



**QUARTERLY  
REPORT  
ON INFLATION**

**August  
2002**

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*The Act on the National Bank of Hungary, enacted by Parliament and effective as of 13 July 2001, defines the primary objective of the Bank as the achievement and maintenance of price stability. Using an inflation targeting system, the Bank seeks to attain price stability by implementing a gradual, but firm disinflation programme over the course of several years. In order to provide the public with a clear insight into the operation of central bank policies and enhance transparency, the Bank publishes the “Quarterly Report on Inflation”, covering recent and prospective developments in inflation and evaluating the macroeconomic developments determining inflation. This publication summarises the projections and deliberations that underlie the decisions of the Monetary Council.*

*The Monetary Council, the supreme decision making body of the National Bank of Hungary, carries out a comprehensive review of the expected development of inflation once every three months, in order to establish the monetary conditions that are consistent with achieving the inflation target. The first section of the publication presents the Monetary Council’s position and the grounds for its decisions. This is followed by a projection prepared by the economists at the Bank’s Economics Department on the outlook for inflation and the underlying principal macroeconomic developments. The expected path and uncertainty of the exogenous factors used in the projection reflect the opinion of the Monetary Council.*





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# Statement of the Monetary Council's Position

5 August 2002.

At its meeting on 5 August 2002, the Monetary Council discussed and approved the Bank's *Quarterly Report on Inflation* to be published on August 15.

*Agreement on key elements of economic policy strategy*

*The objective is to prepare Hungary for joining the euro area in 2007*

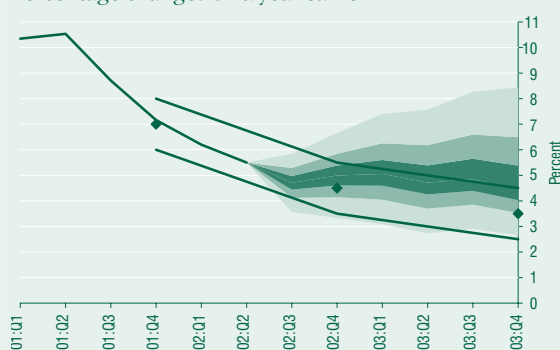
*The central bank's efforts are aimed at preventing inflation exceeding 4.5% in December 2003*

Over the past few months, National Bank officials have held discussions with members of the Government on the expected course of economic developments, and the economic policy to be adopted. These economic policy objectives have also been incorporated into the Government's medium-term programme entitled *A Turnaround in Economic Policy*. The projections presented in the *Report* are based on the assumption that the programme's objectives are achieved.

From a monetary policy perspective, this medium-term economic policy strategy is primarily aimed at preparing the Hungarian economy for joining the euro area by the year 2007. Achieving this objective requires reducing the general government deficit below 3% of GDP in 2005 in terms of European standards and meeting the inflation criteria for euro-area membership. The medium-term programme prescribes continuous economic policy adjustment in order to meet the reference values set for 2005. The Government intends to reduce the general government deficit measured according to European standards to 4.5% of GDP in 2003, and the average rate of inflation to 5% for 2003 as a whole and 4.5% at the year-end.

With its monetary policy measures, the Bank will seek to implement a path for inflation consistent with the medium-term economic policy programme. The designated path is not in contra-

**Inflation projection fan chart\***  
Percentage changes on a year earlier



\* The fan chart shows the probability distribution of the outcomes around the central projection. The central band with the darkest shading includes the central projection. The entire coloured area covers 90% of all probabilities. Outside the central projection (centred around the mode), the bands represent 15% probability each. For the specific values of the individual bands in the fan chart have been estimated relying on the Bank's historic forecast errors and the uncertainties perceived by the Monetary Council regarding the current forecast. The year-end points represent the fixed inflation targets (7%, 4.5% and 3.5%), while the straight lines mark the  $\pm 1\%$  tolerance intervals on either side of the target rates.

diction with the Bank's earlier target rate of  $3.5\pm 1\%$  set for December 2003, as the central bank's efforts are aimed at keeping inflation below 4.5%. Accordingly, the Bank wishes to adopt asymmetric responses to the economic developments that bear on the course of inflation. This means that should the central inflation projection leave the target range over the forecast horizon, the Monetary Council will control the path for inflation via changing the monetary conditions. On the other hand, if the level of inflation remains within the target range, the Monetary Council will be tolerant of rates not exceeding 4.5%.

In the Monetary Council's assessment, recent macroeconomic developments have constituted an upside risk to inflation. The most crucial inflationary pressure is this year's nearly 10% rise in household consumer demand and the rapid wage growth in the private sector. At the same time, the path prescribed by the Government's medium-term economic strategy may considerably lower inflationary pressure next year. Domestic demand growth will likely be mitigated by a cut in the general government deficit to 4.5%, measured by European standards. In the Monetary Council's interpretation, the Government's objectives also include keeping private-sector gross wage growth from exceeding 5% in annual terms. Thanks to prospective measures taken to reduce taxes, even this moderate rise in gross wages will ensure a 3% increase in net real earnings. Wage growth in accordance with the targeted economic policy path will reduce the real economic costs of meeting the inflation target

In contrast, wage increases exceeding the Government's target may necessitate some monetary tightening, in order to meet the inflation targets. Wage increases unadjusted to the disinflation path may undermine corporate competitiveness, hampering economic growth and increase in the number of jobs, via adverse effects on exports and investment.

On the basis of the fiscal and wage growth targets laid down in the Government's medium-term economic policy programme, the Bank projects inflation to be 5.1% in December 2002 and 4.3% in December 2003. However, although the central projection remains within the target range, the upside risk to inflation is considerable in 2003. The main source of the risk lies in the rate of private-sector wage growth. Should wages increase faster than the designated path, this would increase the likelihood that inflation exceeds 4.5% at end-2003. This risk is also reflected in the shape of the inflation projection fan chart.

The Council believes that provided that medium-term economic policy strategy drafted by the Government is successfully implemented, there will be no need to change the monetary conditions, consistent with the assumptions underlying the Bank's current projections. The Monetary Council monitors the economic developments that pose a risk to inflation. Should domestic demand and wages continue to increase at the current fast pace, a tightening in monetary conditions would be required in the future.

National Bank of Hungary  
Monetary Council

*Fiscal adjustment and wage growth in accordance with the targeted economic policy path will reduce the real economic costs of meeting the inflation target*

*Costs of deviating from the target path*

*Provided the economic policy path is implemented, inflation can be kept below 4.5% at end-2003, but there is still considerable upside risk to inflation.*

*Implementing the economic policy strategy may help avoid the need for monetary tightening*





## Summary Table of Forecasts\*

Percentage changes on a year earlier unless otherwise indicated

	2001	2002	2003
	Actual data	Forecasts	
<b>CPI</b>			
December	6.8	5.1	4.3
Annual average	9.2	5.4	4.8
<b>Economic growth</b>			
External import demand	0.8	(-1.4)-(-0.9)-(-0.4)	5.7 – <b>7.1</b> – 8.6
Manufacturing value added	1.3	0.0 – <b>0.5</b> – 1.0	5.5 – <b>7.0</b> – 8.5
Household consumption **	5.1	9.4 – <b>9.8</b> – 10.2	6.3 – <b>7.1</b> – 7.9
Gross fixed capital formation	3.1	5.6 – <b>7.0</b> – 8.4	3.7 – <b>6.0</b> – 8.3
Domestic absorption	2.1	5.5 – <b>6.2</b> – 6.9	4.2 – <b>5.4</b> – 6.6
Exports	9.1	3.5 – <b>5.0</b> – 6.5	4.8 – <b>7.8</b> – 10.8
Imports	6.3	7.2 – <b>8.6</b> – 10.0	5.7 – <b>8.7</b> – 11.7
GDP	3.8	3.5 – <b>3.8</b> – 4.1	4.2 – <b>4.7</b> – 5.2
<b>Current account</b>			
As a percentage of GDP	-2.1	(-4.0) ( <b>-4.4</b> ) (-4.8)	(-3.6) ( <b>-4.2</b> ) (-4.8)
In EUR billions	-1.2	(-2.7) ( <b>-3.0</b> ) (-3.3)	(-2.7) ( <b>-3.1</b> ) (-3.5)
<b>General government</b>			
Demand impact (as a percentage of GDP)	2.0	2.8 – <b>3.0</b> – 3.2	-2.4 ****
Labour market (private sector) ***			
Wage inflation	13.1-14.1-15.7	12.4- <b>13.0</b> -13.6	5.0 ****
Employment	1.0	(-0.8) ( <b>-0.6</b> ) (-0.4)	(-0.1) <b>0.4</b> (0.9)

\* Central projection in bold print

\*\* Household consumption expenditure (consumer spending)

\*\*\* Average for manufacturing and market services. The lower and central projections for wage inflation in 2001 are estimates made by the Bank, taking account of the effect of the minimum wage rise, while the upper index was released by the Central Statistical Office.

\*\*\*\* Conditional on the Government's medium term economic policy programme.

# Summary

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The current *Report* differs from the May issue in two main respects. First, it takes account of the effect of fiscal policy change, while the previous projection assumed a 'constant fiscal policy'. Second, the projections for 2003 are conditional on the Government's announced medium-term economic policy programme, with special regard to the areas of fiscal policy and the assumed private-sector wage growth.<sup>1</sup>

Thus, in the Bank's projection, gross wages in the private sector increase at a slowly declining pace in 2002. In 2003, in turn, based on the medium-term programme, we assume that private-sector gross wage growth remains exceptionally subdued, with this year's roughly 13% projection for wage inflation down to 5%.

Accordingly, the real economy projection has been significantly revised from that in the May *Report*. Household consumption is assumed to expand more rapidly, causing domestic absorption to expand faster than GDP. The current projection is for higher economic growth, at 3.8% in 2002 and 4.7% in 2003.

The consumer price index (CPI) is projected to be 5.1% in December 2002, and in next December conditional on the Government's economic policy strategy forecasted to decline to 4.3%. Compared with the May *Report*, we have somewhat decreased our forecast for the end-2002 inflation, but raised it significantly for December 2003. The rate of inflation at the year-end falls within the upper section of the 4.5% target point  $\pm 1\%$  range and is close to the upper limit of the target 3.5% target point  $\pm 1\%$  range in December 2003.

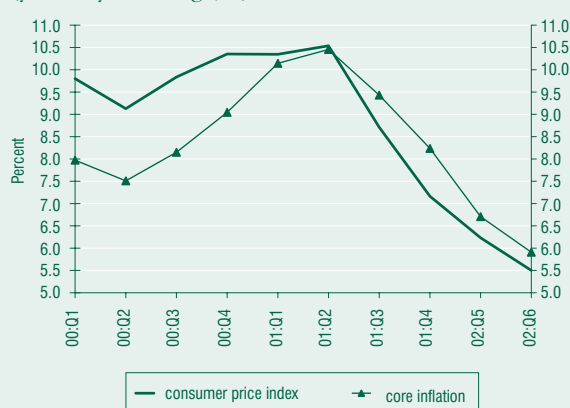
In the Monetary Council's judgement, there are two factors that represent upside risk to the aforementioned central projection in 2003. First, should gross earnings rise at a higher rate next year than assumed in the medium-term economic policy programme, that would trigger both cost push and demand pull inflationary pressures. Second, faster regulated price increases than the technical assumption underlying the central projection would also raise the level of inflation. Accordingly, the fan chart, representing the uncertainty in the inflation projection relative to the inflation target range, indicates considerable upside risk to inflation at end-2003.

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<sup>1</sup> See *A Turnaround in Economic Policy* (see the Ministry of Finance web site).

# 1 Inflation

**Chart 1.1 CPI and core inflation**  
(year-on-year change, %)



## I. 1 Previous projection and inflation developments in the second quarter

Consumer prices rose by 5.5% in 2002 Q2 relative to the same period last year, meeting the forecast published in the *May Report*. This value was 0.7 percentage points lower than the average rate of inflation in Q1. The fall in core inflation from 6.7% in Q1 to 5.9% is another evidence of disinflation remaining uninterrupted in the period under review.<sup>2</sup>

### I. 1. 1 Assessment of second-quarter CPI data

The disinflation experienced in Q2 was to a large extent due to the price developments of some volatile groups of the CPI which can hardly be influenced by monetary policy, namely the fall of prices of unprocessed food and vehicle fuel in June. In case of unprocessed food, the price movements of certain seasonal foodstuffs and pork should be accentuated. The appreciation of the euro against the dollar was the major reason behind the fall of fuel prices.

On the other hand, the price indices for tradable goods and market services, which are of primary interest to monetary policy, were also lower in Q2 than in the previous quarter, although the rate at which the latter fell slowed. Tobacco prices rose, influenced by the full-year effect of the tax increase at the start of the year.

Movements in the price index for *tradables* have shown stable disinflation since the change to monetary regime, which is perhaps best exemplified by the drop in the quarter-on-quarter price indices. This decline is primarily an indication of the delayed effect of nominal appreciation of the forint during the period since the intervention band was widened in May 2001.

Over the longer term, however, a lasting drop in the price index can only be expected if the rate of wage growth adjusts to the lower inflation environment. The annual index for *market services*, being the most sensitive component of the CPI to movements in wages and demand, has been flat since March. Explanation for this must be the exceptionally strong growth rate of household consumption.

<sup>2</sup>The July CPI data (4.6%) arrived after finalising this Report. Though the headline figure shows a steady disinflation, it is largely effected by the canceling the TV-set operation charges and transitory decline in unprocessed food prices.

Movements in *unprocessed food prices* were shaped basically by two similar events in Q2. First, vegetables prices experienced a correction following the price increases of the early months of the year. Second, pork prices (in euros) went below European levels. The latter deserves special mention, given the strong influence pork price movements tend to exert on the prices of a number of unprocessed foods.

Within *processed foods*, the rise in bread prices in April–May was perhaps the most noticeable event. Prices rose in the period despite the fall in both the producer price of cereals and the consumer price of flour. In the Bank's analysis, recent developments in bread prices reflect a staggered hike pattern which might resemble the pricing behaviour of cartels.

Within the category of *alcoholic drinks and tobacco*, rising tobacco prices dominated price developments in Q2. The excise tax increase at the start of the year only fed through to consumer prices in the spring. The slow decrease in the amount of inventories may be an explanation for this, in addition to other factors.

### I. 1. 2 The May inflation projection versus the actual data

Average inflation in 2002 Q2 met the Bank's inflation projection published in May; however, core inflation turned out to be 0.2 percentage points higher than the forecast. This shows that the accuracy of the CPI forecast reflected the 'benign' developments in some of the components with a high degree of volatility.

Calculations by Bank staff show that, from among the items most relevant for the overall consumer prices index, there were differences in the forecasts and the actual outcomes for the prices of foods, market services, motor fuel, and alcoholic drinks and tobacco.

Below we examine the extent to which the forecast error may be linked to the divergent developments in exogenous variables relative to the forecast and, beyond the resulting error, to probably capturing inflation developments inadequately during the analysis.

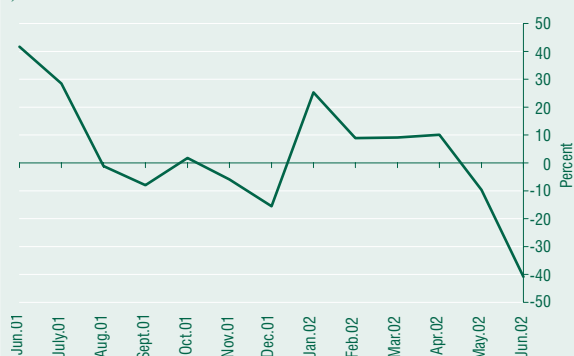
### I. 1. 3 Assumptions of the May forecast and their realisations

Table I-2 provides evidence that, except for imported inflation and the dollar/euro exchange rate, the most important exogenous variables developed in line with the forecast.

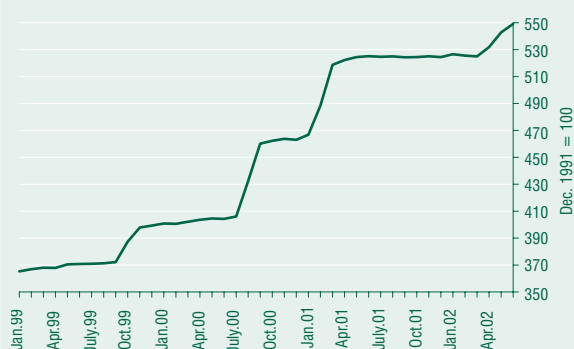
German tradables price inflation has been used to estimate the measure of imported inflation.<sup>3</sup> Its annualised monthly rate was previously assumed to return from its high levels in Q1 gradually to the historical average of 0.5% during the course of the year, resulting in an annualised monthly rate of 1.1% on the average of 2002. In contrast with the expectation, German tradables prices have fallen strongly since April. Chart I-4. is also a good illustration of the fact that there has not been a comparable decline in average prices of the euro-area countries.

<sup>3</sup> Our forecast is based on the June CPI figures. The 4.6% July CPI is somewhat lower than our forecast. As this difference is due to one-off factors, we do not change our projection.

**Chart I-2. Development of unprocessed food prices**  
(Annualised month-on-month growth rates, seasonally adjusted)



**Chart I-3. Bread and cereals price level**  
(December 1991 = 100)



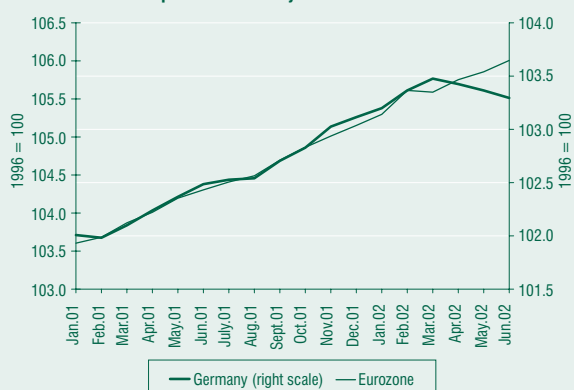
**Table I-1. The May projection and actual data in the second quarter**

Category	Weight (%)	Actual data	May projection	Difference	Contribution to CPI
		year-on-year change, %			
Food	19,0	6,0	5,5	0,5	0,1
Unprocessed	6,2	5,3	6,3	-1,0	-0,1
Processed	12,8	6,1	5,2	0,9	0,1
Tradables	27,0	2,6	2,7	-0,1	0,0
Market services	19,4	8,9	8,6	3,0	-0,1
Market-priced					
household energy	1,5	1,9	4,6	-2,7	0,0
Vehicle fuel	5,2	-7,3	-4,8	-2,5	-0,1
Alcohol and tobacco	9,1	9,1	8,4	0,7	0,1
Regulated prices	18,9	7,2	7,3	-0,1	0,0
<b>CPI</b>	<b>100,0</b>	<b>5,5</b>	<b>5,5</b>	<b>0,0</b>	<b>0,0</b>
<b>Core inflation</b>		<b>5,9</b>	<b>5,7</b>	<b>0,2</b>	

**Table I-2. Assumptions of the May forecast and 2002 Q2 realisations**

	Assumption used in the May Report	Actual data of Q2 2002
Forint/euro exchange rate	242.3	242.9
Dollar/euro exchange rate	0.88	0.92
Brent oil price (dollar/barrel)	25.5	25.1
Imported tradables inflation (%)	1.1	-0.7

Chart I-4. Tradables prices in Germany and the euro area



### I. 1. 4 Sources of the difference between the May projection and actual data

While the actual outcome for the headline CPI was in line with the forecast published in the *May Report*, there were noticeable differences on the level of the subgroups of the CPI, both in the upwards and downwards direction. Inflation turned out to be higher than the forecast within the categories of processed foodstuffs, market services and alcoholic drinks and tobacco, partly as a result of unforeseen events (such as bread prices and the slow re-pricing process of tobacco), and partly due to the stronger-than-expected increase in household consumption. On the other hand, price indices of unprocessed foodstuffs and vehicle fuels were below the projection, which might be the consequence of disinflationary movements in certain exogenous factors.

The price index for unprocessed foods remained below the forecast. The major reason for this may have been that, unlike in most European countries, the increase in vegetables prices early in the year failed to reverse itself by March, and so the resulting high level of prices was thought to remain lasting. In contrast, prices did correct in June. One of the possible explanations for this may be the substitution of imported goods causing extraordinary price increases with domestic products.

The actual outcome for inflation of processed food prices was higher than the forecast. The surprise increase in bread prices was the primary explanation for this, as was noted earlier.

The projection for the tradables price index was broadly comparable with the actual outcome. This may be linked to the use over the short run of methods which took the inertia of the time series into account. Conceivably, the fall in imported inflation may have been in the background of the actual being 0.1 percentage point lower than the forecast, although the effect of this at such a short horizon is insignificant.

The forint/euro exchange rate and imported tradables price inflation are the two most important factors affecting price movements in the model used to forecast tradables inflation, while other, domestic cost and demand factors have a smaller weight. The Bank's current forecast takes into account emphatically the delay in the effect of last year's appreciation on domestic tradables prices, attributable to a one-off shock.

The actual outcome for *market services prices* was 0.3 percentage points higher than the forecast. This gap may be explained by the difference between projected and actual household consumption, which was a factor causing inflation to be higher.

*Vehicle fuel prices* fell more strongly than projected, reflecting the lower euro equivalent of the price of oil on account of a stronger-than-expected euro exchange rate vis-à-vis the dollar. This also provides explanation for the lower-than-forecast actual outcome for the market energy price index.

## I. 2 Projection of the consumer price index

The current projection estimates the CPI to be 5.1% at end-2002, dropping to 4.3% at end-2003.<sup>4</sup> This projection partly reflects the effects of economic policy measures that have unfolded since the *May Report*. In addition to these protracted effects, at the Monetary Council's request, the underlying assumption for the 2003 projection is that the path designated by the Government in the medium-term economic policy programme will be implemented. However, in the absence of specific information about prospective regulatory price measures, the Bank staff have used simple technical assumptions in this context.

In the Monetary Council's view, there are two areas constituting an upside risk to the aforementioned central projections for 2003. First, should the growth in average earnings in the private sector exceed the rate assumed in the medium-term economic policy programme, this will exert inflationary pressures both on the cost and demand sides. Second, should regulated prices increase faster than assumed in the central projection, this will lead to higher inflation than the figure calculated. Hence, the fan chart representing the uncertainty in the inflation projection shows that the risks to inflation are weighted considerably to the upside for end-2003, relative to the target range. While there is an over 60% likelihood that the CPI will remain within the target range at the end of 2002, the corresponding figure drops to 30% next year, together with a sharp rise in the probability that the rate will exceed the upper tolerance limit of 4.5%.

Our new CPI projection for end-2002 has fallen slightly, while that for end-2003 rose considerably compared with the forecasts in the *May Report*. In 2002 this is explained by certain onetime regulatory measures offsetting the initial inflationary

Chart I-5. Inflation projection fan chart\* (year-on-year change, %)



\* The fan chart shows the probability distribution of the outcomes around the central projection. The central band with the darkest shading includes the central projection. The entire coloured area covers 90% of all probabilities. Outside the central projection (centred around the mode), the bands represent 15% probability each. When the fan chart shows significant upside or downside risks the mode should not lie in the middle of the darkest band. The uncertainty intervals have been estimated relying on the Bank's historical forecasting errors and the uncertainties perceived by the Monetary Council regarding the current forecast. The year-end points represent the fixed inflation targets (7%, 4.5% and 3.5%), while the straight lines mark the  $\pm 1\%$  tolerance intervals on either side of the target rates. The fan chart is always based on the quarterly CPI projections, so the end-of-the-year (December) target points are not directly comparable to quarterly data points.

Table I-3. Central CPI projection (year-on-year change, %)

	Weights (%)	2002					2003				
		Actual data		Projection			Projection				
		Q1	Q2	Q3	Q4	Dec.	Q1	Q2	Q3	Q4	Dec.
Food	19.0	8.5	6.0	3.4	4.3	4.5	4.2	4.6	6.5	6.1	6.0
Unprocessed	6.2	9.5	5.3	-0.7	2.3	2.4	1.5	4.6	11.1	9.8	9.5
Processed	12.8	7.9	6.1	5.3	5.3	5.6	5.6	4.6	4.3	4.4	4.4
Tradables	27.0	3.3	2.6	2.1	1.5	1.3	1.1	0.7	0.5	0.4	0.4
Market services	19.4	8.8	8.9	8.6	8.2	8.0	8.1	7.7	7.0	6.3	6.1
Market-priced energy	1.5	0.0	1.9	3.6	4.9	5.0	5.1	5.4	4.0	3.5	3.4
Vehicle fuels	5.2	-9.1	-7.3	1.0	8.4	11.4	14.0	7.9	4.3	4.1	3.8
Alcohol and tobacco	9.1	9.4	9.1	10.4	10.9	11.1	9.0	7.4	6.6	6.0	5.8
Regulated prices	18.9	7.9	7.2	4.2	3.6	3.6	4.0	5.4	6.5	6.0	6.0
<b>CPI</b>	<b>100.0</b>	<b>6.2</b>	<b>5.5</b>	<b>4.7</b>	<b>5.0</b>	<b>5.1</b>	<b>5.1</b>	<b>4.7</b>	<b>4.8</b>	<b>4.4</b>	<b>4.3</b>
Core inflation estimate	68.2	6.7	5.9	5.7	5.5	5.4	5.1	4.4	4.0	3.7	3.6
Annual average price index	-	-	-	5.4	-	-	-	4.8	-	-	-

<sup>4</sup> When this projection was made, the latest data reported by the Central Statistical Office were the those of June 2002. *IDE jön egy megjegyzés a júliusi tényekről*

**Table I-4. Decomposition of the difference between the previous and the current forecasts**  
(for December 2003 year-on-year CPI)

	Difference between the two projections (in percentage points)	Contribution of the factors *			
		Wage cost and aggregate demand	Regulation (prices and taxes)	Forint/euro exchange rate	Other factors**
Food	0.9	0.09		0.02	0.05
Unprocessed	3.7	0.14		0.00	0.09
Processed	-0.5	-0.05		0.02	-0.03
Tradables	0.8	0.06		0.13	
Market services	0.9	0.16		0.03	
Market-priced energy	3.2			0.00	0.04
Vehicle fuels	0.2		0.01		
Alcohol and tobacco	-0.8		-0.07	0.00	
Regulated prices	2.2		0.39		
<b>CPI</b>	<b>0.9</b>	<b>0.32</b>	<b>0.33</b>	<b>0.19</b>	<b>0.10</b>

\* Weighted by CPI shares.

\*\* oil price, imported inflation, dollar exchange rate, agricultural prices.

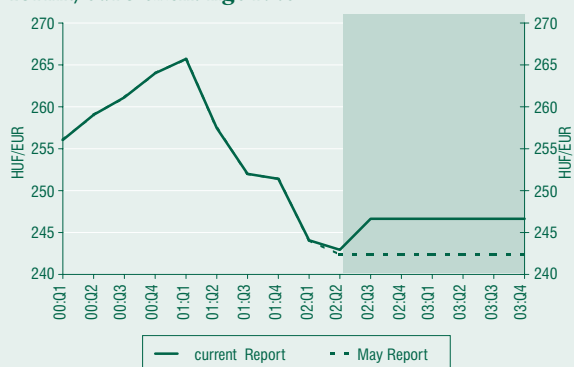
**Table I-5. Assumptions of the inflation forecast**

	2001 Actual	May 2002 projection		Current projection	
		2002	2003	2002	2003
Forint/euro exchange rate (forints)	256.6	242.3		246.6	
Dollar/euro exchange rate (cents)	89.6	88.4		99.2	
Price of Brent crude (USD/barrel)	24.4	25.5		25.8	
Imported inflation (%)*	1.1	1.1	0.5	0.4	0.5
Consumption growth (volume)**	5.3	6.1	4.4	9.8	7.1
Wage inflation in private sector	14.2	11.2	7.5	13.0	5.0

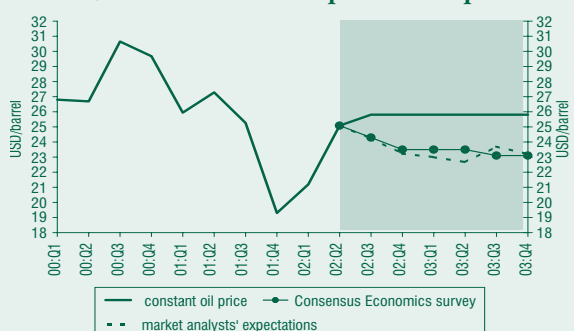
\* Average of annualised monthly growth rates, German tradables inflation.

\*\* Annual growth of household consumption expenditure

**Chart I-6. The May and current assumptions for the forint/euro exchange rate**



**Chart I-7. Assumed Brent oil price developments \***



\* Analyst expectations: average of data for Goldman Sachs, J.P. Morgan, Merrill Lynch, BNP-Dresdner, Lehman Brothers, Deutsche Bank. The Consensus Economics survey is based on a July 15 survey.

pressure of stronger household demand. For example, the July cancellation of the television set operation fee has reduced the CPI by 0.3 percentage points on its own, from the original projection for December 2002 of 5.4%. However, such beneficial regulatory measures affect the price level only on one-off occasions, thus failing to reflect genuine disinflation. This is confirmed in the sharp increase in the projection for core inflation from the level projected in the *May Report*, up by roughly one percentage point over the next nine months, and only expected to decline to 0.3 percentage point towards the end of the forecast period.

For the greatest part of 2003, household demand is likely to exert a pull on inflation, due to the rapid expansion of incomes seen this year. Hence, core inflation remains relatively high until mid-2003. Within the assumed regulatory framework, the index for regulated prices is approximately 6% in December 2003, failing to offset the inflationary pressure of household demand.

The inflation projection for end-2003 has increased by 0.9 percentage points compared with the *May Report*. This has been caused by equal contributions from four major factors, namely the higher private sector wage level in 2002 and rising household consumption, assumed regulatory changes, the evolution of the forint exchange rate as well as exogenous factors (such as agricultural product prices, world oil prices and the dollar/euro exchange rate).

## I. 2. 1 Assumptions of the central projection

The current *Report* is based on a forint weaker than in the *May Report*. Based on the approach of assuming monetary policy to remain unchanged, the average forint/euro exchange rate prevailing in the last month for which actual data are available, i.e. July, is assumed for the entire forecast horizon. This rate is 4.3 forints (1.8%) weaker than the value assumed in the *May Report*, causing higher inflation projection by 0.2 percentage points.

Imported inflationary pressures on domestic inflation have shifted in a downward direction relative to three months ago. Recent months have seen a drop in the price of German tradable goods, with oil prices also falling in forint terms, due to the weaker dollar exchange rate. The resulting downward pressure on the CPI in 2002 amounts to 0.2-0.3 percentage points.

The Bank projects similar oil prices as in *May*, drawing on a number of different sources of information. At the Monetary Council's proposal, guided by risk management considerations, the projection continues to be based on the higher assumption of market analysts' consensus oil price forecast and the constant oil price. Hence, the current projection for future oil prices continues to assume the constant price.

Viewed as transitory, the spring deflation in German tradables prices has not been fully incorporated into the projection. One indication of the transitory nature of this deflation is that tradables price inflation in the euro area seems to be more in a state of stagnation. Hence, cheaper tradable imports are mostly likely to have only a short-term effect on domestic disinflation.



High private sector wage increases in the labour market and certain government measures in 2002 are assumed to exert significant upward pressure on household incomes relative to the previous projection. The ensuing demand-pull inflation spills over to the greatest part of 2003, primarily in respect of market services, tradables and food prices. At the request of the Monetary Council, the current projection assumes restraint in gross wage growth in the private sector in the next year, as proclaimed in the context of the Government's medium-term strategy.

### I. 2. 2 Details of the central projection

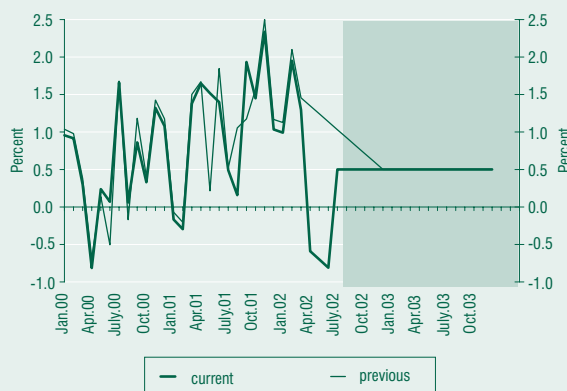
The exogenous factors will likely be characterised by downward pressure from imported inflation on domestic prices. Based on consultation with specialists from the Agricultural Economic Research and Information Institute (AKII), this year's projection is for a moderately rising agricultural inflation profile and some acceleration next year. Price and tax regulation moderates administered price increases in 2002, at the same time pushing up alcohol and tobacco prices. In contrast, 2003 will likely witness a reversal in this trend, according to the Bank's technical assumption. Analysis of the endogenous factors suggests that the rise in labour costs in 2002 will not cause significantly higher supply-side inflationary pressure than projected previously, and will exert downward pressure on inflation in 2003, according to the Monetary Council's assumption. This year's buoyant household spending will greatly hamper the disinflation process in 2003, primarily in respect of market services, but also in tradables and processed foodstuffs.

The Bank's projection for *tradables prices* is 0.5 and 0.8 percentage point higher for end-2002 and end-2003, respectively, than was assumed in the *May Report*. This implies that no deflationary developments are likely even at the end of the forecast period in respect of the overall group of tradable goods (although durables prices are forecast to fall). This implies that stronger consumer spending will likely boost demand for tradables, and consequently, non-durable goods prices will take longer to adjust to the lower costs. Disinflation is also hampered as the exchange rate of the forint has weakened since the time of the previous projection.

The projection for *unprocessed food prices* shows moderate rates of price increase this year, which will pick up sharply in 2003, relative to the forecast of the *May Report*. The unprocessed food price profile remains broadly unchanged, with the price level for cereals, vegetables and fruits assumed to remain largely the same as in the *May projection*. The difference arises from the base effect created by the difference between the prices seen so far in the year and the previous projection.

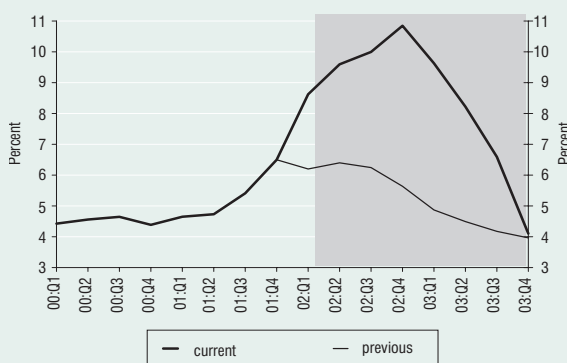
One crucial item in the category of unprocessed food is meat products, which experienced a sharp drop in consumer prices, down by as much as 10% in the period up to June, due probably to supply factors. The current projection for the purchase price of pork is different from the previous forecast inasmuch as the current projection also incorporates the upward pressure exerted by the export subsidies announced in late July for domestic pork prices. As the prices start from a much lower level than in the projection based on actual data for April, prices will likely increase considerably more rapidly over the com-

**Chart I-8. Assumptions for imported tradables prices in the May and current projection \***  
(Annualised quarter-on-quarter change, seasonally adjusted by NBH)

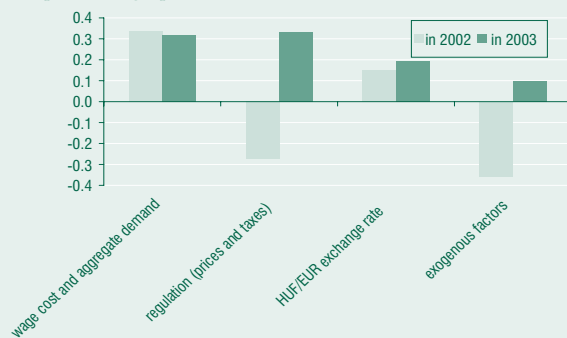


\*Tradables price inflation in Germany, COICOP item name: Non-energy industrial goods; Eurostat NewCronos code: igoodsxe.

**Chart I-9. Household consumption in the previous and the current projection**  
(year-on-year change, %, seasonally adjusted)



**Chart I-10. Decomposition of the difference between the current and the May projection**  
(In percentage points)



**Chart I-11. Projection for tradables price inflation**  
(Annualised quarter-on-quarter change, seasonally adjusted)

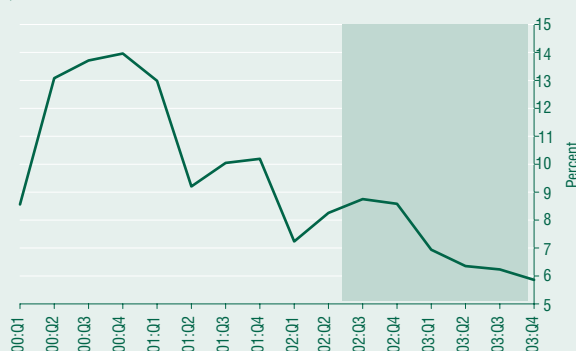


**Chart I-12. Projection for processed food price inflation**

(Quarter-on-quarter annualised changes, seasonally adjusted data)

**Chart I-13. Projection for market services inflation**

(Quarter-on-quarter annualised changes, seasonally adjusted data)



ing one and a half years, with pork prices gradually returning to around the average level of EU prices.

While European fruit and vegetable prices stopped increasing or even started falling as early as the beginning of the year, the price shock affecting the Hungarian domestic market only faded with a delay of several months. Due to the extreme volatility in the prices of products in this category, the Bank was cautious in its estimation, assuming the trend of price increase to be around expected inflation.

*Processed food* price inflation is higher relative to the May projection. Faster inflation in 2002 is partly due to the effect of second-quarter price increases. Late in the year, a probable rise in demand will also contribute to the difference between the current and previous projections for the inflation of processed food prices. The relative fall in labour costs in 2003 will exert disinflationary pressure, somewhat dampened by feed-through from faster unprocessed food price increases, with special regard to unprocessed meat and cereal prices, forecast to rise by double-digit figures.

Inflation in the prices of *market services* is projected to increase sharply, up on the previous projection by 1.1 percentage point in 2002 and 0.8 percentage point in 2003. This suggests that consumption, which has been expanding twice as fast as in the May projection in this year, significantly boosts demand for market services, accelerating services price inflation in 2002. Disinflation may pick up early in 2003, due to lower labour costs, but the process will likely be interrupted as a result of strong consumer spending up to the final quarter. The inflation differential also reflects demand-pull inflationary pressure, with the gap between inflation in market services and tradables widening temporarily and only returning below the current value in late 2003.

As stressed at the start of this Chapter, the projection for *the regulated price profile* for 2002 has changed markedly. One crucial change was that television set operation charges has been cancelled from mid-year, leading to a roughly 0.3 percentage point drop in the headline CPI.<sup>5</sup> Another major difference from the previous path for regulated prices is that piped gas is not forecast to rise this year. Together with the postponement of an increase in the price of subsidised pharmaceuticals, this will contribute another 0.3 percentage point to disinflation this year.

The Bank has neither specific estimates nor information of approved measures of regulation for next year. Thus we apply the simple technical rule explained in the *May Report* of assuming average price increase consistent with the inflation target next year. Whenever price increases are put off during this year, the Bank uses the technical rule of simply adding the rate of this year's postponed increase to the previous projection for next year's inflation. Hence, in the current projection based on the aforementioned technical assumption, the price

<sup>5</sup> For more on the Central Statistical Office's methodology, see [the information released](#) together with the CPI data on 11 July. In addition to the regulated operation charges, the set of television-related fees also comprise the price of HBO and cable televisions' basic packages. The Statistical Office intends to calculate an average price for the latter two components. The change will cause an approximately 30% shift in the price index of the group, but have no effect in 2003.

of piped gas increases by 16% in 2003. This raises the *May Report's* 3.8% projection for regulated price inflation at end-2003 to 6.0%.

*Vehicle fuel prices* are determined partly by world oil prices and the forint/euro and dollar/euro exchange rates and partly by excise duties. The current projection reflects the base effect of the spring drop in import costs over the one-year forecast horizon. Furthermore, there was also a change in the rate of excise duty rise on July 1, when the tax valorisation of diesel oil turned out to be smaller. The assumption for excise duty regulation also applies the aforementioned technical rule, i.e. when a particular tax rise is postponed in the course of the current year; the assumption is that it will be implemented in the following year. Hence, in addition to the previous net rise of 5 forints in 2003, next year's projected price also includes the excise duty increase on diesel oil postponed from this year.

Changes in the previous projection for *alcohol and tobacco* prices are also largely due to changes in excise duty regulation. This year's second rise in tobacco excise duties enters into effect in August. The Bank assumes that this rise has been brought forward from a later date of next January. The increase represents a 20% rise in the fixed tax measure, which corresponds to one percentage point in the percentage measure. This measure will likely cause tobacco prices to rise by about 10%, which is expected to feed through to retail prices gradually as stocks run out. Note, however, that the technical rule mentioned above also applies here. As a price measure brought forward in time, no more changes are assumed in the tobacco tax rule in next year's projection.

### **I. 2. 3 Uncertainty in the central projection**

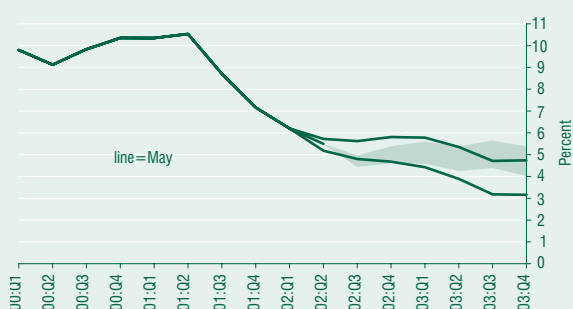
In the assessment of the Monetary Council, uncertainty surrounding the central projection is symmetrical at end-2002, while the balance of risks to inflation at end-2003 is on the upside. To determine the risks to inflation, the Council formed its judgement based on the expected trends of two key factors. These were the outcome of wage bargaining relating to next year and the evolution of regulated prices.

In the Monetary Council's view, the wage path assumed in the Government's medium-term programme is surrounded by an upside risk to inflation. In the Bank's estimate, each percentage point rise in 2003 private sector wages will raise end-2003 CPI by 0.24 percentage points.

As noted above, based on a Monetary Council decision, a technical rule is applied to calculating the price regulation path for 2003. The path is based on price increases that are consistent with the inflation target. In the Council's assessment the applied price regulation assumption also contains an upside risk to inflation.

The inflation projection fan chart is based on the above-noted risk factors and uncertainties. The central band, including the outcomes with the highest likelihood, has shifted markedly from that in the fan chart of the *May Report*. Compared with the previous picture for disinflation, it projects a lower inflation profile in 2002 Q3, followed by a rate remaining flat around 5%.

**Chart I-14. Central bands in the fan charts of the current and the previous projection\***  
(year-on-year change, %)



\*The bands represent the central probabilities of 30 per cent.

**Table I-6. Probability intervals of the fan chart**  
(year-on-year indices, %)

	90% low	60% low	30% low	Central projection (mode)	30% high	60% high	90% high
2002 Q3	3.6	4.1	4.4	4.7	5.0	5.3	5.8
2002 Q4	3.3	4.1	4.6	5.0	5.4	5.8	6.7
2003 Q1	3.1	4.0	4.5	5.1	5.6	6.3	7.4
2003 Q2	2.7	3.7	4.3	4.7	5.4	6.2	7.6
2003 Q3	2.9	3.9	4.4	4.8	5.6	6.6	8.3
2003 Q4	2.7	3.5	4.0	4.4	5.4	6.5	8.4

**Table I-7. Selected scenarios for CPI December 2003 simulation results**  
Deviation from central projection in percentage points

Factors	Description *	Deviation from central projection
Wage bargaining in the private sector	Average wage growth 1 percentage point higher	0.24
Regulated prices	Regulated prices rise 1 percentage point faster	0.22
Forint/euro exchange rate	forints weaker	0.28
Price of Brent oil	1 dollar/barrel increase in price	0.13
Imported inflation	Price level 0.5 percentage point higher	0.13
Pork	Price increase 1 percentage point higher	0.04
Fruit and vegetables	Price increase 1 percentage point higher	0.02
Cereals	1000 forint/ton increase in price	0.02

\* All shocks are assumed to appear once in January 2003.

The Bank staff have prepared a few simulations to demonstrate the possible effect on inflation of change in individual factors<sup>6</sup>. In the Monetary Council's view the projection contains no major uncertainty, apart from the aforementioned two risk factors. The exchange rate, imported inflation and agricultural prices represent a symmetrical risk involving relatively moderate uncertainty.

<sup>6</sup> Calculations are based on our models used for CPI forecasting, therefore similar to our models, are subject to uncertainty.

## II. Demand and output

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### II. 1 Demand

The forecast in the *May Report* was based on the assumption that Hungary's major trading partners had already recovered from the low point of business cycle. In contrast with the expectation, the upturn failed to start in 2002 Q1. Growth in Hungary's major trading partners picked up somewhat relative to the previous quarter. But the decline in imports which started in the previous year in Germany, a country crucial in terms of Hungary's outlook for exports, continued in the period under review.

Rising household consumption expenditure was the dominant factor for Hungarian economic growth in 2002 Q1. In addition to consumption demand, fixed investment also picked up as a result of investment activity in the general government sector. Exports grew at a much higher rate than explained by the indicators of external cyclical conditions. This high rate, which was reflected in imports as well, was related to a one-off factor.

According to the release of first-quarter data by the Hungarian Central Statistical Office (CSO), the fall in inventory investment and other non-specified use which started 2001 H2 continued in 2002 Q1. This, however, was not reinforced by developments in stock data in industry, suggesting that the first-quarter data probably contain a large margin of (negative) statistical error.

In comparison with the current forecast, the central projection in the *May Report* only took into account the expansionary effects on demand of fiscal measures decided up to the time of the *Report* which did not require further decision-making by the Government. In contrast with the forecast of a 1.5% increase as a percentage of GDP, the Bank expects the fiscal demand effect to rise by 3%, based on information obtained and measures taken by the new Government since then. At the request of the Monetary Council the effect of fiscal policy of 2003 is conditional on the announced medium term fiscal programme.

As a result of all these, the Bank has made a major revision to its real economy forecast for 2002 and 2003 relative to the previous *Report*. Household real income is now forecast to rise fast in each year, resulting mainly from the Government's policy measures; however, in 2002 higher-than-expected private sector wage growth will likely have a role in the increase as well. Conditional on the medium term Government programme we assumed a modest private sector wage growth of 5% in 2003. This low private sector wage growth can occur if the expected widening in the gap between gross and net wages in favour of the latter is taken into account at the wage rounds at the end of this year, when recommended wages for 2003 are set.

**Table II-1 Growth in GDP and its components**  
(year-on-year change, %)

	Actual		Projection	
	2000	2001	2002	2003
Household consumption	4.1	4.0	7.8 - <b>8.2</b> - 8.6	5.3 - <b>6.0</b> - 6.7
Household final consumption expenditure	4.4	5.1	9.4 - <b>9.8</b> - 10.2	6.3 - <b>7.1</b> - 7.9
Social transfers in kind	2.8	(-0.3)	1.5	0.8
Public consumption	1.2	0.4	2.0	1.5
Gross fixed capital formation	7.7	3.1	5.6 - <b>7.0</b> - 8.4	3.7 - <b>6.0</b> - 8.3
'Final domestic sales'*	4.7	3.4	6.7 - <b>7.3</b> - 7.9	4.6 - <b>5.6</b> - 6.6
Inventory investment and other non-specified use	12.6	(-19.4)	(-10)(- <b>18</b> ) (-26)	(-10.0)- <b>0.0</b> - (+10.0)
Domestic absorption	5.1	2.1	5.5 - <b>6.2</b> -6.9	4.2- <b>5.4</b> -6.6
Exports	21.8	9.1	3.5 - <b>5.0</b> -6.5	4.8- <b>7.8</b> -10.8
Imports	21.1	6.3	7.2 - <b>8.6</b> -10	5.7- <b>8.7</b> -11.7
<b>GDP</b>	<b>5.2</b>	<b>3.8</b>	3.5 - <b>3.8</b> - 4.1	4.2- <b>4.7</b> -5.2

\* Final domestic sales = household consumption plus public consumption plus fixed capital formation.

**Chart II-1. GDP growth**

(Annualised quarter-on-quarter change, seasonally adjusted)



The forecast of GDP growth has also been based on projections for cyclical developments on the production side as well as for certain items on the uses side. The forecast of developments on the uses side would yield higher growth relative to the production side. The value contained in the central projection is based on the forecast for the production side showing lower economic growth, resulting from the Bank's cautious approach. The discord between the two approaches has been resolved in the 'Inventory investment and other non-specified use' row. From a cyclical point of view, however, the Bank would not expect a further depletion of stocks. Therefore, it should be noted that the very low projection for inventories and non-specified use in the Bank's forecast of GDP is hard to reconcile with expected developments in the business cycle, rather it reflects the difference between the dynamics of the production and uses sides.

A comparison of indices calculated from the annualised quarterly percentage changes, describing the underlying cyclical developments, is an illustration of the Bank's forecast. The falling rate of growth in 2002 H1 will be replaced by a pick-up in economic growth in H2.

## II. 1. 1 External demand

Based on data released since the *May Report*, the external business cycle, and within it that of the EU which is more influential in Hungary's case, appears to have passed its trough. However, the upturn is progressing slowly and is surrounded by uncertainties. Whereas first-quarter GDP data of Hungary's major trading partners showed clear signs of a recovery in 2002 Q1, their industrial output data for Q2 suggest that the upturn has faltered. It seems that external demand for Hungarian goods and services has not yet passed its bottom. Consequently, the recovery has still been waiting to start, in contrast with the Bank's earlier expectation.

Adding to uncertainty, foreign business confidence indicators, the best gauges of the likely twists in external demand over the short term, had previously suggested the recovery to be faster<sup>7</sup>. But second-quarter survey data suggest a stagnation

<sup>7</sup> The monthly business sentiment indices exhibited a sharp improvement up to May, figures for June and July, however, refer to a renewed fall in business confidence throughout major European economies, leaving the assessment of the situation uncertain.

in domestic absorption and a decline in imports in Germany, the country having the largest share of demand for Hungarian exports. In view of these new pieces of information, the Bank has lowered the path of Hungary's external demand relative to that published in the previous *Report*, and only expects it to register positive growth rates from Q3.

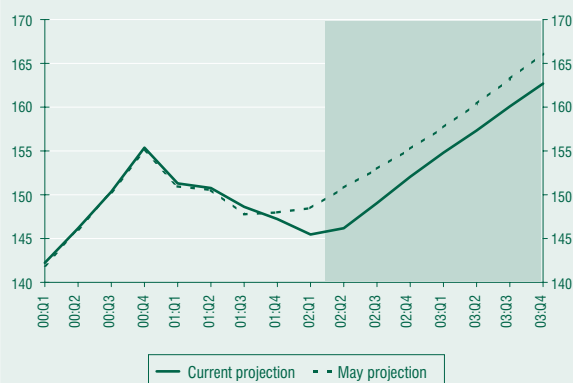
The uncertainties surrounding the possible turning point in external demand were discussed in earlier issues of the *Report*; and it is not the first time that the Bank has revised its expectation of the likely start of recovery. Updates to their forecasts by other research institutes also appear to reflect a further delay in the upturn – they have clearly lowered the paths of import-based external demand relative to their earlier forecasts. What has not changed, however, is that they maintain their expectation of a clear recovery in external demand from 2002 H2. This is consistent with the Bank's current picture of future events.

External demand is expected to decline by 0.9% on average in 2002, due to the delay in the timing of recovery relative to the earlier projection. However, there are less uncertainties at the longer horizon, so the catch-up to the path of external demand determined earlier by long-term economic factors will likely start in 2003. Due to this, the Bank expects a 7.1% growth next year, revising up the forecast published in the *May Report*.

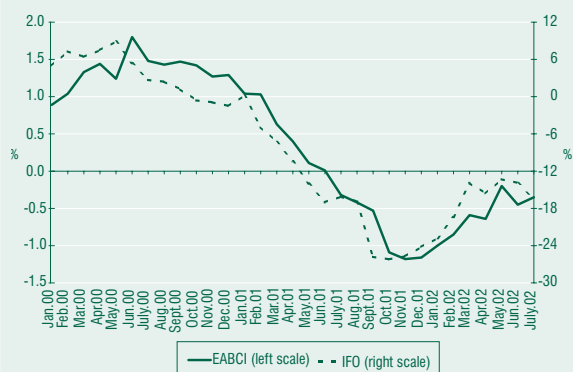
## II. 1. 2 Fiscal stance

In the current estimate, the expansionary effect of general government on demand may amount to 3% of GDP this year, in view of the information available and government measures taken since the *May Report*. The 1.3% figure estimated in May only included the effect on demand of the measures approved before that date which needed no further decision to be implemented. Conditional on the fiscal target for 2003 set in the Government's announced medium term programme, the general government is assumed to contract aggregate demand by roughly 2.4% of GDP next year.

**Chart II-2. Current and past projections for external demand**  
1995 = 100



**Chart II-3 Business confidence indices of the euro zone (EABCI) and the German IFO Institute**



**Table II.2. Expansionary effect of general government on demand, as a percentage of GDP\***

	1999	2000	2001	2002	2003 ****
	Actual data		Preliminary estimate	Projection	Assumption
1. Change in SNA operational deficit** (2+3)	-1.0%	-0.9%	1.7%	3.2%	-2.5%
2. Indirect demand impact (change in real interest expenditures)	-0.4%	-0.3%	-0.3%	0.1%	-0.1%
<b>3. Direct impact (4+5) (Change in SNA primary balance)</b>	<b>-0.6%</b>	<b>-0.6%</b>	<b>2.0%</b>	<b>3.0%</b>	<b>-2.4%</b>
4. Change in GFS primary balance	-1.3%	1.2%	0.5%	2.5%	N/A
5. Change in other factors (SNA corrections)***	0.7%	-1.8%	1.5%	0.5%	N/A

\* The demand effect is calculated on the basis of the SNA accounts. The deficit derived using the ESA methodology is not estimated here. <sup>8</sup> The (+) sign denotes an expansion of demand, and the (-) sign denotes contraction. Subtotals do not always add up, due to rounding.

\*\* Based on the assumption that neither inflation compensation incorporated into interest rates nor its yearly volatility affect demand. Accordingly, real interest rates are smoothed by moving averages.

\*\*\* Other factors represent those channels of demand tightening and expanding that are not reflected in the official primary balance. These factors include the effects on demand of the Hungarian Development Bank (MFB), the State Privatisation Agency (ÁPV), the National Motorway Company (NA), and deposit accounts.

\*\*\*\* Conditional forecast derived from the Government's medium-term fiscal targets. Our assumption refers to the demand effect as a whole, rather than its components.

<sup>8</sup>For an explanation, see Chapter 17, *Handbook on the Use of Hungarian Economic Data*, (forthcoming).

The key factor behind the upsurge in the demand effect estimated for this year is that the measures revealed since the May projection may exert expansionary pressure on demand of 1.30%.<sup>9</sup> Another upward pressure is the fact that the actual preliminary data for the base period turned out to be 0.15% lower. Accurate figures for the effect of fiscal developments, including local authorities' excess spending on investment projects and goods, as well as the effect of quasi-fiscal expenditures represent another demand effect of 0.35%. Apart from the effect of the 100-day programme, macroeconomic developments may earn revenues 0.10% higher than in the previous estimate, thus reducing the expansion of demand by the same degree.

At the Monetary Council's request, the assumption for 2003 is that the fiscal targets set in the Government's medium-term programme will be met; in other words, the general government deficit calculated using the ESA methodology drops to 4.5% of GDP next year. If the interest expenditure falls by 0.3% of GDP, the announced target for contraction expressed as a proportion of GDP amounts to 2.2% in 2003, defined as the change of the primary balance<sup>10</sup>. A further assumption is that the announced rise in the percentage limit of the pension fund contributions that can be transferred into private funds from 6% to 8% will take place in 2003. This implies that adjusting the improvement in the primary balance as a proportion of GDP for the roughly 0.2% effect of the revenue missed as a result, demand contracts by a total of 2.4% of GDP<sup>11</sup>.

A component of the fiscal stance deserving special attention is the *gross wage bill* of general government, which is assumed to increase by 31.0%, much faster than the central projection in May (19.7%). The current projection also includes the effect of the 50% wage rise for public servants effective from this September. Wage bill growth in 2003 may be as high as 16.9%, despite the fact that we assume no further discretionary wage increases. The reason is that the effect of the 50% wage rise will appear for the full year in 2003, and the rise in civil servants' salaries is also statutorily determined. Based on the actual data available currently, we expect the number of employed people in the public sector to fall by only 0.1% in 2002. The fall in employment in 2003 is forecast at 1% in 2003, higher than projected in May.

<sup>9</sup> Of this, the net effect of the 100-day programme of the new government, together with its indirect effect on the rise in pensions based on the Swiss indexation, may exceed 1% of GDP. Other factors include transfers to the agricultural sector and the use of the increased general reserves to cover further expenditures. At the same time, based partly on some specific statements and partly on the Bank's own estimates, there is an expectation of some minor degree of savings and postponement in respect of a few expenditure items.

<sup>10</sup> The inherent difficulty is that to be able to calculate the demand effect, we should know not only the target for 2003, but the value of the ESA deficit in the base period (2002) as well. However, the Bank derives its estimates for each year using GFS data and its own SNA estimates, and thus cannot calculate the ESA deficit (see Chapter 17, *Handbook on the Use of Hungarian economic data*, forthcoming). Based on the technical assumption that the SNA and ESA deficits are changing at a similar rate, the ESA deficit will fall by 2.5% next year, having increased by roughly 3% in 2002. From this, the demand effect is derived by the usual method, which uses the change in the primary balance rather than that in the deficit. Then the result is adjusted for the effect of the pension reform.

<sup>11</sup> The pension reform meant that government enabled a certain portion of the pension contributions to be transferred to the fully funded second pillar. The revenue thus lost exerts upward pressure on the deficit, but it is assumed not to have any effect on household demand.



In 2002, the increase in *transfer payments to households* will significantly exceed the previous projection, due to an amendment to the budget. In addition to a one-time grant to old-age pensioners and a one-month extra payment of family allowance, regular family allowance and scholarship sums will be also raised. These increases combined will push up nominal growth from 13.2% to 17.3%. In addition to the full-year effects appearing in 2003, there will likely be a number of measures involving pensioners, which may raise nominal transfer growth to 11%.

Due to substantial amendments to the system of direct taxation, the Bank's calculations also consider the *rising gap between gross and net wages* as one of the factors governing the evolution of household income. From 2002 Q4 on, taxes on minimum wages will be written off, thus net wages can increase by roughly 1.5 percentage points faster than gross wages for the year as a whole. The full-year effect of the tax write-off in 2003 together with the less pronounced effect of the measures to be taken next year is assumed to widen the gap between net and gross wages by 3.5 percentage points.

We estimate that the volume of *public investment*, including motorway construction financed by off-budget, rose by 13.4% in 2001, one percentage point slower than indicated by the preliminary actual data. The projection for 2002 has been raised to 20-25%, up 7% on the forecast of the *May Report*. This is primarily due to first-quarter actual figures and, to a lesser extent, a downward revision of the projection for the investment price index. The timing of cash flow based investment expenditure has shifted within the year, with a pick-up early in the year and a slowdown late in the year.<sup>12</sup> Actual data reported by the Statistical Office suggest that these expenditures will appear in investment statistics with a shorter time lag than before. Three-monthly actual data and the prospective developments called for a major revision to be made to this year's forecast. However, with the higher base, it is unlikely that there will be considerable volume growth for 2003 as a whole. First, the growth rate of expenditures will gradually slow down this year. Second, lacking information about next year, the Bank has no projection for investment expenditures, but in view of the deficit target, investment spending will maintain its current level at best.

### II. 1. 3 Household consumption, savings and fixed investment

In the Bank's current forecast for the year as a whole, consumption expenditure rises by 9.8%, coupled with an increase in the gross savings rate. Consumption expenditure growth is 7.1% in 2003, which - at the request of the Monetary Council - is based on the assumption of a more modest wage growth derived from the medium-term economic program of the Government. The faster consumption expenditure compare to real net income results fall in the gross savings rate.

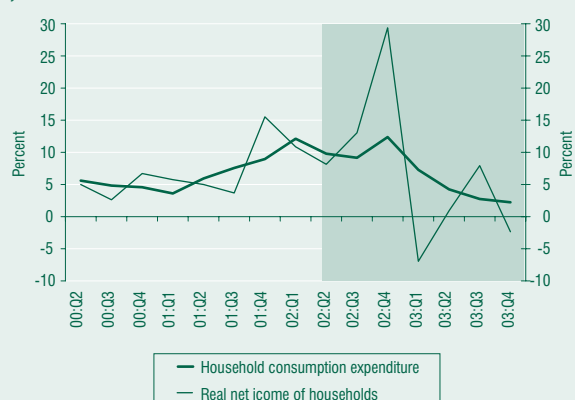
The current forecast of consumption expenditure is higher than that in the *May Report* (6.1% for 2002 and 4.4% for 2003).

<sup>12</sup> Direct spending by general government in Q1, stated with the GFS deficit, rose by 45% at current prices, but this rate of growth is expected to slow down steadily over the next quarters.

**Table II-3. Household behaviour**  
(year-on-year change, %)

	Household real net income	Consumption expenditure	Investment spending
2002	11.3	9.8	20-25
2003	6.3	7.1	10-15

**Chart II-4. Household income and consumption expenditure**  
(Annualised quarter-on-quarter change, seasonally adjusted)



**Table II-4 Savings rates<sup>14</sup>**

	Actual			Estimate	Forecast	
	1998	1999	2000	2001	2002	2003
Gross savings rate	15.8	12.6	12.1	12.9	14.1	13.7
Financial savings rate	10.9	7.9	7.1	7.0	8.0	7.4
Operational financial savings rate	6.7	4.4	3.7	3.9	5.2	4.4
Investment ratio	5.4	5.2	5.4	5.7	6.6	6.8

This can be traced to two factors. Firstly, the most important factor is that the effects of fiscal policy measures on consumption have now been taken into account, in contrast with the previous *Report*. Second, data for 2002 Q1 have been released which reveal an already very strong rise in household consumption expenditure.

According to our indicators consumption expenditure in the second and third quarter in 2002 remain strong. The household confidence index, often used in the Bank's short-term forecasts, rose to its highest level to date in 2002 Q2. In addition, new passenger car sales continued to rise robustly in the period. These point at a further dynamic rise in consumption expenditure. Although the retail sales turnover was strong, but the sales increased more modest pace in April and May which imply the possibility of lower consumption growth compare to the forecast in 2002.

The forecast of consumption in 2003 is conditional on the announced medium term economic programme of the Government. Thus it takes into account the Government's plans for changes to direct taxes, in addition to the increases public sector wage bill and transfer payments. Also, for the Monetary Council request the forecast is based on the assumption of a more modest private sector gross wages growth derived from the medium-term economic program of the Government. According to this assumption a lower private sector gross wage growth will be expected in 2003, due to a falling tax burden on personal income.

Due to the bias in year-on-year indices the analysis on income and consumption expenditure is based on quarter-on-quarter indices. Our chart displays the consumption has a less volatile or "smoother" growth path relative to income. This property comes from consumption smoothing assumption, namely the considerably higher additional income in 2002 compare to 2001 is not expected to spend entirely on current consumption, but the part of it is saved or invested to housing by households. This extra saving can be the financial source of consumption expenditure in 2003 when consumption growth is expected to exceed the real net income growth.

Consumption expenditure is unlikely to reflect the massive growth in household income in full, due to the expected smoother path of consumption. Accordingly, the gross savings rate is now forecast to rise in 2002. The major uncertainty surrounding the projection is the distribution of financial savings and household fixed investment, the two components with the highest weights in the gross savings rate. Households' financial savings have not yet provided evidence of an increase in 2002 H1. But there will likely be a robust rise in wages and social transfers in the second half of the year. In the Bank's view, this may lead to a rise in the financial savings rate.<sup>13</sup>

Home-building is a high-weight component of households' investment spending. The number of completions in 2002 H1

<sup>13</sup> Technically, the transfer of large amounts of take-home pay to personal bank accounts inevitably raises the savings rate over the short term.

<sup>14</sup> The *gross savings rate* equals financial savings plus households' investment spending minus the ratio of capital transfers to adjusted total income. The *financial savings rate* is defined as the ratio of financial savings to adjusted total income. The *operational savings rate* eliminates compensation for inflation from the financial savings rate. The *investment ratio* equals the ratio of household investment spending, mostly on dwelling and garage construction, to adjusted total income. *Adjusted total disposable income* includes transfers in kind and savings in pension funds, in addition to total income.

and the rise in outstanding home-building loans both suggest a further increase in investment spending and in the investment ratio as well.

The uncertainty of the current forecast is in the lack of historical observations for household consumption growth of such a massive volume. High incomes, and the resulting increase in consumption, may induce additional inflation, depending on movements in supply conditions. In the Bank's view, this effect may be underestimated by the models. This, in turn, yields a risk which implies a more modest real consumption growth.

### II. 1. 4 Corporate investment

Corporate fixed investment is forecast to decline by 1.5-4.5% in 2002 and increase by 3.5-7.5% in 2003, in accordance with the surprisingly low actual figures for 2002 Q1 and a slower-than-expected recovery in external demand. By contrast, for total investment the projection in both 2002 and 2003 is higher than previously assumed, it is around 7% in 2002 and 6% in 2003. The upward revision to the May projection is primarily due to higher-than-expected expansion in state projects, in addition to the assumption of stronger housing-related investment, consistent with increased household incomes.

There is considerable uncertainty surrounding the assessment of actual data on corporate investment.<sup>15</sup> The rate of corporate investment growth in 2001 Q4 implied that the investment slump had reached its lowest level. This assessment was supported by evidence of improving business prospects and expectations of higher capacity utilisation in the sector (see previous *Report*). Hence, the May projection was for a continuously rising corporate investment profile.

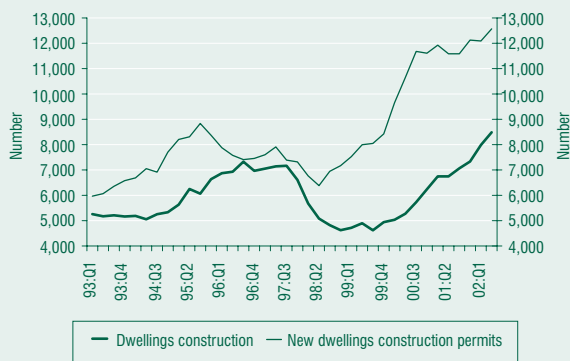
Contrary to this expectation, the level of corporate investment fell sharply in 2002 Q1, involving a sharper-than-average fall in manufacturing investment. This new information has also revised the judgement of the data for 2001 Q4, and it is no longer clear when investment bottomed out.

Despite the decline in investment by firms, whole economy investment grew faster in 2002 Q1 than previously. This was primarily due to a 38% increase in state projects, including a 28% rise in investment, excluding motorway construction. Households continued to expand their investments by over 10%, reflecting an unbroken boom in the housing market.

Corporate fixed investment is assumed to increase more slowly than projected previously. The downward revision of the growth rate reflects the Bank's modest expectations of external demand, in addition to the actual data for Q1. Moreover, accurately assessing the state of the Hungarian business cycle has become significantly more difficult than it was three months ago (see section on Output). In contrast, there is also a growing evidence of a prospective pickup in corporate in-

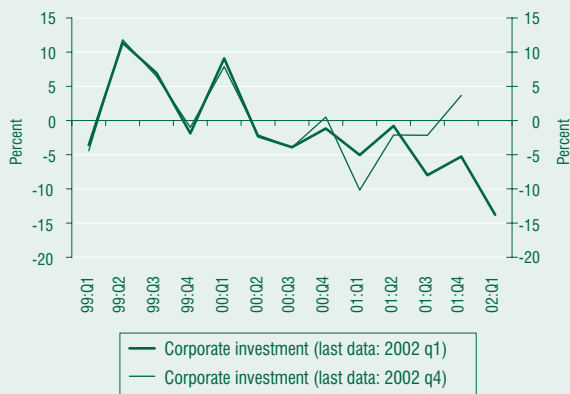
<sup>15</sup> The value for *corporate* fixed investment has been estimated by the Bank. The Central Statistical Office only reports full-year investment data for the corporate sector as a whole. In the Bank's methodology, the category of fixed investment does not include investment projects linked to motorway construction, treating these as state projects, in contrast with the CSO's treatment.

**Chart II-5. Number of building permits and completions**



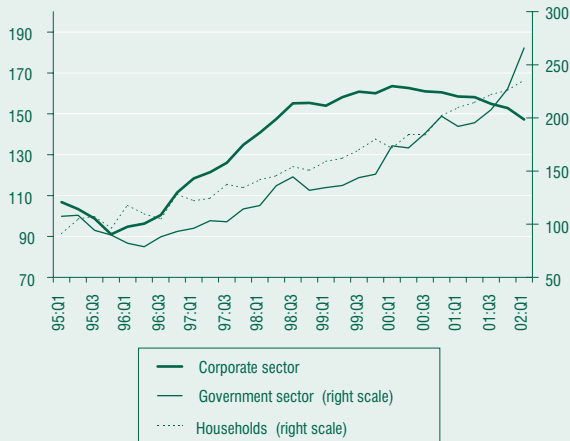
**Chart II-6. Revision of corporate fixed investment data**

(Annualised quarter-on-quarter change, seasonally adjusted)

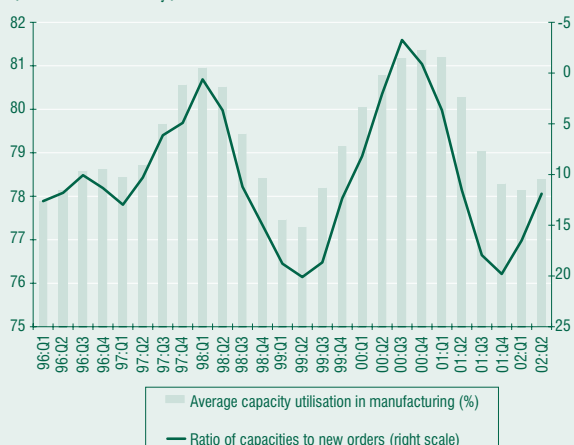


**Chart II-7. Corporate, state and household investment**

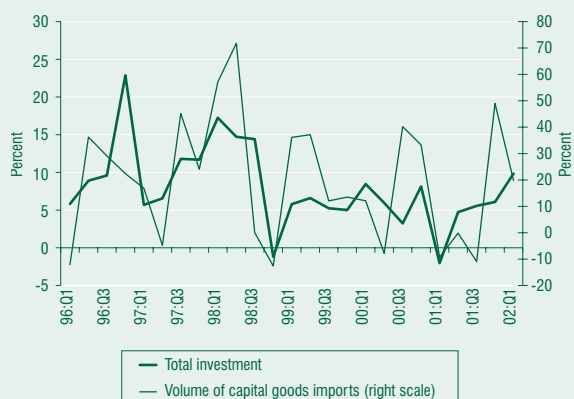
(1995 = 100)



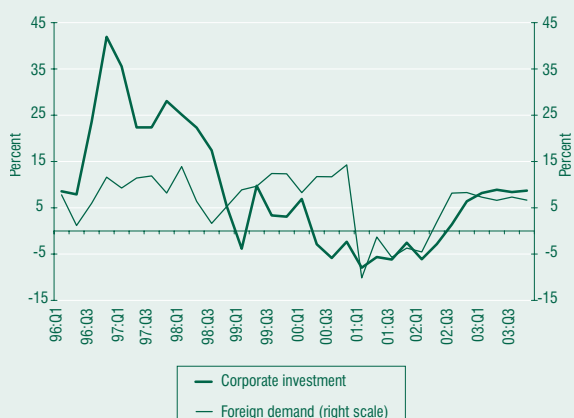
**Chart II-8. Current and expected capacity utilisation in manufacturing**  
(KOPINT survey)



**Chart II-9. Corporate fixed investment and capital goods imports**  
(Annualised quarter-on-quarter change, seasonally adjusted)



**Chart II-10. Forecasts of corporate fixed investment and external demand**  
(Annualised quarter-on-quarter change, seasonally adjusted)



vestment. First, investment imports continued to gain momentum during Q2. It is unclear, however, what share of this import growth is accounted for by the non-corporate sector. Second, data from a Kopint-Datorg survey on capacity utilisation suggest that for the first time since late 2000, capacity utilisation began to increase in Q2. The upward trend is also reinforced by expectations of rising capacity utilisation. Nevertheless, it is difficult to judge the utilisation level that is likely to induce firms to start expanding capacities. All in all, corporate investment is forecast to shrink by roughly 1.5-4.5% in 2002, and to turn up at a robust rate between 3.5-7.5% in 2003, subject to a recovery in external activity.

The Bank's previous projection for total investment has been revised upwards. In contrast to lower growth in the corporate sector, investment is projected to increase markedly in the public and household sectors. We believe that over the short term, it will be possible to maintain the strong first-quarter growth in both sectors. This assumption is supported by the robust pace of capital goods imports in Q1 and rapid growth in construction output. Over the longer term, investment expenditure in respect of public-sector projects is assumed to be consistent with budgetary guidelines, but the investment projection for 2003 does not yet reflect a drastic decline, since there is a lag between the provision of funds and the actual completion of the projects. Hence, public sector investment is projected to grow by 20-25% in 2002 and around 0% in 2003 (see section on General Government). Household investment is expected to expand in line with the evolution of household income, producing volume indices of 20-25% in 2002 and 10-15% in 2003 (see section on Household Consumption).

Based on the above assumptions, total investment is projected to increase by 7.0% in 2002 and 6.0% in 2003.

## II. 1. 5 Inventory investment

Assessing firms' inventory investment efforts may be of the greatest help in forecasting business activity. This is because the fastest way for firms to respond to changes in output and sales prospects is by altering the level of stocks. Hence, a shift in the level of inventories can serve as a leading indicator of changes in the cyclical position.<sup>16</sup> It has been frequently pointed out in previous *Reports* that a cyclical upswing is expected to encourage the replenishment of currently low inventory levels, leading to an increase in stocks (with special regard to input stocks). However, first-quarter GDP data suggest that stocks were cut significantly during the period. Nevertheless, in addition to GDP statistics, there are two further statistics available for studying inventories.<sup>17</sup>

<sup>16</sup> The inventories section of the February *Report's* Special Topics assesses the correlation between inventories and the business cycle. Another useful article on the subject has been published in the ECB Monthly Bulletin, giving an analysis of business cycles within the EU in the 1990s. One of the conclusions of the study is that change in stocks functions as a good leading indicator of the state of the business cycle within the EU, as it moves in parallel, preceding it by a three-month period. In a long-term view the Hungarian economy is also characterised by pro-cyclicality of inventories.

<sup>17</sup> On the difference between inventory statistics and the related methodological difficulties, refer to Chapter 9 in the *Handbook on the Use of Hungarian Economic Data* (forthcoming) and the Special Topics section in the February *Report*.

Within the inventory statistics compiled by the Central Statistical Office, whole economy inventories are classified into three main categories, namely manufacturing input stocks (40%), manufacturing output stocks (30%) and commercial input stocks (20%). It seems worthwhile to start by looking at the ratios of these components to output.

The ratios of both manufacturing input stocks and stocks of finished goods to output have followed a similar course recently. Interestingly enough, there is no evidence of any intentional accumulation of inventories, neither in respect of input nor output stocks prevalent in manufacturing at the time of the Russian crisis. At the same time, there has been a conspicuous flattening in the past few years' downward trend of the inventories to output ratio (associated with better stock-building efficiency), with even an upturn in the inventory ratios. The rise in the ratio of finished goods stocks to output seen since late 2000 signals prolonged sales difficulties. On the other hand, the first-quarter upsurge in input stocks may be associated with a better outlook for production. The ratio of trade input stocks to retail turnover moved in an opposite direction to that of manufacturing inventories. The long-term trend was upward in respect of trade inventories, but when retail trade picked up from late 2000, the ratio started to decrease. On the whole, the Statistical Office's inventory statistics reveal an upturn in whole-economy inventories in 2002 Q1, confirming the Bank's perception of inventory growth.

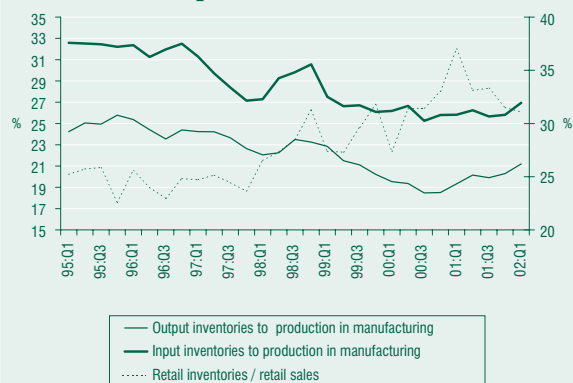
An analysis of the composition of industrial output stocks<sup>18</sup> provides further information on the state of the business cycle. When activity began to slow in late 2000, stocks of investment goods were the first to react, beginning to fall off as early as the start of 2001. By contrast, stocks of intermediary goods piled up due to slower production and only started to fall in the second half of 2001. The increase in manufacturing output stocks over this period was the result of rising food inventories. By contrast, the contribution of foodstuffs to inventory growth during the first six months of this year lost momentum, simultaneously with rising inventories in respect of investment and intermediary goods. This type of manufacturing output stock growth also indicates a cyclical upturn.

## II. 1. 6 External trade

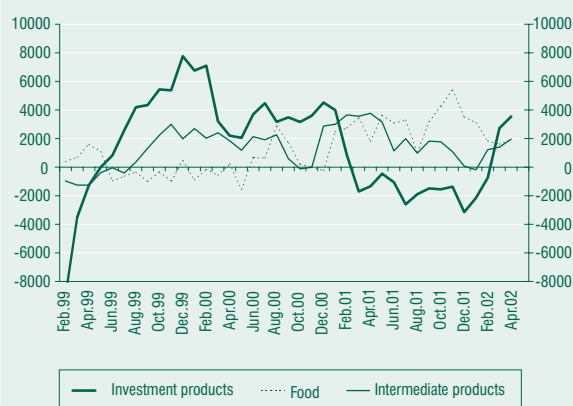
Hungary's GDP-based exports of goods and services are expected to grow by around 5% in 2002 and by 7.8% in 2003, somewhat below the forecasts published in the *May Report*. This is explained mainly by the expected more subdued growth in external demand. In contrast, imports have risen in line with the Bank's earlier forecast - inward trade will likely grow by 8.6% in 2002 and by 8.7% in 2003, due to the revision to a number of components of domestic absorption relative to the previous forecast.

Following the cyclical downturn in the previous year, exports and imports both rose unexpectedly sharply in 2002 Q1. This cannot not be explained by the continued fall in external

**Chart II-11. Manufacturing and trade inventory ratios at current prices**



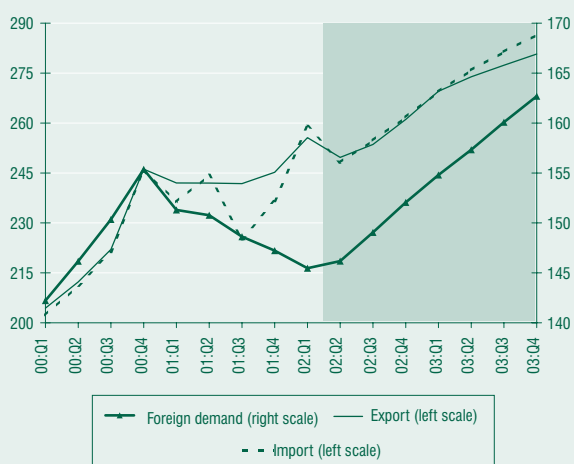
**Chart II-12. Changes in the components of manufacturing output stocks**  
(At current prices, million forints)



<sup>18</sup> The composition of the output stocks is estimated using industrial statistics reported by the Statistical Office. Production of final use less sales figures at current prices is taken as an indicator of change in finished goods stocks.

**Chart II-13 Forecasts of external demand, exports and imports**

1995 = 100



demand. Rather the salient growth rate was driven by the upturn in performance of a firm registering high-volume exports and imports in the period under review. So the paths of domestic exports and imports showed a one-off shift upwards, despite the prolonged external cyclical downturn. But second-quarter customs statistics suggest that the growth rates of Hungarian foreign trade are adjusting to the external demand path, with a genuine upturn being expected only in 2002 H2.

In 2002 H2, Hungarian goods exports are expected to reflect strongly the effects of last year's real exchange rate appreciation. Consequently, the Bank's forecast of export growth is now a little lower, even despite the high growth rate recorded in Q1. In 2003, the full-year effect of 2002's real appreciation will be reflected in developments in exports, in addition to the pick-up in external demand. However, a slightly more rapid annual increase in exports is expected on the low 2002 base relative to the forecast in the *May Report*.

Imports of goods are likely to grow rapidly in 2002, driven by the high growth rate of domestic absorption. Although this expected growth in imports may seem to be less solidly based from the perspective of output, the indicators of inventories most closely linked to cyclical developments suggest growing business activity, so imports may grow more robustly. The strong upturn in the external business cycle will likely keep imports on a high growth path in 2003, despite the expected moderation of domestic absorption. On the whole, although the pick-up in the business cycle is still suffering a delay, the contribution of net exports to economic growth are likely to be negative in 2002, in contrast with earlier years. This is expected to continue, although at a slowing pace, supported by a pick-up in external demand in 2003.

Considering services, the prolonged weakness of external demand is affecting the revenue side of tourism the most – in contrast with the earlier forecast, the Bank currently does not expect revenue to grow in 2002. But in 2003 the pick-up may be even stronger relative to the forecast in the *May Report*. However, expenditure, which tend to be closely aligned with developments in household income, is expected to grow strongly in 2002, followed by a more modest increase in 2003. Growth in imports of other services is expected to be more robust than that in exports in 2002, similarly to the expected pattern of goods trade, although the gap between the growth rates will likely narrow, due to the stronger increase in exports.

## II. 1. 7 External balance

Hungary's current account deficit is now forecast to be EUR 3 billion in 2002 and EUR 3.1 billion in 2003, amounting to 4.4% and 4.2% of GDP, higher than estimated in the *May Report*.

The 2.5 per cent rise relative to the previous year in the external financing requirement in 2002 as a proportion of GDP, is due to the fact that fiscal expansion has exerted upward pressure on the general government financing requirement. Household disposable income is rising but consumption expenditure and investment spending increase even faster, reducing household financing capacity. Firms' financing requirement will be smaller this year despite a drop in the sector's disposable income, due to real appreciation and sluggish labour

market adjustment, as there will be even more pronounced restraint on investment spending.

The year 2003 is not likely to witness another rise in the external financing requirement. This is because the general government financing requirement falls by 2,5% of GDP, in accordance with the path designated by the medium-term fiscal programme. The large-scale contraction of fiscal demand will not lead to a major drop in the external financing requirement, because the private sector's net position is expected to deteriorate. The reduction of the general government deficit will affect corporate sector incomes, as the budget will maintain its expansionary stance vis-à-vis the household sector in 2003, due to the full effect of the decisions passed earlier. Households' net saving position falls slightly as a proportion of GDP, explained by stronger investment spending. Consistent with the business cycle, firms will step up investment already this year, which is expected to exert upward pressure on their financing requirement.

**Table II-5. Current account deficit and the financing capacity of sectors**  
(As a percentage of GDP)

	2000	2001	2002	2003
	Estimates		Forecasts	
I. General government*	(-3.8)	(-5.0)	(-7.7)	(-5.2)
II. Private sector (1 + 2)	1.6	3.3	3.7	1.4
1. Households	5.1	5.1	4.6	4.2
2. Corporate sector**	(-3.5)	(-1.7)	(-0.9)	(-2.8)
<b>External financing requirement (I. + II.)***</b>	<b>(-2.2)</b>	<b>(-1.5)</b>	<b>(-4.0)</b>	<b>(-3.8)</b>
<b>Current account balance</b>	<b>(-2.8)</b>	<b>(-2.1)</b>	(-4.0)-(4.4)-(-4.8)	(-3.6)-(-4.2)-(-4.8)
<b>- in EUR billion:</b>	<b>(-1.4)</b>	<b>(-1.2)</b>	(-2.7)-(-3.0)-(-3.3)	(-2.7)-(-3.1)-(-3.5)

\* A special measure describing general government's net savings position, different from general government balance (e.g. the ESA deficit). It is calculated from the financing side, differently from the SNA deficit.

\*\* Financial and non-financial corporations combined. Government spending on motorway construction is not included.

\*\*\* Cash-flow basis approach. The external financing requirement also includes both the current account and capital account balances.

## II. 2 Output

The Bank has revised down its forecast of manufacturing value added relative to the earlier assumption. Accordingly, growth in value added is expected to be between 0-1% in 2002 and 5,5-8,5% in 2003. Two factors has prompted the revision to the earlier forecast. The first is the slower-than-expected rise in external demand. The second, reinforced by actual data for Q1, is that growth will likely be lower than forecast earlier. However, gross output in manufacturing rose above expectations in the first five months of the year, in which factors independent of the business cycle may probably have played a role.

Assessing the current phase of the business cycle in manufacturing now is especially difficult. The fast pick-up in gross manufacturing output in the early months of the year cannot be judged as a clear evidence of recovery. First, manufacturing has not been progressing along a straight line, rather it has been volatile – following the rise in the first three months, it stagnated in April-May. Second, there are no observable signs in the background of an improvement in the external business cycle, which makes the lasting recovery uncertain. The expansion of output has been concentrated in a fairly narrow range

of sectors, mostly in a handful of companies in engineering and the food industry.

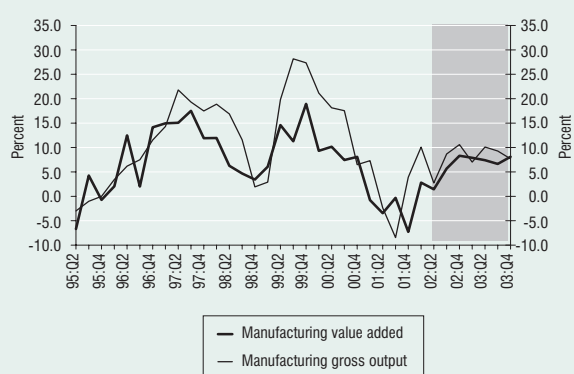
The results of business surveys conducted in 2002 Q1 do not suggest a favourable turn over the short term either. Although the survey by Kopint-Datorg shows an improvement in the outlook for exports to the EU markets, the prospects for output and domestic sales have failed to move away from their bottom reached six months ago. In addition, the GKI business confidence index have not improved significantly either since early 2002, fluctuating around the February level in the past few months. Taking all these factors into account, the Bank judges the upswing in manufacturing output in Q1 to have been caused by one-off influences, and expects industrial output to return to the level determined by external demand over the longer term. This will allow output to grow by 3,5-5,0% in 2002 and by 6,5-9,5% in 2003.

The Bank's forecast of manufacturing value added is now lower than that published in the previous *Report*. Explanation for this is the worse assessment of external demand and actual data for 2002 Q1. The rise in gross output in Q1 was stronger than that in value added, as seen in the previous quarter. This phenomenon has been characteristic of cyclical upturns in the past, which may be explained by a number of reasons. First, it may be linked to cycle-related fluctuations in intermediate consumption, and particularly in purchased stocks (see the May *Report*). Second, it may result from the peculiarities of the domestic business structure. If multinational firms' activities pick up relative to those of domestic companies during the recovery phase, then companies producing lower value added will see their percentage share of gross output rise. Accordingly, on the assumption that multinational firms continue to account for a dominant role in Hungarian economic development, the rate of gross output growth will likely be stronger than growth in value added during future business upturns.

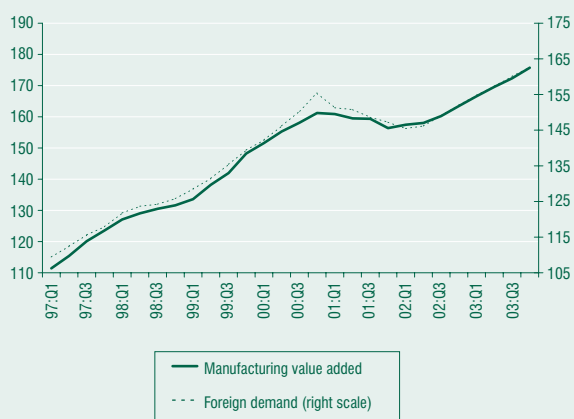
As currently there is no accurate information explaining the background of the difference between gross output and value added, this factor has not been taken into account in forecasting growth in value added. The forecast is based on the assumption that value added will develop in line with turns in external demand, this translating into increases of 0-1% in 2002 and 5,5-8,5% in 2003.<sup>19</sup> This path suggests broadly comparable growth in value added and gross output. The gap observed between the rates at which gross output and value added have grown in the past may be taken into consideration as a risk of lower growth relative to the central path.

In 2002 Q1, market services rose slightly above the Bank's forecast. Higher-than-expected increases in retail trade and household consumption were the reasons behind this. The Bank has developed its current forecast of market services value added on the basis of demand factors. Consistent with the increase in household consumption, the earlier forecast has been revised down for each two year - market services value added is now expected to rise around 5% in both 2002 and 2003.

**Chart II-14. Gross manufacturing output and value added**  
(Annualised quarter-on-quarter change, seasonally adjusted)



**Chart II-15. Forecasts of manufacturing value added and external demand**  
(1995 = 100)

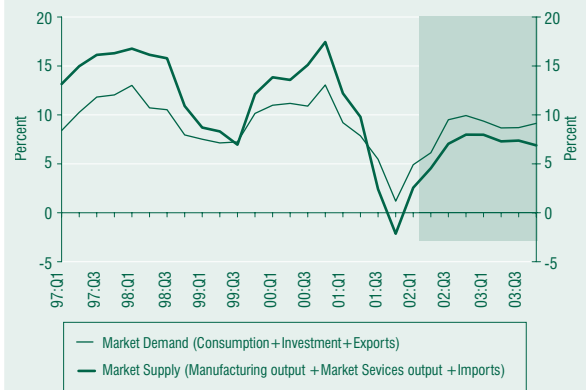


<sup>19</sup> The significant difference between the projected indices of gross production and value added in manufacturing for 2002 may be traced to the actual data. Value added fell so significantly in the final quarter of 2001 that, even on the assumption of equal growth rates with those in gross output, manufacturing value added can only be expected to rise above the previous year's level in the third quarter of 2002.



In the current forecast, the rise in market demand is higher than that in market supply at the entire forecast horizon. In addition, as it has been noted in the chapter on inventory investment, stocks are expected to build up, in line with the improvement in cyclical conditions. Thus, forecasts of market demand and supply do not fit properly, for which economic rationale has not been found. Technically, we can resolve the contradiction between the two approaches on the 'Inventory investment and other non-specified use' row of GDP, the forecast of which is not consistent with turns in the business cycle, rather it reflects the different growth rates of the production and use sides.

**Chart II-16. Annual growth in market demand and supply**  
(Annualised quarter-on-quarter change, seasonally adjusted)



## 3 Labour market and competitiveness

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As pointed out in earlier *Reports*, the intensity and speed of labour market adjustments are crucial from the perspective of the real economic costs of disinflation. With forward-looking, flexible wage-setting practices, disinflation should not entail significant growth sacrifices, as businesses can adjust to the lower inflation environment without suffering large income losses. With a backward-looking, inflexible wage-setting mechanism, however, the costs of labour will be relatively higher, possibly leading to declines in employment and output.

The Bank's current projection is for a different labour market profile than in May, due to a number of factors. One of the reasons for revising the forecast for 2002 is that actual data on the past few months reflect a higher rate of wage inflation than previously projected. The Bank has also changed its estimates about cyclical activity, with the forecast for external demand revised down and that for domestic demand revised up. It is a crucial change that, at the Monetary Council's request, the current forecast for 2003 assumes low private sector wage growth, as indicated by the Government's medium-term economic policy programme.

Second-quarter data suggest that there has not yet been a significant decline in manufacturing wage inflation, where the nominal exchange rate should exert its disciplinary effect most strongly, according to the Bank's expectations. Wage inflation in manufacturing has been flat to falling, whereas employment in the sector has been on a steady decline for quite a long time, due in part to cyclical reasons. Service sector wage inflation stagnated at high levels, with rising employment in 2002 Q2, accompanied by lively domestic demand.<sup>20</sup>

The Bank's earlier forecasts were based on the assumption that, one year after the band widening, more pronounced signs of nominal adjustment should appear. Hence, nominal wage growth was expected to slow significantly in 2002, particularly in the second half of the year. Taking into account the actual data released since the band widening and the latest model results, the Bank currently judges that wage adjustment may be slower and longer lasting than previously expected, reflecting lower-than-expected flexibility within the Hungarian labour market.<sup>21</sup> This suggests that the negative effect on employment will likely be higher than previously expected.

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<sup>20</sup> For a detailed description of the content of labour market indicators and the treatment of time series, refer to Section 15 of the *Handbook on the Use of Hungarian Economic Statistics*, NBH (forthcoming), <http://www.mnb.hu/>.

<sup>21</sup> See Section V. 1.

Due to the above factors, in the current central projection, wage growth is faster and the reduction in employed numbers is higher than forecast in the previous *Report*.

The Bank's calculations for 2003 are based on the assumption that gross wages would be increased at a subdued rate in the private sector as prescribed by the Government's medium term economic policy programme. The substance of the consideration that at wage negotiations, employees will also take account of the projected 3.5 percentage point faster growth in net wages relative to gross wages. This may open the possibility for employees to agree to wage settlements reflecting a reasonable rate of real net wage growth based on low gross wage increases.

### III. 1 Employment

In the second quarter of 2002, labour market trends indicated some changes, since the ratio of activity and the rate of employment showed flat to slightly upward tendencies, while inactivity diminished. But there are no changes in the view of unemployment, as the unemployment rate remained flat. (However, the changes were within the limits of sampling errors. Therefore, it needs caution to draw conclusions from that.)<sup>22</sup>

Monthly employment statistics suggest that in 2002 Q2 manufacturing employment continued on the downward trend witnessed since late 2000.<sup>23</sup> The Bank staff believe that, in addition to cyclical conditions in the sector, the drop in numbers employed was also due to the high rate of wage inflation. Attributed to robust growth in demand, cyclical activity in the service sector is significantly better, which is also reflected by a steady pick-up in employed numbers.

The first-half decline in manufacturing employment was roughly equal to that assumed in the previous *Report*. At the same time, the latest data do not reflect any considerable slowdown in wage inflation, and labour use is also not rising in intensity. At the same time, the new projection is for a weaker external demand profile than assumed previously. The combination of these trends suggest that the drop in manufacturing employment in the second six months of 2002 will likely be higher than assumed in the previous *Report*. In 2003, an improvement in external business activity and an assumed decline of wage inflation is expected to exert some upward pressure on the numbers employed in manufacturing, as projected earlier (due to the base effect, however, the annual index will continue to fall slightly).

In the first half of 2002, service sector employment grew at a somewhat weaker rate than previously projected, presumably due to faster-than-expected wage growth and the fact that the minimum wage rise early in the year had a stronger negative effect than expected. As domestic cyclical activity is ex-

<sup>22</sup> Based on the Labour Force Survey.

<sup>23</sup> Based on institutional labour statistics. As actual data are available only for the period until May, data on June needed for the second-quarter analysis have been estimated using statistical methods.

**Table III-1. Labour market data**  
(year-on-year change, %)

	NBH estimation	Forecast			
		May 2002 Report		August 2002 Report	
		2001	2002	2003	2002
<b>Manufacturing</b>					
Employment**	-0.6	-1.8	0.1	-2.2	-0.2
Wage inflation	14.4	11.1	6.6	12.0	4.8****
ULC ***	9.8	5.9	-0.7	7.5	-2.4
<b>Market services</b>					
Employment**	2.7	1.3	1.5	1.0	0.9
Wage inflation	14.0	11.2	8.5	13.9	5.2****
ULC ***	10.8	6.2	6.0	8.2	0.9
<b>Manufacturing + services</b>					
Employment**	1.0	-0.3	0.8	-0.6	0.4
Wage inflation	14.1	11.2	7.5	13.0	5.0****
ULC ***	10.1	6.0	2.8	7.6	-0.6

\* The forecast for 2003 provides information particularly on the aggregate level of the private sector.

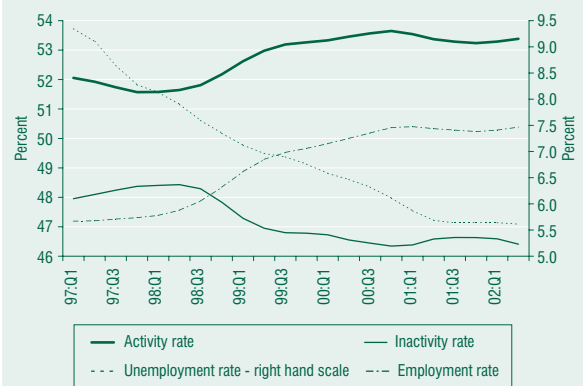
\*\* The Report contains an adjustment for changes in the number of people employed full time.

\*\*\* ULC denotes unit labour cost based on the value added.

\*\*\*\* Assumption based on the Government's medium-term economic policy programme.

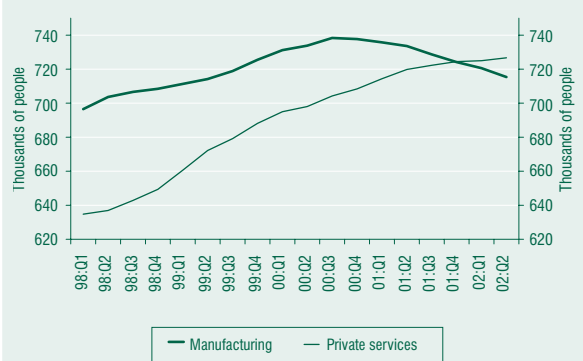
For a detailed description see the Section 15 of the forthcoming *Handbook on the Use of Hungarian Economic Statistics, NBH (2002)*, <http://www.mnb.hu/>

**Chart III-1. Labour market indicators\***

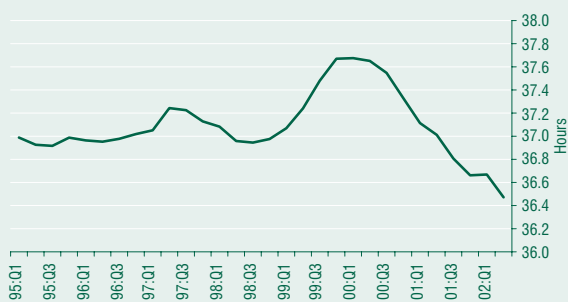


\*Labour Force Survey of the Central Statistical Office. Derived from seasonally adjusted data.

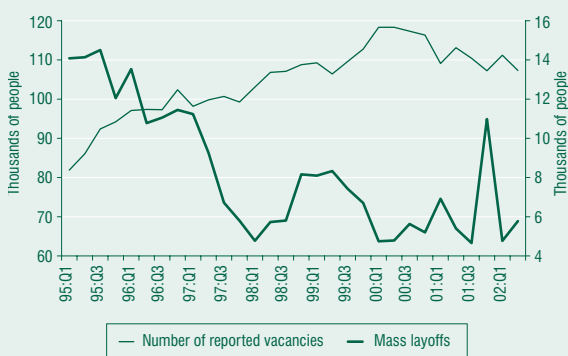
**Chart III-2. Changes in the numbers of full-time employees\***



\* Seasonally adjusted data, recalculated statistically for businesses employing over five people. Source of original data is the Central Statistical Office. Actual data available until May are complemented by data for June estimated using statistical methods.

**Chart III-3. Average weekly hours worked by manual workers in manufacturing\***

\* Data for the hours worked are seasonally adjusted and recalculated statistically for businesses employing over five people. Source of original data: Central Statistical Office. The actual data available until May are complemented by data for June estimated using statistical methods.

**Chart III-4. Reported vacancies and mass layoffs**

\*Data reported for the individual quarters and the number of people affected are seasonally adjusted. Source of the original data is the Employment Office. As the number of people affected by collective redundancies is only available for the period until May, the figures for June have been estimated using statistical methods.

pected to remain buoyant, service sector employment is projected to grow at a balanced pace both in 2002 and 2003.

On the whole, the central projections assume that private sector employment will decline in 2002 (-0.6%) and expand slightly in 2003 (+0.4%).

### III. 2 Labour reserves and tightness

Firms initially adjusted to the movements in the business cycle by changing the intensity of labour usage. The intensity of labour usage is measured in terms of the average number of hours worked. The number of average manufacturing hours worked by the manual labour force fell sharply in 2001, followed by a reversal in 2002 Q1, similar to that reflected by other indicators associated with movements in the business cycle. However, data for the second quarter did not support this change in trends, showing renewed drops in the intensity of labour usage.<sup>24</sup>

The economy finds reserves for extensive expansion primarily in the unemployed labour force (and certain inactive sections of the population). The proportion of unemployed people within the economically active remained virtually flat from mid-2001 and during the first half of 2002.<sup>25</sup>

In 2002 Q2, there was no significant change in the number of reported mass layoffs, in a quarter-on-quarter comparison.<sup>26</sup> Incidentally, the number of redundancies announced for any given three months has moved within a relatively narrow range for quite a while, except for two high values reported in the first and final quarters of 2001. It is possible that these surges may be associated with the mandatory increases in minimum wages, but it should also be noted that assuming usually low values, this indicator is very sensitive to individual one-off incidents.<sup>27</sup>

Following a slight upturn in the first quarter, the number of reported vacancies resumed its downward trend in the second quarter, consistent with the path observed since early 2000.

Hence, the private sector is more likely to face excess capacities than tightness in 2002 and 2003, just as in the previous projection. At the same time, some tightness in certain sectors and areas may still appear, which may have an impact on wage inflation.

### III. 3 Wage inflation

In the first half of 2002, the private sector exhibited no signs of substantial nominal adjustment to a lower inflation environment. In the manufacturing sector, which is assumed to face the strongest need to adjust, wage inflation was in the range of

<sup>24</sup> Actual data are available until May, while the data for June have been estimated using statistical methods.

<sup>25</sup> Based on the Labour Force Survey.

<sup>26</sup> Source of actual data for the period until May is the Employment Office. The data for June have been estimated using statistical methods.

<sup>27</sup> 2001 Q4, for instance, saw major layoffs by a plant in South Hungary, followed by new recruitment of an approximately equal measure.

12-13% in the second quarter, continuing its flat to falling trend seen in the past twelve months. Following some acceleration early in the year, wages in the sector of market services remained flat at approximately 14.5% in Q2, in terms of the annualised quarter-on-quarter index.<sup>28</sup>

Wage inflation in the second quarter was higher than projected in previous reports both in the service sector and in manufacturing. As far as market services are concerned, this could be attributed to domestic demand being more robust than expected.

The Bank's earlier projections for the manufacturing sector have been based on the assumption that one year after the widening of the exchange rate band, the exporting sector should start showing some clear signs of nominal adjustment, due to deteriorating profitability. However, the actual data for 2002 Q2 fail to confirm this expectation. The Bank's previous *Report* features an at-length discussion of a number of hypotheses that may explain the continued high rate of wage inflation (such as the effect of relative wage levels, labour market bottlenecks, the effects of the minimum wage rise and the balance sheet channel). The Bank staff continue to believe that one of these hypotheses, either alone or in combination with each other, may offer a plausible explanation for the delay in nominal adjustment.

At the same time, the Bank's views on short-term wage adjustment have been refined by the findings of a company questionnaire survey<sup>29</sup>. The survey findings suggest that for over two-thirds of firms short-term adjustment to weaker export profitability involved an exploration of production reserves or shifts in market orientation, rather than cutting back on wage growth. Similarly, the Bank's own simulation results refer to a slower than earlier expected wage adjustment.<sup>30</sup>

Hence, for 2002 the current projection assumes a slower and more protracted path for wage adjustment than the previous *Report*. Thus, considering the uncertainty in the labour market processes the prediction for the wage inflation within the private sector as a whole is between 12.4% and 13.6% in 2002. At approximately 13%, the central projection for wage growth in 2002 is 1.8 percentage points higher than in the previous *Report*. This comprises slightly lower rates of wage increases in both major sectors for the rest of the year, amounting to roughly 12% in manufacturing and 13.9% in the sector of market services, for the year as a whole.

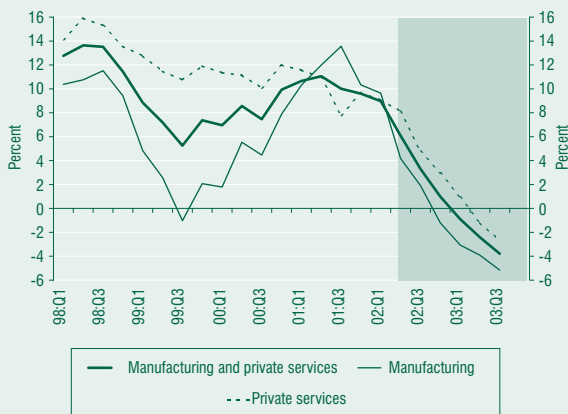
In accordance with the Government's medium-term economic policy programme, the Bank staff reckon with private sector wages to increase at a subdued rate in 2003. The substance of the assumption is that wage settlements next year will also take account of the predicted faster growth in net wages compared to gross wages. This may pave the way for wage settlements allowing low gross wage increases, while

<sup>28</sup> Based on actual data for the period until May and estimates calculated using statistical methods for June.

<sup>29</sup> *The Effect of Widening the Exchange Rate Band – Findings of a Follow-up Study*, Economic Research Institute of the Hungarian Chamber of Commerce and Industry, Budapest, June 2002.

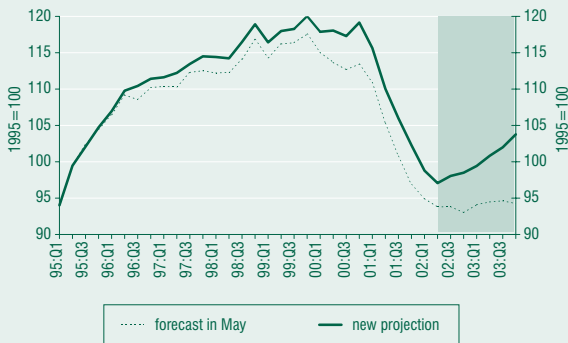
<sup>30</sup> See *The exchange rate pass-through to domestic prices – model calculations* in the section Special Topics.

**Chart III-5. Projection for unit labour costs\***  
(Annualised quarter-on-quarter change, seasonally adjusted)

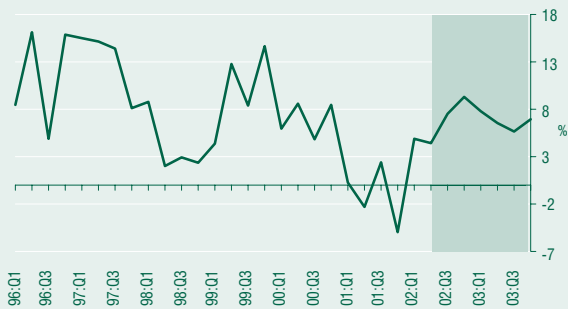


\* Seasonally adjusted data, with the change smoothed by a three-term moving average.

**Chart III-6. The level of the unit labour cost based real exchange rate in manufacturing**  
(1995 = 100)



**Chart III-7. Productivity in manufacturing**  
(Annualised quarter-on-quarter change, seasonally adjusted)



ensuring net real growth that employees are also willing to accept.

The Bank's calculations for 2003 are based on the estimation that the difference between the rates of net and gross wage growth amounts to 3.5 percentage points. In the projection, set out from the Government's medium term strategy, the Bank staff assume that firms will raise gross nominal wages by 3% in the course of the year, which corresponds to a net nominal wage increase of 6.5%, taking into account the widening gap between the growth rates of gross and net wages. Considering the full-year (statistical) effects of wage increases implemented last year and this year, this rise may lead to average annual gross wage inflation in the range of 4-5%, depending on the timing within the year.<sup>31</sup>

In the Bank's estimate, just as in 2001, average labour costs (per employee) will rise at a roughly 1.5 percentage point slower rate than wage inflation in 2002, due to a reduction in social security contributions paid by employers on gross wages.<sup>32</sup> As no similar change is expected to affect the cost items additional to gross wages in 2003, average labour costs are assumed to increase at the same rate as wage inflation.

In the central projection the growth rate of nominal unit labour costs (ULC) fall by roughly 2.5 percentage points in 2002, (from 10.1% last year to 7.6%).<sup>33</sup> The projection for 2003, based on the fulfilment of the Government's medium-term economic policy programme, is for considerably falling ULC in manufacturing (down by 2.4%) and a moderate growth in respect of market services, with the combined rate slightly decreasing.

### III. 4 Productivity and competitiveness

Regarding manufacturing competitiveness, we project a slightly more depreciated real exchange rate path, than in our previous *Report*. In the second half of 2002 - due to the increase in manufacturing value added - the tendency of real appreciation turns to real depreciation, although attributable to the high level in the previous year, the annual index still shows significant, 9.5% appreciation. In 2003 - assuming, that private sector gross wages increase at a more restrained pace, as proposed by the Government's medium-term strategy - a 3.5% depreciation is projected.

<sup>31</sup> If a time series contains a rise in a given year, this may keep annual indices at a high rate in the subsequent year, even in the absence of further rises. Accordingly, full-year effects reflected in twelve-month average aggregate wage indices arise predominantly because the individual wage increases are not implemented at the start of the year and on an identical date. Non-regular pay, such as bonuses, rewards, etc, has a similar effect.

<sup>32</sup> In addition to gross wages, labour costs also comprise other costs incurred by employers, including employers' contributions and taxes paid in respect of their employees, and additional benefits (such as benefits in kind, social benefits, meal discounts, commuting cost and retraining reimbursement, etc.).

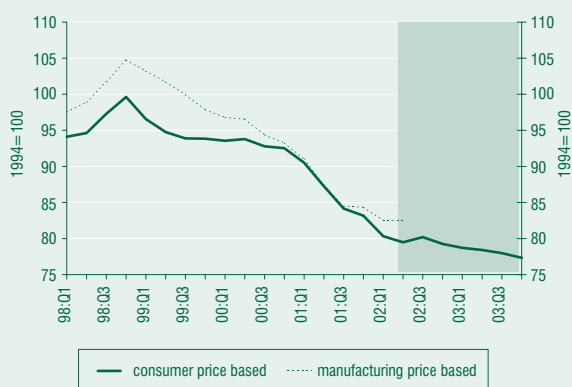
<sup>33</sup> Estimates for the level of average labour costs have been revised down on the basis of the Central Statistical Office's labour cost survey conducted in 2000. The revision has brought the level of unit labour costs of the past few years to a lower level than earlier estimated. Therefore, the level of the unit labour cost based real exchange rate in manufacturing became more depreciated in the years referred to than earlier estimated.

The 2002 Q1 manufacturing productivity figure was basically in line with our expectations. Following the massive decline in 2001 Q4, productivity turned strongly upwards in 2002 Q1. This underscored the Bank's earlier view that the decline preceding the recovery must have been attributable to temporary shocks. However, the recovery turned out to be some 1 percentage point weaker than expected (see the chapter on output). The outturn for increase in wage costs more or less met the forecast. Taken together, the rise in unit labour costs turned out to be 1.5 percentage points higher than previously expected.<sup>34,35</sup>

As mentioned previously, for 2002 our projection includes the assumption of a more prolonged wage adjustment than in our previous *Report*, while for 2003 - according to the request of the Monetary Council - we assume a very moderate wage increase in the private sector. (see the chapter on labour market developments). At the same time, due to the rebound in external demand, manufacturing productivity is now forecasted to rise, so the rate of growth of manufacturing unit labour costs are moderating in 2002, while in 2003 a decline of 2.4% is projected. The real depreciation due to the declining unit labour costs from the end of 2002 is further reinforced by a some 4 HUF weaker exchange rate relative to the previous *Report*.

In terms of the price-based competitiveness indicators, the CPI-based real exchange rate has continued to appreciate more significantly than the manufacturing price-based real exchange rate. The major reason behind this is that the nominal exchange rate appreciation, which started in 2001, has fed through to manufacturing prices more rapidly than to the CPI exclusively containing tradables. In the current forecast, disinflation is slower in 2003 than expected earlier; however, the higher effect of the CPI is offset by a weaker exchange rate relative to the earlier projection. On the whole, the Bank expects the forint exchange rate to be at a less appreciated level by the end of 2003 than previously projected.

**Chart III-8 Price based real exchange rate indicators**  
(1994 = 100)



<sup>34</sup> The Bank's current forecast reflects the result of revision to actual data.  
<sup>35</sup> As national accounts data are only available up to 2002 Q1, the last actual data for unit labour costs refer to this period. Naturally our analyses of the latest developments refer to 2002Q1, despite labour market data being available for the period up to 2002 Q2.

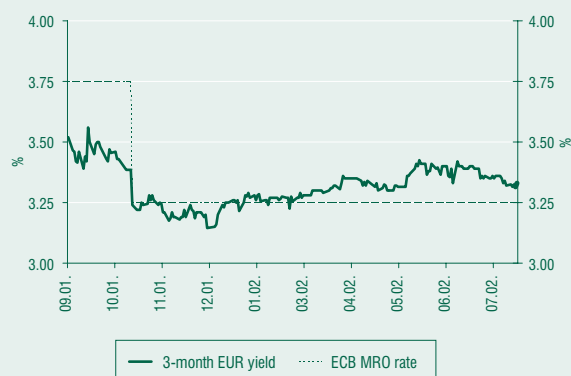
## IV. Monetary developments

### IV. 1 International economic environment and risk perception

The European Central Bank has not changed its key rate since November 2001. Market participants have expected an interest rate hike on several occasions, prompted by both the economic developments and certain official ECB statements. As the economic indicators have not painted a clear picture of economic prospects in either the USA or Europe, the ECB took its time (see Chart IV-1). The April rate of inflation published in May was higher than expected (2.4% instead of 2.2%), due primarily to some energy price increases. The expectations of a rate hike eased in the course of June and July, as inflation in the euro area fell to 2% in May, and then to 1.8% in June, i.e. within the ECB's official medium-term tolerance range. The slowdown in inflation can broadly be attributed to weaker increases in unprocessed food prices, a drop in energy prices and the strengthening of the euro.

In May, the euro started to strengthen against the dollar, with the monthly average exchange rate up from 0.88 dollarcents in April to 0.917 dollarcents in May and 0.955 in June, approximating parity during the final days of June. In the course of July, the exchange rate fluctuated between 0.97 and 1.02 dollarcents. Experience of recent years suggests that European economic activity depend to a great extent on global economic developments, which, in turn, are essentially subject to the performance of the US and the Asian region, with special regard to Japan. The fact that any pickup in global recovery is expected to come later than the second half of 2002 as assumed earlier also sets a restraint on a European recovery. This uncertain situation makes it unlikely that the euro strengthened against the dollar due to an improvement in European economic prospects relative to the US. Rather, the euro must have gained momentum due to rising distrust of dollar investments, arising from uncertainty about the reliability of financial statements of US firms, in addition to a burgeoning US trade deficit and weak corporate profitability. In particular, a new wave of corporate financial difficulties emerging in the summer created an atmosphere of general distrust about the credibility of the financial accounting practices of large American listed companies. This confidence crisis not only plagued the American stock markets, but also their European and Asian counterparts, pushing down the indexes to a level last seen at the time of the terrorist attacks in September 2001. Thus, the uncertainty about a cyclical recovery also grew outside the US, in nearly every economic region.

Chart IV-1 The ECB's main refinancing rate and euro area short term market yield



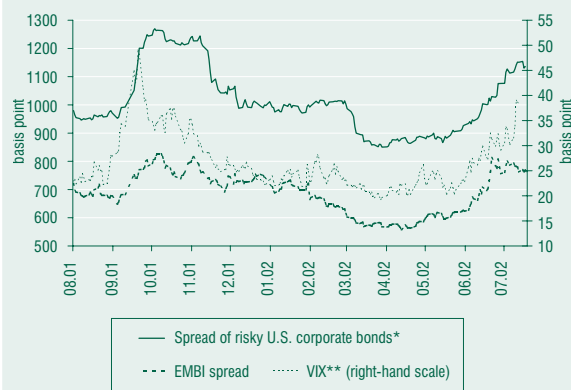


Prompted by the financial troubles facing US corporations, financial market investors cut their dollar-denominated investments, mainly transferring the resulting free funds into euro-denominated securities and, to a lesser extent, into Asian instruments. The steady net capital outflow from the euro area primarily to the US, seen between 1999 and 2001, seemed to turn around and this *capital inflow* caused the euro to strengthen. If this appreciation of the euro proves to be a lasting trend, the resulting tighter monetary conditions and the prospective drop in energy prices due to the weakening of the dollar will cause inflation to decline further in the euro area, contributing to a fall or reversal in interest rate expectations. Finally, should global economic recovery occur later and/or be less robust than expected, this may also contribute to a fall in interest rate expectations.

The yield on securities issued in the Hungarian currency contains a risk premium. A portion of this premium is governed by external – global and regional – factors. Several of these external factors have changed for the worse since the publication of the *May Report*. No solution to the Argentinean financial crisis is in sight, and the situation was further aggravated by the resignation of the central bank governor. There have also been adverse shifts in previously stable investor sentiment towards other Latin American markets, including Brazil. The publication in May of first quarter Brazilian GDP, the nearly 10% depreciation of the currency and the modest performance of US companies active in the country have also caused a fall-off in the largest stock market of the continent, questioning the country’s international solvency. The gloomier perception of Brazil had an immediate effect on other Latin American countries. Meanwhile, the economic crisis in Turkey may be accompanied by a government crisis as well. News about preparations for renewed terrorist attacks continues to foster global uncertainty, with the possibility of a Middle East settlement fading as well. These developments are all reflected in the sharp rise of the EMBI index, which gauges investor demand for emerging country sovereign bonds, since late May (see Chart IV-2). In addition to the worsening perception of emerging markets, uncertainties about more advanced areas have also increased. From May 2002, the date of a cyclical recovery in developed countries has drifted into the more distant future, due to the financial turmoil about US companies. These factors have cut demand for risky investments, which was clearly rising at the time of the previous *Report*, and this downturn has also exerted upward pressure on the risk premia. Global risk indicators have returned to the peak levels measured last September (see Chart IV-2).

In respect of Central and Eastern Europe, certain trends in countries listed in the same class as Hungary with respect to the EU accession and joining EMU, as well as related news have also pushed up the risk premium on the forint. The fall in the exchange rate of the Polish currency, due to external and domestic imbalances, the finance minister’s resignation and the new minister’s hints about prospective devaluation of the zloty have repeatedly weakened the forint’s exchange rate. Initial statements by the new Czech minister of finance indicated moderate ambitions about early participation in monetary union, due to the fiscal policy implications of adopting the euro. However, the exchange rate of the Czech koruna has not

Chart IV-2 Global risk indicators



\* S&P U.S. Industrial Speculative Grade Credit Index  
 \*\*S&P100 index option implied volatility

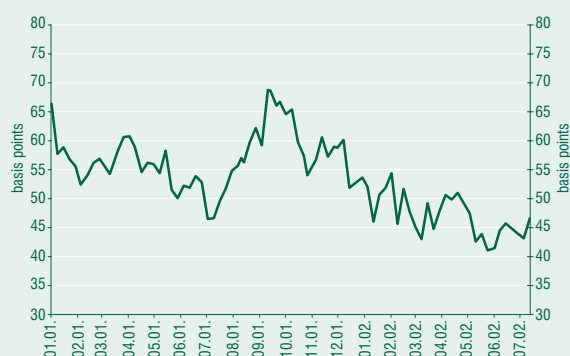
been weakened by either country-specific or external events, steady, powerful capital inflows largely associated with ongoing privatisation.

International investors have interpreted the Polish and Czech developments as signs of these countries' intentions to postpone joining the EMU by a few years (from the early dates of 2006 or 2007 in case of the Czech Republic). As these investors list Hungary together with the Czech Republic and Poland in respect of both the EU and EMU enlargement, it cannot be ruled out that they have interpreted the changing sentiments in the two countries as also bearing on the date of Hungarian membership.

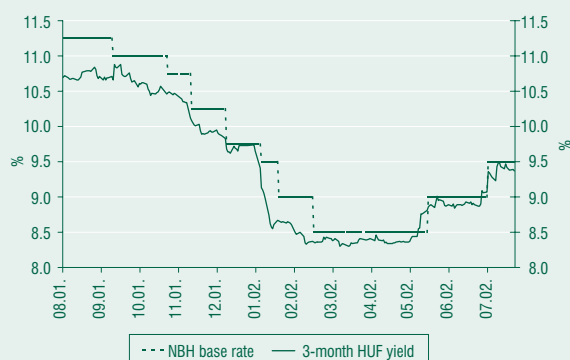
Perception of risk in Hungarian investments has been clearly affected by some country-specific factors since May. The adverse factors have included a number of domestic macroeconomic developments, in particular the rising budget deficit, the weaker-than-expected external balance, the amendment to the Central Bank Act and transitory uncertainties surrounding the timing of EMU accession. Developments of this kind have caused the forint exchange rate to weaken and the yields on government securities to rise. The downward shift in the forint exchange rate was only interrupted when the Government passed a medium-term economic policy strategy for the coming years, aimed at fiscal consolidation and rapid EMU accession (for a detailed discussion of this, see sections IV.2 and IV.3).

The spread on Hungarian foreign currency bonds issued earlier in Deutsch Mark fell by nearly 10 basis points between April and end-May, returning to its early-April level after May (see Chart IV-3). The current value of less than 50 basis points still appears to be low, especially as it only slightly exceeds the spreads of EMU members falling within the range of 10 to 40 basis points, and is far less than the 90-120 basis point spread for Greece prior to joining the euro area. Thus, the country-specific risk factors did not so much mar the perception of Hungary's default risk as the increased uncertainty about the forint exchange rate.

**Chart IV-3. Average spread on DEM-denominated Hungarian sovereign bonds**



**Chart IV-4. Official interest rate and short-term market yield**



## IV. 2 Interest rate and exchange rate developments

Since 19 February 2002, the Bank has tightened monetary conditions on two occasions. On May 22, the base rate was raised from 8.5% to 9%, and then on July 9 by another 50 basis points to 9.5%. Although April inflation data were unfavourable, in accordance with its forward looking inflation targeting strategy, this was not the primary factor at work behind the Bank's decision to raise the base rate in May. Rather, the main reason was that the expansion of domestic aggregate demand, such as fiscal loosening, and high private sector wage growth, and external factors, such as imported inflation and oil prices, led to an upward revision of the Bank's inflation projection. These factors caused long-term yields to rise and the exchange rate to weaken. Hence, the tightening was necessitated by the need to meet the Bank's inflation target. From early June, increases in the risk premium on forint investments have also been added to the domestic factors, exerting downward pressure on the exchange rate and inducing another interest rate rise.

The market was not surprised by the rate increases as indicated by the fact that the rise in three-month benchmark yields preceded the central bank measures on both occasions (see Chart IV-4). Due to rising forint yields and relatively stable euro yields, the interest rate differential with the euro area opened up again, from approximately 500 basis points to its current level of over 600 basis points (see Chart IV-5).

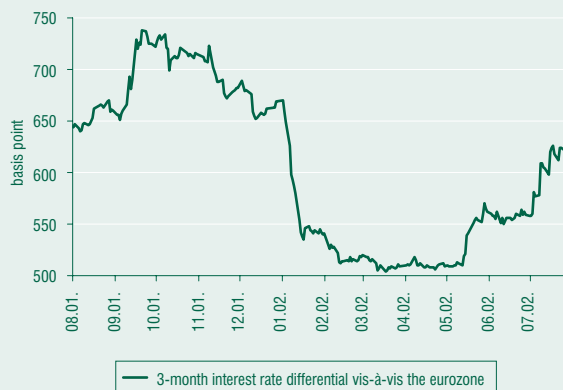
The two indicators customarily reflecting market interest rate expectations have failed to provide unambiguous information about the expected course of central bank rates. Reuters' latest survey conducted on July 18 suggests that analysts expect the current rate to last through late August and to slightly edge down before the end of the year. Nevertheless, the positive slope of the three-month implied forward yield curve, observable over the short-term section of the yield curve since May, is still there, indicating expectations of an interest rate increase of another 25 basis points before the year-end (see Chart IV-6).

The exchange rate of the forint vis-à-vis the euro has displayed greater variability in the period since the previous *Report*, and especially in July, with the end-July rate being on the whole roughly 0.5% more depreciated than in early May (see Chart IV-7). The central bank tightening on May 21 successfully interrupted the weakening trend. However, the forint/euro exchange rate started to weaken again in mid-June. The forint sank by over 2% in the course of two days around July 3. The factors to blame for the sharp drop included several adverse pieces of information published simultaneously on domestic macroeconomic indicators (high budget deficit, dynamic growth of domestic consumption, widening current account deficit) and external developments. The interest rate hike on July 9 was not capable of halting the weakening of the exchange rate on its own. However, subsequent news on the Government's medium-term macroeconomic strategy containing a good deal of fiscal consolidation and a much better-than-expected inflation data caused the exchange rate to start rising again and to reach the end-June level of HUF 244-245 in late July. The latest Reuters survey (of July 18) indicates that market analysts expect the rate to edge up before the year-end, in addition to forecasting steady strengthening by end-2003 (see Chart IV-8).

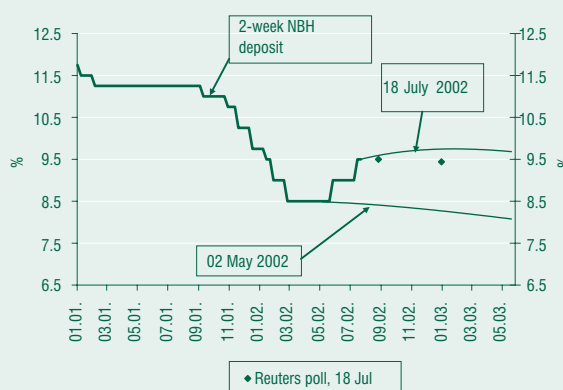
### IV. 3 Capital flows

Under a narrow-band exchange rate regime, short-term capital movements are reflected in changes in the central bank's stock of sterilisation instruments, which are used to stabilise the exchange rate. Under the current inflation targeting system, however, the central bank seeks to avoid purchasing foreign currency, thus capital flows are allowed to feed through to changes in the exchange rate and the commercial banks' open positions on their balance sheets. As noted earlier, the central bank's interest rate increases in late May and July were preceded by weakening in the exchange rate on both occasions, although to different degrees. This was also reflected in the evolution of commercial banks' open positions on their balance sheets. The long foreign exchange positions, increased at a more subdued rate in May, were mainly wound up in June

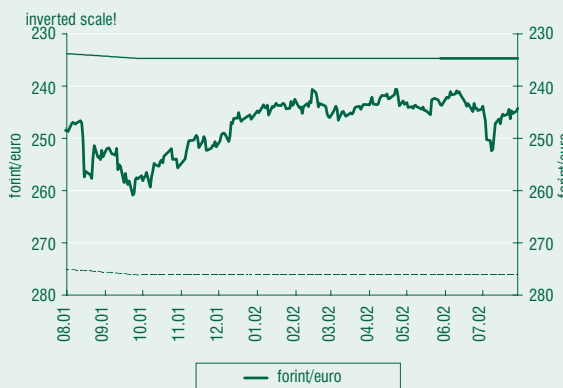
**Chart IV-5. Three-month interest rate differential vis-à-vis the euro area**



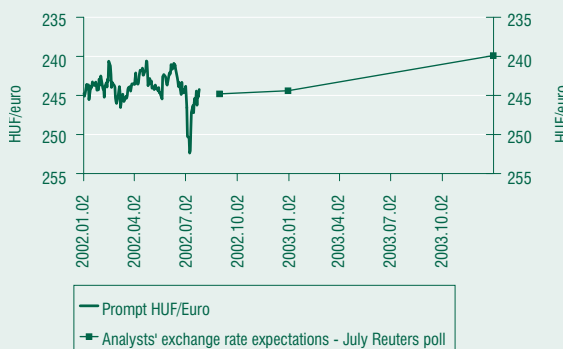
**Chart IV-6. Central bank base rate and interest rate expectations based on the yield curve and the Reuters poll**



**Chart IV-7. Exchange rate of the forint**



**Chart IV-8. Forint exchange rate and analysts' expectations of future exchange rate movements**



and opened up again in early July. This indicates that while the exchange rate weakening in June entailed a major decline in non-bank participants' demand for forint, the drop in the rate in early July did not accompany with significant capital withdrawal (see Chart IV-9).

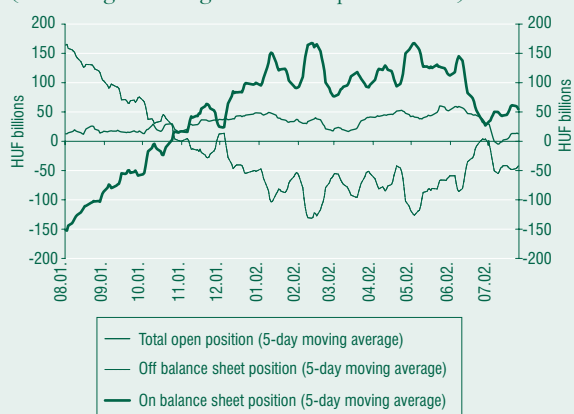
The factors contributing to the net increase in forint demand in April and its falloff in May and June included both interest rate sensitive and non-sensitive items. In both April and May, the deficit on the current account of the balance of payments significantly exceeded the level for last year. The high deficit in April was offset by an inflow of portfolio capital and a pick-up in foreign currency corporate lending, but in May both net portfolio investments and firms' borrowing in foreign currency changed in a negative direction. In addition, just as in Q1, the level of foreign direct investment excluding revenues from privatisation was also lower than in 2001 (see Table IV-1).<sup>36</sup>

The drop in net portfolio investment in May was due to a decline in equity holdings and forint deposits, as non-residents purchased more government securities in the course of May, at maturities exceeding one year (see Chart IV-10). In early June, however, non-residents reduced their government securities holdings by over HUF 60 billion, as a two-year government bond and a discount treasury note matured. These maturing investments were only renewed gradually, and there was another transitory decline in early July arising from uncertainties at the time. Then, non-residents started to increase their government securities holdings, and in end of July the stock approached the level seen at end-May. The period since early May has also seen a shift in the maturity structure of holdings, with an upsurge in the stock of government bonds for terms between two to five years and a drop in bonds maturing below two years and over five years. The implication is that the rise in medium-term yields over the period from May to July must have been primarily due to shifts in Hungarian investors' yield expectations.

Firms' net foreign currency position followed a rather volatile course from March to May, but improved on the whole by approximately HUF 71 billion. At the same time, there was also a shift in the structure of net foreign currency lending, as its overall value fell as a combined result of an increase in domestic foreign currency loans and a reduction in borrowing from abroad. The key factor behind the fluctuations in the stock of net foreign currency lending was investments undertaken by investment funds abroad, which fell by HUF 49 billion in April and increased by roughly a similar amount of HUF 43 billion in May. Nevertheless, changes in investment fund investments only account for about one-third of the drop in net foreign currency borrowing by the corporate sector as a whole in the period from March to May. The improvement in the foreign currency position was also due to the fact that non-financial corporations' sustained efforts to repay foreign-currency liabilities from abroad, especially in March and May, were not offset by a corresponding increase in domestic foreign currency lending.

**Chart IV-9. Commercial banks' open foreign exchange positions**

(excluding the Hungarian Development Bank)



<sup>36</sup> However, the size of foreign direct investment cannot directly be compared with the figures for 2001, as from January 2002, intercompany transactions vis-à-vis the group netting centre have been recorded under inter-company loans.

Table IV-1. Components of foreign exchange market demand and supply\* (HUF billion)

	2001				2002		
	Q1	Q2	Q3	Q4	Q1	April	May
<i>I. Adjusted current and capital account (1+2-3)</i>	-52	-124	79	-97	-133	-80	-98
1. Current account	-63	-195	71	-131	-137	-97	-108
2. Capital account	15	39	23	16	13	2	6
3. Foreign exchange balance of the consolidated government budget	3	-32	14	-19	9	-14	-5
<i>II. FDI inflow (without privatisation revenues)</i>	126	179	108	155	42	55	35
<i>III. Forint demand resulting from the conversion of domestic foreign currency deposits (1+2)</i>	-27	-15	-6	-111	58	-66	34
1. Business sector	-19	-21	2	-64	25	-67	31
2. Household sector	-8	6	-8	-47	34	1	3
<i>IV. Net portfolio investment (1+2+3)</i>	90	212	-134	85	214	53	-26
1. Government securities	90	196	-79	136	144	51	10
2. Equities securities	6	-10	8	-15	12	4	-22
3. Forint deposits	-6	26	-62	-36	58	-2	-13
<i>V. Foreign currency borrowing by non-financial businesses (1+2)</i>	-81	-128	-44	-62	-202	51	-47
1. Domestic	-7	5	19	-12	45	5	38
2. Foreign	-74	-134	-63	-50	-247	46	-85
<i>VI. Forint demand of other credit institutions</i>	12	37	50	99	23	26	30
<i>VII. Other</i>	43	18	20	132	5	28	-2
<b>VIII. Net forint demand outside the banking sector (I+...+VII)</b>	<b>112</b>	<b>178</b>	<b>73</b>	<b>201</b>	<b>7</b>	<b>66</b>	<b>-72</b>
<i>IX. Purchases of foreign currency by the central bank</i>	178	165	47	40	0	0	0
<b>X. Change in banks' on-balance-sheet long position in foreign exchange (VIII-IX)</b>	<b>-65</b>	<b>13</b>	<b>26</b>	<b>161</b>	<b>7</b>	<b>66</b>	<b>-72</b>

\* A positive value denotes forint demand, a negative value denotes forint supply.

As the open positions on their balance sheets were reduced, commercial banks also began winding up their total long foreign currency positions. Hence, the bank's total open positions were brought to zero in early July, simultaneously with a major drop in the exchange rate. As the on-balance-sheet positions started to pick up again at that time, the neutral position was the result of an increase in the derivative position. Thus the commercial banks broke with the former practice to keep 40-50 billion forints long foreign currency position. The fact that the open foreign exchange positions were completely wound up may indicate that while in the previous days commercial banks attributed higher probability to the weakening of the forint, they were striving to reduce exchange rate risk exposure in response to the fluctuations in the exchange rate of the forint.

#### IV. 4 Long-term yields

The previous *Report* described the evolution of yields on the market of government securities up to the end of April 2002. Since then, until early July yields rose substantially by as much as 50 to 150 basis points at every maturity, followed by a moderate decline from the middle of the month (see Chart IV-11). The rise since April was strongest in the one-to-seven-year section of the zero coupon yield curve, but it was also significant at later maturities (see Chart IV-12). A shift in the implied forward yield curve clearly shows that long-term yields rose essentially as a consequence of changing expectations for periods one to six years ahead. As euro yields fell in the

Chart IV-10. Volume and average maturity of non-residents' government securities holdings

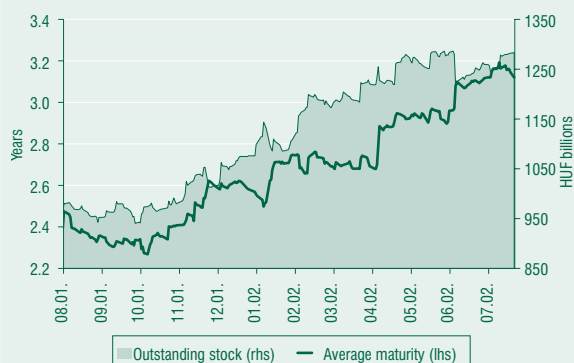
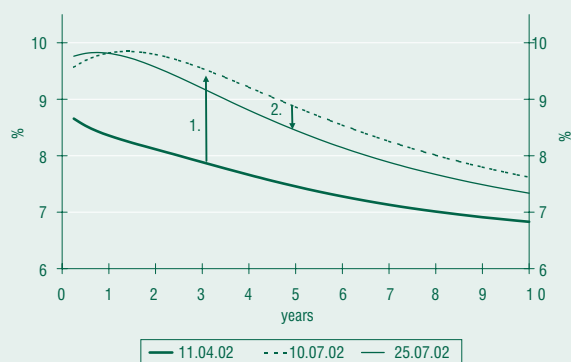
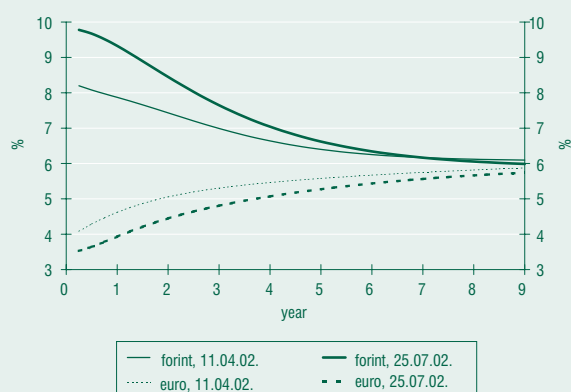
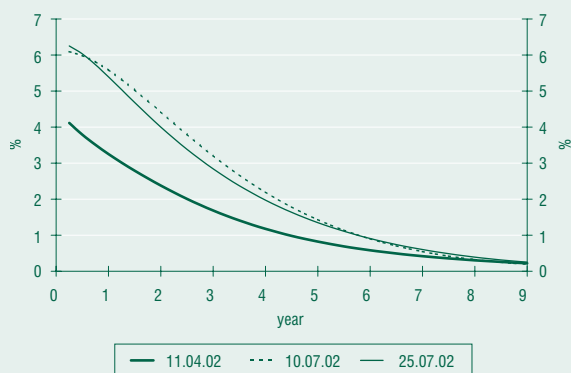
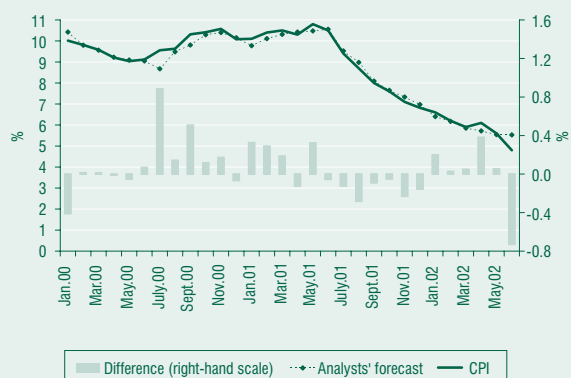


Chart IV-11. Zero-coupon yields



**Chart IV-12. Zero coupon yield curves****Chart IV-13. Forint and euro one-year implied forwards****Chart IV-14. One-year forint - euro implied forward differential****Chart IV-15. Reuters' survey of inflation expectations for one-month ahead vis-à-vis actual inflation rates**

meantime, the forint - euro yield differential increased over the full horizon (see Chart IV-13 and Chart IV-14).

The change in forint yields can be traced to both international and domestic developments and economic news. The increase in interest rates on the Hungarian government securities market since late April coincided with the global decline of risk appetite (see section IV.1). This caused the yield curve to shift upwards, reflecting an increase in the risk premium required by foreign investors. On the other hand, a thorough analysis of the individual shocks and the dates of yield curve shifts suggests that the Hungarian yield curve has been affected not only by global factors but also by events in the Central and Eastern European area, in addition to domestic macroeconomic data. These factors combined have caused expectations to change, interest rate convergence to lose momentum and one-to-seven-year long-term yields to increase at a faster pace. The period with the most pronounced rise in yields in the past few months followed the publication on May 14 of April inflation, which exceeded analysts' expectation by as much as 40 basis points (see Chart IV-15). The interest rate hike of 50 basis points on May 22 did not influence the long-term yields. However, expectations were adversely affected by a sizeable budget deficit in proportion to the time elapsed and the rapid growth in real wages. In addition, uncertainty was further exacerbated by the difference in the government and the central bank's views on the schedule for disinflation and fiscal deficit reduction. The unfavourable Central and Eastern European and Hungarian macroeconomic data and economic policy news (see section IV.2.), released in early July, triggered a surge in the yields on government securities, pushing them to levels characteristic of the period 8-13 months before, depending on maturity. The rise in non-resident investors' required risk premium, the alteration of domestic investors' inflationary expectation and the increase of the required real interest rate could provide the primary explanation for this.

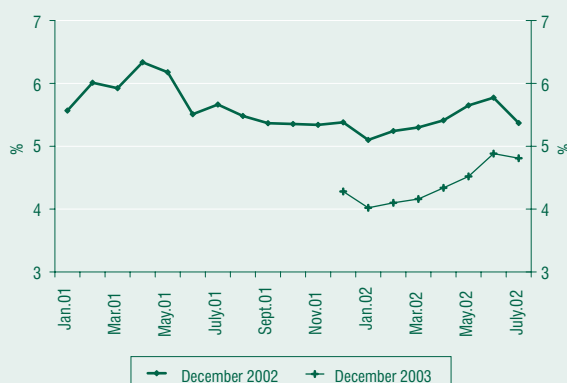
In May and June, market analysts' forecast for the year-on-year price index in December 2002 fell outside of the tolerance range specified by the Bank, with expectations worsening not only for this year, but also for 2003 (see Chart IV-16 and Chart IV-16). The middle of July, however, saw a turning point, as the upward trend of yields experienced for several months seemed to break. The underlying factor was the NBH's interest rate hike of 50 basis points on July 9, which was interpreted by the market participants as evidence of the Bank's strong commitment to disinflation. Also the agreement between the Government and the central bank on medium-term macroeconomic strategy has had a positive impact on expectations, coinciding with the publication on July 11 of a lower-than-expected inflation figure. This mitigation of uncertainty has brought analysts' inflation expectation for the year-end (5.4%) within the Bank's tolerance band, according to the Reuters' survey. Although the rate of price increases predicted for the end of next year (4.82%) is also lower than it was in June, the rate exceeds the expectation of three months before, and is still outside the Bank's inflation target range (see Chart IV-17). According to the Reuters' survey in July, six out of eleven macroanalysts expect inflation to be in the target band in December 2002, compared with just two in December 2003. Nev-

ertheless, the market analysts' inflation forecast for the subsequent one and a half years remains inside the 30% probability range around the Bank's forecast, which assumes that the monetary policy will remain unchanged (see Chart IV-18).

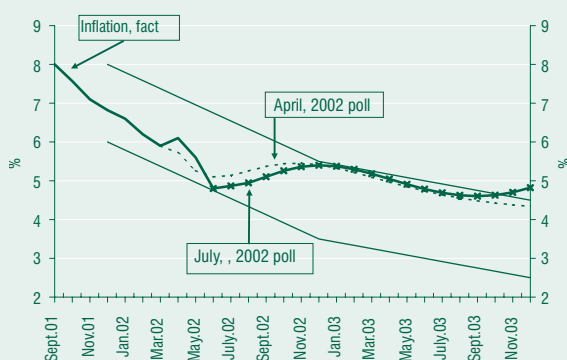
An implication of the shift in the Hungarian yield curve is that the aforementioned developments have, in all likelihood, caused investors to view the date of Hungary's joining the euro, the endpoint of convergence between euro-area and Hungarian interest rates, as postponed until a later date. This also seems to be supported by Czech and Polish officials' statements reflecting a weakened political commitment on the part of their governments to early euro-area participation. Market expectations indicate that the chances that Hungary will join the euro in 2006 have declined since early May, and the probability of the 2007 date was also lower in July. This is reflected in the divergence between the one-year forint and euro implied forward differentials calculated for constant dates (2006-2008) and their jump high above the country risk premium estimated to roughly 50 basis points (see Chart IV-19). One-year forwards four to six years ahead rose not only because of the July increase in the risk premium along the entire duration of the yield curve, but also as a result of higher interest rate expectations caused by slower disinflation and interest rate convergence affecting the nearer section of the yield curve most markedly.

In sum, while the interest rates required on euro-area investments were falling, the Hungarian yield curve shifted upwards over the full maturity horizon, due to an increase in the risk premium induced by a combination of adverse global, regional and country specific factors. The yield rise was more marked over the medium term, possibly because of higher inflation expectations, increasing required real interest rates and rising uncertainty about the date of joining the euro. On the other hand, the publication of the Government's medium-term macroeconomic programme, also supported by the Bank, had a favourable impact on investor expectations over the near term. Over the long term, achieving the objectives laid down in the programme may reinforce the credibility of economic policy, which may lead to a major drop in the yields on government securities, via reducing interest rate expectations and the risk premium.

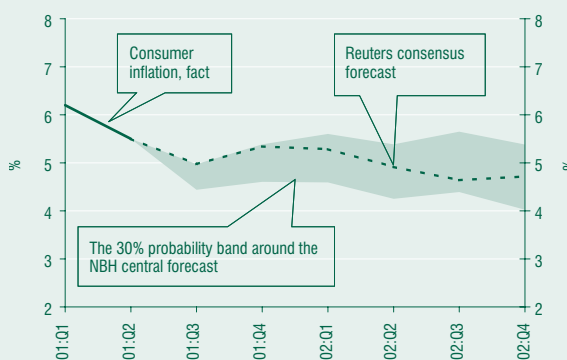
**Chart IV-16. Reuters' survey of inflation expectations for end-2002 and end-2003, trimmed means**



**Chart IV-17. Analysts' expected inflation paths between May - July 2002**



**Chart IV-18. Analysts' expectations compared with NHB forecast**



**Chart IV-19. One-year forint - euroimplied forward differential for constant dates**  
Five-day moving average



### ***V. 1 The exchange rate pass-through to domestic prices – model calculations***

It has been repeatedly underlined in the Bank's previous analyses that the nominal exchange rate's effect on the level of domestic prices, in short the extent of exchange rate pass-through, is of utmost importance from the perspective of disinflation. The Bank's previous analyses were primarily focussed on the exchange rate pass-through coefficient in respect of tradable goods, this being the area where the exchange rate most clearly coordinates prices.<sup>37</sup> But it is important not only to look at the pass-through profile in respect of tradables, as the ultimate question of exchange-rate based disinflation is what kind of disciplinary role the nominal exchange rate exerts on the overall CPI or at least on some aggregate market-related price index.

It stands to reason that in general equilibrium the size of exchange rate pass-through is subject to the behaviour of all markets of the economy, and is thus determined by labour market conditions and fiscal policy just as much as by pricing behaviour. Mark-ups applied by companies on a given set of costs are determined by their pricing behaviour, i.e. how frequently they implement price changes.<sup>38</sup> Their behaviour is, in turn, governed by cyclical conditions within the economy, the level of inflation and the credibility of monetary policy. The situation on the labour market affects pricing behaviour via wage and hence cost changes, and is thus obviously another determinant of the pass-through profile, in addition to pricing behaviour. Fiscal policy is crucial, primarily in relation to credibility over the longer term and hence the coordination of inflation expectations.<sup>39</sup>

The effects noted above can be analysed systematically using the NIGEM model.<sup>40</sup> According to simulations by the Bank's economists, the exchange rate channel affects the rate of inflation in the following way:

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<sup>37</sup> For a discussion of the effect exchange rate change has on inflation, see the August 2001 issue of the *Report*.

<sup>38</sup> Engel (2002) "The Responsiveness of Consumer Prices to Exchange Rates and the Implications for the Exchange Rate Policy: A Survey of a Few Recent New Open Economy Macroeconomic Models" NBER Working Paper 8725

<sup>39</sup> See Krekó-Világi (2002), *Fiscal Policy and Disinflation*, NBH manuscript.

<sup>40</sup> On the NIGEM model in general, see Jakab-Kovács (2002) "Hungary in the NIGEM model" NBH Working Papers 2002/3. Specifically about the simulation, see Jakab-Kovács (2002) "Explaining Exchange Rate Pass-Through: Some Simulations with the NIGEM Model" paper presented at the [ECOMOD Conference](#), Brussels, July 2002. (dow loadasle)



1. In the first year of appreciation, reduction in costs via *import prices* (price adjustment) and expectations play the most pronounced role. The latter is taken to represent the extent to which economic agents have a forward-looking attitude when setting wages and prices.
2. Disinflation implemented via reducing the *output gap* begins to be more marked in the second and third years (mark-up fluctuations). At this stage, the disinflationary effect of the direct reduction in import prices weakens, and a further drop in inflation can only be achieved at the cost of a growth sacrifice.
3. The *labour market* achieves primary significance from year the 4th. As a result of the growth sacrifice, there is a rise in the unemployment rate. Disinflation continues subject to the flexibility with which wages respond to the decline in labour demand (nominal wage flexibility).
4. The pace of mutual adjustments between *productivity and real wages* (real wage adjustment) plays a relatively minor role in exchange rate pass-through.

The Bank's results reveal a one- to two-year lag between the dates from which adjustment in the goods market and in the labour market begin to make a mark in respect of disinflation. This can be partly attributed to the fact that while price change affects disinflation directly, labour market adjustment has an indirect impact. On the other hand, not only does labour market adjustment feed through to prices with a lag, but there is also a phase lag between wage adjustment itself and the decline in inflation. This appears to be the case, because while the effect of imports-side cost reduction is immediately passed through to consumer prices, firms tend to adjust wages only as competitiveness deteriorates.

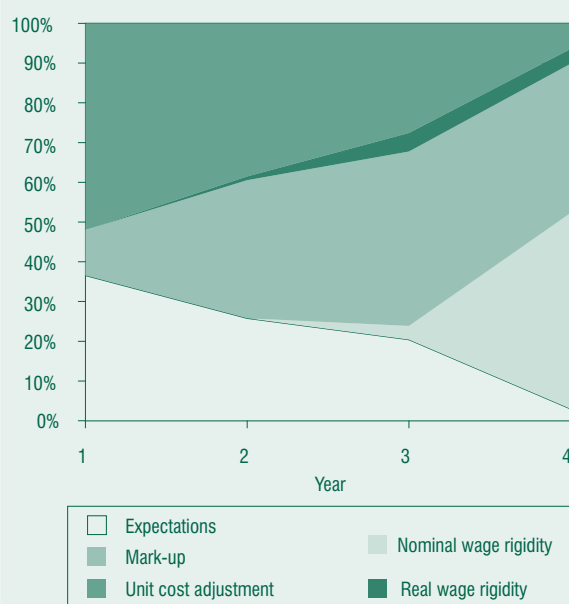
## V.2 How large is the inflation differential vis-à-vis Europe? Some results from a new comparative study

In this paper we try to summarise the size of the real appreciation driven by relative productivity differentials i.e. the Balassa-Samuelson (BS) effect in five Central and Eastern European (CEC5) countries, namely the Czech Republic, Hungary, Poland, the Slovak Republic, and Slovenia. An interesting feature of the study is the unified analytical framework that we apply for all of the countries, which makes the individual results comparable. Our new study in the *NBH Working Paper Series* (no. 2002/5) is joint research of CEC5 central bank experts.

Our approach is based on the use of two methods. Firstly, we create a common simple analytical framework for producing some stylised facts, and obtaining an estimate of relative price movements due to different sectoral productivity growth rates. Secondly, we try to summarise the econometric evidence available for the countries, both from individual country and panel estimates.

It seems clear from the analyses, based on the alternative approaches, that the BS effect on CPI inflation vis-à-vis Ger-

**Table V-1. Major determinants of exchange rate pass-through (totalling 100% in any given year)**



many does not exceed 2% per annum. The numbers obtained are somewhat different from those that one would obtain from the change in relative prices in the countries considered. This result might be explained by the fact, that in the past, other factors like change in the sectoral wage rates, pricing behaviour and intermediate product prices also contributed to the development of the nontradable and tradable price ratio.

As these estimates are based on past data, when productivity differentials were higher than current figures, it is very likely, that as the catching-up proceeds, the magnitude of the BS effect will be even smaller. This would suggest that the real convergence should not endanger the fulfilment of the Maastricht Treaty inflation criterion.

### ***V. 3 How do central banks in Central Europe forecast inflation?***

What do they forecast and what methods are applied? What roles the monetary policy decision makers and the experts play in preparing the inflation forecast? Why and how much is it important to inform the general public on the forecast? One can find answers for these types of questions in the paper [No. 2002/2](#) recently published in English language in the *NBH Background Studies* series. The paper, which examines the inflation forecasting practice and the related institutional framework at the central banks of five Central European countries (the Czech Republic, Hungary, Poland, Slovakia and Slovenia), was initially prepared for the Basle meeting of the Governors of the five central banks on 11th of March, 2002.

The first part of the paper presents the general aspects of the comparative analysis, which primarily follow the requirements of inflation targeting monetary regimes applied by three of the five central banks (Czech, Hungarian and Polish). The second part consists of individual country case studies, which give detailed description of the institutional framework and forecasting practice at the five central banks considered. The paper is the first to give insight into the forecasting practice of the five Central European central banks, while another interesting feature is that, beyond the common framework of analy-

**Main features of inflation forecasting systems in CEE5 central banks \***

	<i>Transparency</i>	<i>Procedure</i>	<i>Output of forecast</i>	<i>Horizon, frequency</i>	<i>Model use</i>	<i>Monetary policy assumption</i>
CZ	Quarterly publication of comprehensive forecasts	Discrete involvement of policy makers	Point estimate and range	6-8 quarters, quarterly	Structural models, partial equations, expert info	Both conditional and unconditional
HU	Quarterly publication of comprehensive forecasts	Iterative, stepwise involvement of policy makers	Point estimate and fanchart	6-8 quarters, quarterly	Partial equations, expert info, simulation models	Conditional
PL	Quarterly publication of backward looking analysis	No involvement of policy makers	Point estimate and scenarios	4-6 quarters, monthly	Structural model, partial equations, expert info	Both conditional and unconditional
SL	Annual publication, monthly updates	Iterative, stepwise involvement of policy makers	Range	4 quarters, monthly	No models, mostly expert judgement	N/A
SI	Semi-annual publication of comprehensive forecasts	No involvement of policy makers	Point estimate and range	8 quarters, at least twice a year	Structural model, expert judgement	Conditional

\* CZ: Czech Republic, HU: Hungary, PL: Poland, SL: Slovakia, SI: Slovenia

sis, the country case studies were written by experts from the individual banks. A brief summary of the analysis is presented in the table below.

### ***V. 4 An analysis on the potential effects of EU entry on Hungarian food prices***

**D**o food prices in Hungary conceal inflationary tensions? We analysed this issues in the 2002/1. issue of *NBH Background Studies*. Our analysis takes a look at the potential *direct* effects of EU accession on food prices, aiming to assess whether domestic food prices conceal an ‘inflationary bomb’ which could be *ignited by the accession*.

It is a widely held idea in Hungary that joining the EU will cause a rapidly and strongly rising domestic food price level vis-à-vis EU prices. The arguments can be separated into two parts. On the one part many argue that intervention prices of the Common Agricultural Policy (CAP) are likely to exert upward pressure on certain domestic agricultural producer prices. On the other hand, say some current consumer price differentials between domestic and EU prices will also disappear. The question carries great significance on account of Hungary’s ambition to join *the euro area*, as the next stage of integration following entry into the EU. Meeting the relevant Maastricht criteria requires, inter alia, reducing inflation to a very low level. As the *two years* following EU accession are crucial from the point of view of satisfying the inflation criteria, this period has been chosen as the focus of the following analysis.

We have found that the domestic agricultural producer prices for those products mostly relevant for the CPI, had approached the level of those in European countries by the late nineties. This was mainly not due to the price-equalising role of free trade, but rather that the result of flat-to-rising trend of domestic producer prices in terms of euro, has occurred simultaneously with a downward movement in European price levels over the past decade. This process has gained further momentum from the persistent appreciation in the exchange rate of the forint. Although there is product having more crucial importance in domestic consumption (sugar beet) which is likely to increase in price in the aftermath of EU accession, we do not expect this to generate overall inflationary shocks. Finally, there are also prices, which might increase as a result of Hungary’s adoption of the common agricultural policy in the wake of the EU entry, for instance fodder prices, but due to high meat prices, this is not likely feed through to inflation.

The *retail* price level of food products, on the other hand, is well below the EU average in Hungary. The reason for this seems to be lying in the high weight of non-tradable inputs (such as wages, land and supplementary services) or other local factors (e.g. different degree of perishability and in consumer preferences, etc). As the price level of the former tends to depend on the degree of economic development, food prices may permanently vary across countries of different stages of development. The latter factors tend to hamper goods arbitrage in general.

Our conclusion is that, over the longer term, retail food prices will converge to the level of the EU countries. However, this will take place simultaneously with the overall catching up of the Hungarian economy and last decades. Thus we do not expect the EU entry to increase domestic food prices.

## ***V.5 A handbook on Hungarian economic data***

What can be considered a time series and what cannot be considered one? How can one prepare raw data for analysis? What indicators should one use to assess cyclical, inflation or equilibrium developments within the Hungarian economy? What is to be done if there are as many as four different measures available describing the same phenomenon? How can one access Hungarian economic data? Which data series are downloadable and which can be found only in traditional paper-based publications?

To answer these and similar questions, the National Bank brought out in July a *Handbook on the Use of Hungarian Data*.<sup>41</sup> The purpose of this publication is to share with the public the Bank's experience obtained in the analysis of domestic economic statistics. We explain what type of data we consider as relevant in assessing Hungarian economy, and various methods of using such data. In particular, the 19 chapters of the *Handbook* deal with one specific subject-matter each, providing valuable assistance in understanding the procedures and forecasts presented in the Bank's *Quarterly Report on Inflation*. This looks at the analytical and forecasting tools used by central bankers is intended to enhance transparency and predictability of monetary policy decision making.

Of the topics in the first edition, it may be worth drawing attention to the methodological and theoretical background underlying the fiscal stance indicator applied in the Bank's analytical work, and - by way of a detour - to the methodological comparison of four widely used fiscal deficit indicators. A description of the statistical tools applied in assessing the domestic labour market may also be useful in understanding analytical practises. Finally, the publication is breaking new ground by highlighting the Hungarian household and corporate confidence indices which, in the Bank's experience, are a leading indicator of domestic economic trends.

The *Handbook* is only published in an electronic format, downloadable from the National Bank's homepage. Several indicators referred to in the *Handbook* and unavailable in a time series format elsewhere, as well as the Bank's own crop of indicators (for the fiscal stance, wage inflation and the Reuters survey's consensus inflation expectations series) have been published on the Bank's homepage.<sup>42</sup>

The publication will be updated on a regular basis, as need may be and as far as it is possible. We would welcome any comments and suggestions from readers.

<sup>41</sup> At the time of the publication of this *Report* only the Hungarian version of the *Handbook* is available for download (see [Kézikönyv a magyar gazdasági adatok használatához](#)). The English version would also be published soon on the NBH website.

<sup>42</sup> See under [Financial Data / Statistical Time series](#) on the NBH website.

## V. 6 *The economic consequences of adopting the euro*

Following Hungary's EU-accession, entry into the Economic and Monetary Union (EMU) will be the next major step in the country's European integration process. EMU-entry will eventually entail giving up the national currency and introducing the euro as the domestic means of payment. In our most recent Occasional Paper we analysed the costs, benefits and optimal timing of the introduction of the common currency.<sup>45</sup>

In our cost-benefit analysis, we tried to quantify the three major benefits of euro-zone membership. These gains are a result of (1) *lower transaction costs*, (2) *increasing foreign trade* and (3) *lower real interest rates* together with a more relaxed current account constraint. The most important measurable cost of introducing the euro is a reduction of seigniorage income. According to our estimates the measurable benefits of the euro are significantly bigger than the measurable costs. As a result, introducing the euro would significantly increase Hungary's long-term potential growth rate and speed up the (real) convergence towards the core euro-zone countries.

The effect of the euro on the volatility of the Hungarian business cycle and its welfare consequences are much harder to measure. By introducing the common currency, Hungary loses a potential policy tool (the exchange rate) with which, in principle at least, it would be able to smooth out part of the asymmetric shocks. However, giving up the national currency also means that a potential source of asymmetric shocks (emerging market financial contagion) is eliminated. Once in the euro-zone, the probability of asymmetric shocks affecting Hungary is not larger than in less developed current member states. The reasons for this are similar production structures, advanced trade integration and synchronised business cycles between Hungary and the euro-zone. Adjustments through flexible goods and labour markets and discretionary measures of fiscal policy in Hungary are able to handle the remaining asymmetric shocks at least as efficiently as in less developed current EMU member states. Our analysis therefore shows that *Hungary and the euro-zone* in most respect *constitute an optimal currency area*.

Many factors influence the optimal timing of the introduction of the euro. On the one hand, quick disinflation and fiscal contraction currently needed to an early euro-zone entry may increase the real costs of the euro. On the other hand, as long as Hungary stays out of the euro-zone, it is exposed to potentially disruptive speculative capital flows. Moreover, a commitment to an early euro-zone entry, especially if it is based on a consensus between the Government and the central bank, sets out a more or less well-determined "end-point" of the nominal convergence process for market participants. The existence of such an "end-point" increases the credibility of the disinflation programme and, having a favourable effect on inflation expectations, eventually reduces the cost of disinflation.

<sup>45</sup> Attila Csajbók - Ágnes Csermely (eds.): *Adopting the euro in Hungary: expected costs, benefits and timing*. NBH Occasional Papers No. 24. Forthcoming in English. Hungarian version published in June, 2002.

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