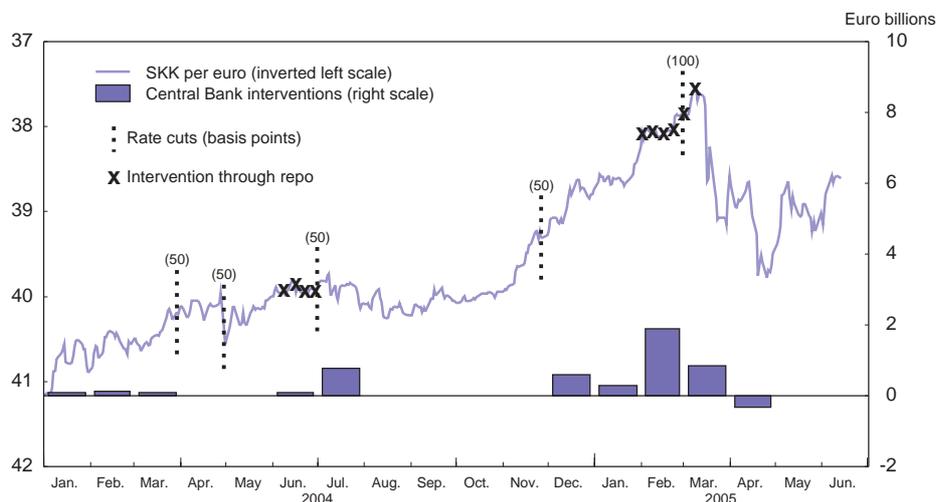
Source: Datastream and ING Slovakia.

25.   While these actions undoubtedly had some (at least short-term) influence, the central bank itself admitted that they had not been as effective as desired.[29] It is likely that the subsequent depreciation over March and April 2005 was due primarily to a change in investor sentiment towards the region and a closing out of short-term capital positions (*e.g.*, of hedge funds), rather than to NBS actions; the Polish, Hungarian and Czech currencies all fell during the same period. Regarding the effectiveness of intervention, the consensus in the economics literature is that it typically has only a minor *short-term* impact (see Box 1). In order to have an impact on the exchange rate for longer periods, very significant and repeated intervention efforts (as in emerging Asia) would be required. Even then, success is not guaranteed. However, assuming that the NBS continues to intervene, their challenge will be to choose their intervention moments carefully. In particular, it is important that intervention attempts not be inconsistent with other fundamental policies, such as the stance of monetary policy. For example, an attempt to slow exchange rate appreciation would not be consistent with a desire to tighten monetary policy, in the event of a rebound in inflationary pressures.

26.   Foreign exchange intervention has also had a significant sterilisation cost for the NBS,[30] particularly prior to the significant rate cut which took place at the end of February 2005 (and was effective

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28.   In addition, the NBS has taken actions to offset the impact of large investment inflows to state-owned enterprises and has negotiated agreement from the Ministry of Finance to not borrow abroad this year.

29.   For example, in early March the NBS governor noted that although he believed the bank's interventions on the foreign exchange market did have an impact on the exchange rate, they were less and less effective, leaving him dissatisfied with their overall impact (ISI Emerging Markets, 2005).

30.   Borrowing Slovak koruna to invest in foreign assets is costly when Slovak interest rates (at which the NBS can borrow) are higher than the return on foreign assets. This *carrying cost* of holding foreign reserves is known as the sterilisation cost of foreign exchange intervention.

from 1 March). Both this, and exchange rate valuation losses, contribute to the total cost of foreign exchange rate interventions.[31] With the spread between Slovak and euro area interest rates having now almost been eliminated, the cost of future sterilisation will be reduced, although losses (or gains) from net open intervention positions will continue to accrue.

27.   Looking ahead, the risk of significant further appreciation cannot be dismissed, despite recent exchange rate weakness. Appreciation pressures are particularly likely if the economy continues to perform well, attracting continued high levels of FDI investment, and once export growth picks up further as the production capacity of new manufacturing plants comes on line. In the event of renewed sharp appreciation, the NBS has room to cut policy interest rates somewhat further, providing inflationary pressures remain relatively muted, but this would be only a weak tool in the face of speculative capital flows.

28.   Given these considerations, it may be desirable for the monetary authorities to seek to enter ERM-II earlier than currently planned (2006Q2), in order to lock in a level of the exchange rate that is perceived to be more or less "fairly" valued, rather than take the risk of excessive appreciation over the next year. Otherwise, if excessive appreciation has occurred prior to ERM-II entry, it would seem reasonable to negotiate a central rate that is significantly weaker than the market rate at the time. The central rate should, in principle, correctly reflect the equilibrium exchange rate. However, if the exchange rate is over-valued, then the depreciation required to return it to a "fairly" valued central rate may put the inflation criterion at risk. Thus, short-term exchange rate misalignments should be avoided wherever possible.

3.4. Meeting the Maastricht criterion for the government budgetary position

29.   A member state will meet the fiscal criterion if the government debt ratio is below 60% and if it has achieved a budgetary position without an excessive deficit (which is normally defined as a deficit that exceeds 3% of GDP). Unlike the inflation and exchange rate criteria, there is no reason why the fiscal criterion should be any more difficult for the catching-up countries to meet than it was for the original EU members. However, a number of central European economies have introduced very significant pension reforms which improve the long-term sustainability of government finances at the cost of a short-term deterioration in the government's budgetary position. The cost of these reforms makes the Maastricht fiscal criterion more difficult to achieve, as the case of Slovakia clearly illustrates.

30.   With a general government deficit of 3.3% of GDP at the end of 2004, Slovakia has not yet fulfilled the criterion on government finances, although admirable progress with fiscal consolidation has now brought the target (a deficit of 3% of GDP or lower) within reach.[32] However, there remains significant uncertainty about how easily this criterion will be fulfilled, given the cost of the pension reform and risks to the government's fiscal projections. The biggest uncertainty relates to the cost of pension reform. The creation of a funded second pillar, operational since January 2005, has reduced the size of social security contributions to the first pay-as-you-go (PAYG) pillar, creating an additional fiscal cost of funding current pension liabilities in the old PAYG scheme. Initially, this fiscal cost was estimated to be relatively moderate (0.4% of GDP in 2005, 1.0% in 2006 and 1.1% in 2007). But since a larger number of

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31.   The NBS reported a total loss of SKK 39.3 billion in 2004, and a further loss of SKK 7.9 billion in the first 2 months of 2005. The more recent depreciation, however, allowed the NBS to post large profits over March and April, leading to a cumulative profit of SKK 12.6 billion for the first five months of 2005.

32.   Slovakia's fiscal deficit peaked at 12.3% of GDP in 2000 before falling to 6.0% in 2001, 5.7% in 2002 and 3.7% in 2003. Since Slovakia's gross public debt was 43.6% of GDP in 2004, well below the 60% ceiling imposed by the EC Treaty, this is not expected to pose any problem for meeting the criterion for government finances.

people have already transferred to the second pillar than was envisaged, the Slovak Ministry of Finance has revised the estimated costs up to 0.8% of GDP in 2005, 1.3% in 2006 and 1.4% in 2007.[33]

31.   Projections of the Slovak fiscal deficit are illustrated in Table 2 and Figure 6. The largest deficit, net lending including 100% of the second pillar costs, is the headline System of National Accounts (SNA) measure. The smallest, net lending excluding 100% of the pension reform costs (or the *underlying* deficit), is the measure that reflects what the fiscal deficit would have been in the absence of pension reform. Somewhere in the middle is a measure of net lending which partially adjusts for pension costs on the basis provided for by recent changes to the Stability and Growth Pact (SGP). These changes permit consideration of 100% of the pension reform costs in the first year (2005), 80% in the second year (2006), 60% in 2007, and so forth, under certain conditions. However, it is unclear whether Slovakia or other countries with costly pension reforms would be eligible for this consideration (see Box 3).

Table 2. Different measures of net government borrowing
As per cent of GDP

	2003	2004	2005*	2006*	2007*
Fiscal balance excluding 100% of 2nd pillar costs (underlying measure) (1)	-3.7	-3.3	-3.4	-2.9	-1.6
Estimated cost of launching pension reforms (2)	0.0	0.0	0.8	1.3	1.4
Fiscal balance including 100% of 2nd pillar costs (headline National Accounts measure) (1-2)	-3.7	-3.3	-4.2	-4.2	-3.0
N.B.: Fiscal balance excluding 2nd pillar costs as calculated on the linear degressive basis laid down in the revised SGP (3)	-3.7	-3.3	-3.4	-3.2	-2.2

1.   Ministry of Finance budget proposal for 2006-2008.
2.   Ministry of Finance estimates.
3.   Excludes 100%, 80% and 60% of the second pillar pension costs in 2005, 2006 and 2007 respectively.
*   Forecasts.

Figure 6. The impact of pension reform costs on the fiscal deficit
As per cent of GDP
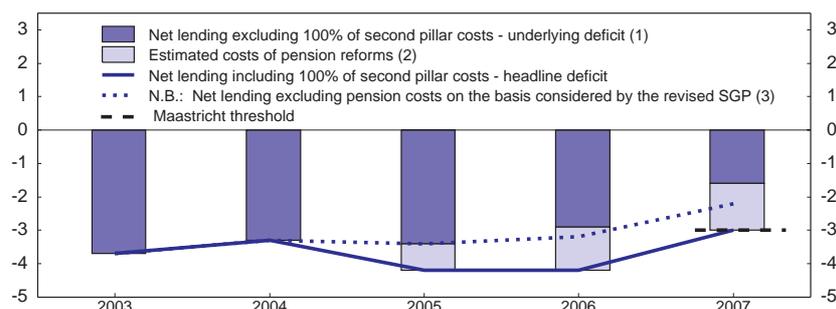
1.   Ministry of Finance budget proposal for 2006-2008 (forthcoming).
2.   Ministry of Finance estimates.
3.   Excludes 100%, 80% and 60% of the second pillar pension costs in 2005, 2006 and 2007 respectively.
Source: Ministry of Finance.

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33   Significant uncertainty continues to surround these estimates, since it is unclear to what extent people have simply transferred *earlier* than expected, or whether the total number of people transferring will also be significantly higher than originally expected. Nevertheless, the importance of fulfilling the government deficit criterion by 2007 argues strongly in favour of using prudent estimates.

Box 3 Recent changes to the Stability and Growth Pact

At the Meeting of the Finance Ministers of the European Council on 22–23 March 2005 it was recognised that although the implementation of fully-funded pension pillars "leads to a short-term deterioration of the budgetary position, the long-term sustainability of public finances clearly improves". As a result, it was agreed that for the decision on the abrogation of an excessive deficit decision, consideration should be given to the costs of such pension reforms in cases where the deficit exceeds, but is close to, the reference value of 3%.[1] More specifically it was agreed that consideration would be given to the net cost of the reform for the initial five years after a Member State has introduced a mandatory fully-funded system, or five years after 2004 for Member States that have already introduced such a system. Furthermore, it will also be regressive, *i.e.* during a period of five years, consideration will be given to 100, 80, 60, 40 and 20 percent of the cost of the reform to the publicly managed pillar.

More recently, the legal text specifying this amendment has been published,[2] confirming that "consideration should be given in all budgetary assessments … to an excess close to the reference value which reflects the implementation of pension reforms introducing a multi-pillar system that includes a mandatory, fully-funded pillar". It also says that this cost (assessed on the linear degressive basis described above) should be taken into account "*if the deficit has declined substantially and continuously* and has reached a level that comes close to the reference value".

If these rules are interpreted literally by the examining committee, the SGP amendments would effectively not provide countries with very costly pension reforms with any consideration of the costs of their pension reform during this period. This is because the cost of the pension reform can push up the headline deficit very significantly, making it extremely difficult to achieve a substantial and continuous decline in the deficit path, even if the underlying deficit is continuously declining.

1. ECOFIN (2005).

2. European Union (2005).

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32.   To illustrate, consider the Slovak government's projections, which suggest that the headline National Accounts deficit will increase from 3.3% of GDP in 2004 to 4.2% in 2005 and 2006, before falling back to 3.0% in 2007 (third line in Table 2). The increase in the headline deficit in 2004 and its lack of decline in 2005 can be almost entirely attributed to the cost of the pension reform. If these projections are realised, then the reference value would be reached in 2007 and the fiscal criterion would be fulfilled. However, if the deficit does not reach 3.0% in 2007, but only comes close to it, then it would be difficult to interpret the projected fiscal path as a continuous decline. On the other hand, the path of the underlying deficit shows a very substantial and almost completely continuous decline.

33.   This suggests a significant risk for the fiscal authorities. On the basis of the latest Ministry of Finance projections, the headline deficit will not be continuously declining, suggesting that the government should not necessarily assume that a favourable decision on the abrogation of an excessive deficit would be granted in the case that it misses the 3% headline deficit target (see Box 3). If such an assumption could be made, as seemed likely following the Meeting of the Finance Ministers in March 2005, then the government's most recent fiscal projections would seem to be sufficiently ambitious. For example, a headline deficit of 3.0% in 2007, less 60% of the cost of pension reform in that year produces an adjusted deficit of 2.2% of GDP (see the bottom line of Table 2), leaving the authorities with a significant safety margin for meeting the Maastricht criterion.

34.   Slovak government officials have stated that 3.0% will remain their headline deficit target regardless of the cost of the pension reform. Thus, if the cost of the pension reform is revised up further, then a more ambitious target for the underlying deficit – i.e. excluding the pension costs (top line in Table 2) – will be required. This line in Table 2 indicates that the Government's current underlying budget

deficit target is at 1.6% of GDP for 2007, revised down from 1.9% in the updated 2004 Convergence Programme as a result of the upward revision to the pension costs. Thus, the Government's most recent set of fiscal projections have already increased the intended degree of fiscal consolidation in 2007.

35.   However, given the risk that the cost of the pension reform will not be taken into consideration, it may be prudent for the government to provide for a greater safety margin with respect to the 3.0% headline fiscal target, through additional fiscal consolidation. Risks to the 3.0% target are not negligible. In addition to the pension reform cost, the government's projections will also require a continuation of strong economic growth, strict spending restraint,[34] and rigorous containment of social security costs. The government may find the budgeted expenditure cuts increasingly difficult to achieve in the run-up to the 2006 election, although the majority of the cuts are scheduled for the post-election period. Moreover, recent tension within the governing coalition suggests that the political environment may also pose a risk to the successful implementation of planned expenditure cuts.

36.   A second risk is that, even if the fiscal targets are met, still tighter fiscal policy may be required during the short period of run-up to meeting the Maastricht convergence criteria, in order to assist with the fulfilment of the other convergence criteria. As discussed earlier, the worst case *trilemma* scenario would be the combination of more rapid koruna appreciation (thus risking EMU-entry with an overvalued exchange rate) combined with signs of over-heating in the domestic economy (risking excessive inflation). Monetary policy would then be torn between cutting interest rates to prevent excessive exchange rate appreciation and raising interest rates to dampen inflationary pressures. In this case, further fiscal consolidation would help to reduce demand pressure.

4. Conclusion

37.   The architecture of the EMU accession rule-book has been designed primarily for economies that are relatively homogenous with respect to the original EMU members. For such economies, sound macroeconomic and structural policies should make it *relatively* easy to achieve a stable (essentially fixed) exchange rate with respect to the euro at the same time as low and stable inflation. However, such economies may still face challenges posed by the impossible trinity - as would be the case, for example, if capital flows caused the exchange rate to deviate substantially from its estimated fundamental level.

38.   Catching-up economies face additional challenges. Most notably, a higher productivity growth rate than in the euro area as a whole, is likely to imply a gradually appreciating equilibrium real exchange rate. Since the Maastricht inflation criterion rules out real exchange rate appreciation through higher inflation, this must be achieved through nominal exchange rate appreciation. Yet, although the rules of ERM-II do permit nominal appreciation, it is considered to be undesirable, and the rules make it difficult for national monetary authorities to clearly signal the magnitude of nominal appreciation that may be expected. In turn, this may imply that the exchange rates of the catching-up economies will be less well anchored within ERM-II than were the exchange rates of the original ERM participants, making the catching-up economies more vulnerable to the challenges of the impossible trinity.

39.   Finally, this paper also draws attention to recent changes to the Stability and Growth Pact. Although these changes were motivated by a desire to alleviate short-term fiscal pressure on countries that have improved the long-term sustainability of their government finances by introducing fully-funded pension pillars, the extent of alleviation may be limited for countries, such as Slovakia, where the cost of the pension reform is particularly high.

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34 .   The future realisation of postponed spending, including in connection with better absorption of EU funds and associated co-payments, will make spending restraint particularly challenging.

40.   In Slovakia, the risks of an excessive fiscal deficit or a worst-case *trilemma* scenario (excessive exchange rate appreciation combined with real economy over-heating) cannot be eliminated. However, tight adherence to the following policy guidelines may help to minimise the risks, and also to underscore the credibility of Slovakia's commitment to structural reform and prudent macroeconomic management.[35]

- ***Exchange rate policies*** should continue to smooth the development of the Koruna and act to prevent excessive deviation of the exchange rate from its perceived fundamental level, while recognising that some appreciation may be required. It may also be desirable to seek to enter ERM-II earlier than currently planned.

- Additional tightening of ***fiscal policy*** might be required to offset the higher estimates of the cost of pension reform. Greater fiscal consolidation may also help to reduce excess demand in case of over-heating in the domestic economy, particularly if it is accompanied by renewed exchange rate appreciation. With tighter fiscal policy, the NBS could focus primarily on a further reduction in interest rates in response to the exchange rate pressures.

- The recent pace of reform to ***structural policies*** should be maintained to promote productivity growth and competition in the non-tradable sector in order to keep inflation low.[36]

- *In particular,* ***labour market and housing policies*** should be focussed on preserving wage flexibility and promoting greater labour mobility.[37] Such policies will help to ensure that real wages do not grow faster than productivity, thus preventing a loss of competitiveness and facilitating adjustments in competitiveness in response to any shocks.

- ***Prudential regulation and supervision*** should be vigilant to ensure that excessive credit expansion does not lead to the development of bubbles in the domestic market (*e.g.*, property prices) which could put upward pressure on inflation. This may be a particularly relevant risk in the context of housing market reforms.

41.   Labour and product market flexibility will also be very important *following* EMU entry, in order to ensure robustness to shocks and to minimise competitiveness losses, given the loss of monetary policy instruments.

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35.   Such credibility could play a vital role in influencing the judgements of the examining committee.

36 .   See chapter 4 of OECD (2005) for further discussion.

37 .   See chapter 3 of OECD (2005) for more details.

APPENDIX:

ESTIMATING SLOVAKIA'S EQUILIBRIUM EXCHANGE RATE

In recent years, considerable research effort has been directed towards estimating the equilibrium real exchange rates for the EU accession countries, in order to determine the parity rates at which each new member state should join ERM-II and subsequently the EMU. This is not an easy task – particularly for Slovakia. As summarised by Toth and Chudik (2004) some of the difficulties of estimating an equilibrium exchange rate for Slovakia include: the sample is very short and the quality of data is questionable; it is likely that the real exchange rate was undervalued for a longish period in the first phase of transition – leading to biased estimates of equilibrium; and there is a high likelihood of structural breaks in the data given the very significant reforms that have been introduced. Not surprisingly, a number of researchers have been unable to identify a stable model specification for Slovakia, even when the same technique has worked for neighbouring countries.[38]

In addition, the different approaches and techniques for estimating the equilibrium exchange rate tend to result in systematically different results, for all economies.[39] For example, according to the ECB (2002), estimates of USD/EUR bilateral equilibrium rate vary within a range of 1.03 to 1.45. All of these factors make the decision of the exchange rate at which the Slovak koruna should enter ERM-II and subsequently for the irrevocable conversion rate, very difficult. Yet since a decision must be made, it should take into consideration a wide range of approaches.

One approach, purchasing power parity (PPP), identifies the level of the equilibrium exchange rate in the *long term* and is often used as a first approximation of competitiveness analysis. However, there are a number of reasons why pure PPP tends not to be a very helpful yardstick for assessing the currently-applicable equilibrium real exchange rate. Most importantly, since the law of one price does not hold for non-tradeable goods, pure PPP does not account for the fact that productivity gaps create significant equilibrium price gaps between emerging and developed countries. Thus the PPP relationship is typically enhanced with some kind of term designed to capture the Balassa-Samuelson (BS) effect.

Most BS-modified PPP approaches ask whether the average price level in Slovakia is appropriate, given the level of GDP per capita (which serves as a proxy for relative productivity differentials). To answer this question, cross-country analysis is typically used to estimate the relationship between the average price level of countries and their relative wealth. On the basis of such analysis, both Oomes (2005) and Toth and Chudik (2004) conclude that Slovak prices were lower than would be explained by Slovakia's relative wealth in the early years of the transition, but that they have experienced relatively fast convergence to the equilibrium level in recent years. Oomes (2005), who provides the most comprehensive study of this type, concludes that the Slovak koruna was around 30 – 40% undervalued in 1993-1994, but

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38   E.g. Dufrenot and Égert (2005), Égert and Lommatzsch (2004). .

39.   See Égert (2004) for a survey of the different approaches for estimating equilibrium exchange rates and a comprehensive literature review of the studies that have been undertaken for the transition economies.

that real exchange rate appreciation since then, particularly since late 2002, has resulted in the undervaluation gap completely closing, so that by 2005 it was fairly valued.

Another approach, and the most popular in the literature to date, is the estimation of so-called Behavioural Equilibrium Exchange Rate (BEER) models. While the original development of the BEER approach was based on the uncovered interest rate parity relationship, as in Clark & MacDonald (1998), the term is now used to describe all statistical approaches to estimating equilibrium exchange rates – *i.e.* single equation-type relationships that model the relationship between the real exchange rate and the fundamentals. Thus, many BEER models no longer have clear micro-foundations and they do not all include interest rate differentials.

Structural change in the economy, and short time-series, present a significant barrier to estimating a robust BEER model for Slovakia. Partly because of this, many economists have resorted to panel estimates, often with a relatively small and homogeneous set of countries (in which case the number of data observations is often still too small to clearly identify parameters), but sometimes with a very large number of economies, many of which have little in common with the Slovak economy. It then becomes very difficult to interpret a common coefficient. Moreover, questions are also raised about the extent to which missing country-specific variables may substantially change the derived real misalignment. Nevertheless, Table A1 summarises the results from a number of recent BEER models that include Slovakia.

A number of these studies conclude that the koruna was around its equilibrium level in the early 2000s. These studies would imply that the real exchange rate is now significantly overvalued. However, as noted by Halpern and Wyplosz (1997), as well as by the PPP studies above, it seems likely that real exchange rates in the transition countries were all well beneath their long-run equilibrium values during the early years of transition. Thus, since some of the results summarised in Table A1 do not indicate such an undervaluation (*e.g.* Zeman, 2004), they may be biased towards incorrectly concluding that current rates are over-valued. Instead, if the koruna exchange rate was persistently undervalued for the first few years of transition, it may have only more recently reached its long-run sustainable equilibrium and not yet be significantly overvalued at all. Those studies which more explicitly take these considerations into account have been more likely to conclude that the koruna reached its equilibrium level around 2004.

The third main theoretical approach is to use the Fundamental Equilibrium Exchange Rate (FEER) model, which takes both internal and external equilibrium into account. However, there seem to have been no FEER models constructed for Slovakia to date, although Égert and Lahrèche (2003) did incorporate some elements of a FEER model into their study (summarised in Table A1).

Most economists agree that the real equilibrium exchange rate itself is expected to appreciate over time. If the exchange is more or less at its estimated equilibrium level at the time it enters ERM-II then estimates of equilibrium appreciation could be used to identify the extent to which the central rate may need to be revalued prior to the eventual conversion to the euro. Égert (2004) provides a comprehensive summary of the factors that may contribute to such trend equilibrium appreciation. These include: i) the Balassa-Samuelson effect, and ii) the impact of increases in regulated prices, both of which lead to positive inflation differentials, as well as iii) the potential role of expected productivity gains on pushing up the nominal exchange rate. The pace of real equilibrium appreciation, as identified by some of the BEER studies, is indicated in Table A1. Most of these conclude that the pace of equilibrium appreciation over the next few years would be around 2 to 3% per annum.

Table A1. BEER estimates of exchange rate misalignments of the Slovak koruna

Authors	Exchange rate model	Real exchange rate definition	Other variables	Period	Comments	Pace of real equilibrium appreciation	Magnitude of real misalignment
Oomes (2005)	BEER model, Slovakia only.	net CPI, ULC and PPI-based bilateral rers (relative to the euro).	$a - a^*$ (Slovakia vs euro area); G	1996:Q1 – 2004:Q2	Coefficient close to 1.0 on the productivity differential.	3% p.a. (or 1 – 2% p.a. if fiscal consolidation continues).	Approximately 0% in 2004.
Crespo-Cuaresma et al (2005)	Monetary-style BEER model, panel (six transition countries).	*Nominal* bilateral (vs. euro) exchange rate.	M2, IP, deposit interest rates, CPI/PPI.	1994:M9 – 2002:M3			Approximately 0% in early 2004.
Zeman (2004)	BEER model.	PPI-based real effective (Germany and Czech Republic) exchange rate	$(a^T - a^{NT}) - (a^{T*} - a^{NT*})$, $a - a^*$, G, NFA, r-r*	1993:Q1 – 2003:Q3		Around 2 % per annum.	Approx 0% in 2000/2002. Approx +10% at end of 2003.
Toth and Chudik (2004)	BEER model, single country model and panel (4 Visegrad countries).	Manufacturing-PPI-based real bilateral (vs. euro) exchange rate.	$(a^T - a^{NT}) - (a^{T*} - a^{NT*})$, TOT, real interest rate diff, FDI, country risk proxies, NFA.	1993:M1 – 2004:M3	BEER results sensitive to model specification.	Up to 2 – 3 % per annum.	Approx fairly valued at end 2003.
Égert and Lommatzsch (2004)	BEER model, panel estimates.	CPI-based real bilateral exchange rate (vs. Germany).	$a - a^*$, regp–regp*, r-r*, Govt Debt/GDP, Openness, TOT.	1993:Q1 – 2002:Q4	Very difficult to find a reasonable relationship.		+20-30% (overvalued) in 2002:Q4.
Égert and Lahrèche-Révil (2003)	BEER + FEER combination VAR model.	CPI-based effective exchange rate.	$a^T - a^{NT}$, $a - a^*$, domestic demand, TOT, current account, openness.	1993:Q1 – 2001:Q2	Reference year of 1994 assumed in FEER analysis.		+10-15% (overvalued) in 2001:Q2
Kim and Korhonen (2002)	BEER model, panel estimates (29 countries).	CPI-based bilateral (USD) and effective.	GDP/capita, investment/GDP, G, Openness	1990 – 1999	Coefficients from cross-sectional sample applied to Slovakia.		0% USD bilateral rate, +8-20% effective rate in 1999.

Key to variables: $(a^T - a^{NT}) - (a^{T*} - a^{NT*})$ = relative labour productivity differential; $a - a^*$ = total labour productivity differential; G = Government expenditure as % GDP; regp = regulated prices (proxied by rents); r-r* = real interest rate differential; TOT = terms of trade; NFA = net foreign assets; IP = Industrial Production.

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