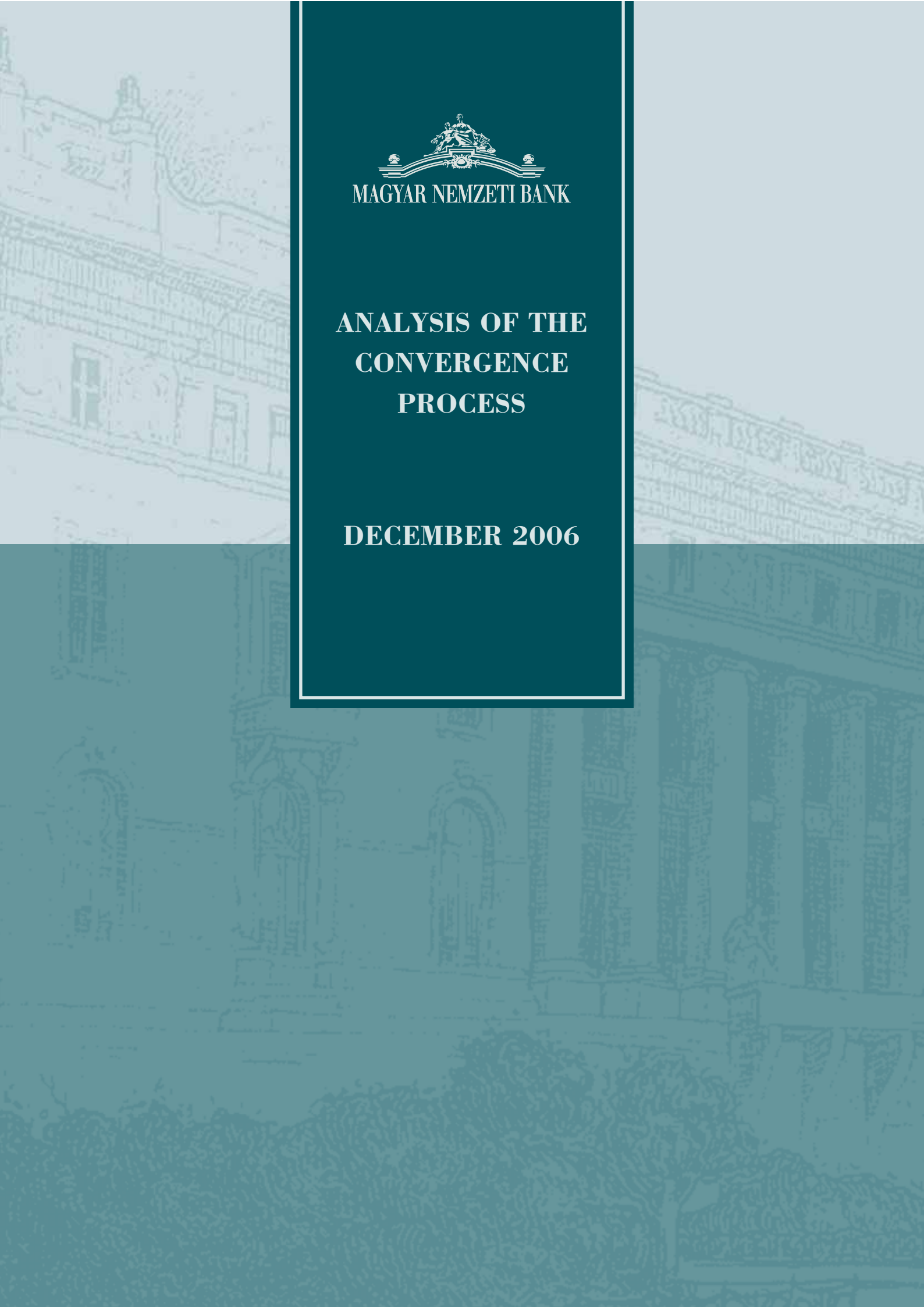

MAGYAR NEMZETI BANK

ANALYSIS OF THE CONVERGENCE PROCESS

DECEMBER 2006

Analysis of the Convergence Process

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Following Hungary's accession to the European Union, the greatest challenge facing economic policy is compliance with the criteria for joining Economic and Monetary Union. Although the adoption of the euro is a medium-term objective, economic policy decision-makers must consider the convergence criteria even now, in order to be able to comply with them at the lowest possible cost.

Similarly to the other Member States wishing to participate in Monetary Union, prime responsibility for the elaboration and execution of the Convergence Programme rests with the government in Hungary. However, the central bank also plays an important role in execution, primarily in the field of monetary and exchange rate policies. The major milestones of convergence, i.e. accession to ERM II and adoption of the euro, can only be reached if the government and the central bank act in mutual agreement. Moreover, convergence indirectly affects the central bank's operations, and the manner in which money and capital market participants perceive future developments in the economy. Furthermore, convergence fundamentally influences domestic monetary conditions, including the scope of interest and exchange rate policies. For this reason, the central bank must continuously evaluate progress in convergence and Hungary's steps towards preparing for the euro.

Due to the role the MNB plays in the convergence process, this overview of the central bank's position regarding the current state of convergence and the challenges expected in the near future may be of public interest. This new MNB publication intends to raise the awareness of decision-makers, professionals and the wider public regarding the frequently intricate issues of participation in Monetary Union and ultimately help Hungary to adopt the euro under the best possible conditions.

The analyses in this *Report* were prepared by the Economics and Monetary Policy Directorate. The work was co-ordinated by Attila Csajbók and supervised by Ágnes Csermely and Gyula Barabás. The *Report* was approved for publication by István Hamecz, Director.

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The *Report* incorporates valuable input from the Monetary Council's comments and suggestions following its meetings on 4 and 18 December 2006. However, the analyses in the *Report* reflect the views of the Economics and Monetary Policy Directorate staff and do not necessarily reflect those of the Monetary Council or the MNB.

Contents

Foreword

The ultimate objective of Hungarian economic policy is to close the gap between the per capita incomes in Hungary and in developed Western European countries; this process is commonly referred to as real convergence. Nominal convergence, i.e. meeting the Maastricht criteria, the subsequent permanent macroeconomic stability and the adoption of the euro are only intermediate targets. Nevertheless, they may considerably facilitate the attainment of the final objective. While progress in meeting the intermediate targets is monitored continuously in the Reports on Convergence, from time to time it is worth examining the prospects for the final objective, i.e. real economic convergence. Therefore, in our 2006 Report on Convergence, we focus on the analysis of long-term prospects for real convergence.

The particular attention to real convergence in this year's analysis does not mean that we consider it as a precondition for the adoption of the euro to reach any particular level of per capita income vis-à-vis developed Europe. We still believe that the only necessary condition for adopting the euro is to meet the Maastricht criteria. Lasting nominal convergence attained by meeting the criteria and the resulting adoption of the euro can contribute to real convergence, i.e. can accelerate the Hungarian economy's catching up process.

The structure of this year's Report is as follows:

In the first chapter we provide a review of meeting the Maastricht criteria in the new EU Member States. As meeting the criteria was analysed in detail in our last year's (2005) Report on Convergence looking back over a longer period as well, in terms of nominal convergence this Report concentrates only on updating the overall picture outlined last year.

In the second chapter the subject of real convergence is discussed. In the light of some new research findings, we attempt to show how our view has changed regarding the expected future trends in factors of production determining potential growth and in the expansion of productivity.

Closely related to this topic is the third chapter, in which the growth effects of European Union cohesion funds are examined.

The fourth chapter of our Report deals with the longer-term effects of the consolidation measures in the 2006 Convergence Programme: the expected impacts of tax increases on investment, on the labour market and on potential growth are analysed. The shorter-term effects, which are relevant on the time horizon of our inflation forecasts, and the feasibility of the full range of balance-improving measures was analysed in detail in the August issue of the MNB's Quarterly Report on Inflation.

Chapter five is also related to the fiscal consolidation measures. In this chapter the conditions of successful fiscal adjustments are discussed in the light of the relevant international experience.

We hope that with this year's Report on Convergence, we can help policymakers and the wider public keep in mind the factors which determine economic convergence for the long term, even in these difficult times of restoring macroeconomic balance.

Overview

Hungary still does not meet any of the Maastricht criteria.

Maastricht criteria still not met, but…

In early 2006, inflation approached the reference value, but in the second part of the year, as a result of increases in the VAT and regulated prices and of the protracted feed-through effect of earlier cost shocks inflation started to grow again. Following the temporary increase expected for next year, inflation may return to the vicinity of the reference value in 2008-2009.

… the fiscal adjustment plan is based on realistic assessment of the situation

The balance of the budget continued to deteriorate in the period since the previous Report. General government deficit is expected to be around 10 per cent of GDP in 2006. Government debt exceeded 60 per cent of GDP in 2005, and is expected to show an upward trend until 2008. However, compared to our evaluation prepared last year, it is an important change that in terms of the fiscal path the current Convergence Programme is based on a realistic assessment of the situation and contains an adjustment plan supported by concrete measures, although this plan is surrounded by feasibility risks.

Adoption of the euro postponed for an indefinite time

Of the new EU Member States, the 10-year government bond yield is the highest in Hungary, which reflects a high risk premium due to the fiscal and current account problems.

In 2006 there has been significant fluctuation in the exchange rate of the forint, which would have been considered as severe tension if Hungary had already been in ERM II .

The government has abandoned the earlier target date of 2010 for the adoption of the euro; no new target date has been set, but meeting the conditions for the adoption of the euro continues to be a policy priority on the basis of the new Convergence Programme.

Euro adoption dates postponed in the region as well

With regard to the convergence of new Member States in general last year, the Baltic and the Visegrád countries did not move any closer to the relevant reference values in terms of inflation and fiscal developments, respectively. In line with the above, the planned dates for adopting the euro became uncertain or were explicitly postponed in the majority of new Member States.

Euro in Slovenia from 2007

In 2006, Slovenia's request to adopt the euro in 2007 was accepted by the European partners, but Lithuania's application was rejected due to exceeding the inflation reference value by a minimal degree and doubts with regard to the sustainability of low inflation.

Slovakia in ERM II

Following Slovakia's ERM II entry in November 2005, of the new Member States only the Czech Republic, Poland and Hungary are not members of the ERM II.

Prospects for real convergence depend on the expansion of labour, capital and productivity

A separate chapter is devoted in this Report to the prospects for real convergence with the developed Europe. Per capita income in Hungary is less than 60 per cent of the average of the EU-15, and thus Hungary belongs to

the middle ranks of the new Member States. Catching up will still require decades. The speed of real convergence is determined by the expansion of factors of production, i.e. capital and labour deepening, as well as productivity growth (adoption of developed technologies).

The forthcoming expansion in activity can lead to an increase in employment and additional growth only if the labour market is flexible

In terms of labour deepening there are considerable reserves in Hungary, as activity and employment rates are among the lowest in the EU. This is partly the legacy of the negative labour market shock in the early period of transition, and the policy steps taken to handle it (large-scale early retirement and retirement of disabled). The groups that were involved in these measures and are currently inactive gradually become older than the working age, thus demographic processes support the increase in labour supply over the medium term. In addition, in case of several social groups labour supply can be actively increased by changing certain incentives, as it has already been proven by the positive effect of some past measures on activity. Whether the forthcoming increase in labour supply will result in more employment (and growth) or – similarly to some countries in continental Europe – permanently high unemployment depends on the flexibility of the labour market. In many dimensions the Hungarian labour market is more flexible than labour markets in continental Europe, although in terms of some important dimensions (e.g. the magnitude of taxes on labour) it lags behind them. Unemployment growing in parallel with activity since 2004 is a warning sign with regard to labour market flexibility.

Capital deepening at a moderate pace, risks in case of corporate investment

The investment rate in Hungary has consistently been at a higher level than in developed Europe for a long period of time. However, the difference is not too great, thus this may result in moderate additional growth at most, and not in any spectacular economic convergence. Moreover, within total investment, corporate investment which plays a prominent role in growth has declined as a proportion of GDP since 2001. The underlying reasons are most likely cyclical, related to the decline in European economic performance. European economic activity is currently recovering. If the current upswing in European business activity continues in the coming years and Hungarian corporate investment fails to follow, it may indicate the existence of more serious competitiveness problems, which may decelerate capital expansion and convergence. Larger volumes of cohesion funds from the European Union available from 2008 on do not necessarily entail an increase in the public investment rate, at least as long as budget deficit reduction is the primary objective.

Increase in productivity remains a dominant source of catching up, but probably with smaller contribution in the future

In the past decade, the most important role in Hungarian growth was played by components usually associated with productivity growth and which were not justified on the basis of labour and capital expansion. Based on macro data, growth in productivity (technological progress) contributed to the potential growth rate by a stable 2 percentage points. However, according to micro-level analyses in manufacturing an industry of key importance in terms of competitiveness productivity growth was quite high in the mid-1990s, but subsequently declined markedly. Since 2002, reallocation effects i.e. a shift in labour towards higher-productivity sectors have also played a role in macro-level productivity growth. However, assuming a certain specialisation path, there is a natural limit to additional growth stemming from reallocation over the longer term. Productivity growth will continue to be the most important factor of catching up in the future as well, although its contribution will probably be smaller than in the past decade.

Based on other countries' experience, only moderate growth effect can be expected from the EU funds

EU cohesion funds will be available in greater volumes in the coming years: therefore, we examined their effects on real convergence. The reviewed literature, which summarises old EU-members' experience is ambiguous in the assessment of the effect of EU funds. Based on most of the econometric studies, as opposed to the expectations of the European Commission and the general public in Hungary, the effect of the Structural and Cohesion Funds will be rather moderate in terms of growth and economic convergence.

The actual growth effect depends mainly on economic policies

Other countries' experience also indicate that actual growth effects strongly depend on the recipient country's economic policies. The actual growth effect lags behind potential additional growth expected from the Structural and Cohesion Funds, mainly due to certain economic policy mistakes. Such mistakes may include a fiscal and monetary policy which do not support macro economic stability to a sufficient extent, a strategy which leads to excessive fragmentation of the transfers or that concentrates them on incorrect objectives, strategies which goes against market trends in the economy, and inefficient state bureaucracy.

In terms of growth, raising direct taxes is more unfavourable than raising indirect taxes

We also analysed the effects of the tax measures in the 2006 Convergence Programme on long-term growth. The measures, as all tax increases, add to the distortions appearing in the Hungarian tax system, which results in a less efficient use of resources and thus reduces potential growth. The question is the magnitude of the additional distortion that is created. Among the tax measures, there was strong emphasis on raising direct taxes on labour. However, based on international experience, raising indirect taxes (e.g. taxes on consumption) instead in order to generate the same tax revenue would harm savings and longer-term capital accumulation less than direct tax increases. In this case, the longer-term growth-reducing effect could even be smaller.

Investment declines as a result of increasing taxes on capital, but potential growth slows down only moderately

Raising the tax burden on capital may result in a decline in investment and the longer-term growth rate. However, the effect will be smaller than what would be justified by the magnitude of the increase in the corporate tax, because due to the dampening effect of leverage and amortisation, the user cost of capital will increase to a lesser extent. Accordingly, we estimate only a slight decline in potential growth. The growth effects of capital taxes may be even smaller if, as a result of fiscal stabilisation, the risk premium declines.

Taxes on labour do not significantly decrease labour supply, but reduce consumption and labour demand

Raising the social security contributions and VAT means that the tax burden on both labour and consumption has increased. However, this will probably not hinder labour supply significantly, except in certain groups at most. Due to the relatively rigid labour supply, consumption will decline. As taxes on both factors of production (capital and labour) increase, factor demand declines. However, there is a substitution effect as well, since taxes on capital grow to a lesser extent than taxes on labour, which are already considered high by international standards. This increases the process of substituting labour with capital, and reduces labour demand. Consequently, as labour supply declines only to a small extent, unemployment may increase.

Overall, downside risks surround the future pace of catching up

Overall, in terms of potential growth, a deeper analysis of factors of production and productivity trends indicate downside risks even before taking into

account the measures in the Convergence Programme. In terms of potential growth, the direct effect of tax increases of the Convergence Programme is clearly negative. This may, to some extent, be offset if a sustainable fiscal balance can be attained, which would result in a decline in the risk premium. Based on other countries' experience, no significant additional growth can be expected from EU cohesion funds. On this basis, it cannot be ruled out that the Hungarian economy's convergence process will continue at a slower pace than previously assumed.

Speeding up convergence requires reform of the institutional environment

According to modern growth theories, institutions (in a broader sense) and economic policy are of key importance in the economic convergence process of less developed countries. Closing the economic gap in these countries is characterised by conditional convergence: capital, labour and productivity expand rapidly as far as the limit determined by the quality of the country's institutions and economic policy allows. The signs of a slowdown in potential growth presented in our analysis and Hungary's deteriorating performance in international comparisons of the institutional environment and competitiveness may indicate that these limits are starting to have an effect Hungary's progress in convergence. In the absence of comprehensive reforms, the present quality of institutions and of economic policy may hinder the continuation of dynamic convergence in the future.

Certain elements of the planned Hungarian fiscal adjustment are similar to those of successful European adjustments, but…

We examined successful (permanent and sizable) fiscal adjustment episodes in Europe which have occurred during the last two decades. Overall, there are numerous similarities and differences, if we compare the planned Hungarian adjustment with earlier successful ones. The envisaged magnitude of the adjustment, its focus on the expenditure side, as well as the current economic upswing in Europe, which creates a favourable environment for reducing the deficit, are important similarities.

…there are important differences, too, due to which those positive growth feedbacks which were typically experienced in Europe cannot be expected in Hungary

However, there are important differences in the structure of expenditures, and even more so in the structure of revenues. Perhaps the most important aspect is not independent of these structural differences: in the case of Hungary, the positive feedback from the upswing in economic growth and employment observed in most countries which have carried out successful adjustments cannot be expected. Moreover, according to the lesson drawn from the analyses presented in our Report, potential growth may be lower than what is assumed in the Convergence Programme. All of this makes it more difficult to reduce the deficit and maintain it at a low level in later years. One must add, however, that in Hungary one of the motivations behind fiscal adjustment is probably the reduction of a serious external imbalance: therefore, a temporary decline in domestic demand and growth is almost unavoidable. Based on international experience, it would be useful to introduce fiscal rules in Hungary, which, together with strengthening fiscal transparency, could assist in maintaining fiscal discipline.

1. Convergence in Hungary and other new Member States in 2006

This chapter examines the nominal convergence processes in the ten new Member States which joined the European Union in May 2004. Since the ten Member States' convergence processes and the underlying driving forces were analysed in detail in our previous Report and with a purview over a longer period of time, the 2006 Report provides an overview of the major changes which took place during the last one year.

Box 1-1: The Maastricht criteria

Upon joining the European Union, the ten new Member States also became members of the Economic and Monetary Union (EMU). However, EMU membership is not full until the Maastricht criteria are met. For the abrogation of the derogation (also allowing the adoption of the euro), which lasts until full membership is achieved, Member States are required to meet the following criteria (in addition to several legal and institutional requirements):

Price stability criterion: inflation dynamics of countries which intend to join should be sustainable, and over a period of 12 months before the examination inflation may not exceed by more than 1.5 percentage points that of the three best performing Member States in terms of inflation.

Long-term interest rate criterion: it is met, if a Member State, over a period of one year before the examination, has had an average nominal long-term interest rate that does not exceed by more than 2 percentage points that of the three best performing Member States.

Exchange rate stability criterion means that a Member State has respected the normal fluctuation margins provided for by the exchange rate mechanism (ERM II) of the European Monetary System without severe tensions for at least the last two years before the examination.

The criterion regarding the avoidance of excessive deficit: the Member State must not be subject to the excessive deficit procedure specified under Article 104(6) of the Treaty. Excessive deficit exists if in a given year a Member State's general government deficit exceeds 3 per cent of GDP and/or the ratio of government debt to GDP exceeds 60 per cent, and no adequate declining trend is shown.

Table 1-1

Summary data of meeting the convergence criteria

Country	Inflation rate (average of Oct. 2005–Sept. 2006)	Budget balance 2005 (per cent of GDP)	Gross government debt 2005 (per cent of GDP)	Long-term interest rate (average of Oct. 2005–Sept. 2006)	Date of ERM II entry	Number of criteria which are met
Reference value	2.8	-3.0	60.0	5.7		
Cyprus	2.3	-2.3	69.2*	4.1	Apr. 2005	3(4*)
Czech Republic	2.4	-3.6	30.4	3.7	–	3
Estonia	4.3	2.3	4.5	4.1	June 2004	4
Poland	1.2	-4.4 (-2.5**)	47.3 (42.0**)	5.2	–	3(4**)
Latvia	6.9	0.1	12.1	3.9	Apr. 2005	3
Lithuania	3.5	-0.5	18.7	3.9	June 2004	4
Hungary	3.2	-7.8 (-6.5**)	61.6 (57.7**)	7.0	–	0(1**)
Malta	3.2	-3.2	74.2*	4.3	Apr. 2005	1(2*)
Slovakia	4.3	-3.1	34.5	4.2	Nov. 2005	2
Slovenia***	2.6	-1.4	28.0	3.8	June 2004	5

Source: Eurostat.

** Taking into account the declining trend of the debt path in case of government debt ratio exceeds 60 per cent.*

*** Deficit and debt figures resulting from recording payments to private pension funds within the budget.*

**** Slovenia joins the euro area on 1 January 2007.*

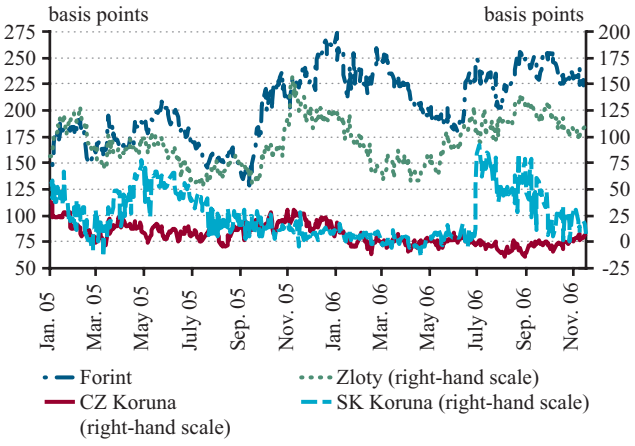
In the year since our previous Report, several changes took place in the nominal convergence processes of the ten new Member States. One of the most important changes is that Slovenia will become a full member of the EMU from 1 January 2007, and will adopt the euro as legal tender. In the first part of 2006, both Slovenia and Lithuania requested the Commission and the ECB to evaluate their compliance with the convergence criteria. The two institutions fulfilled the request by preparing their convergence reports. It was found in the evaluation that Slovenia met all the criteria, but inflation in Lithuania was somewhat higher than the reference value of the price stability criterion, thus the derogation regarding the country's full EMU membership was not lifted (see relevant box 1-3). Another important change is that Slovakia joined the ERM II exchange rate mechanism in November 2005. Consequently, of the ten new Member States only the Czech Republic, Poland and Hungary have not entered the European exchange rate mechanism yet.

Another difference is that the countries which joined ERM II in June 2004 already meet the exchange rate stability criterion. It is to be emphasised that while the difficulty for the Baltic countries is to meet the price stability criterion, the main challenge for the Visegrád countries is the developments in their fiscal positions. During the last one year, the Baltic and the Visegrád countries did not move any closer to the relevant reference values in terms of inflation and fiscal developments, respectively. In line with the above, the planned dates for adopting the euro have become uncertain or been postponed in the majority of new Member States. Over the time horizon examined in this Report, there has not been any major change in the number of criteria which can be considered as met. Hungary still does not meet any of the criteria, although an important change compared to the previous Report is that for the coming years a fiscal path based on a realistic assessment of the situation and an adjustment programme expected to be efficient in the short run has been drawn up.

Regional developments in the five-year forward yield differential five years ahead compared to the euro and implied from bond market yields indicate that in case of Slovakia and the Czech Republic the markets view adoption of the euro in five years as highly probable. It is clear that in Slovakia the forward differential jumped considerably during the summer before gradually returning to its earlier level around zero. This indicates that bond market participants initially did not

Chart 1-1

Five-year forward yield differentials 5 years ahead in the region



Source: Reuters.

Table 1-2

Planned dates of ERM II entry and the adoption of the euro

Country	ERM II entry	Planned date of the adoption of the euro
Cyprus	May 2005	2008
Czech Republic	No target date	No target date
Estonia	June 2004	2008
Poland	No target date	No target date
Latvia	May 2005	No target date
Lithuania	June 2004	No target date
Hungary	No target date	No target date
Malta	May 2005	2008
Slovakia	November 2005	2009
Slovenia	*June 2004*	*1 January 2007*

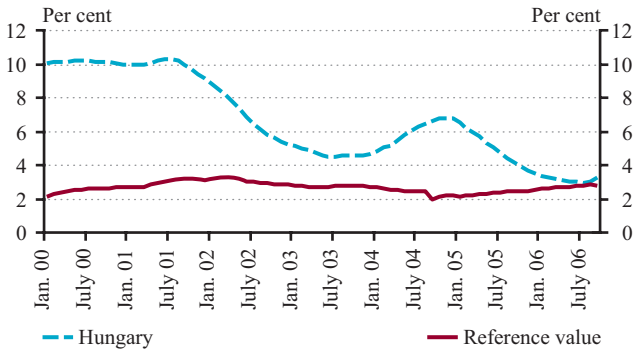
consider the new Slovak government's commitment to adoption of the euro in 2009 to be satisfactory, but the uncertainty surrounding the government's economic policy plans has declined gradually in recent months. In the period since the previous Report, Hungarian and Polish forward differentials have fluctuated between 200-250 and 75-125 basis points, respectively. This reflects that in case of these countries market participants continue to consider it relatively unlikely that the euro will be adopted in 5 years.

Price stability criterion

12-month average inflation in Hungary in 2006 H1 approached the immediate vicinity of the reference value of the price stability criterion. However, the favourable dynamics of inflation were only temporary, and can mainly be ascribed to the effect of the VAT cut which entered into force from January 2006. In 2006 H2, as a result of increases in the VAT and regulated prices and of protracted pass-through effect of earlier cost shocks, inflation started to increase again. According to the MNB's conditional inflation forecast in November 2006, average annual inflation will exceed 7 per cent in 2007, before declining to around 4 per cent in 2008. Although the forecast – due to its conditionality – cannot take account of several factors which are potentially important in terms of future developments in inflation, it can be stated that Hungary will certainly not meet the price stability criterion in 2007 and will most probably not meet it in 2008 either.

Chart 1-2

12-month average annual inflation (HICP) in Hungary



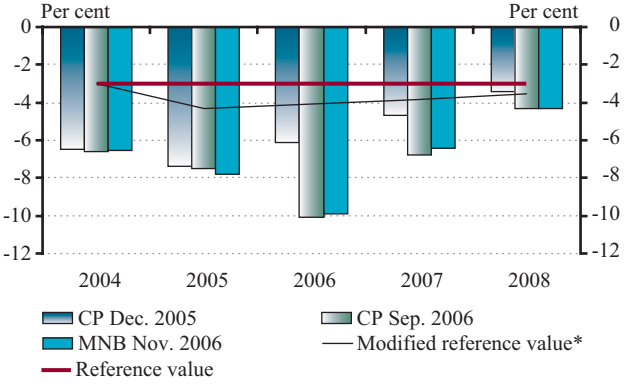
Increasing inflation constituted the main problem in the nominal convergence process of the 10 new Member States in the year since the previous Report. The average inflation rate was below the reference value only in four of the 10 Member States (namely in Cyprus, the Czech Republic, Poland and Slovenia). In addition to rising energy prices, increases in processed food and regulated prices also contributed to inflation becoming less favourable in almost all of these countries. In the Baltic countries – and especially in Latvia – mounting inflationary pressure can be observed, which is mainly attributable to the increase in energy prices, tightening labour markets and overheated economic conditions driven by consumption demand in these countries. In the case of the Baltic countries, the strong growth in inflation is partly attributable to the fact that the exchange rate systems they apply (within the ERM II as well) do not allow an effective anchoring of inflation expectations and management of aggregate demand by way of monetary policy.

Fiscal criteria

Hungary's fiscal balance continued to deteriorate in the period since the previous Report. General government deficit, adjusted for the private pension fund payments reached 7.8 per cent of GDP in 2005, and is expected to be around 10 per cent in 2006. Government debt exceeded 60 per cent of GDP in 2005, and is expected to show an upward trend until 2008. However, compared to our evaluation prepared last year, it is an important change that in terms of the fiscal path the current Convergence Programme is based on a realistic assessment of the situation and a credible adjustment plan, even if the latter is surrounded by implementation risks.

Chart 1-3

Fiscal deficit paths in Hungary



** Modified with the extent of pension correction which can be taken into account as a deficit reducing item in a degressive manner until 2009 in the course of the excessive deficit procedure.*

Risks surrounding the Hungarian fiscal adjustment are presented in a more exact way, in the form of risk distributions as well, similarly to the fan chart known from our inflation forecasts, using a new analysis instrument (see relevant Box).[1]

[1] For details regarding the method and findings see: Zsolt Lovas–Zoltán Reppa (2006): 'Uncertainty of general government deficit forecasts', manuscript, MNB.

Box 1-2: Uncertainty of general government deficit forecasts

There has been a further expansion in our set of instruments for forecasting budget deficit. In addition to traditional expert projections, in the future we shall also use model calculations as well, which allows assignment of a risk distribution to our central projection as well. Only macroeconomic and feasibility risks were taken into account in our calculations; we did not assume any possible change in the announced government measures, failure to implement such or the addition of new measures.

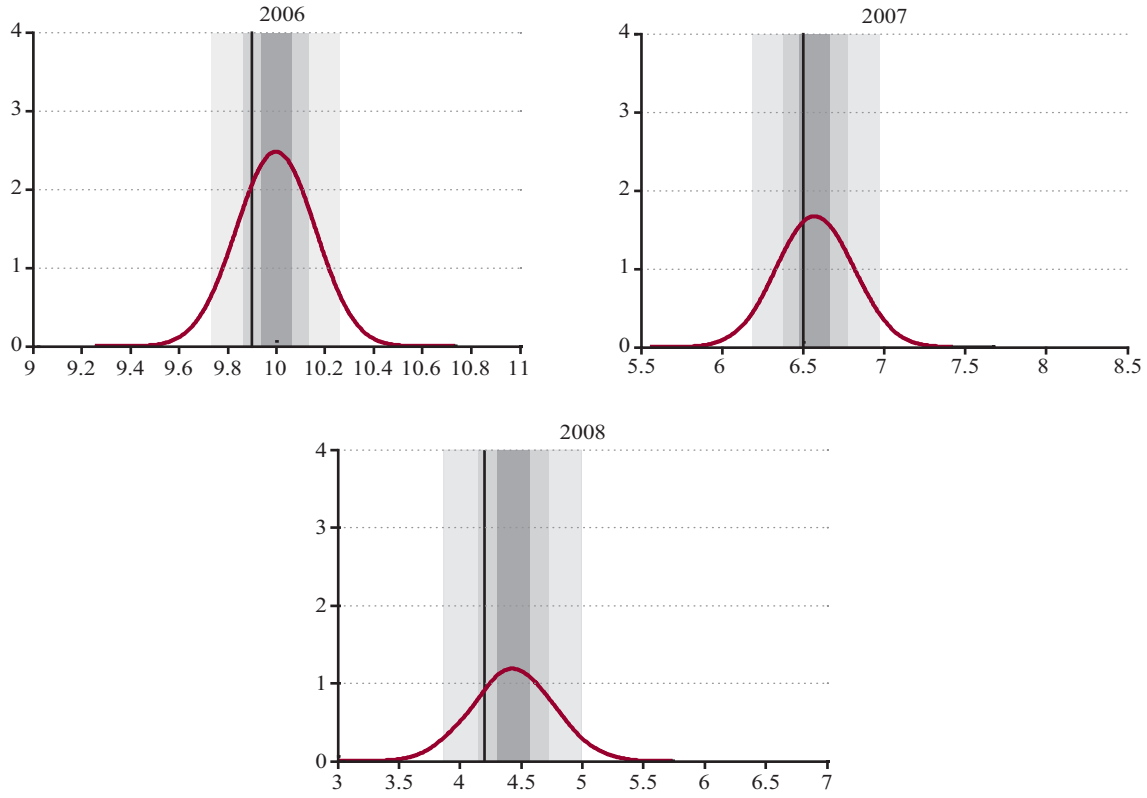
With regard to the distribution of macroeconomic and fiscal feasibility risks we made essentially different assumptions. In terms of macroeconomic risks, for inflation and GDP we used the slightly asymmetrical distributions shown in the fan chart of the latest Quarterly Report on Inflation. We assumed a normal distribution for other variables, the expected value of which is also the baseline scenario of the Quarterly Report on Inflation, whereas the standard deviations were determined using past errors and time series methods. In the case of direct fiscal risks, on the basis of expert forecasts, we designated a risk band, in which we assumed a triangle distribution, the peak (mode) of which is identical with the central projection.

The uncertainty distribution was prepared using the distributions of these input variables, carrying out stochastic simulations: we took random samples from the distribution of uncertainty factors, calculated the deficit belonging to these values, and we calculated the final distributions from the results obtained.

According to the risk distributions resulting from the model simulations, there is a high probability that the deficit target stipulated in the Convergence Programme will be met in 2006 and 2007. For 2008, the probability of achieving the target declines significantly, and the asymmetry of risks increases in the direction of a higher deficit level. Considering this as well, the deficit target in all these three years fall within the range of most probable outcomes (representing 60 per cent of the total probability). This range is rather narrow; therefore, even if the actual deficit exceeds the target, in the event of a consistent implementation of all of the announced government measures the magnitude of exceeding the target will probably remain insignificant.

Chart 1-4

General government deficit as a proportion of GDP: uncertainty distributions



The bands which are lighter and lighter cover thirty, sixty and ninety per cent probabilities, respectively. The vertical line shows the central projection.

At present, of the ten new Member States Estonia, Latvia, Lithuania and Slovenia are not subject to an excessive deficit procedure according to Article 104 of the Treaty. In these countries, both general government deficit and government debt are much lower than the relevant reference values. In 2005, of the new Member States under the excessive deficit procedure Cyprus, Poland and Malta moved closer to the 3 per cent reference value. The deficit stagnated in Slovakia, while it increased in the Czech Republic and Hungary. In 2005, government debt exceeded the 60 per cent reference value only in Hungary, Cyprus and Malta, although indebtedness in the latter two countries shows a downward trend compared to the previous year.

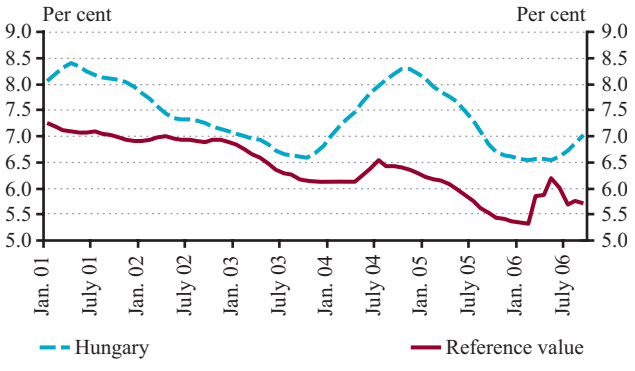
As far as the Visegrád countries are concerned, no major fiscal adjustment can be expected in any of these countries in the coming two years, except Hungary. However, it is to be noted that the general government deficit and particularly the government debt indicators are much more favourable in the Czech Republic, Poland and Slovakia than in Hungary.

Long-term interest rate criterion

In the last five years, Hungary was unable meet the long-term interest rate criterion even once. The high level of Hungarian long-term yields is mainly attributable to the size of the risk premium required on forint investments. The considerable excess premium compared to the new Member States is attributable to the significant fiscal and external balance problems which appear simultaneously.

Chart 1-5

12-month moving average of 10-year yields in Hungary



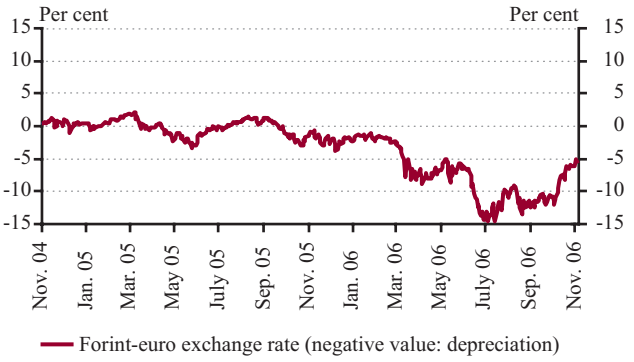
Except for Hungary, the average level of long-term interest rates in the past one year was below the reference value in all new Member States in October 2006, and with the exception of Poland it was around 4 per cent, in the immediate vicinity of the average value of the euro area.

Exchange rate stability criterion

In the case of Hungary, compliance with the exchange rate stability criterion cannot be evaluated, as the country is not participating in the ERM II exchange rate mechanism yet. Compared to the average level in November 2004, a significant weakening took place starting from 2006 Q2.

Chart 1-6

Percentage deviation of the forint-euro exchange rate from the average level in November 2004[2]



The nominal exchange rate in each of the seven Member States participating in ERM II was very stable from the date of entry or deviated significantly from the central parity only in the direction of strengthening, and, except for Slovakia, no factors (significant change in central bank reserves and notable short-term interest rate fluctuations) were observed which could indicate the existence of any 'severe tension' within the exchange rate mechanism. There was temporary depreciation pressure on the Slovak koruna in mid-2006, which the central bank offset by a major foreign exchange market intervention and an increase in the interest rate. Following from the above, Member States that have been participating in ERM II since June 2004 fully meet the criterion of exchange rate stability.

Of the Member States which do not participate in ERM II, the national currencies of the Czech Republic and Poland showed a 5-10 per cent appreciation in the period under review compared to the average level in November 2004.

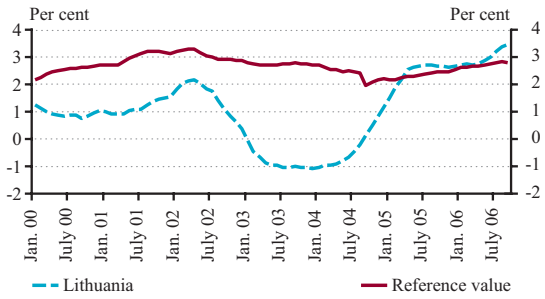
[2] In accordance with the method applied in the ECB's December 2006 Convergence Report for the Member States not participating in ERM II. The aim of the procedure is to examine the exchange rate developments in all countries under review over the same, 2-year time horizon. Therefore, for Member States not participating in ERM II, comparison to the average exchange rate in November 2004 is to be strictly considered as one of technical character.

Box 1-3: Lithuania and the inflation criterion

In March 2006, Slovenia and Lithuania indicated that they intended to start the negotiations on joining the euro area. By May 2006 the ECB and the European Commission had prepared their convergence reports about the two countries, based on which the Council decided to lift the derogation regarding full EMU membership in the case of Slovenia, while maintaining the derogation for Lithuania. The underlying reason for Lithuania's failing to join the euro area was that in March 2006 the 12-month average inflation exceeded – albeit to a very small extent – the reference value of the price stability criterion. Lithuania fully complied with all other criteria. Following the decision, Lithuania did not announce any new target date for adopting the euro.

Chart 1-7

12-month average annual inflation (HICP) in Lithuania



Although according to the literal interpretation of the Protocol on the convergence criteria attached to the Treaty, inflation exceeding the reference value even to any small extent can be evaluated as a failure to meet the price stability criterion, the ECB and the Commission also emphasised that the low inflation dynamics of the reference period was questionable in terms of sustainability as well. Actual data received in the meantime, which reflect a considerable acceleration of inflation, confirmed the pertinence of the above argumentation by the ECB and the Commission.

12-month average inflation in Lithuania was below 2 per cent for a long period during the last six years. In the deflation period between 2002 and mid-2004 and in the current upward period, developments in inflation in Lithuania were mainly determined by external factors. However, over the last two years dynamic growth in aggregate demand and the tightening of the labour market have played an increasing role in inflation developments. As Lithuania does not have an independent monetary policy due to the introduction of the currency board arrangement, bringing inflation back to a level around the reference value and anchoring inflation expectations may prove to be difficult.

The important lesson to be drawn from the case of Lithuania is that in terms of the numerically well-defined convergence criteria, following from the principle of equal treatment, there is no room for a flexible interpretation of the Treaty and the protocols attached to thereunto, and, in addition to achieving a given reference value, the sustainability of meeting a criterion is also of key importance when readiness to become a euro area member is evaluated.

2. The prospects of economic convergence in Hungary – a production function-based approach

Accession to the euro area is an interim goal for Hungarian economic policy: the ultimate aim is to realign Hungary with the developed part of Europe in the field of competitiveness and per capita income. Therefore, beyond monitoring whether the Maastricht convergence criteria are fulfilled, it is worthwhile to take account of the prospect of so-called convergence in real terms. This is what we will attempt in this chapter of our convergence report. The so-called production function approach will be used to analyse the convergence prospects, which divides growth into contributions by production factors (labour, capital) and productivity or technological development.

First, we will review the part of the economic theory of growth that is relevant for today's situation in Hungary. Then, we will present an estimate of potential growth based on the production function. By simply projecting the pace of the expansion of production factors and technological development, this gives a mechanical estimate for the pace of convergence with Europe. Naturally, this is highly simplified and optimistic picture of the process of closing the economic gap, considering that this process will certainly lose momentum over the longer run. Over the medium term, however, it may be an appropriate point of reference. To make this simple medium-term picture more differentiated, we will analyse the deeper mechanism underlying the expansion of capital and labour and growth in productivity in recent years in separate sub-sections. We will try to draw conclusions for the future as well in all cases. We hope that this will help to shed more light on the risks and economic policy challenges, which the Hungarian economy will have to face in the next stage of its convergence with the developed economies in Europe.

2.1. A brief discussion of growth theory

Theories of economic growth can be divided into two groups. 1) *Endogenous growth models look* at how the most developed countries are able to sustain their growth. The responses given typically focus on the external effects of human capital and the interaction between technological development and R&D. 2) *Exogenous growth models* explain the convergence of less developed countries. In these, the main question is not the change in the absolute boundary of production opportunities but how emerging countries learn the most efficient production methods which are then currently available. As the latter issue is more relevant for Hungary, this is what we will focus on.

The issue of catching-up is closely related to investigating the differences between the level of development of each country. The most important prediction in exogenous growth models is *conditional convergence,* according to which a country expands its physical and human capital until it reaches the equilibrium development level *permitted by its institutional framework*.

Therefore, the catching-up process is determined by two fundamentally different factors. If the country's level of physical and human capital is significantly below its own equilibrium value, its short-term growth will primarily be determined by the accumulation of these factors. However, as the level of these factors – based on the principle of diminishing returns – approaches the equilibrium at the given level of institutionalisation, the influence of these institutional factors grows more and more important.

Based on this, one of the most important issues is whether the differences between the level of development of individual countries – and pursuant to this, the potential growth paths – can be attributed primarily to the differences in capital or the difference in equilibrium levels. The latter assumption is often phrased as the difference in *technological level* (TFP – total factor productivity).

Although the literature is not completely unanimous in this respect, more recent studies clearly emphasise the dominant role of technology. However, in departure from the endogenous growth theory, these studies do not try to explain how the most efficient production methods develop, but why less developed countries do not apply these methods.

One promising direction of research stresses that the most important obstacles to technology transfer are of a political nature. A dominant position in the market and the absence of competition, as well as the protection of different privileges can all lead to the inefficient use of resources. In this framework, factors of key importance in promoting technological catching-up include openness to the international economy, ensuring that the various interest representation bodies (such as trade unions and chambers of industry) operate within reasonable limitations, an efficient financial mediation system and an appropriate tax system.

Therefore, the literature on growth largely agrees on the fact that understanding the role of these as well as other institutional variables (the legal and political system, economic policy, the rate of taxation, the role played by the state, political stability, economic openness, cultural traditions, etc.) is a key point for evaluating long-term growth prospects. However, there has been substantially less progress in exploring the relative importance of factors and exposing the exact mechanisms. The main reason for this is the absence of a satisfactory empirical methodology (arising mostly from problems with data).

The empirical problem can be attributed to two closely related reasons. One of these is *endogeneity:* the majority of institutional variables are not only the cause but the effect of development. A typical example for this is economic openness: more developed countries tent to be more strongly integrated into the global economy. Therefore, openness and economic development have a positive relationship but the causal relationship is not clear.

The other problem is the *multicollinearity* of institutional variables: the various factors that influence development are strongly related to each other. Typically, developed countries have good indicators in all dimensions, while the majority of indicators are bad for undeveloped nations. Therefore, it is nearly impossible to separate the impacts of the various factors on an empirical basis unless we find a "basic" reason to which all other problems can be attributed.

Although the fundamental reason has yet to be clearly exposed, the most probable candidates are *economic stability* and *economic freedom.* The existence of these two factors together guarantee that households and companies are able to plan for the long term. Their incentives are not aimed at securing more and more of the goods currently available, but at creating more and more value in the future. Therefore, the key to economic development is to

promote investment activities in a broader sense, the purpose of which can be both physical and human capital and technological development and efficiency.

Naturally, the role of the state cannot be restricted to the development of an appropriate legal system. An important instrument in preventing political uncertainty and political crises is the mitigation of social inequalities. However, it is important that this goal should be achieved by ensuring equal opportunities and protection for the disadvantaged and not by extensive redistribution. The state also plays an important role in ensuring public goods and developing infrastructure. However, these developments cannot be self-centred, but must promote the more efficient operation of the private economy.

In addition to the contribution of the general institutional background, an important issue is the extent to which the economic policy environment determines the growth opportunities of a country. Of the so-called "policy" variables, the literature usually investigates the size of inflation, the various indicators of economic openness, the extent of government consumption and the size of the budget deficit. Although the interpretation of the results is debated (due to the empirical problems mentioned above), it is possible to draw some important conclusions.

Empirical results[3] imply that although the impact of moderate differences on economic growth cannot be demonstrated, an irresponsible economic policy is harmful for economic growth. Countries which have a suitable system of institutions, but which systemically pursue a poor economic policy quickly lose their competitiveness (see Argentina in the 20th century).

However, the effect is asymmetric – a good economic policy is a necessary but not a sufficient condition for growth. Macroeconomic reforms per se do not guarantee permanent growth, if they are not accompanied by an appropriate transformation of the institutional structure.

Naturally, it is not easy to define "irresponsible economic policy", but the data indicate the following. Inflation is clearly harmful if it increases to over 30-35%.[4] The size of the budget deficit becomes critical if it is higher than 10-12% per year. The rate of government consumption in itself is not significant: it is only important if it is accompanied by a high budget deficit. The impact of economic openness is not clear in the short term, but an artificially closed economy hinders growth extremely in the long run.

In summary, therefore, we can say the following. The primary source of economic catching-up is the existence of an appropriate system of institutions, which encourages productive conduct that builds the future. In addition, it is absolutely necessary to pursue a prudent economic policy, which does not systematically undermine the conditions for growth. Naturally, the institutional framework and the economic policy environment are not independent. It is easy to imagine that recurrent economic policy crises are only symptoms of deeper structural problems, and economic catching-up cannot be successful unless these problems are resolved.

[3] Source: Easterly (2005).

[4] Naturally, inflation substantially lower than this can cause serious welfare losses even if it does not impede growth.

2.2. Catching-up and potential growth

Economic catching-up is a long-term process, the speed of which is determined by the extent to which the long-term growth rate of a realigning country exceeds the growth rate of the region to which it is aligning itself. The concept of potential growth is very close to the long-term growth rate. In examining the catching-up prospects of a country, the starting point is usually potential growth and the expected future potential growth.

The simplest interpretations identify potential output with the long-term trend of output. The underlying assumption is that economic growth fluctuates around a trend. Accordingly, potential output can be measured with the trend of actual output with fluctuations filtered out by time series methods. It follows from this approach that the deviation of output from potential output is zero on average, while its fluctuation is greater than that of potential output.

Macroeconomic theories allow for additional approaches to potential output. The most widespread interpretation makes potential output dependent on supply side factors. Accordingly, the economy grows at its potential rate, when the factors of production (labour, capital, human capital) are used at their optimum. In this concept, output is determined by supply in the long run, while variations in demand can cause fluctuations around the long-term trend in the short run.

The above approach is called the production function-based approach, because the potential output is determined using a production function, where the factors of production are utilised to their full capacity. Therefore, the level of potential output can be calculated if the production function and the factors of production are known.[5]

Estimation based on the production function

The production function-based estimate is one of the most widespread methods for estimating potential output. We refer to the production function as the function that describes the relationship between the factors of production and output. In this framework, potential output means the output arising out of factors used to the optimum. The benefit of this method is that it models the supply side of the economy based on economic theory, and that it provides an opportunity for investigating the relationship between potential output and the factors that derive it. This way, it is possible to analyse the impact of variations in the factors of production on potential growth such as variations in demographic processes, the activity rate, structural unemployment or capital accumulation. An important element of the production function is total factor productivity (TFP), also called "technological development". Its size is derived from a Solow-type residual,[6] which actually comprises all impacts on output that cannot be directly matched to the variation of capital or labour. This way, the names "technological development" or TFP are not necessarily correct because in addition to technological progress strictly speaking, it aggre-

Box 2-1: The form of the assumed production function

In the course of modelling the Hungarian economy at the MNB, we have found that the CES (constant elasticity of substitution) production function is best suited for describing the supply side, in the following form:

$$YP = \left\{ \alpha K^{\frac{\sigma-1}{\sigma}} + (1-\alpha)\left[\overline{LF}(1-\overline{U})T\right]^{\frac{\sigma-1}{\sigma}} \right\}^{\frac{\sigma}{\sigma-1}},$$

where YP denotes potential output, K denotes capital, $\overline{LF}$ denotes the trend of the number of active people, $\overline{U}$ denotes the trend of the unemployment rate and T denotes labour augmenting technological progress, – denotes the elasticity of substitution between labour and capital.

Technological progress was assumed to be labour augmenting because our surveys have shown that in the past, the labour/output ratio has been decreasing relatively evenly, while the capital/output ratio fluctuated.

[5] In addition to the trend filtering and production function estimates mentioned above, potential output can be estimated by using other methods. These usually include time series and structural methods, and make use of the assumption that output equals potential output if it does not generate any inflationary or deflationary pressure. Benk, Jakab and Vadas (2005) gives a detailed description of the methods for estimating potential output.

[6] Technological progress can be calculated as follows: we assume a general production function in the form *Y=F(K, TL)*, which is homogenous on degree one in capital (K) and effective labour *(TL)*. Totally differentiating and making use of homogeneity properties, it follows that:

$\frac{dY}{Y} = \omega_K \frac{dK}{K} + \omega_L \left(\frac{dT}{T} + \frac{dL}{L} \right)$, where ω_K and ω_L denote the capital and labour income shares. As it is possible to measure the growth of output, capital and labour, this allows for calculating the growth rate of the residual *dT/T*, called technological progress.

gates the effect of economic restructuring, specification and/or estimation errors as well as other factors.

Major growth factors in the past

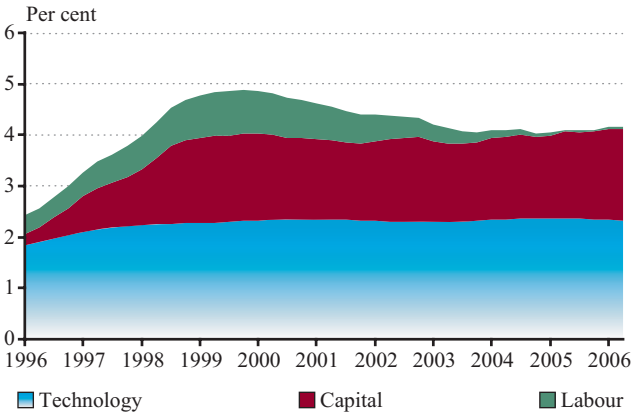
The production function allows for determining the past trend of potential output as well as the impact of each factor. Chart Chart 2-1 shows the development of potential growth since 1996. It can be seen that potential growth accelerated considerably between 1996-1999 from below 2.5% to over 4.5%, and after 2000, it gradually decelerated to around 4%.

The contribution of technological progress to potential growth was relatively stable, at about 2% along the complete time horizon. The strong acceleration of growth up until 1999 can be attributed primarily to the accumulation of capital, which added some 1.7% to potential growth by 1999. The quick accumulation of capital can be explained by the restructuring of production between sectors, the emergence of new capital-intensive industries and the strong inflow of foreign direct investment. Since 2000, the contribution of capital to growth has stabilised.

During the period investigated, there were significant changes in the labour market as well. Partly due to demographic processes, the entering of young cohorts to the labour market, labour supply increased gradually until 2000, which met the increasing labour demand of new industries. Hence, labour also contributed to potential growth more and more, as it did by about 0.8% by 2000. After 2000, due to skill mismatches and sluggish nominal wage adjustment to a lower inflationary environment, labour demand was no longer enough to absorb the still increasing supply, resulting in increasing unemployment. As a result, the contribution of labour to growth became smaller and smaller, declining to nearly zero by 2005.

Chart 2-1

Contribution of investments, labour and technological progress to potential growth



Future prospects

With some presumptions on the future path of the factors of production and productivity, Benk, Jakab and Vadas (2005) presented an illustrative projection of Hungarian potential growth until 2010. Naturally, the simple assumptions act as constraints concerning the time horizon and reliability of the forecast, because these factors can only be predicted with a high degree of uncertainty for a really long term (which is relevant for the convergence process). Over the 4-year horizon of our forecast, the growth of the workforce was calculated on the basis of the activity projections prepared by Hablicsek (2005) based on the estimated demographic changes, assuming no changes in the unemployment rate. According to these projections the workforce increase will have a slight positive impact on growth. We calculated the prospective rate of capital accumulation with a stable investment rate of the national economy, representing the average of previous years. We project a slow decel-

Table 2-1

Expected potential growth and its components until 2010: comparison[7]

	Potential growth	TFP	Capital	Labour
MNB estimate, 2006-2010	4.1	2.2	1.7	0.2
European Commission, 2004-2010	3.7	1.2	2.0	0.5
IMF, 2005-2009	4.1	1.6	1.9	0.6

[7] The MNB and IMF estimates were prepared on the basis of figures revised according to the new FISIM methodology, while the EC study uses figures before the revision. The MNB estimate is basically an update of Benk, Jakab and Vadas (2005), corrected with the change in the FISIM methodology.

eration in TFP growth, assuming that over the long run the TFP growth rate will be close to the EU average.[8]

According to our projection presented in Table Table 2 1, in the period between 2006-2010 we expect potential growth to be around 4.1% with a slightly falling trend. In a recent estimate produced for Hungary, the International Monetary Fund also assumes the same growth; but they expect a lower growth in TFP, faster capital accumulation and increase in labour. A similar estimate would derive from the European Commission's calculations,[9] they also put greater emphasis on the contribution of capital and labour to growth.

A more important issue is how quickly Hungary could align to the average of developed European countries with the growth that we see as being probable. Although Hungarian and EU incomes have grown closer in the last ten years, our shortfall is still significant. In purchasing power parity terms, in 2005 per capita GDP in Hungary was 57% of the EU-15 average, which puts us in the middle of the group of newly joined countries (Chart 2-2). Assuming 2% growth for the EU-15 for the future and not expecting Hungarian growth to lose speed, the difference in per capita income between Hungary and the old Member States could be halved in 15 years and Hungary would reach 90% of the EU-15 average in 21 years.

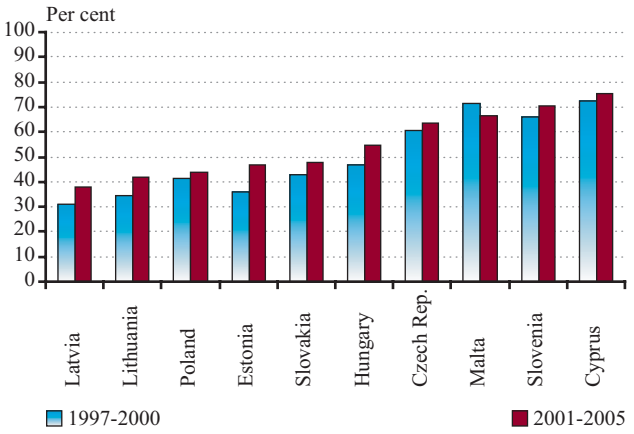
However, the above calculations can be said to be rather optimistic because they assume unchanged growth throughout the complete duration of convergence process, although it is more probable that our growth rate will decrease during catching-up, approaching the lower growth rates of old Member States. If, in contrast with the previous calculation, we assume that our growth rate will decrease in proportion with the difference in income between Hungary and the EU-15, we could halve our deficit only in 20 years and reach 90% of the EU-15's per capita income only in 38 years. The scenario which will be closer to one of the two scenarios outlined depends on the future development of certain growth factors.

The first question is whether it will be possible to sustain the strong growth of total factor productivity in the future as well. The background of the growth in Hungarian TFP is probably mostly the gradual adoption of advanced technologies (management methods, business models, etc.), which has natural limitations, and the contribution to growth may be less as we move closer to these limitations.

Chart 2-2

Per capita GDP of new EU Member States

(EU-15=100 per cent, PPS basis)



Source: Eurostat.

The rapid historical growth in the total factor productivity may have been due to the rearrangement of industries that pointed towards higher-productivity industries. In a transition period, this is obviously stronger, but as the economic structure reaches an equilibrium that corresponds to its own specialisation, the contribution of reallocation to the Solow-residuum decreases.

Furthermore, the development of capital accumulation and labour growth is also surrounded by uncertainties. Although the investment rate of the national economy has been stable for quite a while, the rate of investments of the corporate sector has declined considerably since 2001-2002, which raises questions concerning the pace of capital accumulation over the longer run. As far as the employment rate is concerned, it was one of the lowest among newly acceded countries in recent years. Although we expect an increase in the activity rate, it remains a question as to what extent this will be reflected in increased employment or an increase in the unemployment rate.

The next three sections will investigate the driving forces behind the recent development as well as the expected future development of individual production sectors and productivity. Our objective is to investigate the robustness of our previous assumptions underlying the projections above in the light of recent research results. This way we may be able to identify the magnitude of the risk of facing potential growth differing from the previously assumed.

[8] When projecting TFP growth, we assumed that over the long-term after realignment the Hungarian economy will grow by 2%, reflecting the EU average. Consequently, the growth rate of TFP will decrease gradually too, until it is in line with 2% economic growth.

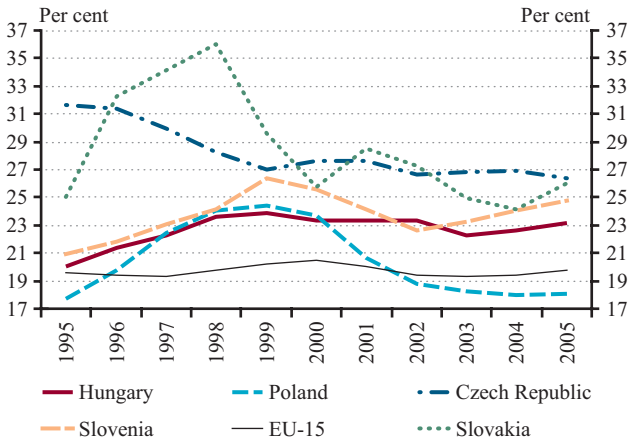
[9] If they were adjusted according to the new FISIM methodology.

2.3. Capital deepening

Investments play a key role in the catching-up process of the Hungarian economy. The capital stock per worker in the Hungarian economy is substantially lower than the EU average: according to some estimates it is less than one-third of that in the euro area. On the other hand, a lower capital stock also means that – by taking over similar technologies – the rate of return on capital is much higher than in the developed parts of Europe. In theory, this promotes capital deepening in Hungary, which implies a higher potential growth and faster catching-up. These theoretical predictions are indeed reflected in the Hungarian investment rate, which is in excess of the EU-15 average and has fluctuated around 23% since 1998.

Chart 2-3

Investment rates in selected Central Eastern European countries and the EU-15



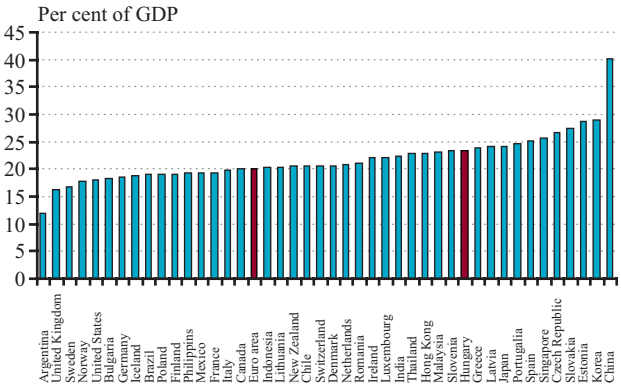
Source: Eurostat.

On the other hand, in comparison with some other – particularly Asian – emerging countries, the investment rate is not outstanding, and it is in the medium range among new EU Member States as well.

However, whether the investment rate is sufficiently high should be evaluated based on a ranking that is not absolute. In simple exogenous growth models, capital expansion depends on the size of the initial capital stock, meaning that in catching-up economies which have a lower per capita capital, capital deepening is faster, the investment rate is typically higher than in mature economies. This relationship is demonstrated in Chart 2-5 The capital stock per worker – as comparable figures on this are available only for a few countries – was approximated by per capita GDP. The negative relationship mentioned above can be seen clearly here,

Chart 2-4

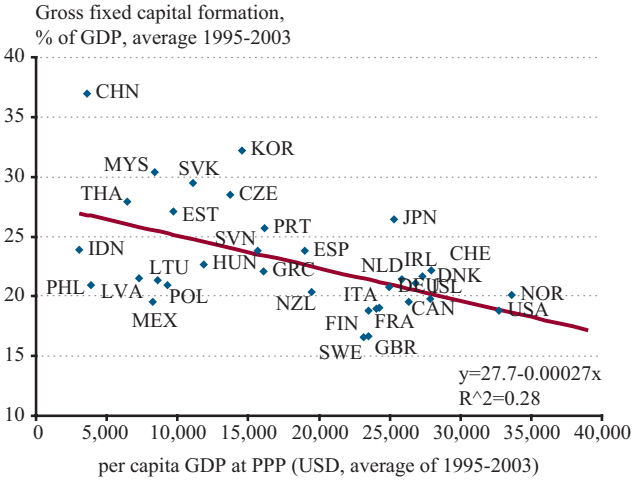
Investment rates in OECD countries and some emerging countries (2002)



Source: WDI.

Chart 2-5

Investment rate and level of economic development



Source: WDI.

and it is also clear that the Hungarian investment rate, even after controlling for the level of development, cannot be deemed to be outstanding in international comparison.

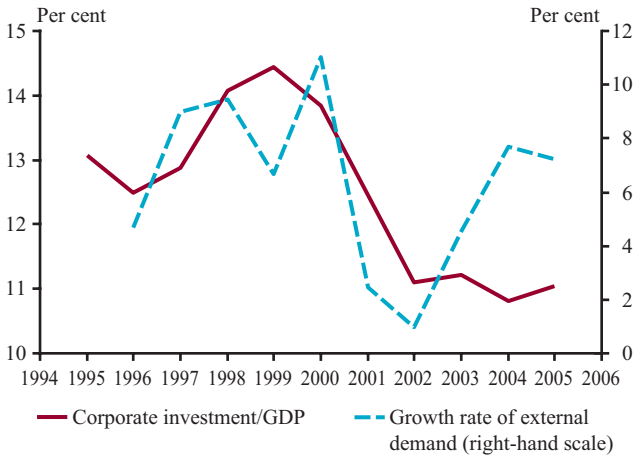
If this investment rate remains in the future, capital deepening may be expected to provide a moderate contribution to Hungarian catching-up, which cannot be termed outstanding by international standards.

As seen in section 2.2, the increase in the potential growth rate of the Hungarian economy between 1996-2000 was primarily due to the rapid accumulation of cap-

ital. The macroeconomic stabilisation package of 1995 and the acceleration of privatisation may have played a role in the development of the strong investment boom, which took place primarily via foreign direct investments. From 2000, the contribution of capital to growth stabilised, which was reflected in the level of the investment rate, which stabilised around 22-23%. However, the investment rate for the whole economy, which seems to be stable, masks a decline from the high level of corporate sector investment rate that existed between 1998-2000. Since 2002, the proportion of corporate investments has become stuck at a level around 11%, which is low compared to the average of the last ten years. This also means that since 2001, investments in the national economy have practically been maintained at the same level by the expansion of public sector and household investments, the latter having undergone a boom concurrently with subsidised housing loans.

Chart 2-6

Corporate investments and external demand*



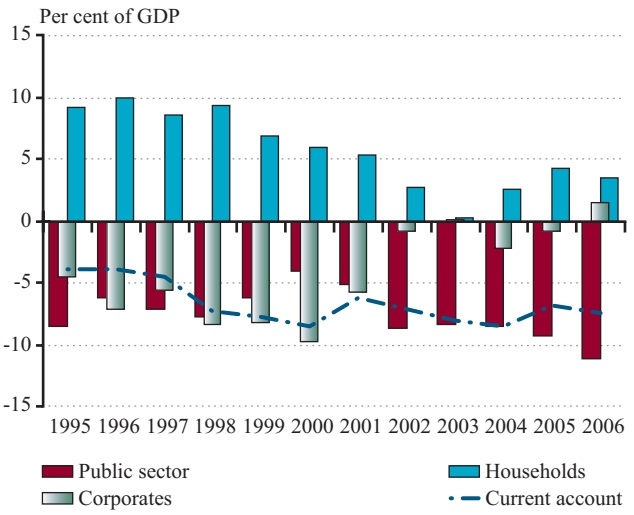
** Weighted import demand of Hungary's foreign trade partners.*
Source: MNB.

Naturally, the fact that the Hungarian economy's infrastructure development remains below the EU average justifies considerable public investments. However, public investment does not necessarily have a positive impact on growth over the longer run, as shown in several empirical studies (Barro, 1991, Easterly-Rebelo, 1993). Over the longer run, catching-up should be driven by private investment, in particular foreign corporate investment, which seems to generate a substantial increase in TFP (Javocik, 2004). Therefore, it is worthwhile to investigate whether the low level of the corporate investment rate since 2001, is caused by temporary or permanent factors, because this has a key influence on the speed of the economic convergence in the longer-term. There are basically three possible explanations: (1) crowding-out by fiscal expansion; (2) a cyclical effect (a decline in the European business cycle); and (3) deeper problems with corporate competitiveness. If it is (1) or (2) that dominate, the corporate investment rate may soon increase again, while the dominance of effect (3) would mean a permanent problem, due to which the rate of catching-up may be lower.

In Hungary, the savings rate is low compared even to emerging countries, so foreign funds play an important role in financing domestic capital expansion, causing a continuous deficit in the current account. It is important to stress that this permanent current account deficit may be an equilibrium phenomenon in an emerging country – to a certain extent, provided that it reflects consumption and investment brought forward in time to be paid back from a higher income in the future. The question is always where is the critical limit, i.e. what foreign investors financing the external deficit think about future growth and in the light of this, how sustainable they consider the process of external indebtedness of the economy. If the current account deficit exceeds the critical limit perceived by investors, the costs of external financing may start to increase steeply. In recent years, the Hungarian economy has shown very large current account deficits, but the costs of external financing have increased only moderately. This implies that despite the not-too-favourable equilibrium prospects of the Hungarian economy, the critical level of current account deficit perceived by investors may have increased. The reasons for this may have been the increase in global risk appetite in recent years as well as Hungary's becoming a member of the EU.

Chart 2-7

Sectoral balances of savings and investments



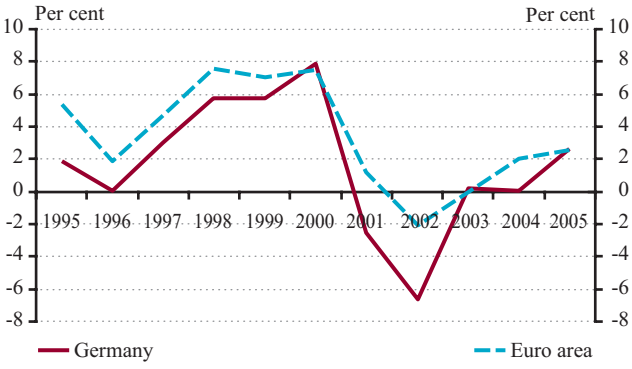
Source: MNB.

It is difficult to evaluate whether the current account has represented an effective constraint in the capital expansion of the corporate sector in recent years. To see this, we should look at how the balance of savings and investments has developed in each sector, i.e. how they contributed to the total external financing requirement. The fiscal expansion and the erosion of net household savings in parallel with this, which has been seen since 2002, would have led to a substantially greater deterioration in the current account than what we have seen. The reason why this has not taken place was that in the same period, investments of the corporate sector have decreased or were financed out of own resources to an increasing extent.

Although all this implies a kind of crowding-out effect at first sight, the relationship between the two trends is not necessarily causal. It is much more probable that the reason underlying the decline in corporate investment activities was the downturn in the European business cycle and a significant deceleration of external demand in 2001-2003. It should be noted that corporate investments decreased not only in Hungary, but also globally during this period, and the corporate sector globally even became a net saver after a long time. This was also typical in developed European countries, which are Hungary's main trading partners and its primary source of working capital.

Chart 2-8

Real gross private non-residential fixed capital formation, percentage change from previous year

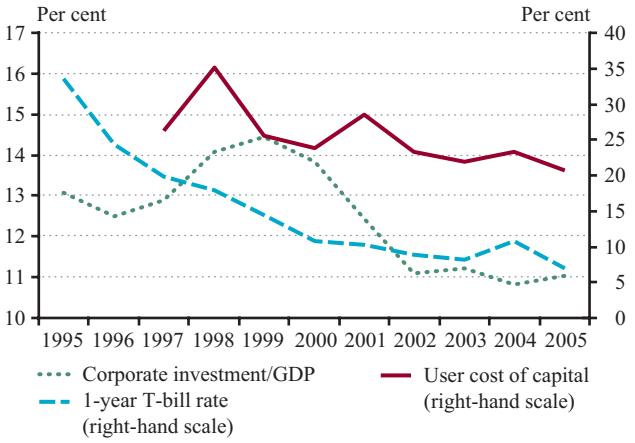


Source: OECD Economic Outlook.

The fact that financing costs have not increased significantly and permanently for the sector during the period when investments declined also speaks against the existence of a crowding-out effect. In 2002, the user cost of capital for corporations increased only temporarily. Beyond that, looking at the entire period, there seems to be no significant relationship between the user cost of capital and the investment rate. Of the components of user cost, a crowding-out effect would have the most direct impact on market yields, which actually decreased up until the second half of 2003. For corporations that make investments out of FX loans (which is the majority of the corporate sector), there was no increase in financing costs even after 2003. It should also be said that in the corporate sector, the depth of financial intermediation reaches the European average, and corporations usually can access FXI funds easily.

Chart 2-9

Corporate investment rate, user cost of capital* and market yields



** Source: MNB.*

Here, the user cost of capital is the indicator used in MNB's quarterly forecast model, which includes capital gearing, taxation, depreciation and the expected relative price variation of investment goods in addition to market return.

Nevertheless, the corporate investment rate has not increased, despite the sustained upsurge in external demand registered since 2004. It is possible that domestic companies consider the cyclical upturn in Europe to be temporary and/or expect a significant decline in domestic demand. However, another explanation arises, which implies more severe consequences over the longer run; namely that in recent years, the conditions for corporate investments (cost, quality and availability of labour, institutional environment, taxation, macroeconomic stability, etc.) have become worse (at least compared to competitors) than in the late 1990s. If fiscal consolidation and the favourable European economic performance continue in the coming years but domestic corporate investments fail to follow this trend, it should be considered that the country is facing a deeper competitiveness problem.

This explanation is confirmed by Hungary's fall in the competitiveness rankings prepared by international institutions. In these surveys the criteria of ranking go far beyond simple price- or cost competitiveness, and include institutional factors such as respect for property rights, degree of corruption, efficiency of government bureaucracy, macroeconomic environment, infrastructure, market efficiency,

education, health, innovation, etc. For example, in the best known survey of this kind, the competitiveness ranking of the Davos *World Economic Forum* Hungary fell from 29th position in 2001 to 41st position.[10] There are other surveys which instead of studying the competitiveness of a country in a general sense, analyse only the conditions relevant for corporate investments and operation. The typical criteria used in such types of surveys are for example, the ease of launching new businesses, difficulties in hiring and firing employees, access to credit, taxation, compliance with contracts, etc. In a ranking of this type prepared by the World Bank under the title of 'ease of doing business', Hungary has fallen a great deal in the last few years and is now only in 66th position from among 135 countries in 2007, with only Poland behind ranked lower from amongst the new EU Member States.[11]

Consequently, the relative deterioration of the institutional and economic policy environment determining the conditions for capital investments (which does not necessarily mean an absolute decline: it is enough if Hungary's position has declined in comparison to its competitors) may well have played a role in the decline of the corporate investment rate. Looking to the future, a few measures, already approved within the fiscal consolidation package, mainly the increase in capital taxation, will not improve the institutional environment for corporate investments at all. According to some old EU countries' experience, the cohesion funds of the European Union increase the economy's investment rate and contribute to catching-up only if certain conditions are met. These latter issues are investigated in detail in Chapters 3 and 4 of this Report.

[10] The detailed list of competitiveness criteria analysed by the World Economic Forum can be found on the following website: http://www.weforum.org/pdf/Global_Competitiveness_Reports/Reports/gcr_2006/composition.pdf.

[11] For more information about the ranking visit the following website: http://www.doingbusiness.org.

2.4. Increase in labour input

This section looks at the historical and expected future development in the activity and employment of Hungarian labour force. Particular emphasis is placed on activity because this determines the extent of the supply of labour force as a production factor. If this is extremely low (as in the case of Hungary), it can be a barrier to growth. On the other hand, increasing activity does not necessarily mean an increase in growth, because in the production function-based approach, growth is affected not by the supply of labour, but rather by the increase in employment. That is why it is important to look at the conditions under which an increase in activity can turn into an increase in employment.

Unfavourable incentives stemming from the transition period, which still have an impact now

In 1989-90, Hungary entered the path of transition together with the other countries of the region, and this process of transition still influences the labour market situation. The transitional reforms carried out in Hungary were more dramatic and started earlier and therefore, caused more radical changes than in the neighbouring countries. The result of the industrial restructuring, reorientation of foreign trade and improvement of efficiency, which occurred suddenly compared to the Czech Republic and Poland, was the spectacular collapse of total employment, which prevailed during socialism, and continuously increasing unemployment. By and large, every fourth person lost their jobs, with middle-aged or older men whose human capital had lost its value as the biggest losers (Lelkes-Scharle, 2004). There was a significant increase in the number of unemployed persons who became individual entrepreneurs, and proved to be involuntary entrepreneurs after going back bankrupt soon in the absence of professional expertise and adequate investment. The state had to urgently address the problem of the sudden surge in unemployment for both competitiveness and social purposes, and the solutions found to this problem have had long-term (negative) effects which are still felt today. The measures aimed at easing the impact of the surge in unemployment created basically bad incentives. The process of disability and early retirement was simple, and together with indexing old age pensions only to nominal wages, it encouraged withdrawal from the labour market. This way, the reversal of the increasing trend of unemployment was reflecting in inactivity for a long time, causing a dramatic increase in this.

Turning point: demography, pension reform and increasing demand for labour

In Hungary, the turning point occurred between 1997 and 1999, by which time economic competitiveness has been restored somewhat and a new influx of foreign working direct investment started, which increased demand for labour. This coincided with a boom in the labour supply: a baby-boom generation, the so-called Ratkó grandchildren, completed their studies and entered the labour market. They already had modern human capital and replaced masses whose knowledge and willingness to work was not sufficient in even higher numbers. This means that a more active group appeared in the labour market, who were at the same time sought after for their knowledge and due to foreign investments; an increase started in activity and together with that, in employment.

On the other hand, the bad incentives that destroy the willingness to find employment started to weaken somewhat: the pension reform in 1997-98 introduced the system of Swiss indexation, according to which from that point on, pensions were not aligned completely to nominal wages, but rather to expected nominal wages and to expected inflation at a proportion of 70-30 per cent initially, and 50-50 per cent later. At the same time, the conditions for early retirement were restricted. In addition, between 1997 and 2006, the legal retirement age was raised from 60 to 62 years for men and from 55 to 60 years for women.

Chart 2-10

Activity in Hungary in the age group 15-74, 1993-2006

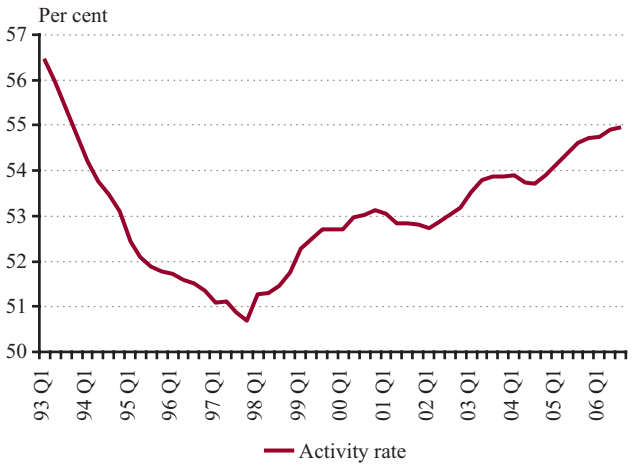
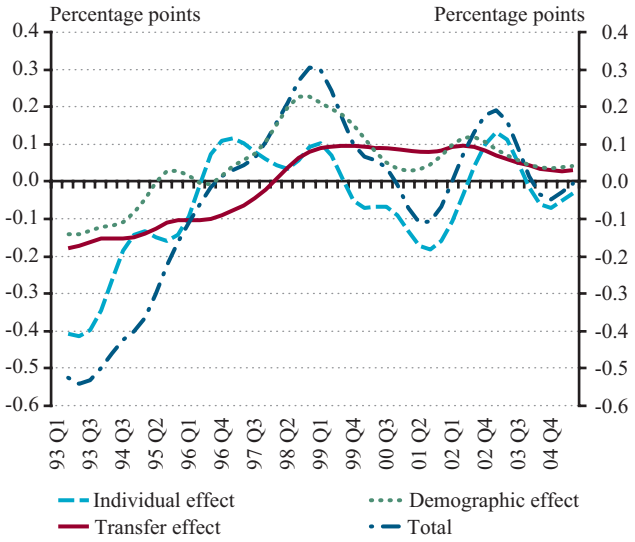


Chart 2-10 shows this turning point quite well: from 1997-98, the activity rate started a trend of growth, and in the last two years, the increase exceeded the forecasts taking into account demographic processes produced by Hablicsek (2005). Chart 2-11 shows the decomposition of the increase in activity to its most important determining factors.

Chart 2-11

Decomposition of the growth trend in activity in the age group 15-64,[12] 1993-2004



The demographic effect indicates the variation in activity arising out of the change in the distribution of the population by age and gender. The positive contribution that started in 1996 and continued intensively for about 5 years (and afterwards, less strongly) covers exactly the entry of the Ratkó grandchildren (born about between 1974 and 1977) to the labour market, who came in large numbers and had modern knowledge.

The transfer effect represents the role of the incentives and their variation already mentioned above: for social reasons in the initial years after the political regime change aids, which were not really detached from salaries, early and disability retirement, which were easily available and provided high income replacement, all encouraged people to move to inactive status, exerting a negative influence on the increase in activity. However, starting from the end of 1997, this effect had a positive influence on activity. The chart clearly indicates the reversal of this trend, but because it includes too many effects (variation in the legal retirement age, in the conditions for early retirement, in the proportion of income replacement, etc.) and we are unable to detach these effects for the time being, we are not certain whether this variation is due to the increase in the legal retirement age or the improvement in other incentives.[13]

Although the effective retirement age (that is, the empirical age limit, when people actually retire[14]) did not increase in spite of the increase in the legal retirement age (Cseres-Gergely, 2005; Orbán-Palotai, 2005),[15] behind the transfer effect turning positive in 1997, we still suspect the dominance of the first factor, i.e. the increase in the legal retirement age and other incentives linked to it (e.g. introduction of the Swiss index).[16]

The third notion, the notion of individual effect includes everything that the first two do not control for, including

[12] Calculations were performed on individual-level labour force survey data as follows: let S_J be the weight of cluster J in a breakdown by age/gender within the population of 15 to 64 years of age in the given quarter. Each group thus generated is divided into two parts based on whether the individuals in the given group receive social benefits (child raising, child care benefit, disability or old age pension, etc.) or not. The "transfer" variable is therefore *1* if the individual observed receives benefits and is *0* if he does not. Within the breakdown by age/gender, s_{Jk} indicates the proportion of those who receive transfers. Let a_{Jk} be the activity rate in cluster J_k in the breakdown by age/gender/transfer observed in the given quarter. It is easy to see that the variation of the aggregate activity rate expressed in percentage points *(dA)* can be broken down into variations of the activity rate within each cluster, the variation of the weight of group *J* by age/gender, and the variation in the proportion of those who receive transfers within the age/gender group, i.e. :

$$\mathrm{d}A = \sum S_{J,t}s_{Jk,t}a_{Jk,t} - \sum S_{J,t-1}s_{Jk,t-1}a_{Jk,t-1} = \underbrace{\sum \bar{S}_J \bar{s}_{Jk}\,\mathrm{d}a_{Jk}}_{\text{individual effect}} + \underbrace{\sum \bar{a}_k \bar{s}_{Jk}\,\mathrm{d}S_J}_{\text{demographic effect (age/gender)}} + \underbrace{\sum \bar{a}_{Jk}\bar{S}_J\,\mathrm{d}s_{Jk}}_{\text{"transfer" effect}},$$

where the bars indicate the geometric average of the values of the variable observed in the periods t-1 and t.

[13] The relevance of the latter does not mean that some people have returned to the labour market as a result of the restrictions, rather that due to restrictions, it was possible to retire only under more stringent conditions, and the number of those who exercised this option decreased while those who went into premature or disability retirement before the restrictions are slowly growing older. In fact, therefore, the part of growth in activity that might arise out of this is also driven by demographics.

[14] Taking into account, for instance, early retirement too.

[15] It should also be noted that the significance of the positive turn driving the transfer effect – naturally, with the aging of the age groups most concerned – has decreased significantly by 2004, and it remains a question what the underlying reason was. However, this is too recent to predict the depletion of the transfer effect based on this, so we expect it to further increase activity in the future, which may be reinforced by the additional restrictions imposed on the conditions for early and disability retirement.

[16] The facts that according to figures available, the growth in activity is currently driven by the group of women aged 55-59 years, that is, the elder generations, and that the introduction of measures concerning the incentives not related to old age pension (e.g. disability pensions) has not been restricted significantly (e.g. the proportion of those on disability pension increased within the group of those who retire) point in this direction.

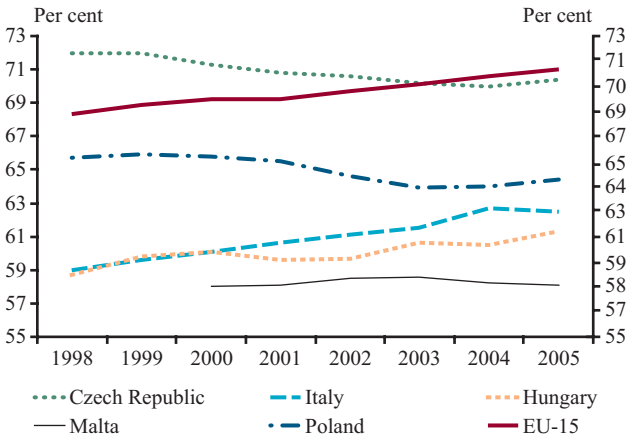
variations in the willingness of people to find employment, the increase in education,[17] etc. The quick rate of wage growth, which took place as a result of the shocks of recent years, further increased the willingness of people to enter the labour market (particularly for women, who have been relatively less active until then). This effect shows a strong cyclical character moving together with business cycles around the zero effect, which allows for the conclusion that this has not contributed to the increase in activity on a permanent basis, and that the increase in activity is quite exactly explained by the demographic and transfer effects. The cyclical nature clearly indicates the temporary increase in the willingness to find employment (and in the demand for labour) in boom periods, when suddenly and temporarily a large number of people (e.g. passive unemployed) enter the labour market.

Can convergence be observed and expected?

Despite the positive trend, which has existed for several years, the Hungarian activity rate is still extremely low in international comparison. Among the newly accessed countries, Hungary surpasses only Malta, and lags behind all of the EU-15 countries (see Chart 2-12).

Chart 2-12

Activity rates of European countries in the age group 15-64, in per cent, 1998-2005



Both the European Union and in accordance with it, Hungary considers increasing activity (and within that, employment) to be an important priority for the reasons mentioned at the beginning of the section. In order to achieve this, the EU has set a specific and absolute objective: according to the Lisbon strategy, it plans to achieve a 70 per cent employment rate[18] by 2010 from the current 63 per cent level, which corresponds to an activity rate of around 75-80 per cent. For Hungary, currently the objective is to approach the EU average as soon as possible. Hablicsek (2005) prepared predictions concerning the population and activity based on the expected demographic changes, the shift in the level of schooling and the increase in the legal retirement age. According to the more conservative scenario, the activity rate will be around 64 per cent by 2025 in the age group of 15-64 years, after which it will decrease and stabilise at about 62 per cent in Hungary – remaining well below the EU's current level. However, based on the currently ongoing processes, we can be more optimistic: although the exact effects of the incentives require more in-depth research, the decomposition of the increase in activity and the role of the transfer effect gave us the impression that it will be possible to achieve a significant long-term improvement in increasing labour supply by dismantling the bad incentives which emerged after the transition.

Employment

Activity is an important category that determines labour supply, but the increase in employment has direct relevance for growth perspectives. Although we have seen increasing activity in Hungary recently, and this is predicted to continue in the future, it is far from certain that it will result in increasing employment. Looking back to the history of employment, we are not able to identify labour market characteristics based on which we could clearly project an increase in employment.

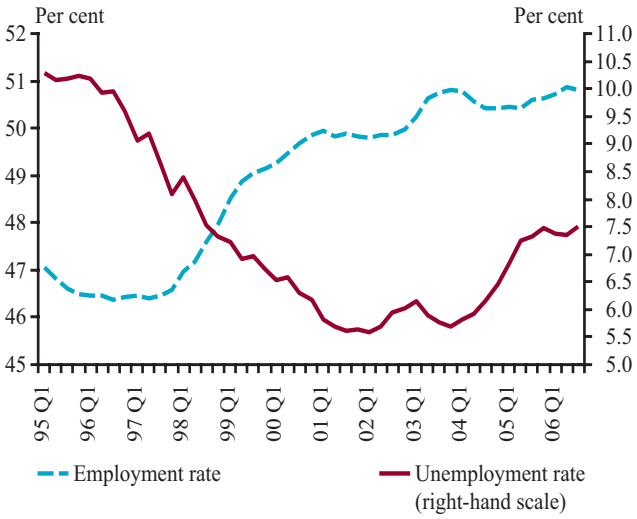
Similarly to that of activity, the current level of employment in Hungary is very low in international comparison. Although we attribute this low level to the economic system change, this is somewhat contradicted by the fact that Hungarian employment is among the lowest even in the group of newly accessed countries. Therefore, it is possible to assume that the reason for this can be sought elsewhere, for instance in the loose regulations of the early and disability retirement regime, or other reasons concerning labour supply and labour demand.

[17] The expected increase in the activity of young people is not clearly substantiated by the data for the time being. This could be explained by the fact that the increase in the average level of schooling puts a stop to the yearly number of young people entering the labour market on a temporary basis. However, after this transition, we have a good reason to assume that these young people will not only increase the number of active labour market participants, but will have better employment chances due to their higher level of education.
It gives reason for some concern that although activity is not driven by the young age groups, unemployment is. This is not necessarily inconsistent with the above; rather, it is an indication for the falling behind of those with lower levels of schooling.

[18] In the age group 15-74.

Chart 2-13

Employment and unemployment in Hungary in the age group 15-74, 1995-2006



Over the last 10-15 years, there was only one period when a significant increase in employment was seen (Chart 2-13).[19] This increase in employment between 1997-1999 can be attributed to two reasons. On the one hand, thanks to the demographic processes, a high number of well-qualified persons appeared in the labour market. On the other hand, this increased supply of labour force encountered an increasing demand due to the sectoral restructuring and new investments. However, after 2000, the demand for labour in the private sector decreased due to the deceleration of the boom, the increase in labour costs and the structural shortage of labour force, which, together with the further increase in supply, resulted in an increasingly loose labour market. In 2002-2003, the increase in the staffing of the public sector prevented the increase in unemployment,[20] but the trend seen since 2004 has clearly been one of opening the gap: the increase in activity is not coupled with an increase in employment. Although research on micro data show a positive contribution of employment to growth in certain sectors in the last 2-3 years (see section 2.5), this did not bring about an increase in employment on an aggregate basis.

In the light of the above, our picture of the future of employment is uncertain. Although we expect increasing activity, it can easily boil down to increasing unemployment, as employment becomes stuck at the lower level that prevailed earlier. The question of what happens to the increased reserve of labour force over the longer run is basically up to the flexibility of the labour market. If the labour market is flexible, increased unemployment leads to the adjustment of wages after a while, and lower wages increase the chances of the unemployed to go into employment (the Anglo-Saxon model). If the labour market is inflexible, the relationship between the wages of the employed and the rate of unemployment is weak, there is a high risk that the increased activity will result in a permanently high rate of unemployment, and hysteresis, characterizing some continental European conutries, will develop.

In his summary study, Pula (2005) finds that based on micro-research, the Hungarian labour market can be said to be flexible compared to the European Union: corporate headcounts react more flexibly to both variations in wages and business cycles. In the local sense, unemployment is able to reduce wages, and even the restructuring, brought about by the transition, took place with relatively little friction at corporate level. Furthermore, it can be assumed that the cost of adjusting the headcount (recruitment and dismissal) is relatively low for companies.

On the other hand, with respect to Anglo-Saxon countries, the degree of flexibilities mentioned above can be said to be rather low. The inflexibilities of the Hungarian labour market are tangible mostly in the low adaptability of wages. Although there is a negative relationship that can be seen between local unemployment and local wages, this is highly questionable at the aggregate level.

Box 2-2: Institutional characteristics of the Hungarian labour market

As emphasised by Pula (2005), the ability of the labour market to adapt (its flexibility) is greatly determined by the structure of institutions from all three sides (nominal wage elasticity, labour supply and labour demand elasticity). In this respect, Hungary is between the two ideal types, the Anglo-Saxon model and the continental model represented by most EU countries, being closer to the one in certain dimensions and the other in other dimensions. In order to involve as great a proportion of activity in employment as possible, we should strive to ensure higher elasticity, i.e. to approach the Anglo-Saxon model. This box reviews the institutional dimensions that are relevant for this purpose based on the study of Pula (2005).

[19] The increase in Chart 2-13 for 2003 is only an outstanding value caused by the expansion in employment in the public sector.
[20] Employment in the public sector increased by about 43,000 persons in 2002 and by over 58,000 in 2003.

The institutional factors of nominal wage elasticity

This means the frequency and the centralisation of wage contracts, the power of trade unions and the effective impact of minimum wages. In Hungary – in contrast with EU countries, and bringing us closer to Anglo-Saxon countries – agreements on wages are reached mostly at corporate and much less at sectoral or national level, so they are more frequent. Trade unions have lost much of their power with the transition; they have an influence on less than half of the part of wage agreements than the average of the European Union. Although the effective impact of minimum wages (their ratio compared to the average wage) – similarly to other transition countries – has approached the EU average in recent years, it still remains well below that, similarly to what can be seen in Anglo-Saxon countries.

Factors of the elasticity of labour supply

This includes the spread of the system of benefits and of active labour market programs. Although the reverse would be more fortunate in terms of elasticity, in order to mitigate the welfare costs caused by the transition, supports and benefits are somewhat – although not substantially – more generous even compared to the EU, while Hungary is lagging behind in the field of active labour market programs. However, this situation should be reversed in order to make the human capital of older generations marketable again, and to transform the country from a paternalist state into a state that creates opportunities.

Factors of labour demand elasticity

This includes labour law regulations protecting the employed, which remain below the standards of the EU for the moment. This is certainly positive in terms of elasticity, because this determines the costs of recruitment and dismissal, which are low in Hungary, similarly to Anglo-Saxon countries. On the other hand, the elasticity of labour demand is greatly influenced by the rate of taxes and charges on labour, which are high in Hungary even in comparison with continental Europe, and is perhaps the most serious institutional factor that works against flexibility.

Naturally, the factors listed can sometimes be classified into other dimensions (e.g. tax charges have an impact on the elasticity of labour supply as well), meaning that there is an overlap and a relationship between the three dimensions. (For instance, the elasticity of labour demand and labour supply obviously assumes some elasticity in nominal wages.)

Based on all this, Pula (2005) finds that the Hungarian labour market may be said to be more elastic than the European labour market in several dimensions. However, he calls attention to the fact that, overall, the rate of tax charges, the insufficiency of active labour market programs and other factors not classified into the above categories considerably reduce the adapting ability of the labour market. The latter factors include the low utilisation of labour force, the structural nature of unemployment and high inactivity, which are frequently due to the incentives already mentioned (the system of premature and disability retirement), the obsolete nature of education and the low degree of regional labour mobility.

All in all, therefore, it can be said that although the Hungarian labour market is relatively elastic in comparison with the European Union, its operation and institutional structure is closer to the countries of continental Europe than to the Anglo-Saxon countries (see the box above). The macro-level inflexibilities mentioned earlier, together with the low rate of regional mobility, call attention to an important point: the increasing labour supply coupled with inelastic, downwardly rigid wages can result in much higher natural unemployment than is presently the case. The risk of this is particularly high if the substitution between capital and labour, which was seen during the last 2-3 years, becomes a protracted phenomenon and continues to form a barrier to the growth of demand for labour. Increasing the flexibility of the labour market and avoiding the examples (which are bad examples in many respects) from continental Europe are very important goals for employment policy in order to avoid high unemployment. In this case, the chances of the expected increase in activity contributing to economic catching-up through higher employment will increase.

2.5. Productivity growth

The productivity of a country basically measures the efficiency with which the production factors available to it are used, and the variation of productivity in the long run is one of the main factors determining economic growth. From the perspective of international competitiveness, which is key in economic catching-up, the productivity of sectors that produce for export (typically manufacturing) and the variation of this productivity over time bear particular importance.

A number of productivity indicators can be distinguished, depending on the production factors being taken into account. Labour productivity (measured in working hours or the number of employees) measures the value of goods produced by one unit of labour, while total factor productivity (TFP) attempts to take into account the impact of all production factors (human capital, physical capital, etc.), and considers variations in value added that is unexplained by these factors to be the change in productivity. Naturally, an increase in productivity may have several reasons (adoption of advanced technology, stronger market competition, research and development activities, etc.), but here we will not attempt to study these reasons in great depth.[21] The following analysis focuses primarily on a detailed analysis of historical trends, emphasising conclusions that are relevant for economic policy considerations.

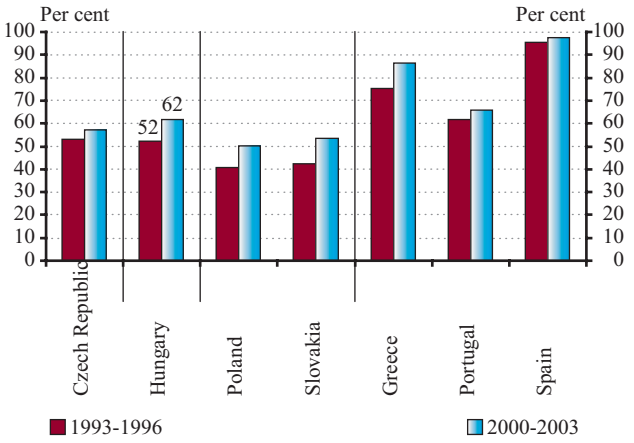
Productivity in international comparison

Hungary's lag in labour productivity is still considerable compared to the average of the developed countries of the EU (see Chart 2-14). We are at a level comparable only to Portugal, the least developed of the old EU Member States, but we perform well relative to other countries in the region. Just as most of the Visegrád countries, Hungary made up only a small part of its lag compared to the average of old EU Member States between 1993 and 2003.[22]

However, a comparison of labour productivity obscures the fact that developed countries use a much higher amount of per capita physical capital in production.

Chart 2-14

Labour productivity compared to the EU-15 average in some EU Member States*



Source: Groningen Growth and Development Centre, 60-Industry Database, Eurostat

** The EU-15 means the 15 EU Member States that existed before 2004.*

Although the investment rate of less developed countries is usually higher (see section 2.3), they catch up with the developed countries only slowly in terms of per capita capital. This is reflected in the initial difference and slow catching-up of labour productivity. Therefore, it would be reasonable to compare TFPs of countries, which would filter out the impact of differences that stems from different levels of capital. However, the amount of capital and the level of TFP can only be estimated, and the accessibility and quality of the data required for this are very limited. Furthermore, estimation may be carried out by a number of methods. Due to this, international comparison entails considerable uncertainties. Even so, the result of a recent estimate by the IMF should be mentioned, according to which the backlog of newly acceded countries compared to euro area Member States is quite significant in terms of TFP-levels. According to this estimate, the aggregated Hungarian TFP is as low as 44% of that of the euro area, which puts us in the middle of the field of newly acceded Central and Eastern European countries.[23]

[21] See section 2.1 for details on the reasons for increases in TFP, the methodology and data problems of research related to this issue and international results.

[22] According to a study by Caselli-Tenreyro (2005) Hungary's lag in labour productivity compared to the developed EU countries is significant and nearly identical in agriculture, industry and services.

[23] "Growth in the Central and Eastern European Countries of the European Union – A Regional Review", IMF, 2006 (under publication).

Analysis of manufacturing productivity on micro-level data

Total factor productivity (TFP) tries to capture the combined efficiency of production factors: it shows the impacts of production technologies, organisational structures and the quality of management on economic growth. As mentioned above, TFP is not a variable that can be observed directly: its values can only be estimated using various techniques. The Solow-residuum derived from the traditional aggregate production function as presented in section 2.2 is often identified with TFP. The Solow-residuum, however, may also include several other effects that are not related to corporate productivity (such as the reallocation of resources between companies and industries that operate with different efficiencies). However, this kind of reallocation cannot be the sole source of potential economic growth over the longer run; efficiency *at the corporate level* must also improve in order to ensure it. We investigate results achieved using micro-level data to obtain a more accurate picture of the efficiency of resource use by individual companies.

In this approach, the TFP estimates reflect only the growth impacts of improved efficiency at individual corporate level, while growth impacts arising from the increase and restructuring of the use of resources are accounted to those resources.[24] For instance, in industries that use labour force efficiently, the increase in the number of employees – i.e. reallocation of labour force to these industries – will be a contribution to growth by labour as a production factor and not an increase in efficiency, i.e. TFP at the corporate level. Therefore, the growth impact of labour use may be positive even if aggregate employment decreases, and if the companies and/or sectors that use labour force more efficiently increase their number of employees. However, corporate-level efficiency will not change due to this; it is only the available labour force that will be allocated more efficiently at the aggregate level.

In contrast with the aggregate TFP estimate, the micro-level analysis also takes into account the different production technologies of individual industries (capital and labour intensity), and assumes that the technology is the same only in the groups of companies that may be considered as homogenous based on their scope of activities (industries).

At the time being, no micro-level TFP estimates covering the entire national economy are available, so we are not able to compare our macro-level TFP estimates presented in section 2.2 with the findings of company-level analyses. The following section analyses TFP estimates made on the basis of a sector with key importance for international competitiveness, i.e. of manufacturing,[25] based on a study by Kátay-Wolf (2006).[26] An important characteristic of the estimation – beyond the micro approach – is that it endeavours to filter out demand effects by taking into account of capacity utilisation, meaning that the impact of higher demand is less demonstrated as an increase of TFP.[27]

The most important conclusion of the study is that *the improvement in corporate efficiency shows a declining contribution to growth.* If we divide the investigated 10-year period (1994–2004) into three episodes it can be seen that the increase in corporate-level productivity initially played a dominant role (between 1994–1997). However, in the period that started from 1998, the contribution to growth decreased significantly, and its role was further mitigated in the most recent years (2002–2004) (see Chart 2-15).

Therefore, in terms of the expected speed of catching-up, the fact that following the dynamic improvement in productivity seen at the beginning of the period the contribution of the TFP increase of manufacturing companies to economic growth decreased implies considerable downward risks compared to the path presented in section 2.2. During the early and mid-1990s, development of the legal and market environment (introduction of the Bankruptcy and

[24] The disadvantage of this can be that it is more difficult to form a picture about processes taking place throughout the entire national economy due to aggregation problems.

[25] Manufacturing export covers over 95% of the export of goods of the national economy, and more than half of the sales revenue of manufacturing companies comes from export sales. On the other hand, it provides about one-third of total employment in and about 30% of the GDP of the private sector.

[26] The source of the data was the data reported by manufacturing companies that keep double-entry bookkeeping reported in the annual tax returns between 1992 and 2004. The companies observed employ at least 5 persons. Within the machinery, the sector of Production of office and computer equipment (TEAOR code 30) was omitted from the estimate due to the significant measurement problems related to the data with unchanged prices. The weight of the sector's added value compared to the entire manufacturing is minor, about 2% on average.
The aggregate added value and export sales calculated from the figures of the companies investigated cover about 80% of the aggregate for the total manufacturing for both indicators. This coverage is reduced by the fact that MOL, which makes up nearly 10% of the total added value for the manufacturing but which is directly and considerably influenced by government decisions (statutory pricing) is not included in the results shown here to be able to see a more generic picture of market processes, adjusted to filter out a significant unique effect.

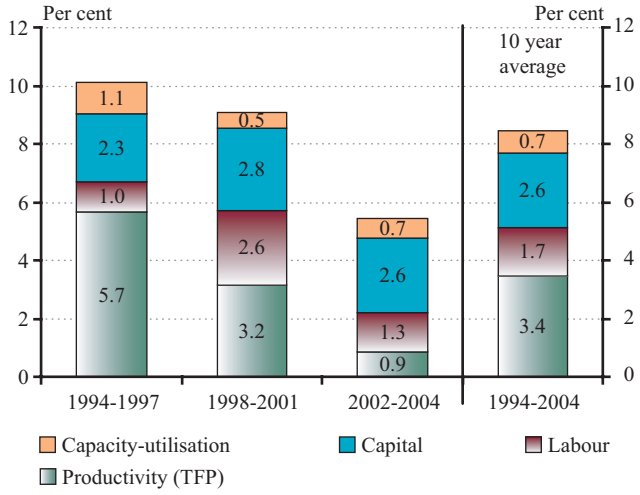
[27] As can be seen later, it was not possible to control demand effects entirely due to the problems related to measuring the utilisation of capacities, meaning that a part of the TFP estimates presented here may reflect demand effects as well.

Accounting Act, price liberalisation), the high rate of privatisation, stabilisation in 1995 and the dynamic FDI inflow afterwards may all have been important factors in the exceptionally rapid growth of corporate efficiency.[28] As the impacts of the micro- and macroeconomic reforms began to taper off, from the time of the political regime change until the mid-1990s, we experienced steadily lower increases in TFP. In the period from 1998, production technologies probably further improved owing to the still significant FDI inflows, as well as continuous adoption of advanced technologies, due to which TFP made a relatively large contribution to growth. However, in the most recent period, the increase in corporate efficiency has been substantially slower than before.

All in all, it can be said that – as referred to in the literature dealing with emerging countries (see section 2.1) – the major drivers of the improvement of corporate efficiency in Hungary might primarily have been the reforms that accompanied the transition, i.e. the change in the institutional environment and the adoption of advanced technologies.

Chart 2-15

Contribution of production factors and productivity to real value added growth in manufacturing



Note: The production of office and computer equipment and Mol Nyrt. were omitted from the estimation, so real value added growth on these figures may differ from the dynamics of growth in the manufacturing sector if calculated from aggregate data.
Source: Calculations based on the database of Kátay-Wolf (2006).

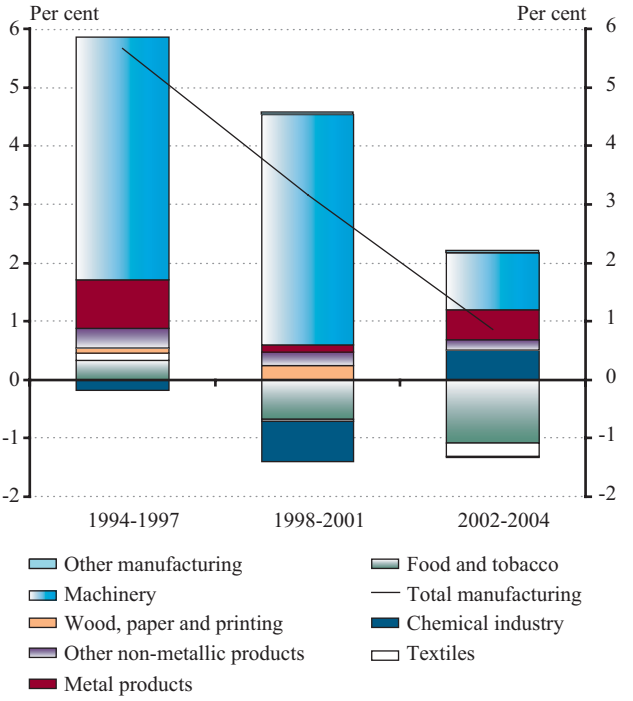
gies.

Reallocation effects and industrial developments

What are the industries, the efficiency of which had the greatest influence on growth? As it can be seen from Chart 2-16 that the development of growth was most affected by the productivity of companies in the machinery, the chemical industry and the food industry. As far as machinery is concerned, this stems from its large weight in value added (35-40%), and its considerable increase in productivity. While the machinery industry saw a significant increase in productivity almost throughout the entire period, the TFP of the chemical industry and the food industry between 1998-2001 and of the companies of the food industry between 2002 and 2004 resulted in a negative contribution to growth. On the other hand, it is important to note that the chemical industry has undergone significant changes with the market loss caused by the Russian crisis, and has made several investments in order to enter new markets. Return on these investments – due to the still high weight of the sector in added value (20-23%) – may bring considerable growth later, signs of which have already appeared recently. However, apart from developments in the chemical industry, we can see a constantly decelerating contribution of TFP to growth, or in other words: the improvement

Chart 2-16

Company level TFP-growth contributions to real value added growth by industries in manufacturing*



** Contributions of total, company level TFP-growth by industry to annual average manufacturing TFP-growth.*
Note: Manufacturing of Office Machinary and Computers and Mol Nyrt. are not included in the calculations.
Source: Calculations based on the database of Kátay-Wolf (2006).

[28] The effects of the quick and extensive privatisation that took place in Hungary on improving productivity are demonstrated in the study of Brown at al. (2006), by analysing Hungarian, Ukrainian, Romanian and Russian micro-level databases.

in the efficiency of companies provides less and less support for growth.

In this "micro perspective" the increase in productivity was identified with individual technological development and improvement of efficiency at the corporate level. From a macroeconomic perspective, another important issue is whether the allocation of resources varies in time between companies with different productivity levels and technologies, and if so, how does this influence aggregate developments. As regards the utilisation of labour, the question could be phrased by investigating reallocations behind changes in aggregate employment, and, overall, by assessing to what extent labour contributes to growth. For instance, one unit of increase in employment by companies and sectors that utilise labour more efficiently results in a higher contribution to growth than if employment were increased in less labour-productive sectors or companies. This may result in a situation in which the effect of labour on growth is positive while aggregate employment decreases.

During the period investigated, this mechanism played an important role in Hungary, which is presented in Chart 2-17.

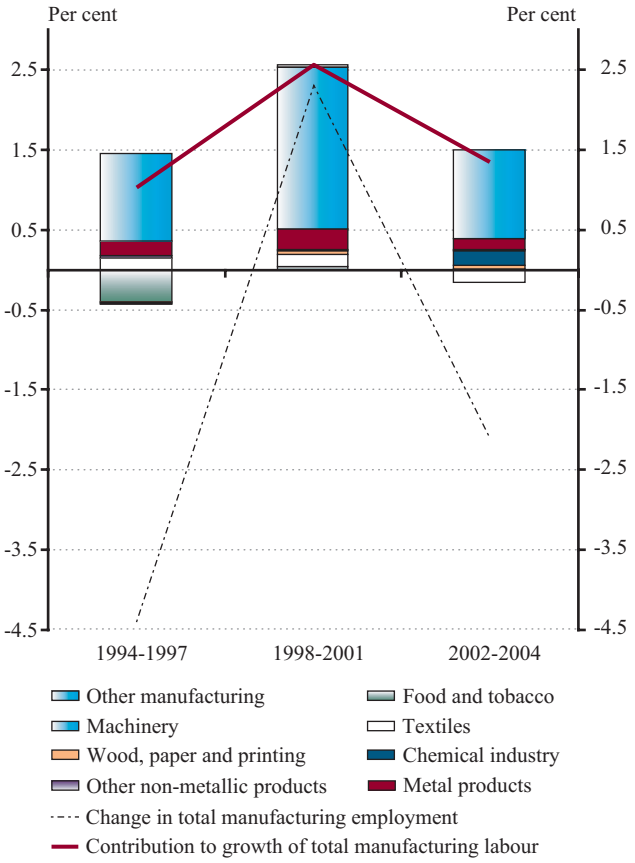
As can be seen from the dotted line of the figure, there were mass layoffs during the mid-1990s to rationalise production (the annual average cut-back was 4.5% between 1994-1997), which resulted in a still positive, albeit low (around 1%), labour contribution to growth (solid line). In other words, companies and industries that efficiently use labour increased their number of employees.

Therefore, the main driver of growth in the mid-1990s – as can be seen from Chart 2-15 – was the improvement in corporate efficiency and micro-level TFP increase. Compared to this, the expansion of production factors gained relative importance between 1998-2001 through the expansion of capital and employment based on both the FDI inflow and employment increase. During the third period, employment decreased again but structural rearrangements again resulted in a positive contribution by labour to growth, in other words, there was an increase in employment in the industries and companies that use labour force efficiently. A typical example of reallocation between industries was that there were layoffs in the textile industry, which operated at a low rate of efficiency, while employment increased in the machinery industry (see Chart 2-18), with a decrease in aggregate employment.

As regards capital, this kind of reallocation impact is less striking, because capital in total manufacturing has increased in all three episodes and its contribution to growth remained over 2% throughout the period (see Chart 2-15). However, Chart 2-18 is indicative also in this respect, because it illustrates that the restructuring of labour force was accompanied by a similar restructuring of capital in a similar direction.

Chart 2-17

Labour contribution to real value added growth by industries in manufacturing

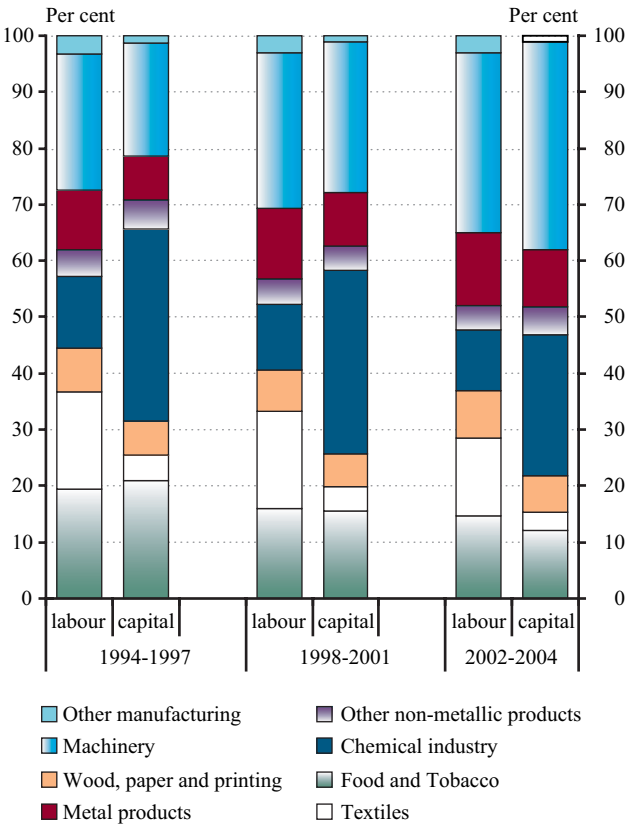


Note: Manufacturing of Office Machinery and Computers and Mol Nyrt. are not included in the calculations.
Source: calculations based on the database of Kátay-Wolf (2006) and of the labour statistics of the Central Statistical Office.

Therefore, in addition to the increase in TFP within an industry, the growth effect of different industries may also arise out of the expansion of production factors used by the industry and their reallocation within the industry. As we have seen, in recent years, this kind of reallocation has played a significant role in recent years in manufacturing, which consisted of the flow of resources into more productive industries and companies from less productive industries. At the same time, it is easy to see that following a given path of specialisation, the growth potential that arises only due to reallocation will be exhausted, so that it plays a limited role in catching-up in the longer run.

Chart 2-18

Distribution of production factors among industries in manufacturing



Note: Without Manufacturing of Office Machinery and Computers.
Source: calculations based on the database of Kátay-Wolf (2006).

In summary, the findings of our micro-level analyses of manufacturing show a more pessimistic picture about historical trends of increase in productivity compared to the Solow residuum of the aggregate production function, which mixes a number of factors. While the latter indicator has shown a mostly even contribution of 2% points to potential growth from the mid-1990s, micro-level analyses show that the increase in corporate productivity lost a significant part of its dynamism over the ten years investigated. Although the results relate only to manufacturing and therefore cannot be generalised for the whole economy, they are still remarkable because the sector plays a key role in Hungary's international competitiveness.

In Hungary – as a catching-up country – the major drivers of the improvement in corporate efficiency were probably the adoption of advanced technologies and the reforms that were entailed by the transition. As we move further and further from the political regime change, it is a question to what extent the deceleration of these processes is natural, and the extent to which it indicates that growth should receive additional impetus from economic policy.

The analyses also indicate that by increasing the proportion of industries and companies that use production factors efficiently, the so-called reallocation-effect had a positive impact on aggregate developments and promoted faster growth. However, with a given specialisation path, there will probably be less and less room for this effect over the long run.

All in all, therefore, the processes experienced here raise the risk that total factor productivity will not contribute to growth to the extent suggested by simple projections, presented in section 2.2, without a substantial change in the economic policy environment over the longer run.

2.6. Summary

Overall, in terms of potential growth, a deeper analysis of factors of production and productivity trends indicate downside risks, even before taking into account the measures in the Convergence Programme. Our analysis draws the attention to low investment rates in the corporate sector in recent years, doubts about the flexibility of the labour market overshadowing the potential growth effect of the forthcoming increase in activity and finally, declining productivity growth in a flagship industry such as manufacturing. These signs suggest that it cannot be ruled out that the Hungarian economy's catching-up process will continue at a slower pace than previously assumed.

According to modern growth theories, institutions (in a wider sense) and economic policy are of key importance in the convergence process of less developed countries. Catching-up in these countries is characterised by conditional convergence: capital, labour and productivity expand rapidly as far as the limit determined by the quality of the country's institutions and economic policy allows. The signs of a slowdown in potential growth presented in our analysis and Hungary's deteriorating performance in international comparisons examining the institutional environment and competitiveness may indicate that these limits are starting to become effective for Hungary's catching up. In the absence of comprehensive reforms, the present quality of institutions and of economic policy may hinder a continuation of dynamic convergence in the future. Further research is necessary in order to get a picture of the magnitude of decrease in potential growth and to identify which institutional features of the Hungarian economy are responsible for this decline. After this is accomplished, discussion should focus on how to change these institutions so that catching up can continue at a dynamic pace.

References

BARRO, R. (1991): "Economic Growth in a Cross Section of Countries", *Quarterly Journal of Economics,* Vol. 106 (May), pp. 407-43.

BROWN, J. D., J. S. EARLE AND Á. TELEGDY (2006): "The Productivity Effects of Privatization: Longitudinal Estimates from Hungary, Romania, Russia, and Ukraine", *Journal of Political Economy,* vol. 114, no. 1, pp. 61-99.

CASELLI, F. AND TENREYRO, S. (2005): "Is Poland the Next Spain?", *NBER Working Paper* No. 11045.

CSERES-GERGELY, ZS. (2005): "Inaktív középkorú emberek és háztartások: Ösztönzők és korlátok" (Inactive middle-aged people and households: Incentives and restrictions, *Research booklets,* Ministry of Finance, May 2005.

EASTERLY, W. AND S. REBELO (1993): "Fiscal Policy and Economic Growth", *Journal of Monetary Economics,* Vol. 32 (December), pp. 417-58.

EASTERLY, W. (2002): "The Elusive Quest for Growth", The MIT Press, Cambridge MA.

EASTERLY, W. (2005): "National policies and economic growth" in Philippe Aghion and Steven Durlauf, editors, *Handbook of Economic Growth,* Elsevier.

HABLICSEK, L. (2005): "Demográfiai forgatókönyvek és a gazdasági aktivitás előrebecslése hosszú távú nyugdíj-modellezéshez" (Demographic scenarios and predictions on economic activity for long-term pension modelling), Aktív Társadalom Alapítvány, June 2005.

HÁRS Á., B. SIMONOVITS AND E. SÍK (2004): "Munkapiac és migráció: fenyegetés vagy lehetőség?" (Labour market and migration: a threat or an opportunity), In: Kolosi T., Tóth I. Gy. AND Vukovich Gy. (ed.): *Társadalmi Riport,* TÁRKI, Budapest, pp. 272-289.

IMF World Economic Outlook (April, 2006): "Awash with cash: Why are corporate savings so high?", pp. 135-159.

J. TEMPLE (1999): "The new growth evidence", *Journal of Economic Literature,* 37, pp. 112-156.

JAVOCIK, B. S. (2004): "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers Through Backward Linkages", *The American Economic Review,* vol. 98, no. 3, pp. 605-627.

KÁTAY G. AND WOLF Z. (2006): "Driving Factors of Growth in Hungary – a Decomposition Exercise", *MNB Working Paper,* fotrhcoming.

KÁTAY, G. AND Z. WOLF (2004): "Investment Behaviour, User Cost and Monetary Policy Transmission – the Case of Hungary", *MNB Working Paper* 2004/12.

KÉZDI G. (2006): "A szakképzés munkapiaci értéke az átmenet után" (The value of vocational training in the labour market after transition), lecture delivered at the annual conference of the Committee of Labour Sciences of MTA KTI.

LELKES, O. AND Á. SCHARLE (2004): "Miért inaktív az 50 éves magyar férfiak egyharmada?" (Why is one-third of 50-yyear old Hungarian men inactive) In: *Társadalmi Riport 2004,* TÁRKI.

ORBÁN G. AND D. PALOTAI (2005): "A magyar nyugdíjrendszer fenntarthatósága" (Sustainability of the Hungarian pension system), *MNB Occasional Papers* 40.

KLENOW P. J. AND A. RODRIGUEZ-CLARE (1997): "Economic growth: a review essay", *Journal of Monetary Economics,* 40, pp. 597-617.

PULA G. (2005): "Az euro bevezetésével járó strukturális politikai kihívások: munkapiac" (Structural policy challenges related to the introduction of the Euro: labour market), *MNB-tanulmányok* 41., 2005.

HALL R. E. AND C. I. JONES (1999): "Why do some countries produce so much more output per worker than others?", *Quarterly Journal of Economics,* 114:1, pp. 83-116.

PARENTE, S. L. AND E. C. PRESCOTT (2005): "A unified theory of the evolution of international income levels", in: Philippe Aghion & Steven Durlauf (ed.), *Handbook of Economic Growth,* edition 1, volume 1, chapter 21, pp. 1371-1416, Elsevier.

SÍK, E. (2000): "KGST piacok és feketemunka – Hungary 1999." In: *Elemzések a rejtett gazdaság magyarországi szerepéről* series, MTA KTI és TÁRKI.

3. The impact of the EU funds on potential growth

The view seems to be developing in the Hungarian public that transfers coming from the European Union to Hungary will generate a considerable growth surplus. The model simulations prepared by the European Commission quantifying the potential impact of structural funds also support these positive expectations. However, the empirical studies analysing the actual impact of the funds in the previous periods of the support system report relatively moderate growth and convergence surplus attributable to the funds.

The reason for this difference is that generally model simulations assume efficient use of the funds. However, it is not so evident; the conditions for effective use were not and are not necessarily fulfilled in practice. In addition, the institutional system receiving the funds in the new Member States is lagging behind the systems of the former cohesion countries. All these aspects should warrant a degree of caution in assessing the estimated growth impact of the European Union funds.

Effective use of funds depends on Hungarian decision-makers. The quality of economic policy will determine whether the country will be capable of making use of the additional growth potential provided by the funds. Experience indicates that the major economic policy factors in this respect are fiscal and monetary policies supporting macroeconomic stability, efficient distribution of funds both geographically and sectorally, and improvement of the efficiency of the bureaucracy responsible for the allocation.

This chapter provides an overview of the literature related to this subject and describes in detail the main issues and problems related to the growth impacts of the EU funds.

3.1. Brief description of the structural funds

Purpose and structure of the funds

One of the most important objectives of the European Union is to promote the harmonic economic development of its Member States and to support the most underdeveloped regions in their convergence. The instrument used in achieving this purpose is the operation of structural and cohesion funds. In this framework, the EU makes large capital transfers from the richer Member States to the less developed ones.

There are two main fund groups: the structural funds and the cohesion fund. The structural funds include five funds, of which the three most important ones are the regional development fund (ERDF), financing mainly infrastructure and employment programmes, the social fund (ESF), promoting social integration of the unemployed and people in disadvantaged situations and the agricultural fund (EAGGF), which supports the development of rural areas.[29]

The structural funds have three objectives, or, target areas. The first is the development of regions, where the per capita GDP is lower than 75 per cent of the EU average. More than 60 per cent of total EU structural and cohesion funds are committed in this framework. The second objective contains assistance to regions suffering from general industrial decline and restructuring problems. In addition, this category also includes some, primarily agricultural, regions. Finally, the third objective covers programmes related to the modernisation of training systems and increase of employment.

The role and nature of the cohesion fund are very similar to those of the regional development fund (focusing mainly on infrastructure projects) but there are some important differences. The structural funds are distributed on a regional basis, while the cohesion fund is distributed among the Member States (provided that their per capita GDP is not higher than 90 per cent of the EU average). Typically, the structural funds do not finance separate projects, but support regional, often multinational, complex programme systems. In the framework of cohesion financing, individual projects can be supported, primarily large infrastructure or environmental projects.

There is also a difference in the structure of financing. For the structural funds, more stress is put on co-financing, i.e. the principle according to which the region or the organisation receiving the support also contributes financially to the project. In the structure before enlargement, this set a requirement of 30-50 per cent own funds for structural funds, and at least 20 per cent own financing for the cohesion fund. In the 2007-2013 programming period, the receiving states are required to make a slightly lower contribution. The possible minimum equity contribution has been reduced to 15 per cent for both the structural funds and the cohesion fund. However, the specific ratios may vary by project, showing sometimes radical differences.

Finally, the principle of additionality should also be mentioned. Joint with the principle of co-financing, this sets another requirement for the country receiving the support, specifying the minimum capital investments to be implemented outside the framework of the programmes.[30] The purpose of this principle is to guarantee that the EU funds do not crowd out the other public investments of fund receiving state. In other words, the 'economic' additionality principle intends to prevent the receiving country from using EU support to finance the budget deficit. In practice the appropriate expenses of the period before the applicable seven-year programming period need to be kept at the average of the programming period in real terms.

According to the data of the European Commission, the principle of additionality was practically fulfilled between 1994 and 2006 (see European Commission, 2004), but, as we shall see, other empirical research raises doubts about the fulfilment of the principle of additionality (see Ederveen et al., 2003).

The difference may occur because the calculations relate to different periods. On the other hand, while the data disclosed by the European Commission can be interpreted on the basis of the 'legal' additionality concept complying with the principles laid down in the regulations of the European Union, the calculations published by Ederveen et al. reflected more the estimates of economic additionality, which does not fully correspond with the legal concept.

[29] This fund is not included in the Common Agricultural Policy (CAP).

[30] This specifically relates to public development expenditure, not funded by the European Union. Most of it is capital expenditure (infrastructure, industry, etc.) but it may also include educational, training and other operational expenses.

There may be cases when a particular Member States reduces its capital investments outside the EU financing (i.e. by not fulfilling the additionality principle even in an economic sense) and in the meantime it still fulfils the EU's ('legal') additionality requirement. In order to do that, the structure of public investments and other programmes implemented only with national funds without any EU financing must be changed to include investments and expenses satisfying the criteria of additionality in a higher proportion. Compared to the previous situation, such a change may modify the structure of investments in a sub-optimal direction as well.

Management of additionality will become significantly stricter from 2007. From 2007, non-compliance with additionality will involve a sanction as well and the receiving country will have to repay the received EU support, if it is unable to fulfil the objectives set in relation to additional expenses. Consequently, additionality will be subject to ex ante, interim and ex post controls.

In the 2000-2006 programming period, approximately EUR 200 billion was made available within the framework of the support system, and more than 90 per cent of this amount was available through the structural funds.

The Hungarian framework

In the 2007-2013 programming period, Hungary will receive a large amount of support from the structural and cohesion funds. In this period, the EU funds within the budget will amount to approximately HUF 830 billion on average each year,[31] to which the Hungarian state will add on average approximately HUF 180 billion each year. On average, this represents 18 per cent Hungarian co-financing which, compared to the previous Hungarian situation and other countries using the cohesion fund, is rather favourable. For example, in 2005 and 2006 Hungarian co-financing was still above 30 per cent. The following two tables illustrate the amounts included in the budget in the past and forecasted until 2010.[32]

The decline is partly related to the changes in regulations indicted above, as well as changes in the structure of Hungarian projects: the PHARE and SAPARD programmes requiring higher national co-financing will soon be completed. More effective cost planning also improves the balance of financing. The additional expenses incurred frequently in relation to previous programmes, primarily in relation to the ISPA programmes in 2000-2001 had to be covered by the Hungarian budget.

Based on the Convergence Programme submitted by the Government in 2006 and accepted by the European Commission, there are some issues concerning additionality as well. In terms of investments and other government programmes implemented only with Hungarian resources, the Convergence Programme projects a decline equivalent to 2 per cent of GDP between 2006 and 2009. GDP-proportionate public investments will not increase according to the Programme during the same period, but will remain at around 3.6 per cent. Two conclusions can be drawn from these projected figures in relation to additionality. On the one hand, the plan may indicate that economic additionality will not be fulfilled in the period between 2006 and 2009: the capital investments financed with EU resources will replace Hungarian investments which have already been planned. On the other hand, it will definitely help to restore the balance of the budget. Under such circumstances, in order to fulfil the principle of economic additionality throughout the entire period from 2007 to 2013, rather significant government investments will have to be implemented between 2010 and 2013 without the use of EU funds, while Hungary must also comply with the stability conditions of the European Union.

On the other hand, the legal additionality requirement may be achieved even with the outlined budget figures as early as during the period from 2007 to 2009. In order to do that, the structure of public investments and other programmes implemented only with national resources will have to be changed as indicated above. The question is whether Hungary will move closer to or further away from an ideal public capital expenditure structure, but we cannot endeavour to make a judgement on that within the framework of this Report.

Due to current twin deficit situation in Hungary, EU transfers may have an additional, indirect effect on potential growth. If economic additionality is not fulfilled, that is, the EU transfers do not generate additional investment, the external financing need may decrease. This effect in itself may reduce the risk premium and increase potential growth.

[31] Outside the budget, approximately HUF 270 billion can be expected additionally each year.

[32] The table also contains other forms of supports, not related to the structural funds. They include, e.g. the transfers of the Schengen fund, supporting the development of the new border crossing system to satisfy the EU requirements.

Table 3-1

Financial transfers between Hungary an the EU, 1998-2005

(current prices, billion HUF, only sums in the budget)

	1998		1999		2000		2001		2002		2003		2004		2005	
	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.
Structural and Cohesion funds	0	0	0	0	0	0	0	0	0	0	0	0	3.6	2.0	85.6	37.2
Cohesion Fund	0	0	0	0	0	0	0	3.8	4.6	4.5	5.3	18.7	10.5	9.2	23.4	21.0
I. National Development Fund	0	0	0	0	0	0	0	0	0	0	0	0	3.6	2.0	85.6	37.2
Új Magyarország Develompent Fund	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other structural funds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rural development funds	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	43.0	6.7
I. National Rural Development Plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43.0	6.7
Új Magyarország Rural Development Programme	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SAPARD	0	0	0	0	0	0	0	0	0	0	1.1	3.8	8	7.0	21	8.3
Schengen Fund	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	2.5	0.7
PHARE and transitory transfer programs	8.2	2.4	14.9	1.0	31.6	3.4	30.6	11.0	26.7	14.8	21.5	17.3	27.1	16.7	19.1	13.7
Other EU transfers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	1.8
Total	8.2	2.4	14.9	1.0	31.6	3.4	30.6	11.0	26.7	14.8	22.6	21.1	38.6	25.7	171.9	68.4

Source: Ministry of Finance.

Table 3-2

Financial transfers between Hungary and the EU, 2006-2010

(current prices, billion HUF, only sums in the budget)

	2006		2007		2008		2009		2010	
	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.	EU source	National co-fin.
Structural and Cohesion funds	232.2	122.8	322.4	125.8	565.1	163.6	694.0	173.2	869.5	173.1
Cohesion Fund	*50.9*	*36.8*	*90.5*	*61.7*	*65.0*	*50.0*	*70.0*	*76.3*	*85.0*	*72.3*
I. National Development Fund	*181.3*	*86.0*	*117.8*	*37.5*	*144.5*	*21.7*	*0.0*	*0.0*	*0.0*	*0.0*
Új Magyarország Develompent Fund	*0*	*0*	*100.1*	*22.6*	*340.6*	*87.9*	*609.1*	*94.1*	*770.1*	*98.1*
Other structural funds	0	0	14.0	4.0	15.1	4.0	14.9	2.7	14.5	2.7
Rural development funds	60.3	17.5	95.1	25.9	50.6	14.6	93.4	23.4	112.4	28.8
I. National Rural Development Plan	*60.3*	*17.5*	*68.2*	*17.0*	*0*	*0*	*0*	*0*	*0*	*0*
Új Magyarország Rural Development Programme	*0*	*0*	*26.9*	*8.8*	*50.6*	*14.6*	*93.4*	*23.4*	*112.4*	*28.8*
SAPARD	9	3.0	0	1.7	0	0	0	0	0	0
Schengen Fund	11.2	2.2	32.7	5.2	0	0	0	0	0	0
PHARE and transitory transfer programs	14.8	10.5	5.2	1.7	1.0	0.9	1.0	0.9	1.0	0.3
Other EU transfers	2.2	5.8	9.2	5.3	9.0	6.0	13.7	6.0	2.8	5.3
Total	329.6	161.8	464.5	165.6	625.7	185.1	802.1	203.5	985.8	207.5
Rate of national co-financing in per cent (structural transfers only)	34.6		28.1		22.5		20.0		16.6	
Rate of national co-financing	32.9		26.3		22.8		20.2		17.4	

Source: Ministry of Finance.

3.2. Theoretical considerations about the relationship between convergence and capital transfers

The main theories of economic growth were outlined in the first part of the Report. We should also briefly review the conclusions drawn from these theories regarding the impact of transfers arriving from abroad. We can state that adequately implemented foreign assistance can make a positive contribution to the convergence of the economy under each theoretical framework, but the effect mechanism is different.

Capital transfers and growth theories

In the *exogenous* neoclassical growth theory framework, a capital transfer to an underdeveloped region gives a single, push-like effect to the existing convergence process, accelerating catching-up. Within the framework of the *endogenous* growth models, international capital transfers do not only represent additional help in the convergence process, but they may also be required for starting convergence itself. In these models, even the divergence of certain regions and countries may take pace, generating a growing lag from the centre because of the externailities assumed in the evolution of the technology and the increasing returns to scale. As noted in the discussion of growth theories, the framework of exogenous growth models is most probably the relevant one for Hungary.

The theory of technological leaps may also confirm the positive role of capital transfers in the convergence process. This theory argues that poorer and less developed countries can simply copy the technology of the richer countries, which can result in the desired convergence. What is required for that is the ability to absorb advanced technology, which arrives usually in the form of foreign direct investments. Consequently, the EU funds may effectively contribute to the convergence process, because they increase the technology absorbing capacity of the country.

New economic geography and the role of the regions

Because of its importance for the subject, a special branch of growth theories, the so-called new economic geography also needs to be mentioned separately. This new body of theories, which has developed in the last 15 years (see, e.g. Krugman, 1991), stresses that the interrelations of the various economic driving forces behind spatial agglomerations may lead to different equilibria. Economic growth is never balanced, and the differences of development observed geographically, even within the same country, do not result from accidental factors. The theory is based on the externalities in the diffusion of technologies between regions *(technological spillovers)*. Growth may be higher within a particular agglomeration if the necessary production factors are sufficiently concentrated there. For example, innovation is typically exposed to external impacts: the important inventions do not arise in companies and organisations working in a vacuum. They usually occur in an effective and productive business/scientific environment.

Two trade-offs need to be mentioned, partly related to this theory. According to the hypothesis of Kuznets-Williamson, regional disparities necessarily increase in countries in the early phase of economic catching-up. This is most likely due to the regional level increasing returns to scale. However, at a later point of development regional disparities will naturally ease. Consequently, this is the equity/efficiency trade-off. So, the regional convergence programmes may also hold back convergence at the country level. This is because programmes may have external impacts too, which reduce the share of economic resources, e.g. human capital, in 'naturally' fast regions (without convergence programmes, based purely on efficiency or market considerations).

The other trade-off is similar, but it occurs in the industrial structure. We can see that growth is not balanced there either, but certain growth clusters, growth poles contribute much more to the development of the economy than other areas. It is not only due to the regional structure, but also to the accumulation of strongly specialised knowledge capital. The biggest development may occur in sufficiently large operational areas with duly specialised knowledge capital. Thus, there is a trade-off between the structural balance of the economy and the strength of growth/convergence. An economic policy that distributes its development resources too evenly imposes a risk on the convergence and development of the economy because it runs against the increasing returns arising from regionality.

Foreign capital transfers may have a strongly positive role in promoting convergence in the new economic geography framework as well. However, because of the agglomeration externalities and trade-offs indicated above, we have to be very careful, taking into account the fact that a certain level of regional and structural divergence is not just not contradictory to the general convergence process, but it is also a direct and necessary consequence of this process.

Finally, we shall describe an application of the new economic geography, which looks at the potential future scenarios of Europe. Modelling agglomeration interactions, Braunerhjelm et al. (2000) outlined three potential scenarios for regional development in Europe. In the first scenario, most regions can successfully use their local comparative advantages, and therefore the continent develops according to a balanced regional growth scenario. In the second scenario, the agglomeration benefits result in much stronger geographic economic concentration. If it also includes workforce mobility, then some regions may lose most of their population, but in total the per capita income will converge to the same level. The third scenario is different from the second scenario by assuming low workforce mobility. In such a case, development will be heavily polarised: the continent breaks down into developed and underdeveloped regions and the per capita income levels diverge.

3.3. Convergence in experience

Numerous studies have tested the convergence process using empirical methods. For example, in its study the European Commission (2004) published the results of several calculations based on European data. For the period from 1960 to 2003, they found strong economic convergence in the European area both at country and regional level. The former cohesion countries (Greece, Ireland, Portugal, Spain) strongly converged to the EU average.

However, convergence seems to be stronger at the level of regions, and differences within the same country have even increased. This supports the Kuznets-Williamson hypothesis. The Commission also used more sophisticated statistical instruments to analyse the level of development, up until which the regional disparities increase within a country and from which they start to decrease. The results indicate that in the countries that joined the European Union in 2004, regional disparities will increase until the per capita GDP of the country reaches 70-75 per cent of the EU average. After that, disparities will begin to decline, decreasing even more strongly than during their previous period of increase.

The results published by Ederveen et al. (2003) partly confirm and partly contradict the above arguments. The authors used a slightly different methodology and a shorter data series (1980-1996) and found that discrepancies decreased not only between but also within countries, with the exception of Italy.

The national convergence rate estimated in the studies was around 2 per cent: the per capita GDP of the countries converges to the long-term equilibrium annually by this average figure, i.e. the difference between the actual and long-term income levels decreases on average by 2 per cent each year.[33]

[33] It is important to note that these calculations assume conditional convergence (that is, a given country does not necessarily converge to the same steady state as the others). In section 2.2., on the contrary, we assumed absolute convergence to the EU average when calculating the half-time figures of the Hungarian convergence process.

3.4. Review of the impact of the funds

The issue is to what extent the observed convergence process has been helped, if at all, by the structural funds of the EU. The rather scarce literature on this subject can be divided into three parts, based on the applied methodology: 1) case studies, based mainly on questionnaires and informal methods; 2) model simulations; and 3) econometric estimates. The outlined picture is not absolutely clear, not least because the different methodologies have different strengths and weaknesses, and therefore the specific questions answered by them are not identical either. For example, a case study can provide an accurate description of the characteristic features of a particular project, the quality of environment and implementation process, etc., but it is less suitable for quantifying the impacts of the funds or drawing conclusions at aggregate, regional or country levels. Consequently, from now on we shall only concentrate on model simulations and econometric estimates.

In general, we can conclude that the model simulations quantify the *potential* impact of the funds, while the aim of econometric studies is to estimate the *actual* impact. Consequently, according to the models, structural support has a significant and positive impact on the economic growth of the countries involved in the framework, helping convergence a great deal. However, according to econometric estimates, the impact of the funds was negligible even in the best cases in the past, and sometimes their impact on convergence was even negative.

Model simulations

Model simulations are based on theoretically consistent, general equilibrium models, the parameters of which are quantified partly on the basis of previous empirical study results (calibration), and partly by assumptions. The funds are modelled as capital stock increasing investments carried out by the state. All models share a feature whereby they assume productivity and efficiency of these investment projects. Thus, the simulations show the potential impact of the structural support of the EU, i.e. they answer the question of what the economy's situation would be on a shorter and longer term basis, if the projects were allocated, co-ordinated and implemented optimally. The European Commission uses two such models, which are the Hermin and QUEST II models.

Hermin is a fundamentally Neo-Keynesian model with some neo-classical elements on the supply side (see Bradley and Morgenroth, 2004). The economy of a particular country consists of an industrial and a service sector. The output of the industrial sector is determined by world demand and the international price and cost competitiveness, while the output of the service sector is influenced by final demand. Wages are determined in a bargaining process, in which unemployment, the tax rates and productivity have a very important role. The model also takes into account the (positive) externalities of public investments on the accumulation of physical and human infrastructure capital. The interest and exchange rates are exogenous, and expectations are adaptive.

Based on the ex post simulations of the model, the potential impact of the already implemented programmes can be quantified. For example, the impacts of the structural support of the EU 1994-1999 budget period are positive but relatively modest for Spain, Greece and Ireland according to the model: the support increased the GDP level by approximately 1-1.5% in the budgeting period and by 0.5-1% on a long-term basis. In Portugal, however, these impacts were much greater, calculated at 3-3.5% and 2%, respectively.

QUEST II is a so-called new Keynesian stochastic dynamic general equilibrium model (see Roeger and in't Veld, 1997). The model is micro-funded: it features forward looking (rational) expectations, intertemporally optimising households, neo-classic production function, endogeneous real interest rates and short-run nominal rigidities. Thus, the model can illustrate the short-term effects of the structural funds crowding out private investments, and their positive long-term impacts on the supply side.

The ex post simulations, performed with the model, calibrated on the basis of the budgeting period of 2000-2006, support the conclusion of the Hermin model about the positive impact of the structural funds on production capacities and GDP levels. However, in the QUEST II model these impacts are weaker, because of the longer-term real appreciation of the currencies and the effect of the increasing real interest rates, which deteriorate external equilibrium and crowd out private investments.

Thus, the quantified results show in total 0.5-1.4% additional growth in the 2000-2006 period in terms of GDP (looking at Spain, Greece, Ireland and Portugal). Crowding out and real appreciation effects occur relatively quickly in the model, already in the third-fourth year of the seven-year cycle.

Ederveen et al. (2003) refer to other simulations relying mostly on endogeneous growth models, not related to the Commission. The results of these models are generally positive about the impact of the structural funds, but they often also reflect the adverse effect generated by the additional real appreciation.

Econometric studies

The results of econometric studies generally outline a more pessimistic picture of the effects of the funds than most model simulations. Econometric models are used to estimate the actual impact of support (contrary to the potential quantification of model simulations). No assumptions are made about the productivity of investments, lack of crowding out effects and compliance with the additionally principle. Consequently, by doing so these studies avoid some of the potentially unreasonable assumptions of the calibrated models.

The weakness of the econometric studies is the limited and bad quality of the data. Very often there is no regional database with sufficiently detailed data. The available data do not always cover a sufficiently long timespan, which makes it more difficult to quantify the long-term effects of the structural funds. These are serious problems, which can even completely offset the benefits, but by the nature of the issue it is difficult to quantify the balance.

According to paper by Boldrin and Canova (2001), the structural support did not contribute to economic growth at all. Practically, these funds are subordinated to objectives that depend on the current European political equilibrium, and only few of them contribute to economic growth. Thus, the authors urge drastic changes in the system of structural support and also express their doubts about the financing of the newly entering states. In their opinion, economic growth and convergence can be encouraged best by using more 'traditional', market-oriented economic policies.

According to a study by Ederveen et al. (2003), the structural funds have a conditional impact. They most strongly promote convergence in the countries, which have an open foreign trade, lower corruption index and better quality institutions. The estimated impact of a fund also depends on whether absolute or conditional convergence is assumed in the econometric model.[34] For absolute convergence, the impact on economic growth is negative: a positive impact was found only by assuming conditional convergence. However, in this case the countries do not converge to the same income level; the standard of living of certain countries may not catch up with the level of more developed countries at all.

Ederveen et al. also examined the performance of additionally, in a regional database, for the period of 1989-93. According to the main results 1 euro of community support crowds out 17 cents of national regional development project which would otherwise (without community support) have been implemented. However, let us note that according to the figures published by the European Commission (2004) on the basis of the statistics filed by the Members States the principle of additionality was fulfilled by the EU Member States between 1994 and 2006.

As we have already indicated, this difference may be due to the fact that the calculations were made for different periods. On the other hand, the data published by the European Commission could be interpreted on the basis of the 'legal' additionality concept, but the calculations published by Ederveen and partners reflect more like the estimates of 'economic' additionality.

As already mentioned above, sometimes a particular Member State reduces its investments not involved in EU financing by fulfilling the additionality requirement at the same time. This can be achieved by changing the structure of investments not included in EU financing. It should be noted that if this change modifies the structure of investments in a sub-optimal direction compared to the previous situation, we have found a potential explanation for the question why econometric studies usually indicate a lower growth incentive in the case of EU capital transfers.

Similarly to the results of Boldrin and Canova, Stoianov (2003) could not find any strong empirical proof either that the actual impact of the funds would have been even close to the potential growth and convergence fostering effect, assumed by so many people. The calculations confirm the result of Ederveen et al. (2003) too, according to which the funds have the biggest effect if the foreign trade of the receiving country is open.

As mentioned earlier, model simulations assuming the effective use of the funds tend to quantify the potential

[34] The concept of convergence is interpreted as a tendency of decline of income differences. Absolute convergence means that all economies (or regions) move towards the same long-term per capita GDP level. Conditional convergence means that each economy moves to its own long-term level, which may be influenced by the starting conditions, technological level, institution and demography of that particular economy.

effect, while econometric studies try to estimate the actual effect. The difference between the two is in the efficiency of the widely interpreted institutional system of the receiving county. On the basis of these issues let us now move on to the detailed consequences applicable to Hungary.

3.5. Consequences applicable to Hungary

As for the Hungarian situation, first we shall describe the potential impact of the resources of the structural and cohesion funds on the main macro economic variables of the country over the medium term according to the simulations of the model used by the European Commission. Then we shall review the conditions under which these potential effects can be achieved and the main risks due to which the actual effects could fall significantly below expectations.

Simulations of the Hermin model for Hungary, 2007-2020

The impact projections of the Hermin model have been prepared for the EU 2007-13 budgeting period based on the information available in 2004 (ex ante simulations, see Bradley and Morgenroth, 2004). The results can be seen separately for each individual country as well. According to the assumptions in the studied period, on average EUR 3 billion support will be received in Hungary each year. The constant Hungarian national co-financing, estimated at 40%, will be added to this figure.[35] Thus, in total, each year and on average projects will be implemented that account for more than 6% of GDP.

The impact is compared to a baseline scenario, in which it is assumed that no support comes to Hungary and the capital investments, co-financed by the Hungarian State are not carried out either. This comparison implicitly assumes that the EU structural support does not crowd out the capital investment of the private sector, or replace the otherwise completed public investments either (in other words the funds do not finance the deficit: the additionality principle is fulfilled).

Another assumption is that the available amounts are allocated to the various sectors in constant proportions during the examined period. In the case of Hungary, this means that 63% of the funds will be spent on infrastructure investments, 17% on human capital investments and 20% on supports to the business sector. These proportions are more or less in line with the proportions of support coming into Hungary between 2004 and 2006.

According to the simulation results, by 2013 GDP will increase by 8.4% as a result of the additional impact of the projects financed by the funds. Physical infrastructure will expand by more than 35%, but human capital will only grow by 7.5%. The employment rate will be 4.5 percentage points higher by the end of the period, representing 157,000 new employees. Within that, the employment rate of the service sector will grow more than that of the industrial sector. In the two sectors the productivity level will increase on average by 4% by the end of the budgeting period as a result of the structural funds. Consumption will be larger by 5.9% and capital investments will increase by more than 41% by 2013.

The researchers also tested the long-term effects in their simulations. They assumed that after 2013, when the projects financed from the structural funds have been implemented, no other support will come to Hungary. Thus, GDP would be 4% higher in 2020 than in the baseline scenario. After 2013 the employment rate will fall back to the level indicated in the baseline scenario. The additional increase achieved in the capital stock and productivity will be retained. External equilibrium will be approximately 3% worse in the years of the financing programme than without the programmes. However, after 2013, as a result of the completed projects, the external equilibrium will be on average approximately 1.5% better than in the baseline scenario. Finally, national debt will be higher until 2010, and then it will be lower than in the scenario not containing any structural funding.

Criteria for the effective use of the funds

The European Commission (2004) has four criteria specifying the conditions which need to be fulfilled for the optimal use of the funds. These criteria are disciplined national economic policy, adequate concentration of financial instruments, the right capital investment mixture and institutional efficiency. In the following, we shall summarise the main findings of the study prepared by the Commission.

[35] As indicated above, Hungarian national co-financing is expected to be around 18% between 2007-13. The authors prepared their study in 2004, so they could not see that clearly. Consequently, they calculate with larger investments, and probably show a higher potential effect for the fund than they would have done on the basis of the latest information. Non-compliance with the additionality principle will change the results in the opposite direction. The simulations assume compliance, therefore, in the case of non-compliance the potential effect of the funds could be lower than presented.

Role of the national economic policy

According to the study, a good macro-economic policy is an absolute prerequisite for the suitable absorption of supports: this involves disciplined, stability-oriented fiscal and monetary policies, and a foreign policy focusing on openness. According to the empirical results of the study, the international capital transfers can have a growth enhancing effect only if such an economic policy is pursued.

National regional support policy may also play an important role. These policies can be classified into two categories by their nature. Re-distributive support is aimed at eliminating the regional disparities in the distribution of public funds, i.e. it represents a redistribution of assets. On the other hand, proactive support focuses on the production of assets, promoting the increase of economic potential of poorer regions. Although in the recent past the national regional policies of the individual Member States have shifted slightly from the redistribution of assets to their production, they could still be classified as re-distributive policies. On the other hand, the EU structural funds are more proactive. For the purpose of effective use of EU funds, national regional support policy should also move in a proactive direction.

An adequate institutional and administration background is another major factor in the use of the funds. This applies especially to Hungary, and the other new Member States, where additional EU funds are required because of the relative weak efficiency of public administration (administrative capacity building).

Geographic concentration of financial instruments

The Kuznets-Williamson hypothesis explained above influences the regional support system of the EU: in the initial phase of the convergence process, higher national growth is accompanied with regional disparities for a period. Consequently, an adequate regional policy, in relatively poorer countries, supports national growth because acting against market forces and trying to artificially balance the situation of various regions would hinder the convergence process. However, at a later point of the catch-up process, the reduction of regional disparities could have a priority.

For example, starting in the 1960s Ireland used all the available resources to promote its national growth, while it began to allocate its support to reduce regional disparities only in the late 1990s following a very strong convergence period. Similar, although not so clearly structured, support policies have been and are still being implemented in Italy, Portugal and the new Member States too.

Another dilemma, which was also mentioned above, involves the financial support of growth poles or the encouragement of more a equal sectoral distribution of economic activities. The latter one may lead to rather bad results in the early phase of catching-up, because of its objection against markets laws. For example, in the 1970s large amounts of money were spent in southern Italy on the establishment of an industrial base of this economically underdeveloped areas. These efforts were not successful, and the traditionally more industrialised northern agglomeration clusters gained even more strength. Compared to the Italian policy, the Irish and Portuguese support policy relied on the vertical and horizontal relations of the existing industrial clusters.

Consequently, according to the EU Commission study, an adequate structural policy does not try to create growth poles from 'nothing', generating comparative advantages artificially, because this would weaken the naturally existing agglomeration spillover externailites.

Adequate investment mix

For the purpose of promoting long-term sustainable growth, the EU funds provide support for investments in physical infrastructure, human capital, business environment and rural development. Experience indicates that support has been really useful in those regions which found the right balance of these four support directions, where none of the directions suppressed the other, and there were no attempts to artificially equalise the support of the four areas either.

Naturally, the existence of an adequate physical and mainly transportation infrastructure is a necessary prerequisite for economic development, but on its own it will not solve the catching-up problems of the individual regions.[36] The biggest marginal benefit of such invest-

[36] In his econometric study performed on Hungarian data, Németh (2005) analysed the relationship between motorways and the spatial structure of the economy. According to his main conclusions (page 177) '[…] motorways […] do not represent sufficient conditions for the desired growth. In a depressive environment, with a non-favourable structure of settlements, in a region with shrinking and undereducated population a motorway cannot significantly contribute to the improvement of the situation. For a motorway to have an impact boosting the economy, adequate starting conditions and other dynamising factors must exist also [highlighted in the text]'. On the other hand, according to the research by Békés and Muraközy (2005) on a large, firm level panel 'density of road network positively influenced location choice and productivity as well'. Perhaps the difference between the two results is due to the fact that the latter two authors included in their analysis not only motorways but other types of roads as well.

ments can be observed primarily in the initial phase of the catch-up process, later the return begins to decline. The study also emphasises that infrastructure development could even increase regional disparities for a shorter or longer period. The infrastructure networks with improved quality (more generally: decreasing interregional transaction expenses) may extract even existing production facilities from other regions, which have fewer opportunities to become a potential growth pole. The southern Italian regions can serve as a very good example for that.

The development of human resources is also important, but a lot depends on the specific support structure. According to experience, it is not good to encourage increasing participation in the higher education with direct support given to education. Instead, the implicit barriers to entry into higher education need to be lowered, for example in the case of disadvantaged people. According to the recommendations of the Commission the basic technology handling capabilities of the population need to be improved and the accumulation of research-intensive human capital should also be promoted.

Within the support targeting the business environment, co-financing of state support for companies continues to represent the most important use of the appropriate EU structural funds. However, this is definitely not an effective form of development, according to the Commission's study. The main disadvantages of such support include dead weight losses (completion of projects which would have been completed without the support), the dislocation effect (the project would have been implemented but in a different region) and the substitution effect (without support another company would have implemented the same projects). According to empirical results only 10-20% of the state support does not generate any dead weight loss in this area.

The dead weight loss is the lowest in help directed to projects supporting start-up companies, small enterprises, technology changes, research development and human resource training. Finally, in terms of support allocated to villages and rural areas, resources need to be increasingly concentrated outside of agriculture.

The European Commission has already tried to apply these principles in the new Member States. The structure of appropriations of the national plans submitted for the period of 2004-2006 has been modified by a proposal from Brussels. In general, the size of investments in human resources and physical infrastructure has been increased and the amount of support allocated to agricultural projects and the corporate sector has been reduced. However, within the latter category resources directed at small and medium-sized enterprises have been increased, holding back direct state support. There were severe cuts in the capital investment plans applicable to regional/local cultural and sports facilities.

Institutional efficiency

Finally, the study mentions that improvement of the efficiency of the institutions of the countries receiving support is of key importance. The application of the structural funds is rather complex, requiring increased expertise and knowledge from the bureaucracy of the specific countries. Although it is well-known that simplification of the system would be welcomed, there is a trade-off between simplicity and accountability.

Outlook: pessimism justified?

Both Boldrin and Canova (2001), and Stoianov (2003) outlined a rather gloomy picture of the estimated effects of the structural and cohesion funds. There are several factors, which could and can still deteriorate the efficiency of the transfers. Some of the resources can be used for public consumption instead of investments. This may occur if the principle of addititionality is not fulfilled as indicated before and, additionally, the governments of regions and Member States may also withold their other investments.

In addition, even the necessary investments can imply trade-offs. For example, infrastructure development does not only improve the export opportunities of a particular region, but also creates an easier situation for foreign competitors, so it may even reduce the competitiveness of local industries, causing an outflow of investments.

According to the studies, sometimes investment projects are not selected in the optimal structure, even despite the best intentions. Unsuitability and lack of experience of local and regional leaders can be a considerable disadvantage in the cost-benefit analysis and the implementation of major projects. In addition, evaluation distortions were often observed in the cost-benefit analyses in the past. Usually, the regions calculated all the benefits of the evaluated projects, but used only part of the costs in the calculations.

On top of that, the distribution of EU funds was also often criticised, with the claim that distribution was too much determined by politics. Finally, a detrimental impact of the transfers can be a reduction of workforce mobility, in as much they provide an incentive against migration between

regions, and therefore increases the rigidity of wages. This fundamentally hinders the convergence process.

We should also take a look at the differences between the Member States supported before the enlargement of the European Union in 2004 (primarily Greece, Spain and Portugal) and the recently joined countries of Central and Eastern Europe. In Central and Eastern Europe there are larger regional disparities, and the national regional development policies are extremely underdeveloped. This causes major experience and implementation problems for the local decision-makers, according to the authors.

Another interesting difference arises from the geographic situation. Compared to the economically developed Member States, the former cohesion countries are situated more on the peripheries of Europe, while the recently joining Member States are mostly situated in Central and Eastern Europe. Consequently, the large transport infrastructure investments in the former group of countries had their impacts primarily through a more intensive integration into the economic circulation of the centre. On the other hand, the same investments in the recently joined Member States will also increase the competitive pressure on the region, imposed by the other regions of the European Union.

3.6. Conclusions

The reviewed literature does not have a unified view on the effect of the EU funds. Based on most of the econometric studies, the impact of structural and cohesion funds will be rather small in terms of growth and catching-up, at least on a short-term basis, contrary to the expectations of the European Commission and the general Hungarian public.

At the same time, foreign experience also indicates that the actual growth effects strongly depend on the economic policy of the receiving country. The actual growth effect of the potential additional growth expected from the structural and cohesion funds does not take place primarily because of certain economic policy mistakes. Such mistakes may include a fiscal and monetary policy which do not support macro economic stability to a sufficient extent, a strategy which leads to excessive fragmentation of the transfers or that concentrates them on incorrect objectives, strategies which goes against market trends in the economy, and inefficient state bureaucracy.

Consequently, the effective use of the funds depends mainly on Hungarian decision-makers. With an appropriate economic policy, the funds arriving from the European Union can accelerate the convergence process of the Hungarian economy.

References

BÉKÉS, G. AND B. MURAKÖZY (2005): "Firm behavior and public infrastructure: The case of Hungary", *MTA KTI Műhelytanulmányok,* 2005/4.

BOLDRIN, M. AND F. CANOVA (2001): "Inequality and convergence in Europe's regions: Reconsidering European regional policies", *Economic Policy: a European Forum,* 0(32), pp. 205-45.

BRADLEY, J. AND E. MORGENROTH (2004): "A study of the macroeconomic impact of the reform of EU cohesion policy", The Economics and Social Research Insititute.

BRAUNERHJELM, P., R. FAINI, V. NORMAN, F. RUANE, AND P. SEABRIGHT (2000): "Integration and the regions of Europe: how the right policies can prevent polarisation", *Monitoring European Integration,* 10, London: CEPR.

EDERVEEN, S., J. GORTER, R. DE MOOIJ AND R. NAHUIS (2003): "Funds and Games: The Economics of European Cohesion Policy", ENEPRI, *Occasional Paper* No.3, October. 2003

European Committee (2004): "EU Economy 2004 Review, Chapter 2: Catching-up, Growth and Convergence of the New Member States", downloadtte: http://ec.europa.eu/economy_finance/publications/european_economy/2004/ee604ch2_en.pdf.

KRUGMAN, P. R. (1991): "Increasing Returns and Economic Geography", *Journal of Political Economy,* 99(3), pp. 483-99.

NÉMETH, N. (2005): "Az autópálya-hálózat térszerkezet alakító hatásai – Magyarország esete", in: Fazekas Károly (ed.) *A hely és a fej. Munkapiac és regionalitás Magyarországon.* MTA KTI, pp. 139-179.

ROEGER, W. AND J. IN 'T VELD (1997): "A multi country business cycle and growth model".

STOIANOV A. (2003): "Effectiveness of the EU Cohesion Policy. Implications for Central and East European Countreis", mimeo, CEU.

4. Long-term effects of the tax measures in the Convergence Programme

4.1. The tax system and economic agents' behaviour

The short-term (2-3-year) macro effects of the government's stabilisation measures were evaluated in the August and November issues of the MNB's Quarterly Report on Inflation. The main measures were the following: raising the corporate tax rate, raising other corporate-type taxes (e.g. raising the simplified entrepreneurial tax), a VAT raise, freezing public sector wages, raising regulated prices (especially changing the gas price compensation system), increasing employees' and employers' social security contributions and reducing the real value of certain transfers.

Of these steps, mainly those measures influenced our short- and medium-term situation assessment which have direct and/or secondary effects on the aggregate demand and supply of the economy and on economic agents' price setting behaviour (wages, prices). However, over this time horizon, we could not detect any significant effect of many of the measures listed above, as they mainly have an effect on labour market activity and/or the long-term growth potential of the economy. Moreover, our forecasting methods applied focus primarily on quantifying the inflationary effects and the impacts on aggregate demand, and medium-term growth potential is typically assumed as given.

In this analysis, we provide an outlook for a longer time horizon, focusing on the long-term effects of changes in taxes, which alter economic agents' behaviour. Most measures which had great importance in the short run (2-3 years) have very little or no effect at all over the longer term. Of the effects which are significant over the long term, there are ones that were left out for lack of short-term importance due to the shorter-term horizon of the inflation forecast. In our long-term analysis, the main emphasis is on three tax changes: taxes on capital (raising the corporate tax and the interest income tax), taxes on labour and consumption. The effects of layoffs and freezing the wages in the public sector are not analysed, as it is difficult to assess their effect without a deeper, more structurally oriented analysis of the labour market.

We refer to a tax system as distorting depending on the extent to which it diverts economic agents' behaviour from the social optimum. A tax system serves three purposes: (1) there are public projects that must be financed; (2) it can redistribute income between certain groups of society; and (3) it may add to efficiency by correcting externalities. Taking these three functions as a given, the question arises with what sacrifices of resources the tax system can provide them. Due to redistributing incomes/resources, in most cases there is a loss on the level of the whole society. Of course, in the course of the analysis the question also arises as to what gains and welfare improvements can offset this. For example, it is easily conceivable that certain public projects improve efficiency or welfare (e.g. protection of the environment) to a greater extent than the taxes needed for funding these projects impair it. In this analysis, expenditures are taken as given; the tax system is analysed partially, only on the basis of loss of resources, and we disregard the effects of the potential rise in welfare. In this sense, our analysis looks only at one side of the stabilisation measures, at the magnitude of necessary *'costs',* and not the expected *'gains'.* For example, the measures add to the probability of the development of a more sustainable macro path. We also do not deal with expenditure side issues related to social redistribution and justness, which can also modify the balance of welfare losses and gains.

In terms of the effect of taxes, two main aspects can be distinguished. A part of them (the so-called *intertemporal taxes*) have a direct effect on decisions between present and future (e.g. they modify the path of consumption/investment). Another part of them does not have a direct dynamic effect; and they influence factor demand/relative demand within a given time period (so-called *intratemporal taxes*). Of course, in terms of their indirect effects both types of taxes can have effects on the future and on immediate decisions as well.

Based on the above, various types of losses are distinguished according to their effects on the distribution between present and future resources or on that of goods at a given time. It is called *dynamic distortion* when tax-induced inefficiencies appear in the resource allocation between present and past, whereas it is called *static distortion* when they appear in the resource allocation within a given point in time.

With the exception of *lump sum taxes,* all types of taxes cause distortions; the question is their magnitude, timing and what groups they affect (the latter is not the same as who pays the tax). Therefore, the distortion of a tax system (i.e. to what extent it influences growth and current income)

depends on two factors: the size and ratio of dynamic and static distortions. There are tax systems with more static but less dynamic distortions and vice versa. Direct taxes that influence factor demand (such as capital and labour taxation) tend to imply higher direct and indirect dynamic distortions than indirect taxes (sales tax, value added tax). There is a relatively strong consensus in taxation theory that one should minimise dynamic distortions, while in terms of static distortions it is less clear.

When analysing the effects of the tax system we also must take into account to what extent they are considered permanent by economic agents. If economic agents expect that the tax increases are only temporary, the effects presented by us will be much smaller, although the direction of the shifts is similar. This analysis is premised on the assumption that tax measures are permanent.

4.2. Intertemporal taxes: increase in the tax burden on capital

Of all kinds of taxes, capital tax involves the greatest dynamic (intertemporal) distortion. Imposing taxes on capital affects investment decisions, which directly influences production opportunities through capital accumulation and thus growth as well over the long term. Based on Chari and Kehoe (2006), one should set capital taxes as low as possible, because this ensures the highest growth potential, and in the long run this leads to the smallest dynamic distortion.

The question is how capital taxes are defined exactly. It seems obvious to identify it as the taxes paid by companies. The corporate tax rate changes companies' user cost and affects their demand for capital. The relationship between corporate taxes and user cost is not straightforward either, because it depends on, inter alia, the indebtedness of companies, depreciation of capital and long-term interest rates as well. In addition, a change in the tax rate does not fully correspond to the change in user cost (see below). There are other types of capital taxes too, such as the tax on dividend and interest income. They affect (households') capital supply and the opportunity cost of capital. Capital demand and supply is connected by the financial system. Therefore, when analysing the effects of a given user cost shock, the banking sector's possible adjustment cannot be left out of consideration either. The fiscal package might also have increased the opportunity cost of capital, the underlying reason of which is the raising of the interest income tax.

Two taxes of the announced measures can be considered intertemporal: the increase in the corporate tax and the introduction of the interest income tax. First, we examine the effects of corporate taxes, then those of the interest income tax.

Corporate tax

Academic economics has long since argued that various kinds of taxes may have a significant impact on investment through the user cost, but econometric analyses were unable to fully confirm this for a long time. By now a relatively strong consensus has been reached, stating that taxes are important determinants of investment. Box 4-2 provides a brief overview of what this consensus means and how it came to being.

According to the Convergence Programme, the corporate tax[37] will increase by 4 percentage points. However, this does not raise the user cost to the same extent. One of the offsetting effects stems from the fact that if an investment project is financed from credit, interest payments can be subtracted from the tax base. Consequently, even in the case of a fixed financing mix the increase in the corporate tax will not be fully reflected in the user cost (e.g. if the weight of debt financing is 100 per cent, the user cost remains unchanged); moreover, the financing mix may even change. As Chart 4-1 shows, the average leverage ranged between 50 and 60 per cent in the Hungarian private sector. According to our estimates, this factor reduces the effect of the increase in the tax rate by nearly one fourth. In addition, another reducing factor is the depreciation allowance, which also reduces the tax base. This is around 15 per cent on average, which, in addition to the effect of leverage, is another important factor that attenuates the relationship between tax rates and user cost. According to our calculations, the effect of depreciation is approximately half of the original effect (see Box 4-1 on the main determinants of the user cost).

Box 4-1: What determines companies' user cost?

Companies' user cost shows the discount factor they apply when evaluating investment projects. When assessing a given investment project, the company's management must maximise the company's *total value*, taking into account both shareholder's equity and bonds (debt). Otherwise, the company goes bankrupt, and creditors take over the management of the company. It also has to be taken into account that capital depreciates, thus in case of investment projects even this loss has to be made up for. In addition, when maximising the value of a company, one must also not forget that the price (cost) of replacement of investment changes over time. For example, if the price of investment goods is expected to increase, within certain limits it is worth accepting investment projects which seem to be less prof-

[37] Our analysis is based on the situation as of November 7; the effects of the latest pieces of information (e.g. deductability of the R&D expenses from the raised corporate (solidarity) tax base) have not been taken into account.

itable, as the company would be able to carry out the same investment only at a higher cost later.

However, the corporate tax system somewhat modifies the above simplified picture. As a direct effect, taxes *add* to the user cost, since the value of the company declines after paying the taxes. However, the corporate tax system *provides support* as well. As interest payments on loans and the depreciation of capital can be deducted from the corporate *(accounting)* profit, projects with lower return also become feasible, and the user cost will be lower. Moreover, corporate taxes can further reduce companies' user costs if companies react in an optimum manner, and work with higher leverage compared to the case without taxes (it is more advantageous to finance projects the *tax favoured* way).

In addition, there is another factor (which is usually less significant), namely that companies' investment decisions also have to consider the relative price of output and investment: the company's return from sales and the investment cost also have to be compared.

In this analysis (based on Kátay-Wolf (2004)), we use the particular user cost formula given below, in which we disregard the relative price changes of investment goods, and the expected return on equity is identified with the yield of the 1-year government securities.

$$UC_{it} = \frac{1}{1-u_{it}}\left(\left(\frac{E_{it}}{B_{it}+E_{it}}\right)LD_t + \left(\frac{B_{it}}{B_{it}+E_{it}}\right)(1-u_{it})\,IR_t - \frac{\Delta p^I_{i,t+1}}{p^I_{i,t}} + (1-u_{it})\delta_{it}\right),$$

where UC is the user cost of company i, u_{it} is the effective tax rate of company i in year t, B_{it} is the company's bank loan holding, E_{it} is the amount of own resources, IR_t is the average interest rate on bank loans, LD_t is the one-year bond interest, p_{it} is the company- (sector) specific investment price, and, finally, δ_{it} is the effective depreciation.

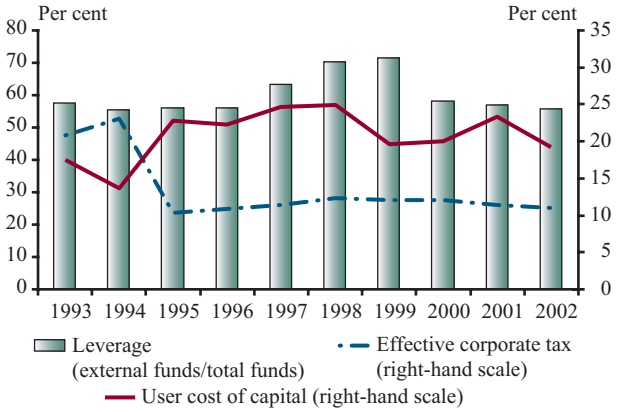
The above two effects (leverage and depreciation) by themselves compensate for three quarters of the tax rate increase. Therefore, on the whole, the user cost is expected to increase by 0.6-1.12 per cent only, i.e. more than two thirds of the 4 per cent increase is absorbed.[38] This increase may further be offset, if the cost of credits and equity financing changes (with some simplification they can be represented by the long market yield), for example, because of a possible risk premium decline due to an improvement in the fiscal situation.

The investment estimation by Kátay and Wolf (2004) allows for the determination of the partial effect of this user cost increase on the capital stock. This is a partial effect to the extent that in the equation the value of GDP is assumed to be fixed, i.e. the decline in capital is not plugged back. In addition to the partial effect, using the MNB's Quarterly Projection Model (N.E.M.) we can also take into account the spillover effects, which appear through the output effects of the lower capital stock.

Chart 4-2 shows the effects (one period means one year): accordingly, capital stock increases at a slower rate than without measures, for about ten years. According to partial calculations it will be lower by a total 0.55-1 per cent, whereas the total effect on capital stock may be estimated at 0.3-0.7 per cent. According to findings of Pula (2003), the Hungarian capital stock is about one and a half times GDP, thus a decline in capital corresponding to 0.5-1 per cent of GDP can be expected. All this reduces the potential growth rate of the Hungarian economy in the medium term in any case.

Chart 4-1

Factors determining the user cost in the corporate sector*



** Based on Kátay–Wolf (2004), private sector excluding financial institutions, unweighted averages.*

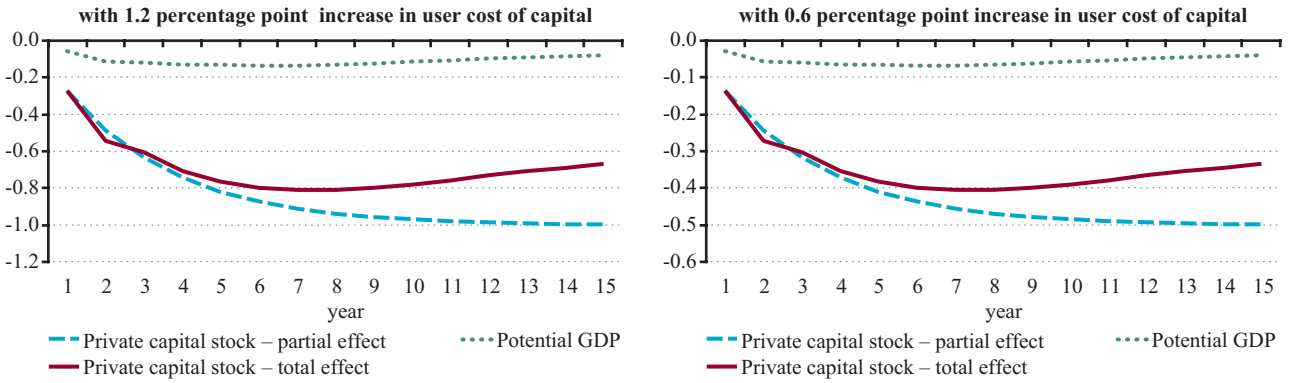
[38] The user cost formula of Kátay and Wolf (2004) and manufacturing companies' 2001 and 2002 depreciation and external-internal financing compositions were used for the calculations.

According to our calculations using the N.E.M. model, it amounts to approx. 0.1-0.2 per cent.[39,40]

However, contrary to the above, fiscal adjustment may also have opposite effects. The most spectacular effect may be brought about by the decline in the risk premium of capital. If the increasing taxation on capital introduced by the package is compensated by a decline in the risk premium, the long-term growth sacrifice may be much smaller, or even overcompensated by this effect.

Chart 4-2

The effect of user cost on capital stock and potential growth*



** Partial effects based on Kátay and Wolf (2004), the total effect on potential GDP is the result of the simulation prepared using the Quarterly Projection Model.*

Box 4-2: Cost sensitivity of corporate investment – lessons from empirical studies

The first important empirical observation about investment was their very strong co-movement with changes in production (the so-called acceleration theory). The other robust finding was that not only the current, but also numerous lagged values of production play an important role. According to the neo-classical theory, when deciding on investment projects, companies compare the present value of the revenues generated by the new equipment and its procurement cost. This latter is clearly influenced by the incentives in the tax system.

Hall and Jorgenson (1967) implemented this approach on macro data, and found a good fit, although various lagged effects had to be included as well. However, later Eisner et al. (e.g. Eisner, 1969) separated the effect of the user cost and production change in the equation of Hall and Jorgenson, and found that the fit of the estimates stems solely from the change in production (in accordance with the acceleration theory).

Analyses then turned to models which take into account investment's forward-looking, dynamic nature in an explicit manner and to firm-level data. Their starting point was that the cost of investment is not only the investment price of capital goods, but the cost of putting into operation also has to be taken into account. It can be demonstrated that in this case investment depends only on the forward-looking user cost corrected with taxes, i.e. the so-called *Tobin-q*. Using certain assumptions, its value can be obtained from companies' stock prices. However, early empirical experiments found unrealistically high adjustment costs, which also means that taxes have a very moderate effect on investment.

This approach, however, is also subject to a serious estimation problem,[41] which can be resolved by examining tax reform episodes. This approach resulted in much higher *q* coefficient estimates: according to the consensus result, the adjustment cost per one investment unit is approx. *0.1* unit, and investment's user cost elasticity is between *-0.5* and *-1*.

Another approach starts from different assumptions about the nature and structure of adjustment costs, but finds similar macro-level effects

[39] The effect can even be greater, since the model is unable to take account of all growth effects of corporate taxes, as it was elaborated primarily for capturing shorter-term (2-5-year) processes and not long-term growth. Practically, the effect illustrates only the changes stemming from the production function.

[40] The effect on long-term growth depends on whether the endogenous or exogenous growth framework captures economic processes better. In case of the former, the increase in user cost reduces long-term growth as well, while in case of the latter growth remains constant, only there is a downward (level) shift in the path.

(e.g. Caballero, Engel and Haltiwanger, 1995). Companies' investment behaviour can significantly be modified if they also have to take borrowing constraints into account. According to the seminal findings by Fazzari, Hubbard and Petersen (1988), a firm's liquid financial capital has extra explanatory power for its investment. As taxes affect internal sources as well, this consideration may further increase the effect of taxes on investment.

The cost dependence of investment in Hungary has been examined by two MNB studies based on company data. Reiff (2006) mainly focused on alternative adjustment costs; therefore, his findings do not provide immediate user cost elasticity. The approach and findings by Kátay and Wolf (2004) are broadly identical with the findings of the international literature: over the long term, a one per cent change in the user cost changes the investment rate *(I/K)* by *-0.75* per cent.

Interest income tax

Theoretically, the introduction of the interest income tax added to the opportunity cost of capital; households expect a higher (gross) yield from their investments. In principle, it has a negative effect on capital supply, and over the longer term may even impair the financing possibilities of the corporate sector's investment. The evaluation of this measure is also rendered difficult by factors which counteract the effects that reduce capital supply. These effects are typically related to some kind of portfolio reallocations. In a small, open economy, where capital is sufficiently mobile, of sources available for companies, external financing may be important, thus capital use does not necessarily have to decline even if capital supply is declining. Second, with the introduction of the interest income tax, household portfolios may also change, and it is easily conceivable that the overall capital supply does not change, only its form. Third, in line with international experience,[42] it is hard to detect the effect of interest rates on savings in case of Hungarian data as well. Regarding the effects of the introduction of the interest income tax – with great uncertainty – we may state that it will probably have only a minimum effect on savings and capital supply. Therefore, its effects hindering long-term growth are negligible.

[41] If our observations are typically moved by the changes in user cost (net real interest rate), a relationship with the expected sign can be seen between user cost and investment; whereas if often there is an upswing in investment due to other reasons (e.g. driven by positive investors' mood), it pushes up the real interest rate, and leads to a relationship with the opposite sign than expected.

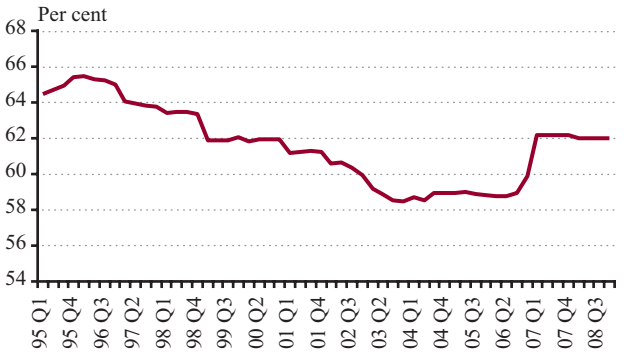
[42] See Bernheim (2002), for example.

4.3. Intratemporal taxes, which influence labour supply and consumption

Of *intratemporal* taxes the nearly 4 percentage point increase in taxes on labour and the 5 percentage point rise of the medium VAT rate are worth emphasising.[43] *Intratemporal* taxes mainly influence the choice between consumption and leisure (labour supply). Raising both types of taxes affect the marginal utility ratio of consumption and leisure, in a way that both make consumption relatively more expensive compared to leisure. Relatively cheaper leisure, in turn, means that employment becomes relatively more expensive (see Chari and Kehoe, 2006). Accordingly, for measuring the (total) static distortion of the tax system a good indicator is the sum of consumption taxes and taxes on labour (tax wedge). This static distortion in Hungary is illustrated in Chart 4-3. It shows that the tax wedge declined continuously and steadily from 1995 to 2003, and has been practically stagnating since then. According to our forecast, the tax wedge is going to follow a steep upward path from 2006; the price of consumption relative to leisure will grow by approx. 6 per cent (provided that other conditions remain unchanged). Over the long term this may reduce long-term consumption (and, of course, income) and labour supply as well. The probability of these factors is examined in the following.

Chart 4-3

Static tax wedge in Hungary*



** Note: Developments in all consumption taxes and taxes on labour.*
All consumption taxes and taxes on labour =1-(1-all taxes on labour/labour cost total)/(1+effective indirect tax rate), the indicator shows the effective size of all intratemporal taxes (in the absence of consumption tax this magnitude of tax on labour would involve the same effects).

We expect an approx. 4 percentage point increase in labour taxes. Tax burden on labour in Hungary can be considered high both in an international comparison and in the region as well. The question is to what extent it hinders labour supply (activity) and labour demand. According to Box 4-3, the international literature found that on the whole, the tax system does not have a significant effect on the labour supply of *primary earners*. However, in case of *secondary earners* several studies found signs of flexible adjustment.

The first question is the link between labour supply (activity) and the tax system. In Hungary, according to the OECD (2006) as well as Table 4-1 and Chart 4-4, the tax burden on labour declined steadily until 2003, and at the same time an increase in the number of the active and in private employment could be observed. However, changes in activity (labour supply) are volatile, and – based on Chapter 2.4 - may also be related to the effects of demography and transfers. Following the most significant fall in labour costs (after 1999) the earlier increase in activity slowed down, or even stopped in certain periods. Therefore, in the examination of this episode it is difficult to detect an explicit link between labour supply and total burden on labour. However, in terms of the labour supply effect of the recently announced measures, attention also has to be paid to the fact that, as opposed to our past experiences, now mainly the tax burden on employees will increase, which may have different effects in the short run than the effect of burdens on employers in the past. (Over the long term, contributions to be paid by employees and employers have the same impact, although it cannot be excluded that they result in different behaviour in the short term.) This item has been stable for a longer time, with the exception of some decline observed in the period between 2003 and 2006. This process may have had some positive effect on activity (labour supply), but numerous other factors (e.g. demographical factors, salary increases in the public sector, delayed effects of minimum wage increases etc.) also have to be taken into account. In the light of past experiences one must not rule out that the reduction of taxes burdening employees may have stimulat-

[43] The raising of the minimum social security contribution can also be considered as a tax on labour. In our analysis, we used the conservative assumption that it affects about one-fourth of the nearly 1 million self-employed.

Table 4-1

Tax wedge on labour in selected countries

	Singles with average income, as a proportion of labour cost	Singles with low income		
	2003	1996	2000	2004
Czech Republic	43.8	41.4	41.6	41.9
Estonia	n.a.	38.5	38.2	38.9
Euro area	41.1	n.a.	n.a.	n.a.
Ireland	24.5	n.a.	n.a.	n.a.
Latvia	n.a.	39.3	41.4	41.1
Lithuania	n.a.	37.6	42.0	40.0
Korea	14.1	n.a.	n.a.	n.a.
Hungary	**45.7**	**46.8**	**46.2**	**41.5**
Mexico	17.3	n.a.	n.a.	n.a.
Poland	42.9	43.6	41.9	41.9
Slovakia	41.4	40.3	39.6	38.8
Slovenia	n.a.	40.9	41.0	39.8

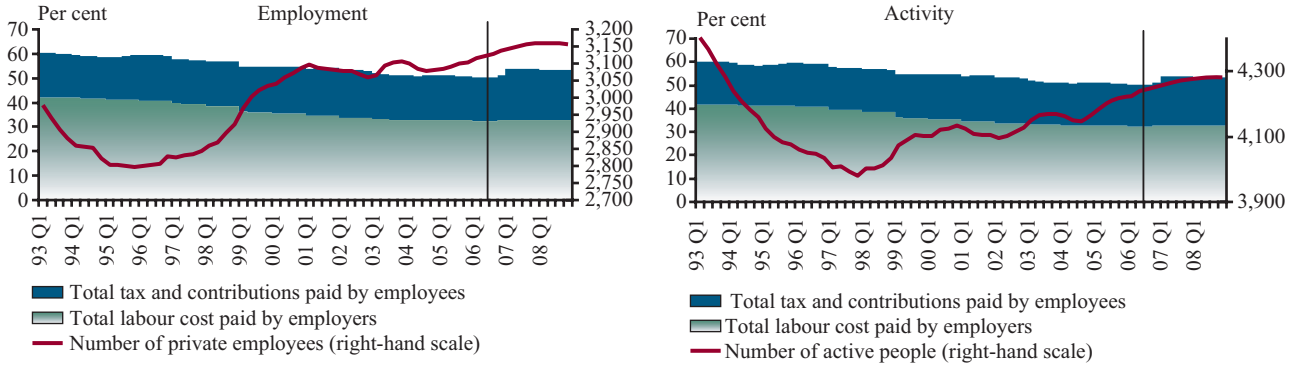
Source: IMF (2006).

ed labour supply to some extent, although its magnitude is questionable and probably insignificant.

In terms of effects on demand for labour, it may be worth examining separately and together as well the burdens affecting employers and employees. It can be concluded that in the past period (except 2005), the biggest part of the decline in the burden on labour came from the reduction of items burdening employers. Labour demand of the private sector expanded steadily, in parallel with the decline in the burden. However, there may have been several other underlying factors, including, inter alia, that for a while labour market supply of adequate skills was coupled with the demand for labour coming from fresh capital investment inflows into manufacturing. Fluctuations in business activity and last but not least, the transformation of the services sector observed in recent years may have also been a similar contributing factor. Therefore, the positive effect on employment of reducing the tax burdens paid by employers cannot unambiguously be proven. We can claim that in the early phase it probably contributed to the increase in labour demand. Within the framework of the current measures, tax burdens affecting employers increase only slightly, although – as will be mentioned later – labour demand over the long term may be

Chart 4-4

Burdens on labour, private employment and activity in Hungary*



** Burden on labour=total of taxes and contributions paid by employers and employees as a proportion of total labour costs.*

reduced by the increase in all tax burdens related to labour, to the extent it makes the price of labour more expensive relative to capital.

Overall, based on our past experience and the international empirical literature it is expected that raising the taxes burdening labour will not significantly hinder *primary earners'* labour supply, whereas in case of certain special groups (e.g. *secondary earners)* a decline in labour supply can be expected. It is difficult to assess the effects of measures of opposite directions observed in Hungary in the past, but based on these effects a slight slowdown in labour supply might be expected.

The increase in taxes on labour and consumption means that leisure becomes relatively cheaper. The extent to which it is reflected in the decline in consumption or labour supply depends on in what direction households' adjustment is more flexible. In line with the above, we believe that the measures will not result in a substantial fall in labour supply. Consequently, tax measures (in the short run in any case) will have to appear in a decline in consumption. Considering that the increase in taxes on capital reduces income over the long-to-medium term, this will result in a long-term drop in consumption as well. Therefore, in the medium-to-long run a lower level of consumption and a temporarily slower consumption growth rate can be expected in any case.

Box 4-3: Taxation and labour supply

Labour income taxes influence labour supply through two main channels: the number of hours worked and labour market activity. Although less clearly, but the examination of total income may even inform us about the effect on work effort in an indirect way.

The traditional labour economics literature (see e.g. Pencavel, 1986) regresses the number of working hours on the wage and non-labour income, and for US data found a practically negligible effect for primary earners. The findings by Galasi (2002) as well as Bicáková, Slacálek and Slavík (2006) were similar on the basis of Hungarian and Czech data, respectively. Hausman (1981), however, points out that estimates have to take account of the progressivity of tax systems as well, based on which he found a very significant effect.[44] Applying this method for other countries (England, Sweden) resulted in similarly strong effects. Therefore, it is not surprising that the robustness of results and of the methodology became questionable. The final consensus was that the tax system does not have a significant effect on *primary earners'* labour supply.

However, several studies found robustly significant effects for non-primary earners. An example is Eissa (1995), who obtained significant net wage elasticity in case of women belonging to the upper 10 per cent of income distribution when examining the 1986 US tax reform. The effect comes from both the participation and the hours worked margin. While due to the family tax system in the USA these effects can be significant in case of high-income women as well, in Hungary a greater effect can rather be expected for low-skilled, low-income or low social status employees.[45] There are US findings on this as well: according to Eissa and Liebman (1996), as a result of changing the US *earned income tax credit* in 1986, the participation of single women with children increased by approx. 2.8 percentage points compared to other single women; at the same time, the number of working hours of women who had been active before the reform as well did not change significantly.

[44] Its magnitude is illustrated by the following example. Replacing the 1975 US tax system with a 'flat tax system' (where there is one single tax rate and there are no tax allowances or tax-free incomes), a 14.6 per cent tax rate results in the same tax revenue. By way of comparison: in 1974 the marginal tax rate of the median American taxpayer was 20 per cent; for the lower and upper quartiles it was 0 per cent and 22 per cent, respectively.

[45] Scharle (2005) describes in detail that effective marginal tax rates are very high in certain low ranges of income.

4.4. The overall effect

Changes in the tax system increased the distortions present in the Hungarian tax system in every respect, which results in less efficient use of resources. All of this has a negative effect on longer-term growth prospects as well.

Looking in detail at the effects of tax measures on long-term growth, the following statements can be formulated. Increasing the tax burden on capital may entail a decline in capital stock (and investment for a while) and potential GDP. However, the effect will be smaller than what would be justified by the size of the increase in corporate tax by itself, as the user cost will increase to a lesser extent. In case of the other capital-like tax, the interest income tax it is hard to decide what effect it will have on savings and consumption. Moreover, even in the event that domestic savings decline, it is not necessary that it would influence companies' financing possibilities, as their financing mix may change (e.g. another form of financing or financing from abroad). The effects of taxes on capital may be lessened or perhaps offset completely, because as a result of stabilisation, the interest rate premium may decline.

There are no static effects that would offset the increase in the dynamic distortion of the tax system. Raising the social security contribution and VAT means that the tax burden on both labour and consumption grows. However, this will probably not hinder labour supply significantly, except for certain groups at most. Therefore, the relatively inflexible labour supply will be reflected in a permanent decline in the level of consumption.

In order to determine the total labour demand effect of all measures, one must also take into account that taxes on capital increase less than taxes on labour. There have been numerous signs recently that the production technology in the Hungarian economy has gradually changed. This is called the substitution of labour with capital.[46] As shown in Chart 4-5, the economy's reaction to the increase in the relative price of capital and labour was that it became increasingly capital intensive, and the growth rate of employment was much lower than what would have been justified by the increase in productivity. Capital intensity grew mainly through the decline of more labour intensive industries and rapid development of more capital intensive industries.

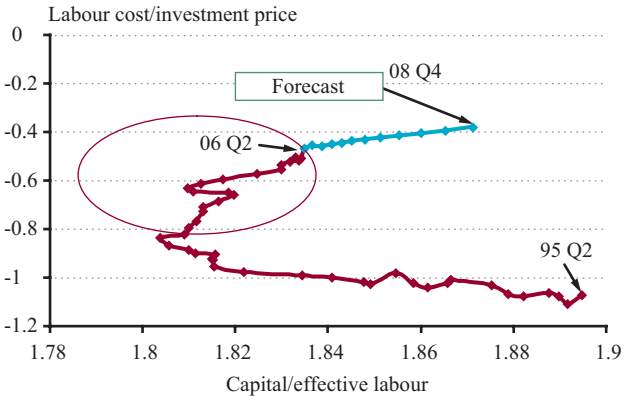
A decline in labour demand may result in temporarily increasing unemployment, due to the inadequate adjustment (decline) of labour supply. Equilibrium over the long term may be restored in a way that real wages have to decline compared to the price of capital. This, in turn, also envisages that over the long term the growth rate of real wages will lag behind what would be justified by productivity. In terms of sectors, all this also indicates a deterioration in the relative situation of labour intensive sectors.

Should for any reason - for example, due to the inflexibility of the labour market - the adjustment of real wages fail to realize, this could even result in permanently higher unemployment, lower employment and potential output.

It is important to note that in the recent tax measures the emphasis is on raising direct taxes on labour. International experience suggests that among intratemporal taxes indirect taxes (especially VAT) are the most favourable, since these hinder savings less than direct taxes (mostly because all generations facet he same tax burden). Therefore, indirect taxes have a smaller negative effect on potential growth in the long term. Consequently, putting the emphasis on direct taxes, as it happened in the case of the recent tax measures in

Chart 4-5

Capital-labour ratio* and relative labour-user cost**



** Private capital stock/effective private employment (adjusted for productivity).*

*** Total labour cost per employee/investment price index, data are logarithmic.*

Source: database of the Quarterly Projection Model (N.E.M.).

[46] This is exactly the factor which hinders the analysis of developments in labour demand in the past period.

Hungary, is not optimal from a growth perspective (see Auerbach–Kotlikoff, 1987).

Finally, it should be noted that the recent tax measures may have worsened expectations of the stability of the tax system. Changing the "rules of the game" frequently increases uncertainty, shortens the horizon of investment decisions, and altogether hinders investment and employment.

References

AUERBACH, A. AND L. KOTLIKOFF: "Dynamic Fiscal Policy", Cambridge: Cambridge University Press, 1987.

BERNHEIM, D.: "Taxation and Saving", in: A. Auerbach and M. Feldstein (ed.), *Handbook of Public Economics,* Volume 3, Amsterdam, North Holland, 2002.

BICÁKOVÁ, A., J. SLACÁLEK ANDM. SLAVÍK: "How much can income tax cuts stimulate economic activity?", *CNB manuscript,* 2006.

CABALLERO, R. J., E. M. R. A. ENGEL ANDJ. C. HALTIWANGER: "Plant-level adjustment and aggregate investment dynamics", *Brookings Papers on Economic Activity,* 1995:2, pp. 1-54.

CHARI, V. V. AND P. J. KEHOE AND E. MCGRATTAN: "The poverty of nations: a quantitative investigation", Federal Reserve Bank of Minneapolis, *Research Department Staff Report* 204, 1997.

CHARI, V.V. AND P. J. KEHOE: "Modern macroeconomics in practice: How theory is shaping policy?", Federal Reserve Bank of Minneapolis, *Research Department Staff Report* 376, 2006

EISNER, R.: "Tax policy and investment behavior: comment", *American Economic Review,* 59 (1969), pp. 379-388.

EISSA, N. AND J. LIEBMAN: "Labor supply response to the Earned Income Tax Credit", *Quarterly Journal of Economics,* 111 (1996), pp. 605-637.

EISSA, N.: "Taxation and labor supply of married women: the Tax Reform Act of 1986 as a natural experiment", *NBER Working Paper* 5023, 1995.

FAZZARI, S. M., R. G. HUBBARD AND B. C. PETERSEN: "Financing constraints and corporate investment", *Brookings Papers on Economic Activity,* 1988:1, pp. 141-206.

GALASI, P.: Munkakínálati becslések: fizetett/nem fizetett munka és jövedelem. *Munkaerőpiaci Tükör,* 2002, pp. 101-104.

HALL, R. E. AND D. W. JORGENSON: "Tax policy and investment behavior", *American Economic Review,* 57 (1967), no. 3, pp. 391-414.

HASSET, K AND R. G. HUBBARD: "Tax policy and business investment", in: A. Auerbach and M. Feldstein (ed.)", *Handbook of Public Economics,* Volume 3, Amsterdam, North Holland, 2002.

HAUSMAN, J. A.: "Labor supply", in.: H. Aaron AND J. Pechman (ed.)", How Taxes Effect Economic Activity, 1981, Washington D.C.

IMF (2006): "Aticle IV. for Hungary", Selected issues.

KÁTAY, G. AND Z. WOLF : "Beruházások, tőkeköltség és monetáris transzmisszió Magyarországon", *MNB Füzetek* 2004/12.

OECD (2006): "Going for Growth: Overview and Country Priorities", ECO/CPE/WP1(2006)12.

PENCAVEL, J.: "Labor supply of men: a survey", in.: O. Ashenfelter AND R. Layard (ed.) *Handbook of Labor Economics,* vol 1, Amsterdam, North-Holland, 1986.

PULA, G.: "A tőkeállomány becslése Magyarországon a PIM módszerrel. Módszertani leírás és eredmények", *MNB Füzetek* 2003/7.

REIFF, Á.: "Firm-level adjustment costs and aggregate investment dynamics: estimation on Hungarian data", *MNB Working Papers, forthcoming*, 2006.

SCHARLE, Á.: "Az adó- és a jóléti rendszer hatása a munkakínálatra: amit az effektív marginális adókulcs mutat", in.: Hárs Á., Landau E. AND Nagy K. (ed.), Európai Foglalkoztatási Stratégia: Lehetőségek és korlátok az új tagállamok számára, KOPINT-DATORG, Budapest, 2005.

VIDOR, A.: "A megtakarítás-ösztönzők hatása: magyarországi tapasztalatok", *PM Kutatási Füzetek,* 2005/15.

5. The convergence programme of Hungary in light of successful fiscal adjustments

The Hungarian government embarked upon major fiscal adjustments in the summer of 2006. As far as economic developments in the coming years are concerned, one of the most important issues is whether efforts to cut the deficit will be successful; in other words, whether the budget deficit can be reduced permanently and substantially. It is difficult, of course, to give a clear-cut answer to this question. This is particularly true, because the initial state of the countries carrying out fiscal adjustments in the past and the economic policy measures following the deficit reduction are very different. Yet, it is worthwhile to take a look at the developments in other countries which were successful in adopting adjustment measures in a similar situation, and to compare the characteristics of the adjustments announced this past summer in Hungary with their experiences.[47] Although fiscal adjustments have occurred in many countries, in this analysis we focus only on adjustment periods relevant to the Hungarian case.[48]

Naturally, as to what is considered a success depends on one's perspective. In this analysis, we looked upon the current situation in Hungary and defined the concept of success in terms of fiscal adjustments that was significant, permanent and continuous, where

1. the primary balance, with and without cyclical adjustments, improved by at least 4 percentage points during the first four years of the adjustment period (magnitude);[49]

2. the adjustment period took at least four years (permanent); and

3. during the fiscal consolidation there could be only temporary and small (not exceeding 0.5 per cent of GDP) decline in the primary balance without one-off items (continuous).

This analysis is descriptive in its essence; therefore, we will not attempt to define the factors that make a fiscal consolidation successful. Rather, we undertook to demonstrate the macroeconomic developments and structural changes that took place in the budget during the consolidation period. We looked at only successfully consolidating countries, in order to gather useful information relevant for Hungary from these episodes . In this analysis we did not focus on causal relations, for they cannot always be established beyond doubt. Instead, we studied the co-movement of certain macroeconomic and fiscal variables during the successful adjustment periods. Without analysing the casual relationships we cannot determine how much fiscal adjustment contributes to increasing economic activity or how much economic growth resulted in deficit reduction.

In the case of several countries deficit reduction was accompanied by considerable structural changes (labour market reforms, market liberalisation, privatisation, etc.). Thus, the evolution of macroeconomic variables does not reflect only the effects of fiscal consolidation. A detailed discussion of structural reforms is beyond the scope of this analysis, and thus we can only assert its importance.

The countries deemed successful based on the above-specified criteria are examined along three main dimensions:

1. first, we demonstrate the major attributes of the consolidation periods, the magnitude, the length and the process of adjustments;

2. second, we take account of key macroeconomic indicators – growth, structure of growth, inflation, monetary conditions, employment, external balance; and

3. third, we review the main changes in the structure of the budget, revenues and expenditures.

In relation to the above-defined three dimensions we compare the proposed adjustments in Hungary and its environment with countries that managed to carry out successful, meaning significant and permanent adjustments.[50]

[47] A good survey of the literature on fiscal consolidations is P. Kiss, G.–Karádi, P.–Krekó. J. (2005): Az euro bevezetésével járó strukturális politikai kihívások: költségvetési politika, MNB HT 2005/1 (available only in Hungarian).

[48] A useful overview on fiscal consolidations outside Europe is Schadler (ed.) (1995): IMF Conditionality: Experience Under Stand-by and Extended Arrangements, IMF. This study contains the description and evaluation of those economic consolidations of the late 1980s and early 1990s that were also supported by the IMF. Summarizing the experiences of mainly developing countries the paper establishes that the fiscal side of the consolidation was successful in about half of the investigated countries. The examined successfully consolidating countries outside Europe and the countries analysed in this study have some characteristics in common, for example the expenditure-oriented structure of adjustments.

[49] In this analysis we look into developments in both cyclically adjusted and non-adjusted primary balances. Cyclical adjustment is necessary to filter out the impacts of fluctuations in economic output, while detaching the interest balance provides a better view of the effects of fiscal political measures than the total balance. The data used in our analysis were received mostly from the Eurostat database, where data from this source were not available we relied on the databases of the OECD and the IMF. Furthermore, according to the OECD database we managed to identify the one-off items. Time series obtained by filtering out this items better illustrates the actual impact of long-term economic policy decisions. For certain episodes the beginning and the length of the consolidation period differs depending on whether we use the adjusted or the raw data. However, this has little effect on our conclusions, the underlying processes show a similar picture. The only major deviation is seen in Luxembourg.

[50] In case of Hungary, we presumed that the adjustment, because of the 4-year criterion, will last until 2010.

5.1. Successfully consolidating countries

In Europe, the majority of fiscal adjustments took place during the 1990s, most of them before joining EMU. The important lessons for Hungary concerning convergence also originate chiefly from this period, however, some countries had begun their fiscal consolidation process already during the 1980s. The analysed countries may be categorised along several different criteria: during the 1990s most of them went through fiscal consolidation prior to joining monetary union, while the adjustments/self-adjustments of the 1980s are linked in principle to market liberalisation, similar to the episode that took place in Estonia around 2000. According to another grouping, in some countries the crisis of 1992-93 also had a role during or before the adjustments in setting off the consolidation process (near-crisis episodes), while other countries made efforts to reduce their deficit even in the absence of a near-crisis situation (crisis-free episodes).

In line with the above-specified criteria we were able to identify 11 fiscal episodes as successful fiscal consolidation, whose major indicators are shown in the table below:

Table 5-1

Consolidated figures of successfully consolidating countries
(as a percentage of GDP)

	Primary balance with cyclic adjustment			Primary balance					
	T(0)	T(i)	ΔCAPB	T(0)	T(i)	PB(0)	PB(i)	ΔPB	Average ΔPB
1. The Netherlands	1995	2000	4.1	1995	2000	0.4	5.8	5.4	1.1
2. Estonia	1999	2003	4.9	1999	2003	-3.4	2.6	6.0	1.53
3. France	1992	1998	5.1	1993	2001	-2.6	1.5	4.1	0.5
4. Ireland	1985	1988	5.3	1986	1990	-1.5	5.1	6.5	1.6
5. Luxemburg	1992	1997	6.0	1996	2000	1.5	6.2	4.7	1.2
6. Finland	1992	1998	6.7	1993	2000	-3.9	9.4	13.3	1.9
7. Italy	1990	1998	7.6	1990	1997	-1.2	5.2	6.4	0.9
8. United Kingdom	1993	1999	7.8	1993	2000	-4.8	4.3	9.1	1.3
9. Belgium	1983	1990	8.8	1983	1990	-4.9	5.1	10.0	1.4
10. Sweden	1992	2000	10.0	1993	2000	-5.2	9.0	14.2	2.0
11. Denmark	1982	1987	10.0	1982	1986	-4.2	10.6	14.8	3.7
Whole model									
average			6.9			-2.7	5.9	8.6	1.6
minimum			4.1			-5.2	1.5	4.1	0.5
maximum			10.0			1.5	10.6	14.8	3.7
Hungary (estimate)	2006	2010	7.2	2006	2010	-5.5	1.0	6.5	1.6

T(0): first year of the adjustment period; T(i): end of the adjustment period; PB: primary balance with non-recurring items excluded; CAPB: primary balance with non-recurring items excluded and with cyclic adjustments. In case of Hungary the forecasts are taken from the Inflation Report of the MNB until 2008. As for 2009-2010 we accepted the numbers of the Convergence Programme which are not supported by measures yet.

Box 5-1: Italy

Although Italy satisfied the criteria of success among the successfully consolidating countries, it differs substantially from the others in light of the macroeconomic and fiscal attributes under review, so we have decided to deal with it separately in this analysis. While during the early 1990s Italy managed to reduce the primary balance significantly, the interest balance remained high at 10-12 per cent for seven

years, therefore the total deficit dropped only slightly and the debt ratio went up by more than 20 percentage points, to above 120 per cent. Furthermore, Italy was unable to avoid the recession of the early 1990s: growth slowed down considerably and fell below the level before the consolidation. The fall in household consumption played the most significant role in the slowing down of growth. The rate of inflation levelled out at 4-6 per cent, which is considered relatively high compared to the other cases. Of the investigated countries, Italy was the only one that failed to increase its rate of employment by the end of the consolidation period. Another difference relative to the other countries is that Italy managed to reduce the deficit while revenues and expenditures increased significantly, that is the state's role in centralisation and re-distribution increased. Wage expenditures of the government and social expenditures also increased. After the adjustment period the process of fiscal consolidation completely stopped, indeed, it reversed in Italy. Because of the fiscal performance around the millennium, the literature often categorizes the Italian adjustment as a failure.

5.2. Key attributes of successful adjustments – magnitude and dynamics

The average length of consolidation periods is 5.7 years, spanning within a timeframe of 4 to 8 years. A characteristic of successful adjustments is the slightly "front-loaded" path. The burdens of adjustment are allocated relatively evenly between the first and second halves during the consolidation period in the examined countries, with a slight bias toward the first half of the period. In the whole sample, 59 per cent of all adjustments took place during the first half of the consolidation period, falling behind 50 per cent only in three countries. The dominance of the first half is evident in 6 countries, where over 60 per cent of total adjustment materialised during the first half (Table 2).[51]

Usually less than 50 per cent of the adjustments were completed during the first year of the consolidation; only countries with shorter adjustment periods had a faster dynamics at the beginning. Only two countries (Finland[52] and France) fell behind significantly the time-proportional degree of adjustment in the first year, however, in the sample of 11 countries 5 carried out adjustments well above

Table 5-2

Characteristics of the adjustments

	Adjustments during the first year (%)	Adjustments at half the period (%)	Ratio of adjustments during the first year relative to the whole	Ratio of adjustments halfway through the period relative to the whole
1. The Netherlands	54	65	2.7	1.3
2. Estonia	52	65	2.1	1.3
3. France	5	61	0.4	1.2
4. Ireland	33	87	1.3	1.7
5. Luxembourg	51	45	2.0	0.9
6. Finland	1	41	0.1	0.8
7. Italy	20	45	1.4	0.9
8. United Kingdom	15	55	1.1	1.1
9. Belgium	40	65	2.8	1.3
10. Sweden	15	66	1.0	1.3
11. Denmark	26	58	1.0	1.2
Whole sample				
average	28	59	1.4	1.2
minimum	1	41	0.1	0.8
maximum	54	87	2.8	1.7
Hungary (estimate)	60	86	2.4	1.7

The first two columns indicate the percentage of adjustments for the various periods relative to the whole. The third and fourth columns show the rate of speed for the completion of all adjustments compared to the fiscal path of balanced adjustments. If higher than 1, consolidation was implemented faster than time-proportional, and if less than 1, consolidation took place slower than time-proportional.

[51] One possible explanation for the relatively even course is that in the successfully consolidating countries the major part of deficit reduction was induced by structural changes and the enforcement of fiscal rules whose impact is designed to gradually reach its full strength over several years. However, verification of this hypothesis requires further investigation. The convincing deficit reduction in some countries during the early stages is due in part to the fact that at the beginning of the adjustment we examine the evolution of the deficit starting from a local minimum.

[52] In connection with Finland, we should point out that even though the adjustment periods began in 1993, effective and more dynamic reduction of the deficit did not commence before 1995. If we were to measure the performance of fiscal policies starting from 1995, the ratio of the first year and the total adjustment would be 22 per cent instead of 1, slightly above time-proportional. The example of Finland well demonstrates that the selection of the starting point may also have an impact on the assessments. Naturally, this type of selection bias may apply not only in this dimension, but also in connection with other variables, and the sensitivity of the results related to selection would require further robustness tests.

time-proportional during the first year.[53] At the same time, following a significantly higher rate of adjustment in the first year, the initial high rate gradually dropped slightly under average (Table 2).

The adjustments planned in Hungary between 2006 and 2010 meet the criteria of success from the perspective of magnitude and it is more "front-loaded" than in the successfully consolidating countries. Starting from the MNB forecasts up to 2009 and accepting the improvement in the balance for 2010 planned in the convergence programme (which is not supported by measures yet), the cyclically adjusted primary balance without one-off items may decrease by a little over 7 percentage points relative to 2006. This constitutes an improvement in the balance by 1.8 percentage points on an annual average, while the average improvement in the primary balance without adjustment is expected to be around 1.6 per cent. In terms of magnitude and average dynamics this is similar to the average of successful countries. In Hungary, approximately 60 per cent of all improvements in the balance are expected to materialise during the first year, which will go up to 85 per cent by the first half of the 4-year adjustment period. Therefore, the Hungarian adjustment, if it goes according to plan, will be faster than in the successful countries and it appears more “front-loaded”. Evidently, this is due in part to the higher role of tax increases in reducing the deficit during the early stages of the adjustment period, which facilitates a more dynamic adjustment compared to reducing expenses, which is more time intensive.

[53] In the case of four countries the magnitude of adjustments during the first year was close to time-proportional.

5.3. Macroeconomic indicators of the successfully consolidating countries

Growth[54]

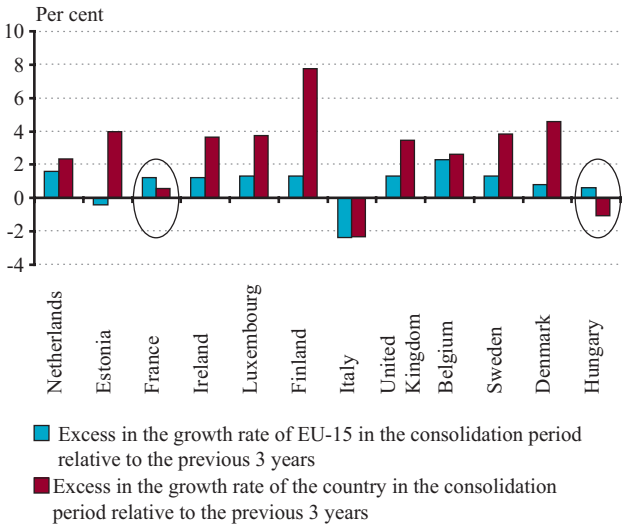
The GDP growth rate increased significantly in the countries in question[55] relative to the average rate of the years preceding the adjustments, and they managed to sustain this higher growth rate for a relatively long time. The majority of these countries achieved substantial improvements in their growth rate which was mostly moderate before the consolidation (Chart 1). However, this is due to some extent to that the benchmark in many countries is the low growth rate experienced during the 1992-93 ERM crisis. In some countries the growth rate dropped temporarily during the early stages of the adjustment period (such as in Estonia and France), however, in most of the countries the economic growth rate increased steadily.

In most cases external economic developments had a beneficial effect on deficit cut-backs, as the European growth rate increased relative to pre-adjustment times. However, the investigated countries achieved more dynamic growth than the EU, that is they grew faster – with the exception of France – (or in the case of Italy the slowdown was smaller) than the average of the EU-15. Consequently, during the period of deficit reduction, in the majority of the successfully consolidating countries economic growth was on a faster path than the EU average, or as in the case of Italy it dropped in a lesser degree.

In the Hungarian adjustment period that is scheduled to start in 2007 and is expected to last until 2010, economic growth is not expected to accelerate in contrast to the successfully consolidating countries, moreover, it is expected to slow down considerably. According to the MNB forecast, following the 3.9 per cent growth in 2006, the rate of economic growth is expected to drop back to 2.5 in 2007 and 2.4 per cent in 2008 due largely to the drop in real incomes and household consumption, then it may gradually return to a potential growth rate of around 4 per cent. A drop in the growth rate similar to the 2007-2008 period in terms of size (-1.5 percentage points) and length (2 years) did not occur under favourable external environment in either of the successfully consolidating countries. Growth in Europe is projected above 2 per cent on the average for 2006-2008, providing an agreeable external environment for the adjustment, still the excess-growth of the Hungarian economy relative to the European average is expected to drop from 2.5 percent in 2005 to zero during 2007-2008.

Chart 5-1

Changes in the average growth rate in successful countries and EU-15 relative to the years before the adjustments (per cent)[56]



In the case of Hungary the chart contains the forecast for 2007-2008.

Growth structure

Besides the higher growth rate in the successfully consolidating countries, the internal structure of growth is also worth analyzing, specifically the various GDP components (private and public consumption, investments, net exports). During the three-year period before the adjustments, household consumption and net exports had an equally decisive share in real growth in the successfully consolidating coun-

[54] We should like to emphasize that it is not our intention to presume any causal relation between the growth rate and fiscal adjustments, we simple focus our attention on the similarities between their movements relative to one another. This analysis shall not address the Keynesian and non-Keynesian impacts of fiscal consolidation on growth. For more information on this subject refer to Horváth-Jakab M.-P. Kiss-Párkányi: Macro impacts of fiscal adjustments in Hungary, MNB studies, 2005

[55] In this respect, too, Italy is the exception.

[56] If we were to use the average of the countries not implementing any adjustments as the basis for comparison instead of the EU average, the difference in the growth rate would be higher.

tries. Investments declined during this period, i.e. their contribution to growth was negative, was offset for the most part by public consumption. During the two years after the adjustments (and throughout the entire consolidation period) the level of household consumption did not change in terms of its share to growth, meaning that it remained at around 50 per cent. On the other hand, the share of net exports virtually dropped to zero,[57] similar to public consumption. The reason for the drop in the volume of net exports is that imports grew faster than exports, which is likely to result from the increased demand for imported goods in connection with ongoing investment projects. The loss of foreign trade surplus was offset in the aftermath of the adjustments by the substantial increase of investments. Public consumption, although it constituted a lesser share in growth, remained unchanged in terms of volume.

In Hungary, similar to the successfully consolidating countries, household consumption was the driving force behind growth during the three years before the adjustments (2003-2005). However, in this case, net exports made a significantly less contribution. Contrary to international experience, investments did not fall back in Hungary in the years before the consolidation. Furthermore, unlike in the successfully consolidating countries, according to the latest forecasts, net exports are labelled as the largest factor in growth following the adjustments, with investments limited to a lesser role. At the same time, household and public consumption will both have a negative impact on real growth. This is decidedly different from the successfully consolidating countries, where household consumption retained its position in terms of proportion, showing a slight increase in terms of volume. The higher role of net export in Hungary is primarily linked to higher export volumes, whereas the level of imports is not expected to change.

As for the components for faster growth, consumption and investments proved to be the driving force behind real growth in the successfully consolidating countries, compensated to some extent by the drop in public consumption and net export. In Hungary, the GDP growth rate is expected to decline by close to 2 percentage points, largely due to the significant drop in the volume of household consumption. This also tends to bring about a decline in

Chart 5-2

Role of the various GDP components in growth

(per cent)

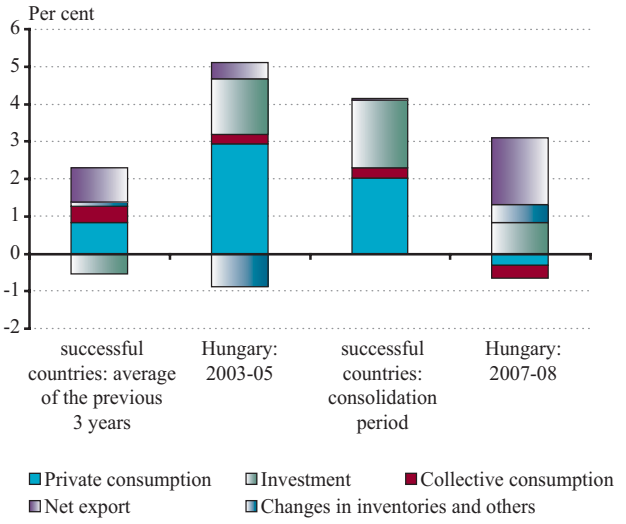


Table 5-3

Changes in the levels of GDP components in the successfully consolidating countries and in Hungary[58]

Changes	Average of the successful countries	Hungary	similarity
GDP	↑↑	↓↓	none
Household consumption	↑	↓↓↓	none
Public consumption	–	↓	minor
Investments	↑↑	↓	none
Net export	↓	↑	none
Export	↑	↑	yes
Import	↑↑	–	none

[56] If we were to use the average of the countries not implementing any adjustments as the basis for comparison instead of the EU average, the difference in the growth rate would be higher.

[58] The reduction in the rate of contribution of net export to growth in some countries is likely to be connected to the inflation of the exchange rate of the national currency that took place in tandem with the adjustments, while the rise in investments is probably due to the improved willingness of foreign investors in response to a better economic environment (FDI), or to the downward trend in capital costs induced by interest convergence. However, formulating a better idea of these issues requires additional inquiries.

Table 5-4

Contribution of various factors to the GDP growth[59]

	Average of previous three years						Consolidation period					
	GDP	1. Household consumption	2. Public consumption	3. Gross capital formation	Of which: investments	4. Net export	GDP	1. Household consumption	2. Public consumption	3. Gross capital formation	Of which: investments	4. Net export
1 .The Netherlands	1.7	0.4	0.5	-0.2	*-0.3*	1.0	4.0	2.2	0.4	1.4	*1.4*	0.0
2. Estonia	6.6	5.1	-0.2	4.8	*4.1*	-3.1	8.4	4.8	0.4	6.4	*5.7*	-3.2
3. France	1.9	0.8	0.7	0.0	*0.0*	0.4	2.5	1.3	0.2	0.9	*0.9*	0.1
4. Luxembourg	8.0	1.8	0.6	0.7	*0.7*	4.9	7.3	1.9	0.7	2.4	*2.4*	2.3
5. Finland	-3.3	-1.5	0.2	-3.4	*-3.7*	1.5	4.5	1.9	0.4	1.2	*1.7*	1.06
6. Italy	3.6	2.3	0.6	1.1	*1.1*	-0.5	1.3	0.7	-0.1	0.1	*0.1*	0.6
7. United Kingdom	-0.1	0.0	0.4	-1.0	*-0.9*	0.5	3.3	2.3	0.3	1.2	*1.1*	-0.5
8. Belgium	0.2	0.8	0.3	-2.6	*-2.6*	1.7	2.8	1.3	0.2	1.4	*1.5*	-0.2
9. Sweden	-0.4	-0.1	0.7	-1.5	*-1.4*	0.5	3.4	1.3	0.1	1.0	*1.1*	1.0
10. Denmark	-0.6	-1.2	0.7	-2.3	*-2.3*	2.2	3.9	2.3	0.1	2.1	*2.1*	-0.7
minimum	-3.3	-1.5	-0.2	-3.4	*-3.7*	-3.1	1.3	0.7	-0.1	0.1	*0.1*	-3.2
maximum	8.0	5.1	0.7	4.8	*4.1*	4.9	8.4	4.8	0.7	6.4	*5.7*	2.3
average	**1.8**	**0.8**	**0.4**	**-0.4**	*-0.5*	**0.9**	**4.2**	**2.0**	**0.3**	**1.8**	*1.8*	**0.1**
contribution		47%	26%	-25%	*-31%*	52%		49%	7%	43%	*43%*	1%
Hungary	4.2	2.9	0.3	0.6	*1.5*	0.4	2.4	-0.3	-0.3	1.3	*0.8*	1.8
		69%	6%	14%	*35%*	11%		-12%	-14%	54%	*34%*	72%

[59] As for the GDP components, gross capital formation is basically comprised of investments, and of inventories and other consumption. In the countries under review the latter represent a considerably lower volume in general, thus having a lesser impact on GDP, however, in Hungary this factor also has a major role in real growth.

the volume of investments and, to a lesser extent, public consumption as well, while any growth projected is due to exports growing faster than imports.

Inflation

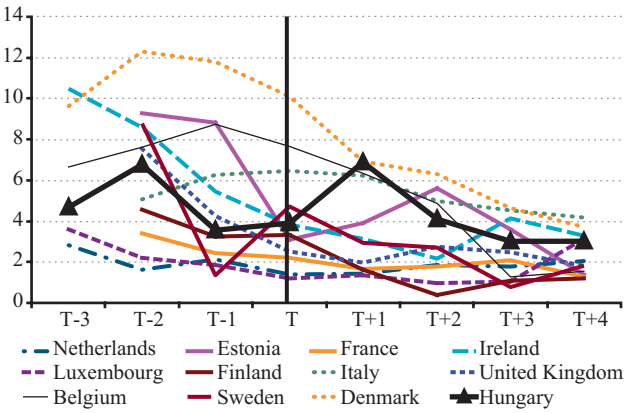
Before the adjustment the level of inflation was low in most countries and this did not change significantly during the consolidation period. In some countries, more specifically in Denmark, Ireland and Belgium during the adjustments in the 1980s, inflation started to drop before the adjustment, and continued to do so during the consolidation period.[60] The rate of inflation remained low in most countries during the adjustment period, at around 4 per cent.[61] This means that the inflation of expenses did not play a role during the process of adjustment, unlike in Hungary where it turned out to be a significant factor in the 1995 adjustment package. On the other hand, in connection with the adjustments implemented during the 1990s, let us not forget that meeting the convergence criteria would not have allowed for the adjustment to generate higher inflation.

In Hungary, contrary to the above-specified countries of reference, a notable and temporary rise in inflation is expected.[62] The annual rate of inflation, according to the MNB forecast, is expected to rise from 3.6 per cent in 2005 to 6.9 per cent by 2007, and will return to around 3 per cent in 2009, in line with the requirement for the price stability. At the beginning of the adjustment period, inflation in Hungary will be higher than in most of the successfully consolidating countries, and the temporary surge in the rate of inflation, unlike elsewhere, will have an impact on Hungary in cutting real expenses (see below for more details). Additionally, we should like to point out that the rise in the rate of inflation is only temporary and it is not similar to the increase that took place during 1995-1996.

Chart 5-3

Changes in the annual percentage rate of inflation

(annual percentage change)



Monetary conditions

Nominal and real effective exchange rate

In many examined countries, the fiscal consolidation started after currency crises, consequently, the nominal exchange rate depreciated in practically all of them (8 out of the 11 episodes reviewed) relative to the three-year period before the adjustments. Apart from Italy, the largest degree of depreciation took place in Finland and Sweden. However, it is important to point out that the depreciation did not bring about any surge in the rate of inflation in the successfully consolidating countries. Consequently, the real effective exchange rate also dropped in almost all countries (9 out of the 10 episodes reviewed).[63]

Most of the reference countries were members of the European exchange rate mechanism (ERM), where market pressure on the currency called for realignment of the exchange rate band, which resulted in permanent depreciation. The current exchange rate regime in Hungary is characterized by a 30 % wide fluctuation band. In Hungary, the deterioration in market sentiment has also been accompanied by a depreciating exchange rate since early 2006, nevertheless, it was easily accommodated by the exchange rate regime. In the longer run, achieving the inflation targets constrains the extent of nominal depreciation of the currency.

Yields

Short-term yields, which are more exposed to monetary policies, and the long-term yields as well, dropped considerably in all of the examined countries during the consolidation period compared to the years before the adjustments. Naturally, in connection with the adjustments imple-

[60] In these cases, it is obviously due to the corrections adopted in the wake of sky-rocketing oil prices during the early 1980s as far as inflation is concerned. Furthermore, the disinflation that took place in parallel with market liberalisation has also had a part in reducing the inflation.

[61] Italy was an exception in this respect as well, where inflation was higher, generally around 5 to 6 per cent.

[62] Let us note that the driving factor behind the higher rate of inflation in 2007 is the intended mitigation of tensions accumulated in recent years in connection with regulated prices.

[63] It is important to point out that the devaluation did not bring about any surge in the rate of inflation in the countries that successfully managed to consolidate their fiscal standing.

mented during the 1990s, yield levels had to come down in the process of meeting the Maastricht convergence criteria on yields. Short- and long-term yields registered a drop of 5 percentage points and 3.5 percentage points, respectively, on the average during the consolidation period. A temporary increase in the yield levels was only seen in a few countries.

In addition to the yields in the market of government securities, we also checked the loan rates provided to corporate customers. The reduction in the interest rates of short- and long-term loans was also significant, which is presumed to have an impact in the notable increase in investment.

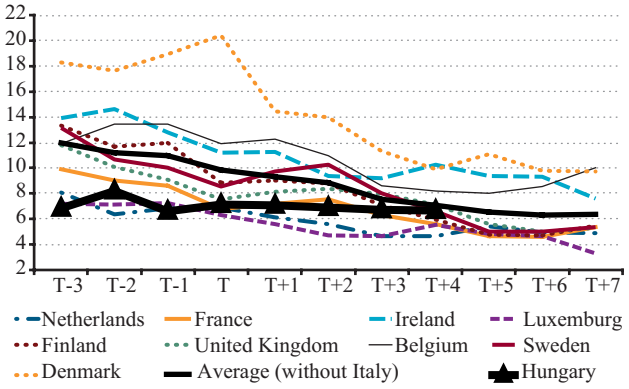
In Hungary, the only source we have in terms of yields is the current forward yield curve. It indicates a potential drop in short- and long-term yields from the present level, somewhat stronger for short-term yields and a little less for long-term yields (relative to the yield level prevailing in the beginning of December of 2006, short- and long-term yields are projected to drop by approximately 1.5 and 0.6 percentage points, respectively, by 2010). However, in both instances it is decisively less than in the consolidating countries. The main reason for the lower decline is that the average yield level was higher in the examined countries than the yield level that presently prevails in Hungary, thus enabling a drop in the yield level in these countries to a greater degree. Moreover, let us not overlook the fact that future trends in the credibility of economic policies may have a significant impact on yields, and may be the driving force in any potential shift in either direction from the current forward yield curve.

Employment

Developments in the labour market may also have a beneficial effect in the efforts to reduce the deficit as any increase in the level of employment generates more revenues in taxes and contributions and it may reduce the number of dependant, in other words it brings about less social expenditures. As for the successfully consolidating countries the level of employment fell back in most of them before the adjustment, then it gained some compared to the first year of the adjustment period (Chart 5-4). The drop in the level of employment was significant in Finland and Sweden, however, Finland was able to restore the previous status during the consolidation period, whereas in Sweden the rate of employment remained low for quite some time.[64] In some countries, such as Denmark, Ireland, The Netherlands and Finland, the rate of employment increased above the average during the adjustment period. Looking at the whole period up to this point, Italy was the only country where the rate of employment did not move, or even declined a little. In most of the successfully consolidating countries, favourable employment trends around Europe, and the expansion in the level of employment in many cases, helped the process of reducing the deficit considerably.

Chart 5-4

Changes in long-term (10 year) yields in the various countries

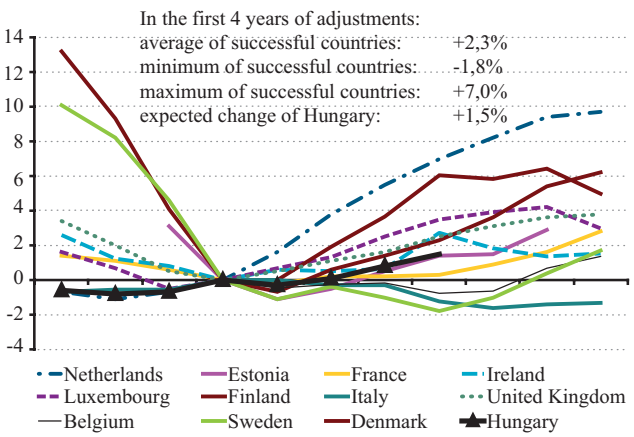


In the case of Hungary, for 2007-2010 it shows the yield level estimated on the basis of the forward yield curve of November 2006.

Chart 5-5

Changes in the level of employment relative to the first year of the adjustment period

(per cent)

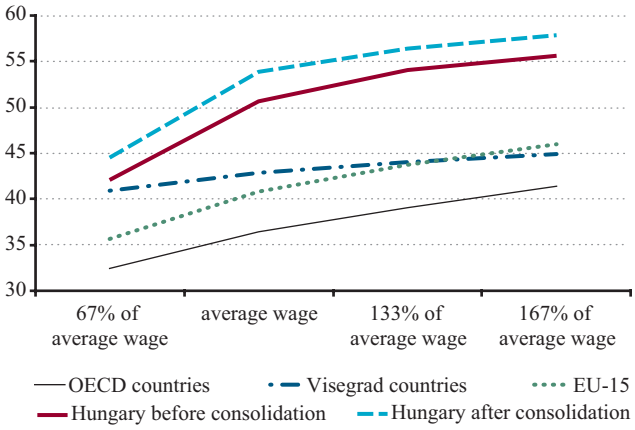


[64] It is important to point out that the devaluation did not bring about any surge in the rate of inflation in the countries that successfully managed to consolidate their fiscal standing.

As for Hungary, expansion in the level of employment is likely to remain slightly behind the dynamics seen in the majority of the successfully consolidating countries. In Hungary, the convergence programme does not count on any noticeable increase in the rate of employment during the first half of the adjustment period. For 2007-2008, the convergence programme predicts a 0.3 per cent increase on the aggregate, while the MNB forecast indicates growth of 0.1 per cent. The central bank does not have a forecast for the period after 2008, whereas the convergence programme suggests a faster growth path of 1.4 per cent over two years. However, this assumption of growth in the rate of employment is not yet substantiated. The convergence programme and the government announcements communicate the possibility of measures, which have yet to take a concrete form – e.g. measures implying the postponement of the retirement age – which may serve as the first step toward increasing employment even at a rate faster than predicted in the convergence programme under the best circumstances. Nevertheless, any growth in the rate of employment in Hungary is likely to generate significantly less support in the process of reducing the deficit than it did in the majority of the most successful countries.

Chart 5-6

Tax wedge in certain group of countries and in Hungary



Source: World Bank.
International data date from 2002, while in case of Hungary we examine the situation before and after the SSC-increase in 2006.

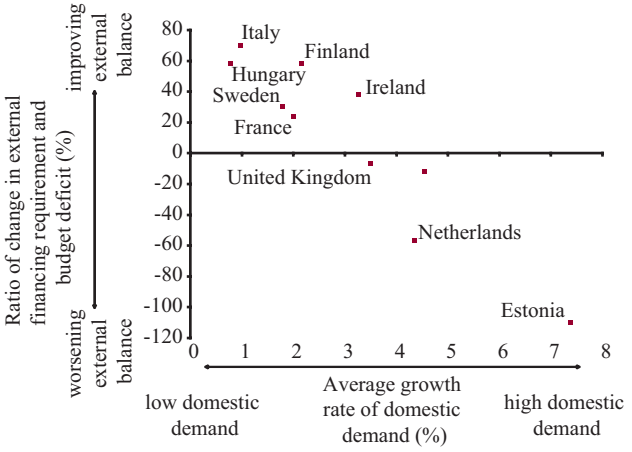
External balance

Prompted by the fiscal measures external imbalance may be reduced considerably in Hungary. According to our forecast, close to two-thirds of the fiscal demand contraction may result in improvement of the external balance. Looking at the international experience of the successfully consolidating countries, we found that the reduction in the external financing requirement projected by us exceeds the average value among these countries. In 5 out of the 9 countries deficit cuts were accompanied by increasing external financing capacity.

In the examined countries, during the adjustment period the evolution of external balance was determined by domestic economic activities. Thus, the experiences are in line with theory. If the fiscal adjustments were carried out without a drop in domestic demand, then the improvement in the balance of the budget had only a minor positive impact on the external balance, or there was even an increase in the external financing requirement. On the other hand, if the fiscal adjustments were carried out in parallel with slower domestic demand growth, reliance on external financing also dropped markedly through the import demand induced by consumption and investments.

Chart 5-7

Net financing capacity and domestic demand in the consolidation period



** Based on the forecasts provided for 2006-2008 in the Inflation Report.*

Consequently, there is a clear trade-off between output loss and improvement in the external balance.

Among the successfully consolidating countries this trade-off is traceable. Chart 5-6 shows the ratio of the improvement in external balance and the fiscal adjustment as a function of average growth rate of domestic demand during the adjustment period. Some of the countries registered even some growth in the external financing requirement during the period of fiscal consolidation; however, the negative relation with the growth rate of domes-

[64] It is important to mention that in Sweden the level of employment was registered, even after the decline, at one of the highest levels in Europe, second only to Denmark, above 70 per cent.

tic demand is evident in these countries as well. Let us emphasise that domestic demand and the external balance in the analysed countries were independent of the initial level of external /internal imbalance. Only two of the countries, namely Denmark and Estonia, experienced a twin deficit before the adjustment, and the external financing requirement grew in both countries during the adjustment period.

In light of the above, Hungary's growth and external balance indicators in the adjustment period forecasted by MNB are consistent with the trends shown in the sample. Hence, the massive impact of fiscal consolidation on the improvement of external balance may be justified by the drop in domestic demand that is considered substantial by international standards.

5.4. Structure of the budget[65]

Expenditures versus revenues[66]

In terms of GDP-proportionate indicators, in the successfully consolidating countries the reduction of expenditures dominated the fiscal consolidation process. Expenditures relative to GDP were reduced substantially in all of the successfully consolidating countries. The lowest rate of reduction is 2.8 per cent, the average is 8.4 while the highest is at 16.4 per cent. In all countries – not including Italy – the reduction of expenditures amounted to 92 per cent of all deficit cuts on the whole. In some countries (Ireland, The Netherlands, Finland, Belgium) revenues even declined, meaning that expenditures dropped at a rate higher than the rate of the deficit reduction relative to GDP. Of the successfully consolidating countries – other than Italy – United Kingdom and Denmark were the only ones showing substantial losses in revenues. In these countries one-third and one-half of the adjustments on the whole materialised on the revenues side, as opposed to the others where consolidation took place almost entirely on the expenditure side. From the perspective of budget structure, Italy can be considered as an exception, where they managed to reduce the deficit with an increase on the revenue side of 15 percentage points and also an increase in the expenditures of 9 percentage points, respectively.

Table 5-5

Government revenues and expenditures during the adjustment period

(as a percentage of GDP)

	Centralization (revenues)			Redistribution (expenditures)			Ratio of expenditure within the total adjustment*
	Revenues at the beginning of the period	Revenues at the end of the period	Change	Expenditures at the beginning of the period	Expenditures at the end of the period	Change	
1. The Netherlands	46.8	45.7	-1.1	51.3	43.6	-7.7	117
2. Estonia	39.1	39.1	0.0	42.8	36.7	-6.1	100
3. France	48.5	50.0	1.5	54.4	51.6	-2.8	65
4. Ireland	42.9	40.5	-2.4	53.5	43.1	-10.5	130
5. Luxembourg	42.3	44.1	1.8	41.2	38.2	-3.0	62
6. Finland	56.4	55.2	-1.2	64.7	48.3	-16.4	108
7. Italy	32.6	47.4	14.8	41.6	50.1	8.5	-135
8. United Kingdom	38.1	41.3	3.2	46.1	39.8	-6.3	66
9. Belgium	49.0	46.8	-2.2	63.8	53.7	-10.1	128
10. Sweden	61.1	61.8	0.7	72.4	56.8	-15.6	96
11. Denmark	48.5	54.9	6.5	58.3	52.6	-5.6	47
Whole sample							
average (excluding Italy)	**47.3**	**47.9**	**0.7**	**54.9**	**46.4**	**-8.4**	**92**
minimum (excluding Italy)	38.1	39.1	-2.4	41.2	36.7	-16.4	47
maximum (excluding Italy)	61.1	61.8	6.5	72.4	56.8	-2.8	130
Hungary	**41.9**	**42.8**	**0.9**	**52.0**	**45.5**	**-6.5**	**88**

** Any indicator over 100 means that revenues decreased relative to GDP during the adjustment period.*
In the case of Hungary the first year is 2006 and the last year is 2010.

[65] We did not include Italy in calculating the average indicators, because it is very different from other countries in practically all respects, in principle, to following different tendencies compared to the others (see Box 1).

[66] In this field we must not overlook the reliability and uniformity of the data available. In spite of our efforts to gather information from a single source, there may be some inconsistencies.

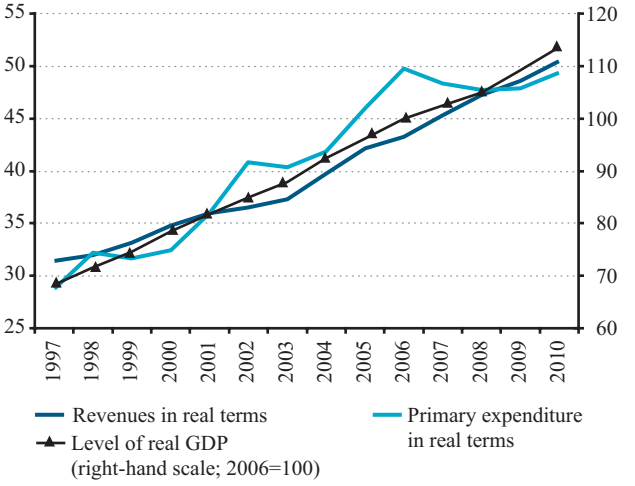
With regard to GDP-proportionate indicators, the reduction of expenditures leads the way in the adjustment planned in Hungary for the 2006-2010 period, with approximately the same degree than in the majority of the examined countries. Taking into consideration that the absence of individual expense items in the 2006 budget accounts to approximately 0.7 percentage points in the deficit-reduction efforts in Hungary, expenditures will drop 5.8 per cent over a 4 year span. This way, the planned reduction of expenditures will amount close to 90 per cent of all deficit cuts over a 4 year span. In conclusion, the budget deficit projected for 2009 is slightly above 3 per cent, which will be achieved – relative to the 3 per cent deficit in 2000 – under lower revenues and expenditures, i.e. under lower government centralisation and redistribution ratios.

Most of the successfully consolidating countries also managed to reduce the deficit by maintaining the level of their expenditures in real terms during the adjustment period, while the revenues in real terms increased almost consistent with the real dynamics of economic growth. In the 1980s in Ireland and Belgium and in the 1990s in Sweden, apart from the adjustment, expenditures were not reduced any further in real terms. Where the economy embarked upon a very dynamic growth path it allowed a substantial deficit reduction in spite of a moderate increase in real expenditures due to the rapid increase of real revenues.

In Hungary, the level of expenditures in real terms has been higher since 2001 than the level of revenues in real terms, and this tendency is not expected to change before 2008. In 2007-2008 real expenditures are forecasted to drop by about 4 per cent, while real revenues will grow during the same two years by close to 5 per cent, consistent with the growth rate of the economy. For the 4-year period between 2007 and 2010 the level of real expenditures will remain close to constant and real revenues are predicted to increase at a rate consistent with real GDP. This underlines the opinion we have expressed concerning the dynamics of the deficit reduction, notably that the cuts planned for the first two years are very tight, as conceivable reductions in real expenditures and the majority of deficit cuts will have to be carried out during this period.

Chart 5-8

Primary real expenditures, real revenues and real growth in Hungary



Expenditures of the government

Nominal **wage expenditures** in the government sector dropped during the adjustment period in practically all countries.[68] On the average wage expenditures declined by 1.6 percentage points of GDP, while in some countries going through the adjustment process (for example Finland, Sweden, Belgium and Denmark) the volume of GDP-proportionate wage expenditures dropped by more than 2 percentage points.

In most of the successful countries (9 out of 10 for which we have information available), substantial reductions in **social expenditures**[69] were observed during the consolidation process. In the successful countries social expen-

Box 5-2: Fiscal rules[67]

Of the successfully consolidating countries practically all have adopted fiscal rules. Some countries introduced fiscal rules in order to maintain the level of real expenditures constant. Fiscal rules are primarily connected to the expenditures or the budget balance, usually prescribing limits upon certain expense items or linking them to some simple predetermined rules. In several countries the rules were supplemented with "reserves" intended to lay down additional measures to keep with the original objective in the eventuality if the expenditures exceeded the proposed limits. Besides expenditures, the whole balance or the debt are the other targets of rules of various scope (from the entire general government to local governments).

[67] For more information on this subject consult, among others, Public Finances in EMU, Part III. 2006, European Commission; http://ec.europa.eu/economy_finance/publications/european_economy/2006/ee306_en.pdf.

[68] France and Luxemburg are the only two countries where the reduction in wage expenditures in the government sector did not exceed 1 percentage point.

[69] Social benefits other than social transfers in kind.

Table 5-6

List of countries applying fiscal rules

	Balance – rule (nominal or in percentage of the GDP)	Real growth rate or ceiling of expenditures	Debt – rule
1	Belgium	Belgium	Estonia
2	Denmark	Denmark	Finland
3	Estonia	Finland	Luxembourg
4	Finland	France	United Kingdom
5	France	The Netherlands	
6	Ireland		
7	Italy		
8	Luxembourg		
9	Sweden		
10	United Kingdom		

ditures declined by 1.5 percentage points on the average during the first three years, going all the way up to 2 percentage points and above in some countries (for example in the Netherlands, Finland and Sweden). In a number of countries, the decline in social expenditures was considerable over the full length of the consolidation period compared to the first year of the consolidation period: more than 7 percentage points in Finland, 5 percentage points in Sweden, 4 percentage points in The Netherlands, and 3 percentage points in the United Kingdom and Belgium. In Italy, social expenditures also went up considerably, by approximately 5 percentage points during the entire period.

Pension expenditures were also reduced more or less in most of the countries in the sample (6 out of 7) during the consolidation period. In the successfully adjusting countries pension expenditures dropped by an average 0.9 percentage points during the first four years of the adjustment period. The largest reduction took place in Finland, Sweden and Luxembourg, where the initial ratio was extremely high.

Interest expenditures also fell in parallel with the debt ratio that was also declining due to fiscal adjustments during the consolidation period. In the examined countries the GDP-proportionate interest balance was between 3 to 6 per cent

Table 5-7

Some expenditure items during the consolidation periods

(as a percentage of GDP)

	Minimum	Average	Maximum	Hungary (2006-2010)
Compensation of employees	-0.1	-1.8	-3.5	-2.0
Social expenditures	-1.0	-3.1	-7.5	-0.9
Pension expenditures	0.0	-1.5	-3.1	-0.1
Interest expenditures	-0.1	-0.9	-2.2	-0.1
Public investments	0.2	-0.5	-1.1	-1.9

In Hungary social expenditures also cover the social transfers other than transfers in kind and gas prices subsidies.
Changes in the investments in the public sector covers the period ending in 2009.

in the early part of the adjustment period, than it fell back to 2 to 3 per cent by the end of the period.[70] The largest reduction took place in the Netherlands and in the Scandinavian countries. In the successfully adjusting countries the interest balance declined further following the consolidation period, falling all the way back to 1.6-2.6 per cent by the end of 2005. Naturally, Italy is out of sample in this respect as well, for its interest balance that was above 10 per cent in 1990 took on an upward path and rose close to 13 per cent by 1993, and then it subsequently begun to decline.

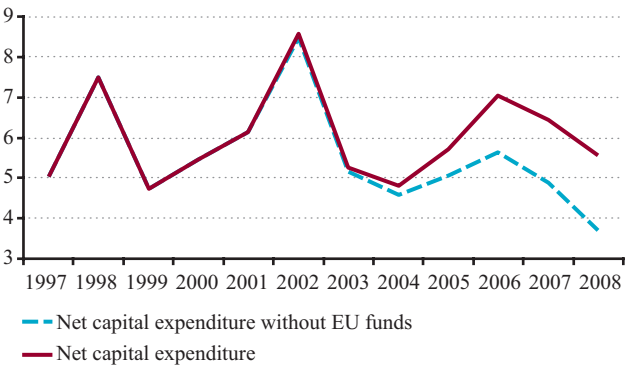
Government investment expenditures declined or stagnated in all countries during the consolidation period. The magnitude of GDP-proportionate investments of the whole economy went up in practically all countries, it was, however, the result of contradicting tendencies: the volume of investments in the private sector grew in all countries, while government investments dropped. The largest decline in government investments took place in Sweden, Luxembourg and in the United Kingdom.

As regards Hungary, the reduction in expenditures – not counting one-off items – by 5.8 percentage points over a period of four years is mostly linked to the compensation of the public employees and investment expenditures in the government sector. In consequence of the freezing of wages in the public sector and of the redundancy of about 20,000 people in the public sector, wage expenditures may be reduced in Hungary essentially in the same degree as in the successfully consolidating countries,

Chart 5-9

Expected path of net capital expenditures up to 2008 in Hungary with and without EU transfers

(as a percentage of GDP)



approximately 2 percentage points of GDP. About three-quarters of this reduction of wage expenditures is the result of the freezing wages and only the remaining one-quarter is attributed to the reduction of workforce in the public sector. Although cutting investment expenditures in the public sector was a typical occurrence in the successfully consolidating countries, reductions in Hungary will be of a greater magnitude for the reason being that in light of growing EU transfers investment expenditures in the public sector can be slashed in the 2006-2010 period without any significant reduction in the overall level of investments. Compared to the successfully adjusting countries one major difference in the structure of expenditures is that in Hungary the level of social expenditures relative to GDP is not expected to drop at the rate that was seen in the successful countries. According to our calculations based on the latest version of the convergence programme pension expenditures relative to GDP is not expected to decline before 2010.

Revenues of the government

With respect to the majority of the successfully adjusting countries we did not find clear evidence of any tendency in terms of revenues relative to GDP. In most of these countries there was no major shift in revenues in either direction during the consolidation period. Apart from Italy, revenues grew considerably in Denmark and in the United Kingdom. Once again, Italy is the exception, showing an increase of close to 15 percentage points in revenues while expenditures rose substantially during the period. In the successfully consolidating countries the structure of tax revenues relative to GDP rearranged somewhat during the consolidation period[71]. A slight increase in overall tax revenues has been observed. While the revenues from taxes on labour declined slightly relative to GDP, revenues from taxes on capital expanded. Revenues from taxes on consumption remained roughly unchanged.

Of the seven countries mentioned below, Sweden was the only one where revenues from taxes on labour increased considerably, whereas in the other countries the revenues generated by the same types of taxes did not change, or even dropped. In the countries where revenues from taxes on labour decreased considerably (Netherlands, Finland, Luxembourg) it brought about an increase in the rate of

[70] Not counting Estonia and Luxemburg where the debt ratio was very low and the interest balance is at 0.2-0.4 per cent of the GDP.
[71] We only have data available for the periods subsequent to 1995.

Table 5-8

Changes in the revenues from the different types of taxes during the consolidation periods

(as a percentage of GDP)

			Changes in the various types of taxes relative to the GDP			Overall changes in tax revenues
			Consumption	Labour	Capital	
The Netherlands	1995	2000	0.7	-0.9	1.1	0.9
Estonia	1999	2003	1.0	-2.0	-0.5	-1.5
France*	1995	2001	-0.8	0.1	1.9	1.2
Luxembourg	1996	2000	-0.1	-1.9	-0.2	-2.2
Finland*	1995	2000	0.4	-1.6	4.4	3.2
United Kingdom*	1995	2000	-0.2	0.3	1.9	2.0
Sweden*	1995	2000	-0.9	1.6	3.5	4.2
Whole model						
minimum			-0.9	-2.0	-0.5	-2.2
maximum			1.0	1.6	4.4	4.2
average			0.0	-0.6	1.7	1.1
Hungary	2006	2008	-0.7	0.4	0.9	0.5

** The information available for these countries covers the period subsequentt to 1995, even though some episodes date back to 1993,however, employment-related taxes are considered robust.*

employment, whereas in the case of Sweden the degree of growth in the rate of employment remained below average.

In the case of Hungary – according to the latest plans – taxes on labour are expected to rise slightly during the adjustment period, similar to taxes on capital, while revenues from consumption taxes are projected to decline in spite of higher tax rates, as they will follow the downward trend of the volume of consumption.[72]

[72] Performing the cyclical adjustment in connection with tax revenues provides a somewhat different picture. At this time tax revenues rose markedly in the examined countries, half of which is attributable to the increase in revenues from taxes on capital, and 25 per cent to the increase in revenues from taxes on labour and another 25 per cent to taxes on consumption. In contrast, the slight increase of tax revenues in Hungary is attributed mostly to the increase in revenues from taxes on capital, while taxes on labour are expected to remain steady or close to it.

Summary

The fiscal adjustment launched in 2006 in Hungary aims to reduce the cyclically adjusted primary deficit by more than 7 per cent of GDP if implemented in full according to the convergence programme. The proposed magnitude of adjustments is, in essence, consistent with the average of the successful countries. In terms of dynamics, the process for cutting the deficit is front-loaded similar to the successful countries, however, in Hungary the cuts planned for the first year are far greater than in the case of these countries.[73] The countries where the deficit was comparable with Hungary's deficit of close to 10 per cent, did not implement close 60 per cent of the planned cuts during the first year, which indicates that the dynamics of Hungarian adjustment are not all that similar to the successfully adjusting countries.

In terms of the GDP-proportionate figures, the Hungarian adjustment programme of 2006-2010 focuses on a reduction of expenditures similar to the successfully consolidating countries, albeit to a somewhat lesser extent. This is due in part to the sudden surge in inflation, meaning that nominal expenditures are rising faster during the first year when inflation is higher compared to the successful countries. Over the four-year period, similar to the successful countries deficit cuts will be carried out while expenditures in real terms will remain close to their current level and revenues will grow in real terms in parallel with GDP. However, the first two years will be tight, as real expenditures will have to be cut by close to 4 per cent by 2008, which is nearly unparalleled in previous cases of successful adjustment.

The international environment surrounding the Hungarian adjustment programme is basically favourable: the European growth rate is projected to be slightly higher in the next few years than it has been in recent years, which – similar to the adjustment periods of the successful countries – will support the adjustment process. At the same time, the substantial decline in Hungary's growth rate projected for 2007-2008 is a major difference compared to the successfully adjusting countries, where the growth rate increased relative to the European average, with the exception of France. What all this means is that the extra revenues generated by the growth of the economy will have a lesser impact in cutting the deficit by comparison to the successful adjustments, furthermore, consumption also increased in these countries during the adjustment period, which is unlikely to occur in Hungary during the early years. As for the structure of growth, in Hungary the volume of consumption and investments are expected to drop off, contrary to what happened in the successful countries.

There are several reasons sited for the growth path to take a different course by comparison to the successful countries:

1. Improvements in the external balance may be an objective

In Hungary, in addition to the budget deficit the current account deficit was also high before the adjustments. The impact of deficit cuts on the external balance and on growth are not independent of one another: the larger the improvement in the external balance is, the slower economic growth is. Therefore, if cutting the current account deficit is set as a goal in the economic policies, it will necessarily bring about slower growth in the economy.

2. Decreasing yields and depreciation do not help a great deal

In Hungary, the decrease of yield levels and a depreciated national currency is insufficient in itself to support growth as it did in the successful countries. The main reason for this is that the adjustment in Hungary is likely to induce a temporary surge in the rate of inflation, unlike in the countries analysed, due to some extent to the tension that built up previously in the regulated prices. Accordingly, the rise in inflation will be responsible for the projected inability of the non-inflationary depreciation of the forint to support growth. Furthermore, the latest yield curve indicates only a minor drop in yield levels relative to the level from before the adjustment period, whereas the yield level in the successful countries dropped from a level that was far higher than in Hungary, which may have had an impact on the increase of investments and consumption.

3. Expansion in the rate of employment has a lesser effect on growth and deficit cuts

In Hungary, the information currently available indicates slower growth in employment, which is already low in international comparison, relative to the majority of the successful countries. The tax wedge, which is already higher in international comparison, will increase even further, unlike in the

[73] This is due in part to the greater dynamics in the beginning originating from the tax increases that we have already discussed.

successful countries, where revenues from taxes on labour were reduced relative to GDP, despite higher rates of employment. This is why higher employment is projected to have a lesser impact on growth and deficit cuts than it did in the majority of the successful countries.

4. Differences in the structure of expenditures

As for the structure of expenditures, there is similarity in the substantial reduction in wage expenditures in the public sector. The drop in the volume of investment expenditures in the public sector will be more significant in the case of Hungary, while EU financing also plays an increasing role, as it was in the case of successful countries. The most apparent difference in the structure of expenditures is that social expenditures and pension expenditures are not expected to decrease in Hungary, as opposed to most of the successfully adjusting countries. The reduction of social expenditures (such as unemployment benefits, social transfers, sick-pay) is likely to contribute to cutting the deficit directly, through lower government spending, and it may also have an indirect impact through the reform of incentives offered to job-seekers, which in turn may have a positive impact on economic growth.

All in all, there are many similarities and just as many discrepancies will surface if comparing the proposed adjustment programme in Hungary with successful adjustments that took place previously. On general principle, there are more similarities, however, taking a deeper look reveals more and more disparities. The proposed magnitude of adjustment and the significant weight of expenditures relative to GDP is an important similarity, just as prosperity in Europe which provides a favourable environment for cutting the deficit. At the same time, there are considerable dissimilarities in the structure of revenues and expenditures, not to mention the perhaps most important disagreement that is not detached from these structural discrepancies: namely that any upswing in economic growth and any expansion in the rate of employment is not expected to inspire economic growth similar to what took place in the majority of the successfully adjusting countries. This will make it more difficult to carry out the deficit reduction program, especially during the first half of the adjustment period when 85 per cent of all deficit cuts would have to be completed. Although this analysis does not cover this subject, structural reforms are likely to play an important role drawing up a sustainable fiscal path in Hungary, of which only sketches are available as of yet. Furthermore, based on international experience, the introduction of fiscal rules may prove useful in Hungary as well, for they have the capacity to enhance transparency and to maintain fiscal discipline.

Table 5-9

Dimension	Successful countries (average)	Hungary 2006-2010	Similarity
MAGNITUDE AND DESCRIPTION OF ADJUSTMENTS			
Magnitude of adjustment (CAPB as a percentage of GDP)	Average volume: 6.9% **Adjustment for one year: 1.2%**	Whole adjustment: 7.2% (without one-off items) **Adjustment for one year: 1.8**	Yes
Development of adjustment	**Slightly front-loaded** First year: 28% First half: 59%	**Definitely front-loaded** First year: 60% First half: 86%	**Partial;** front-loaded, with 2007 dominating
MACROECONOMIC ENVIRONMENT			
Growth	**Faster growth** First 4 years' average: 3.9%, **Increasing excess of growth:*** went up from -0.4% from before the adjustment period to +1.5%.	**Slower growth** 2007-2010 average: 3.2% **Decreasing excess of growth:** dropped from 2.6% from before the adjustment period to 1%.	None
External growth	**Strong external economic prosperity** EU-15 average during the adjustment period: 2.7%.	**Strong external economic prosperity** EU-15 average during the first 4 years: 2.2%.	Yes
Inflation	**Stagnation or continued reduction.**	**Temporary acceleration.**	None
Monetary conditions	**Nominal and real-effective exchange rate deteriorated in the most of the countries.** **Yields decreased significantly.**	**No exchange rate forecast, but deterioration in the REER is not expected.** **Substantial decrease in yields is not expected on the basis of current forward yield curve.**	None
Employment	**Significant increase,** mostly over the EU average Growth rate in the first 4 years: 2.3%.	**Unfavourable initial situation** **Stagnation followed by slight increase:** Over a 4-year period 1.5%.	None
External balance	**Improvement in the external balance sepends on the structure of the growth. The domestic demand did not fall, hence the improvement was moderate.**	**Due to a fall in the domestic demand the improvement in the external balance is expected to be 2/3 of fiscal adjustment.**	Partial
STRUCTURE OF ADJUSTMENT			
Revenues and expenditures relative to GDP	Relative to GDP **cuts in expenditures** constitute for the majority of deficit cuts Average: 92%.	Relative to GDP **cuts in expenditures** constitute for the majority of deficit cuts 88%.	Yes
Expenditures and revenues in real terms	**Stagnating real expenditures** and **real revenues rising** parallel with real GDP.	**Stagnating real expenditures and real revenues rising** parallel with real GDP. 4 per cent reduction on real expenditures during 2007-2008.	**Rather yes,** but first two years will be tight.
Structure of expenditures	Substantial **cuts in wage expenditures in the public sector** (-1.8% of GDP) and in **social expenditures** (-3.1% of GDP).	Substantial **cuts in wage expenditures (-2.0%)** and in public **investments (-1.9%),** however, there are no cuts in **social expenditures.**	Partial
Structure of revenues	**Less revenues from taxes on labour,** higher revenues from other types of taxes. Average reduction: 0.6 per cent of GDP.	**According to the latest plans revenues from taxes on labour** will increase during the next few years.	None

** Compared to the EU-15 average.*

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