QUARTERLY REPORT ON INFLATION

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2001

Prepared by the Economics Department
of the National Bank of Hungary
Head: István Hamecz, Head of Department
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Responsible for publishing: Botond Bercsényi, Head of Department
Prepared for publication by the Publications Group of the Department
for General Services and Procurement
1850 Budapest, V., Szabadság tér 8–9.
Mailing: Miklós Molnár
Phone: 36-1-312-4484
Fax: 36-1-302-3714
Internet: http: //www.mnb.hu

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The new 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 a 2% rate of inflation, corresponding in effect to 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 considerations that underlie the decisions of the Monetary Council.

The Monetary Council, the supreme decision making body of the National Bank of Hungary, will carry 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 analysts at the Bank's Economics Department on the outlook for inflation and the underlying principal macroeconomic developments. This projection serves as background information for Monetary Council members.

Since the Monetary Council was only established subsequent to the completion of this Report, the first projections presented herein for the variables that can be regarded as exogenous to monetary policy are either determined on the basis of market expectations or use the data for the last complete month, assuming that these remain unchanged during the forecast period. In the future, the assumptions underlying the projections will reflect the stance of the Monetary Council.

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Evaluation of monetary policy

At its session on 23 July 2001, the Monetary Council reviewed the report on the state of the economy and the expected developments with regard to growth and inflation. After the discussion of the report, the Monetary Council took the position that there was currently no need to change the monetary conditions. On the basis of the currently expected external and internal economic conditions, an exchange rate in the current range of 245–250 forints to the euro will help inflation stay within the projected 7 ± 1% band at the end of 2001 and meet the 4.5 ± 1% inflation target by the end of 2002. This inflation projection is based on the assumption that the world price for oil and the euro/dollar exchange rate will not change significantly relative to their average values in June, and cyclical conditions will also be in line with projections.

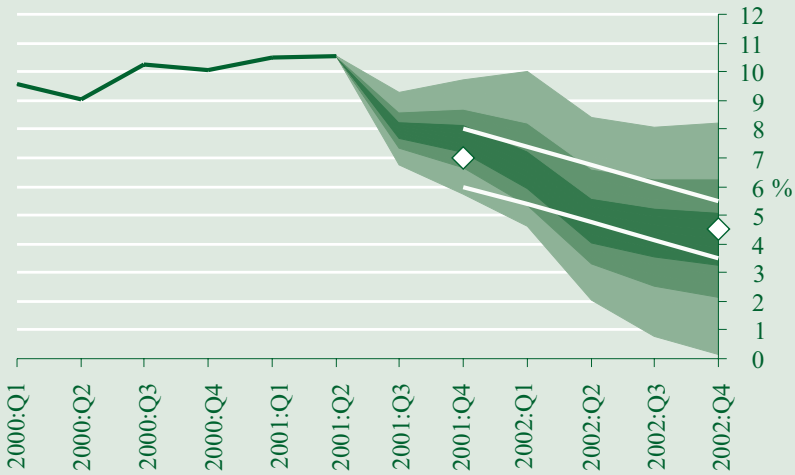
The past two months have witnessed significant tightening in monetary conditions. Based on the joint decision of the Central Bank Council and the Government, the Bank widened the intervention band of the forint's exchange rate to ±15% as of 3 May 2001, while retaining the 0.2% monthly rate of devaluing the forint's central parity. Since the change in the exchange rate system, the central bank has not made any interest rates changes, but the widening of the band has been followed by an appreciation of the forint. The key factor behind the appreciation has been higher external demand for longer term government securities. As a complementary measure to the band-widening, a government decree, effective as of June 18, removed, all remaining restrictions in the way of the forint's full convertibility. In spite of this foreign currency liberalisation, there have been no significant speculative short-term interest rate sensitive capital inflows.

The transformation of the monetary regime was necessitated by the persistently high rate of inflation. This unfavourable development could be primarily attributed to a series of negative external shocks occurring over the past one and a half years. In addition to these shocks, the negative effects of inflation expectations have also become a contributing factor from the second half of 2000.

In the opinion of the Monetary Council, it is not the overheating of the economy that is to blame for the worse-than-projected outcome of inflation: the unfavourable turn in the external cyclical conditions is expected to cause a slowdown in this year's aggregate demand growth compared to 2000. Consequently, the National Bank seeks to moderate inflation expectations so that the slowing of inflation can take place at the smallest possible cost to economic growth. Under the regime of inflation targeting, the National Bank will give guidance to economic agents by projecting a disinflation path over a horizon of several years. If prices and wages rise in accordance with the projected path, it will be possible to curtail the economic costs of disinflation. The National Bank expects that the private sector will exhibit greater flexibility than this year in adjusting wage increases.

Based on its forecasts, the Bank expects GDP to grow in a balanced manner at a rate in the range of 4–5% in both 2001 and 2002. The slowdown in the economic growth of Hungary's main international trading partners in 2001 will be offset by expansionary fiscal policy. Of the domestic

***Chart 1* Inflation projection**
Percentage changes on a year earlier



Note: The fan chart shows the probability distribution of the outcomes around the central projection. The central band with the darkest shade includes the central projection. The entire shaded area covers 90% of all probabilities, with a 5% likelihood that the inflation outcome will fall outside the uppermost shaded band. Outside the central projection, the bands represent a 15% probability each. The uncertainty intervals have been estimated on the basis of the Bank's past forecasting experience errors, taking into account the uncertainties about the current projections. The two white dots represent the inflation targets (7% and 4.5%); the straight lines mark the ±1% tolerance band on either side of the target rates..

components of demand, consumer spending is expected to grow by 4.5%, thanks to a rapid rise in household incomes.

In 2002, the forces driving growth are expected to change. In line with international forecasts, the National Bank also expects a pick-up in external economic growth. Public sector demand will no longer rise compared with 2001; fiscal policy will not significantly increase aggregate demand according to the Monetary Council's expectations.

As a result of domestic absorption outstripping GDP growth in both years, the external financing requirement will increase. The current account deficit is expected to amount to about 4% of GDP in 2001 and slightly above it in 2002. Based on projections regarding financing, these deficits are consistent with the Bank's exchange rate objectives.

Forecasting the path of inflation over the short term is a difficult task since during the current period of transition the National Bank has not yet gained sufficient experience about how long economic agents' adjustment to the new regime will take. Therefore, when making its projections, the National Bank has also relied on the experience of European small open economies with exchange rate regimes similar to that of Hungary in order to make up for missing information. The Monetary Council expects that economic agents will pay increasing attention to the new exchange rate and inflation path when setting their prices.

The Monetary Council's expectation is that the external inflationary pressures that prevailed over the past two years will gradually disappear. This assumes, inter alia, that unprocessed foodstuff prices will increase at a considerably slower pace.

With unchanged monetary policy and assuming that the external and domestic developments are in line with the above projections, the National Bank projects the rate of consumer price inflation to be in the range of 7–8% in December 2001, i.e. the upper range of the Bank's inflation target band. In comparison, the inflation rate for December 2002 is more likely to fall in the lower range of the target band. The degree of uncertainty about the inflation outcome is significant in both years. In 2001, the risks have an asymmetrical distribution, being more on the upside. This is due to the uncertainty about the development of unprocessed foodstuff prices. The uncertainty about the inflation outcome in 2002 can be viewed as symmetrical.

MONETARY COUNCIL

I. Inflation

In the first half of 2001, the consumer price index (CPI) of 10.4% exceeded the average rate for the past two years. The factor behind this negative development was inflation inertia emerging in the aftermath of last year's temporary inflationary shocks, aggravated by yet another rise in unprocessed foodstuff prices in the second quarter.

In terms of consumer basket components, *tradable goods and market services prices* play a crucial role from the point of view of monetary policy. The former provides information as to the efficiency of the transmission mechanism of exchange rate policy, i.e. the operation of the exchange rate channel. The latter reflects the credibility and sustainability of exchange rate-based disinflation.

Inflation in *tradable goods,* accounting for roughly one-quarter of the consumer basket, is determined by the imported inflation rate and the exchange rate path. During the first six months, inflation rates of over 5% exceeded the rate at which the forint depreciated in 12 month. Yet this difference between the rates of price increases and devaluation can be satisfactorily explained by the acceleration in tradable goods price inflation imported from Europe (see Chart I-1).

The direct effect of past supply shocks and the indirect effect of the inflation inertia triggered by such have been most apparent in market services price inflation. Unlike tradable goods prices, those of *market services* are not disciplined by import competition. They are primarily governed by cost-side inflation developments, domestic demand and domestic price setters' inflation expectations. The first was undoubtedly a contributing factor to the rise in the services price index, with the jump in energy and fuel prices, and in meat prices last summer, not taking long to feed through to services prices. However, the direct inflationary pressures arising from last year's developments have tapered off this year, and domestic demand growth has also moderated. Therefore, the Bank attributes the acceleration in the price index to services sector price setters' higher inflation expectations. In 2001 Q2, the adverse trend in the price index of services seemed to have reversed, beginning to decline again in this quarter (see Chart I-2).

In 2001 Q2, the jump in the price of pork directly raised headline CPI inflation by 0.8 percentage points. According to the Bank's estimates, within the course of one year, unprocessed foodstuff price inflation may feed through to about one-fifth of the goods in the consumer basket. This will first push up processed foodstuff prices and subsequently prices of certain services that are sensitive to food prices. Last summer's meat price shock, together with the cereal price increases in autumn 2000, has kept the quarterly price index values high for nearly a year .

Chart I-1 **Difference between increases in domestic tradable goods prices and imported tradable goods price inflation**
Difference between annual rates of increase

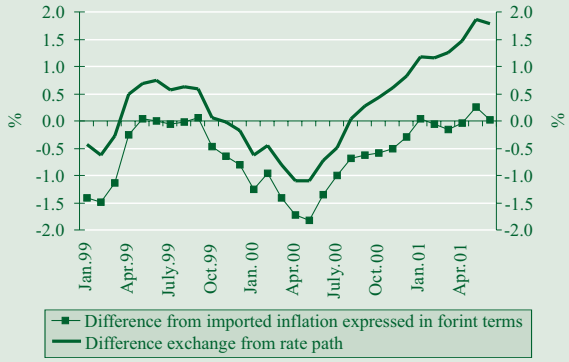


Chart I-2 **Market services price inflation**
Percentage changes on a year earlier

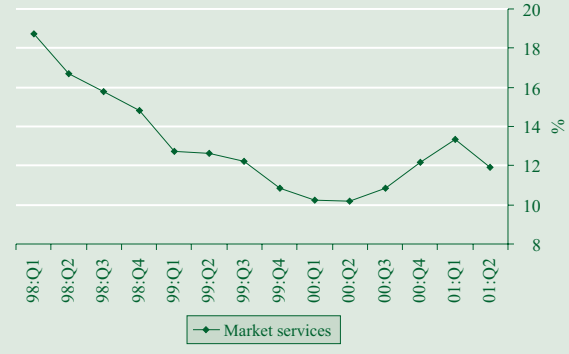


Chart I-3 **Food price inflation**
Percentage changes on a year earlier

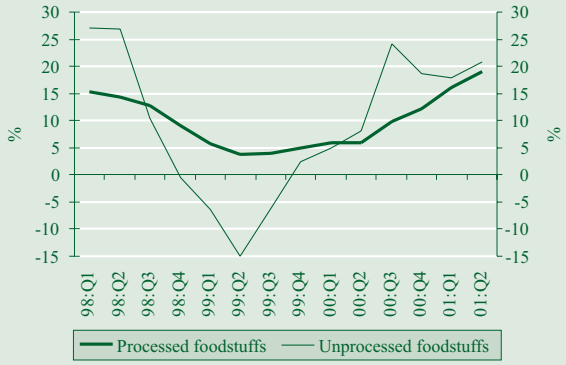
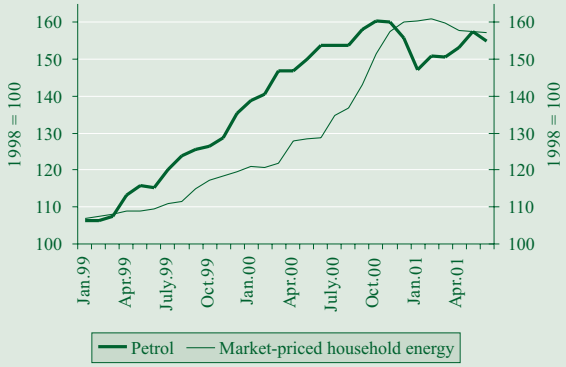


Chart I-4 **Vehicle fuel and market-priced household energy price levels**



Extreme fluctuations in the prices of domestic agricultural products, which significantly exceed the rates seen in neighbouring countries and the EU countries, represent additional serious challenges to disinflation policy (see Chart I-3).

After declining at the end of last year, the price level of *vehicle fuels,* regarded as a large CPI component, rose at a steady rate throughout the first six months, approaching the peak rate measured before last year's decreases. In addition to flat oil prices and a weak euro, this appeared to be the result of a one-off supply shock, exerting extra upward pressure on the regional price level of petrol. Available data show that the domestic price level of petrol has started to decrease since May, due party to the strengthening of the forint. This decline is expected to first appear in the July price index. Following an over 60% rise in 2000, market-priced household energy (bottled gas, briquette, coal and firewood) prices have been falling steadily over the past few months.

On the whole, *regulated prices* followed our expected trend, rising by 7.8% during the first six months, not as fast as the CPI, which thus exerted downward pressure on inflation during the first half of the year.

Prices regulated by the central authorities increased by 6% in general. This rate refers to electricity and, in rough terms, communication and subsidised pharmaceuticals prices. The price for natural gas rose by 12% in July, but the impact of this increase will first appear in August.

The prices of services provided by local government authorities increased faster than the targeted 6% rate. Prices for housing services went up by 10% during the first half of the year. District heating prices will begin increasing from the start of the heating season in autumn.

The 6% average valorisation of excise duties took place early in the year. This comprised a 15% rise in the tax on tobacco, aimed to approximate tax content norms within the EU. By contrast, the excise tax on vehicle fuel remained unchanged. The rate of excise duties had a 0.3 percentage point impact on headline CPI.

II. Monetary policy, interest rates and the exchange rate

1 Central bank interest rates and short-term market yields

The National Bank has not changed its key rates over the past four months. While the level of interest rates remained unchanged, monetary conditions tightened significantly, as the widening of the band was followed by a 5–10% appreciation of the forint's exchange rate. Under the narrow-band regime preceding the band-widening, the so-called interest premium, derived as the difference between three-month forint and foreign (euro) yields and the rate of devaluation announced for the subsequent three months, provided a good approximation of expected excess returns on short-term forint investments. This was because, apart from periods of capital market crises, intra-band exchange rate movements were minimal: the exchange rate, which stayed near the strong edge of the intervention band, was expected to depreciate over the short term at virtually the same rate as the official rate of devaluation.

With the widening of the band in May, the earlier method of calculating the interest premium is no longer suitable, since the official rate of devaluation and the exchange rate expectations are no longer as closely linked as under the narrow-band system. Therefore, following the change of the regime, the Bank is focussing on the (actual and expected) three-month interest rate differential vis-à-vis the euro area (see Chart II-1).

The difference between three-month forint and euro yields has fluctuated in the range of 630 and 670 basis points over the past four months. (see Chart II–2). Short-term forint rates remained relatively stable in this period. The fluctuation of the interest rate differential was more of a result of swings in short-term euro yields as expectations of an ECB rate cut were continuously changing.

Forward yields derived from the yield curve and the Reuters poll provide indications of market participants' expectations regarding the future course of the central bank interest rate. The expectations for the central bank rate at end-2001 remained virtually unchanged during the period from March to early July, at around 10%. Thus, neither the band-widening, nor the announcement of the inflation target have significantly altered expectations pertaining to this year's interest rate policy. At the same time, unchanged nominal rates reflect higher real interest rate expectations, since the period since March has seen a decrease in macroanalysts' inflation expectations for end-2001.The investor confidence crisis about emerging markets first experienced on July 6th and the weakening of the forint have changed

Chart II-1 **Central bank base rate and short-term market yields**

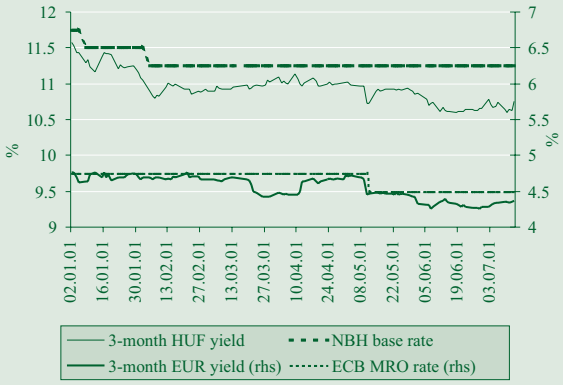


Chart II-2 **Three-month interest rate differential vis-à-vis the euro area**

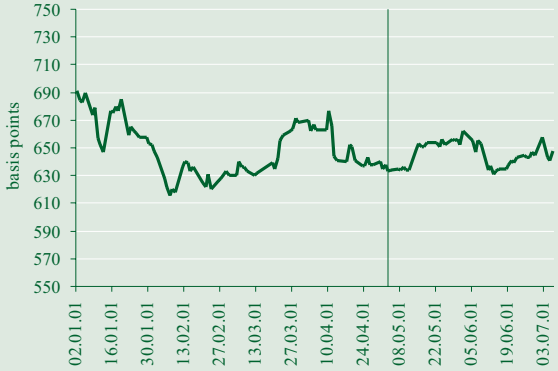
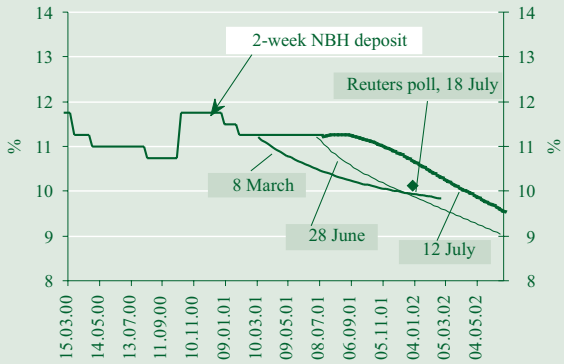


Chart II-3 **Central bank base rate expectations: two-week interest rate path derived from the yield curve and the Reuters poll**



interest rate expectations. There has been an upward shift in the expected path of central bank rates: according to the two-week interest rate path derived from the yield curve, at mid-July, market participants did not expect a rate cut for the following month (see Chart II-3).

2 Changes in risk perceptions

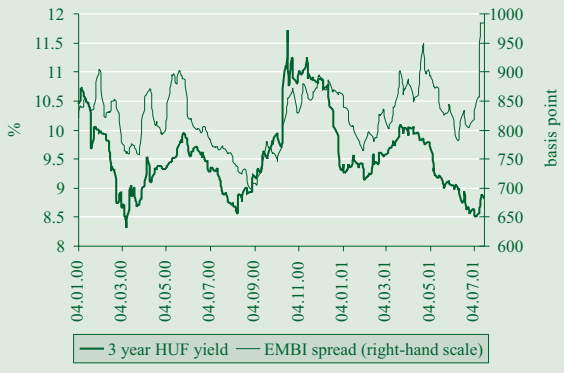
The perceived risk of forint investments, which is crucial to the development of capital flows and yields, is more markedly reflected in exchange rate movements now that the band has been widened. In addition to domestic economic fundamentals, international money and capital markets' "global appetite for risk" frequently has a great influence on the perceived risk of Hungarian investments.

Over the past few months, foreign investors' willingness to take risk has been influenced by swings in expectations about US growth prospects and the Fed's interest rate moves. A similar factor of uncertainty was associated with the cyclical position of the euro area, where the adverse effect of slowing US growth and the European Central Bank's tight interest rate policy have both dampened growth expectations. Furthermore, the general risk perception of emerging countries has also had an impact on investors' willingness to take on risk, especially in July.

Continuing the trend seen early in the year, the indicators of the „appetite for risk" in developed countries continued to increase in March, thanks primarily to deterioration in and higher uncertainty about US economic prospects. However, the publication of more favourable data in April and another unexpected rate cut by the Fed on April 18th gave rise to more optimism. Since then, indicators of risk-taking willingness have steadily declined. This first upward, then downward path of risk perception has been reflected in the interest premium on Hungarian foreign currency bonds as well as the inflow of portfolio capital, which showed a modest pace in March, but strengthened in April.

The EMBI spread,[1] reflecting the risk premia on dollar-denominated emerging country sovereign bonds, moved in an opposite direction to global risk indicators in April. However, this was exclusively due to unfavourable news from Argentina and the higher required risk premia on South American sovereign bonds. Other (European and Asian) components of the EMBI indicate that investors only perceived a region-specific threat (see Chart II-4).

Chart II-4 **EMBI spread and the three-year HUF yield**



During May and June, foreign investor behaviour on the Hungarian money and capital market was primarily influenced by country-specific factors (such as the widening of the band, foreign currency liberalisation and the announcement of the new exchange rate regime). Nevertheless, global investor sentiment was also beneficial to capital inflows: there was improvement in the risk perception of both emerging and developed markets during this period.

However, the Hungarian foreign exchange market experienced another episode of emerging market contagion in July.

[1] JP Morgan's Emerging Markets Bond Index+ (EMBI+) consist of spreads of dollar-denominated emerging country sovereign bonds over US treasury bond yields. The EMBI+ is thus an indicator of perceived emerging country risk.

A fresh wave of simultaneous bad news from Turkey and Argentina, suffering from economic and financial troubles for several months, and the controversy surrounding fiscal policy in Poland triggered a depreciation of a few percentage points in the forint's exchange rate from July 6th on. At the same time, there was no significant increase in either the spread of Hungarian foreign currency bonds or in forint yields.

3 Capital flows and the exchange rate

The narrow-band exchange rate regime, in place for the first four months of the year, was characterised by a strong demand for forints. Demand was exceptionally high in February and April. The main factors behind this were non-residents' purchases of long-term government securities and FDI inflows, while companies' foreign currency borrowing fell. April saw a significant rise in non-residents' demand for short-term government securities. Thanks to the vigorous inflow of funds, until the band was widened, the exchange rate of the forint lingered at the upper range of the intervention band, prompting the central bank to intervene on several occasions (see Chart II-5).

After the band was widened on May 4th, non-residents' demand for long-term government securities increased. The increase in foreign demand was offset by a decrease in commercial banks' on-balance-sheet foreign currency open positions. Banks were only willing to wind up open positions as the exchange rate was steadily appreciating. The domestic currency strengthened steadily from HUF 267 to the euro on May 3rd to HUF 240 on July 4th, against the background of a nearly twofold rise in spot exchange market turnover relative to that prior to the band-widening.

Non-residents' government security purchases amounted to approximately HUF 100 billion in May. Growth was largely due to purchases of medium-term (one- to four-year) government securities. Since the risk premium on forint yields is not likely to have decreased in the wake of the band-widening, and medium-term euro yields rose during this period, the upturn in the demand for government securities can mainly be ascribed to a shift in exchange rate expectations. Movements in the stock of government securities point to foreign investors' expectations of a strengthening of the forint over the medium term, while the uncertainty about more immediate movements has caused them to refrain from buying short-term paper.

In June, non-residents' forint demand fell from HUF 141.2 billion in May to HUF 4.7 billion. However, from the second week of June, commercial banks reopened their net on-balance-sheet foreign currency positions, which was a contributory factor in the June strengthening of the forint's exchange rate.

The less favourable capital market situation in the aftermath of the Argentinian crisis in July led to a marked weakening in the exchange rates of Central and East European national currencies, with the zloty down by 12% and the forint by 7%. The initial major shift in the exchange rates was followed by a correction in respect of both currencies. The depreciation of the forint might have been partly due to the closing of earlier positions established in expectation of an appreciation and the insufficient

***Chart II-5* Exchange rate of the forint**

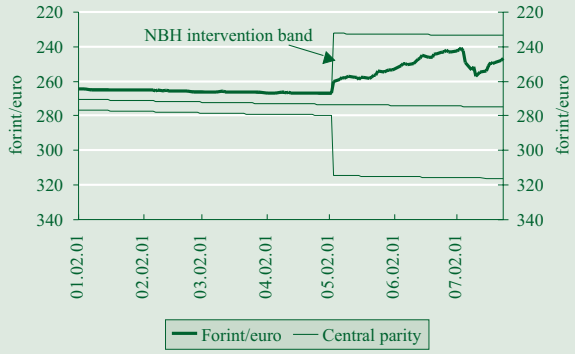


***Chart II-6* Analysts' exchange rate expectations, Reuters polls**

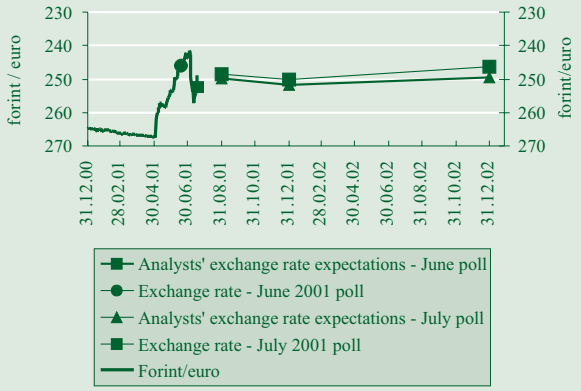
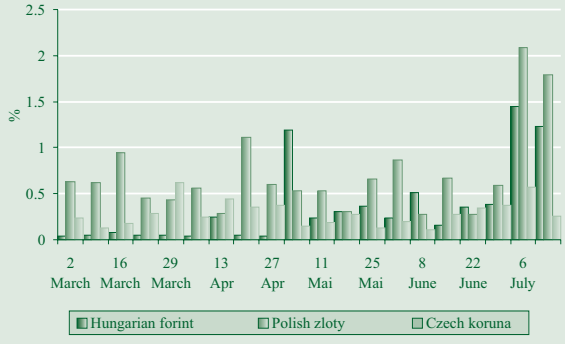


Chart II-7* Weekly volatility of Central and East European national currency exchange rates



* Volatility has been defined as the weekly standard deviation of daily exchange rate returns.

Chart II-8 **Volume and average maturity of non-residents' government security holdings**

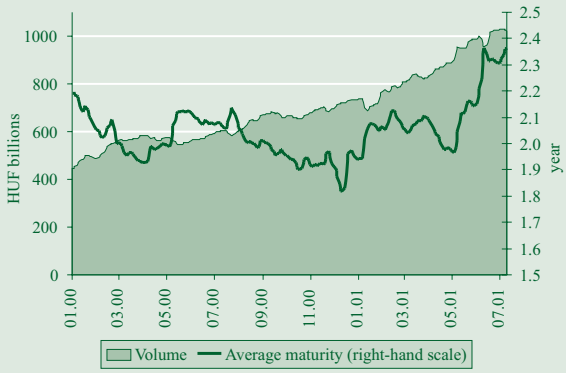
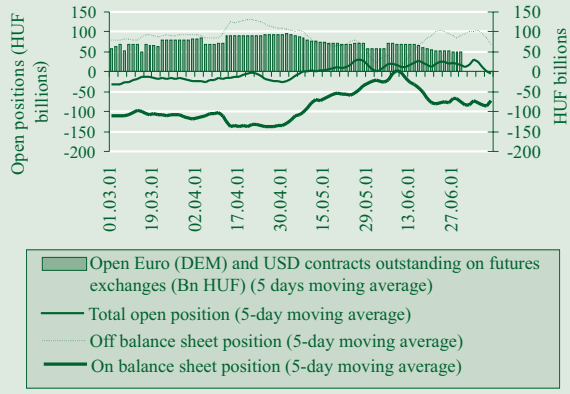


Chart II-9 **Commercial banks' open FX positions**



depth of the domestic foreign exchange market. The weakening of the exchange rate led to a minor withdrawal of funds in the latter part of the month, along with an apparently weaker demand at government security auctions.

During the period between the widening of the band and the emerging market shock, exchange rate expectations moved in line with spot exchange rates. According to the Reuters poll published on July 19th, macroanalysts' average forecast for the exchange rate is HUF 249.8 to the euro at end-August 2001, HUF 252 at end-December 2001 and HUF 249.4 in December 2002, with the individual forecasts showing significant variance. Apparently, the shock in emerging countries early in July also decreased analysts' expectations of the forint's future exchange rate (see Chart II-6 on Page 15).

Exchange rate volatility increased sharply as a consequence of the characteristics of the new regime and the uncertainties concomitant with the period of transition. In the period since the band was widened, the forint appeared to be slightly more volatile than the Czech crown and significantly less volatile than the Polish zloty (see Chart II-7 on Page 15).

Despite the increased risk, the volume of trade reported by the two foreign exchange futures markets failed to increase, and indeed there was even some evidence of a downward trend. Banks' foreign exchange derivative positions developed symmetrically to those of their on-balance-sheet exposures in order to prevent their total FX positions from being short. It is not the two Hungarian FX futures markets that banks have used to accommodate their changing hedging requirement, since the volume of exchange-traded futures appeared to be much more stable than the banks' total derivative transactions. Naturally, not only banks can trade on the exchanges, yet non-bank participants seem to be less active in using the exchange-traded instruments for risk management (see Table II-1 and Charts II-8 and II-9).

Since the widening of the exchange rate band, the central bank has not intervened in the foreign exchange markets. However, since25 June 2001, the central bank has been purchasing

Table II-1 **Components of foreign exchange market demand and supply**
The + sign denotes forint demand and the – sign denotes negative forint supply

HUF billions

	2001					
	January	February	March	April	May	June
Central bank intervention*	**–4.1**	**–133.4**	**–40.4**	**–135.0**	**–28.0**	**0**
Current account balance	**–62.8**	**–14.3**	**–12.9**	**–0.5**	**–34.5**	
Non-interest-rate-sensitive capital-flows	**54.8**	**66.8**	**40.5**	**38.0**	**30.4**	
FDI inflow (private sector)	42.9	67.0	32.8	34.2	28.3	
Equities	11.9	–0.2	7.7	3.8	2.1	
Interest rate sensitive capital flows	**20.9**	**51.4**	**–10.8**	**54.5**	**–8.1**	
Change in non-residents' holding of government securities	–9.2	69.8	29.4	66.2	99.7	29.9
Short-term	6.9	5.4	–14.4	28.5	–10.1	–7.2
Long-term	–16.2	64.4	43.8	37.7	109.8	37.1
Non-residents' forint deposits	2.1	2.6	–12.0	19.8	41.5	–25.2
Non-residents, total	*–7.1*	*72.4*	*17.4*	*86.0*	*141.2*	*4.7*
Credit institutions (change in on-balance-sheet open position)	*37.0*	*31.3*	*–3.0*	*15.2*	*–107.7*	*79.7*
Corporate sector	*3.9*	*–51.8*	*–31.0*	*–46.2*	*–37.8*	
1 Change in net internal foreign currency lending	9.4	–44.5	9.0	21.9	–9.1	
2 Change in non-residents' foreign currency lending	–5.5	–7.3	–40.1	–68.1	–28.7	
Household sector	*–12.9*	*–0.5*	*5.7*	*–0.6*	*–3.7*	
General government demand for foreign currency						*–2.1*
Other	**–8.8**	**29.5**	**23.6**	**43.0**	**40.2**	

*The entry "Central bank intervention" does not include foreign exchange market purchases associated with the public sector's foreign exchange debt by the National Bank, acting as an agent of general government. These purchases, made in equal amounts on a daily basis since 25 June 2001, are presented with the entry on "General government demand for foreign currency".

foreign currency on a daily basis on behalf of the government in order to service the interest on the country's sovereign FX debt. The Bank will buy foreign currency amounting to EUR 366 million for the year as a whole. In order to prevent market participants from incorrectly interpreting these transactions as central bank signals as well as to minimise their effect on the exchange rate, the National Bank will announce in advance both the total required amount of foreign currency and the size of daily purchases. Furthermore, the transactions will take place in equal instalments and at the same time on each business day.

4 Long-term yields and inflation expectations

The previous Report traced the developments on the government securities markets until end-February. Since then, yields with maturities in excess of one year have fallen significantly, with the largest downward shift (80–100 basis points) occurring in the two-to-five-year section of the yield curve (see Chart II-10). As a result of this fall and a slight rise in five to ten-year euro yields, the forint-euro yield differential fell considerably. The shift in the implied forward curve indicates that the decrease in long-term forint yields was mainly due to changes in expected short rates one to four years ahead (see Chart II-11).

Following their upward trend in January and February, yields on medium-to-long-term government securities continued to increase in March. At the beginning of April, in parallel with the global capital market risk indicators, forint implied forwards derived from the zero-coupon yield curve increased by 100–150 basis points relative to corresponding euro forwards (see Chart II-12). In addition to a rise in the required interest premium, adverse changes in CPI inflation[2] were also likely to have contributed to the increase in yields. The yield differential (150–200 basis points) showed the most marked rise in the two-to-four-year segment, implying that the series of negative shocks had become incorporated in medium-to-long-term inflation expectations.

Since the beginning of April, apart from ten-year yields remaining flat, shifts in the yield curve have been governed by a decrease in the required risk premium.

The widening of the forint's exchange rate band represented a landmark event in the development of inflation expectations. The market welcomed this change in monetary policy. Even though the rate of inflation was worse than expected in May, analysts' average inflation forecast for December 2002 decreased slightly at the end of the month and by 0.7 percentage points in terms of the survey following the June announcement of the inflation target. This brought the forecast rate down from 6.34% prior to the band-widening to 5.51%, close to the upper edge of the tolerance band around the inflation target. According to the July 19th poll, carried out after the emerging market turmoil in early in July, analysts' expectations of the forint's exchange rate in the next one-and-a half years seem to have declined. Consistently, there was also a slight upward shift – to 5.75 % – in the rate of inflation expected for end-2002.

[2] Since last June, macroanalysts have underestimated inflation typically by 0.2–0.3% (see Chart II-13) in each month except December and April.

Chart II-10 **Zero-coupon yield curves**

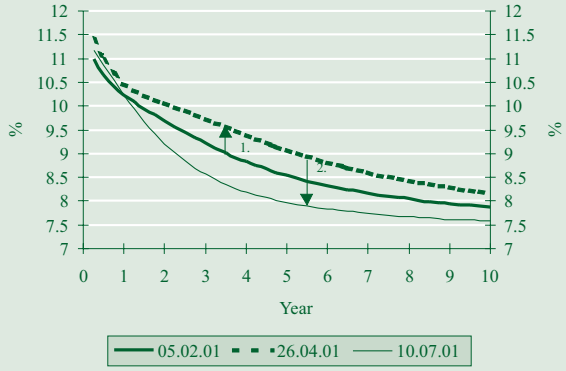


Chart II-11 **One-year implied forward yield curves**

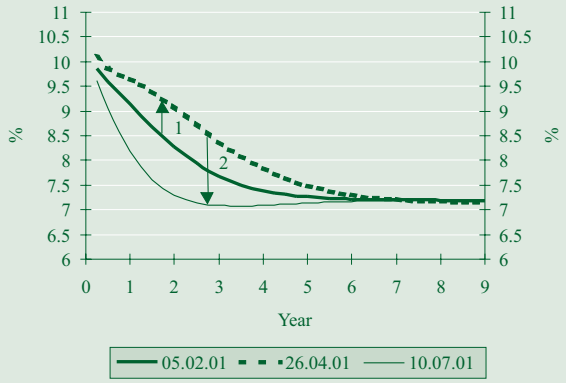


Chart II-12 **One-year implied forint and euro forward rates on different time horizons**

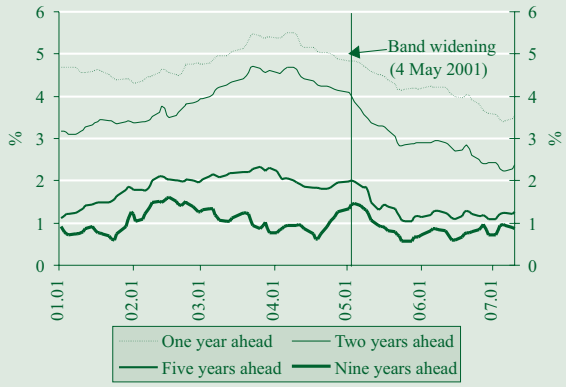
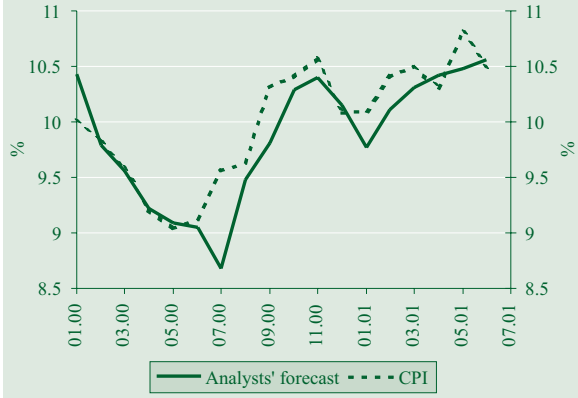


Chart II-13 **Reuters survey on monthly inflation expectations versus actual inflation rates**



After the band-widening, yields on government securities fell spectacularly. The widening of the band and the strengthening of the forint exerted downward pressure on domestic investors' medium-term inflation expectations, while increasing foreign investors' medium-term expectations of forint appreciation. This was most apparent over the one-to-three-year horizon, with implied forward rate differentials falling by 100–120 basis points. After the announcement of the inflation-targeting regime, yields with one-to-two-year maturities continued to fall. In addition to the effect of medium-term inflation and exchange rate expectations, international investors' steadily increasing "appetite for risk" is presumed to have contributed to the trend only to a smaller extent.

All in all, the widening of the band, the new exchange rate regime and the announcement of the central bank's inflation targeting policy have had a positive impact on inflation expectations, reflected in the decrease in medium-to-long term yields. This led to a significant fall in the difference between forint and euro yields, with the ten-year interest rate differential exceeding the rate satisfying the Maastricht convergence criterion by merely 60-80 basis points. It is important to note that the drop in longer-term yields was mainly due to a decline in medium-term forward rates (one to five years ahead), whereas forward rates for terms over five years did not fall significantly. This implies that the band-widening and the inflation targeting regime have mainly reduced medium-term expectations, causing market participants to expect a brisker pace of disinflation and interest rate convergence. There has been no considerable change in six-to-ten-year interest rate expectations, probably because the market had already priced in EMU entry and nominal convergence with on that horizon.

III. Determinants of inflation

This chapter analyses the factors bearing on the development of inflation in Hungary. In a small open economy, prices are governed to a significant extent by external demand, the terms of trade, foreign prices and change in nominal exchange rates, in addition to domestic supply and demand. Firstly we deal with internal demand and external trade, secondly we analyse external inflation trends. Supply-side developments are examined via the labour market of the private sector.[1]

1 Demand

In 2001 Q1, GDP grew at an annual rate of 4.4%. The acceleration of household consumption expenditures was a major factor contributing to this growth. In contrast to expectations, the volume of investment continued to rise at a moderate rate. Although the first quarter saw significant growth in exports, short-term trends point to a slowdown. Imports grew at a slower pace than exports, due to subdued investment growth and destocking, in addition to lower export expectations. During the first half of the year, general government's demand effect was 0.4% of GDP.

Over the forecast horizon, we do not expect a recurrence of last year's deterioration in the terms of trade. In 2000, the deterioration in the terms of trade caused gross national disposable income (GNDI) to grow at a slower pace than GDP, which was also reflected in the trade balance. However, in 2001 and 2002, GNDI is not expected to hamper domestic absorption or worsen the trade balance in nominal terms (see Table III-1, III-2).

The National Bank forecasts that the economy will continue growing at a robust rate in 2001 and 2002. This is based on the projection that other effects, such as the fiscal demand shock this year and a better external cyclical environment next year, will offset the real impact of the forint's appreciation. The Bank's central projection falls in the middle of the ranges given in Table III-3, but in 2002, due to the appreciation of the forint, the outcome for GDP growth is more likely to fall within the lower half of the 4–4.9% range.

In 2001, both consumption and investment are projected to contribute to growth at a stronger rate, while the contribution of net exports becomes negative. In 2002, domestic absorption is expected to play a lesser role, while net exports put less downward pressure on economic growth than in the previous year. In

[1] The employment and wage policies of the public sector will be viewed as part of fiscal policy, i.e. as factors contributing to aggregate demand.

Table III-1 **Annual growth of GDP and its components**
Percentage changes on a year earlier

Per cent

	2000					2001
	Q1	Q2	Q3	Q4	Year	Q1
Household final consumption expenditure	3.7	3.8	3.7	4.0	3.8	5.4
Social transfers in kind	0.3	1.8	1.8	1.4	1.3	1.2
Household consumption	3.0	3.4	3.4	3.5	3.3	4.5
Public consumption	1.0	1.1	2.0	2.0	1.6	1.2
Gross fixed capital formation	7.7	6.2	2.9	9.1	6.6	5.3
Gross capital formation*	14.5	4.2	9.5	11.9	9.9	0.0
Domestic absorption, total	5.7	3.4	5.0	6.0	5.0	2.9
Exports	20.9	21.0	19.9	25.0	21.8	21.4
Imports	18.5	16.4	20.8	27.3	21.1	18.4
GDP	6.5	5.6	4.5	4.2	5.2	4.4

* Includes the statistical discrepancy, represented by the difference between the results of calculations for production and use. The value 0.0% for the increase in gross capital formation is the result of rounding: the precise figure is 0.03%.

Table III-2 **Contribution to GDP growth by components of use**
Percentage changes on a year earlier

Per cent

	2000					2001
	Q1	Q2	Q3	Q4	Year	Q1
Household final consumption expenditure	1.9	1.9	1.9	2.0	1.9	2.7
Social transfers in kind	0.1	0.2	0.2	0.1	0.2	0.2
Household consumption	2.0	2.1	2.1	2.1	2.1	2.9
Public consumption	0.1	0.1	0.2	0.2	0.2	0.1
Gross fixed capital formation	1.1	1.4	0.7	3.0	1.6	0.8
Gross capital formation*	3.8	1.3	2.7	3.7	2.9	0.0
Domestic absorption, total	5.9	3.5	5.0	6.0	5.2	3.0
Export	11.1	11.2	11.0	14.4	12.0	12.9
Import	10.5	9.1	11.5	16.2	12.0	11.5
Net exports	0.6	2.1	–0.5	–1.8	0.0	1.4
GDP	6.5	5.6	4.5	4.2	5.2	4.4

*Includes the statistical discrepancy, represented by the difference between the results of calculations for production and use.

Table III-3 **Growth rate of GDP and its components – projection[2]**
Percentage changes on a year earlier

	Actual	Projection	
	2000	2001	2002
Household consumption	3.3	4.2–4.8	3.7–4.3
Household final consumption expenditure	3.8	4.9–5.5	4.2–5.0
Social transfers in kind	1.3	1.4	1.5
Public consumption	1.6	1.3	1.5
Gross frixed capital formation	6.6	8–9	7–8
Exports	21.8	14–16	14–16
Imports	21.1	15–17	14–16
GDP	5.2	4.1–5.1	4.0–4.9
„Final sales"	4.4	4.1–4.7	4.0–4.6

Table III-4 **Current account deficit and the financing capacity/requirement of sectors**
As a percentage of GDP

	2000	2001	2002
I. General government	–3.6	–5.5	–4.8
II. Private sector (1+2)	0.9	1.8	1.1
1 Households	5.1	4.2	3.5
2 Corporate sector*	–4.2	–2.4	–2.4
External financing requirement (I.+II.)**	**–2.7**	**–3.7**	**–3.7**
Curent account balance	**–3.3**	**–3.8 –4.3**	**–3.9 –4.5**
in EUR billions	**–1.6**	**–2.2 –2.5**	**–2.7 –3.0**

* Financial and non-financial enterprises, total.
** On cash-flow basis. The external financing requirement includes both the current account deficit and the capital account balance.

the projection, the current account deficit for 2001 amounts to EUR 2.2–2.5 billion (3.8–4.3% of GDP) and to EUR billion (3.9–4.5% of GDP) for 2002 (see Table III-3). The general government's financing requirement in 2001 rises to 5.5% from 3.6% of GDP. This rise is partly offset by the private sector's reduction of the corporate-sector financing requirement, justified by the expansion of firms' disposable income, also including transfers, and moderate growth in investment relative to income. Household financing capacity decreases as household consumption and investment rises faster than disposable income, due to a pick-up in household lending, the easing of liquidity constraints and a considerable rise in household investment (property investment, in particular). However, this effect is less powerful than that of the improvement in the corporate-sector financing requirement. In the projection for 2002, financing requirement of the whole economy remains unchanged as a percentage of GDP. We project that the general government reduces its financing requirement at the same rate as financing capacity deteriorates within the private sector. The National Bank expects no further accommodation on the part of the corporate sector, and investment as a proportion of GDP increases at a similar rate to disposable income growth. Real wage growth slightly falls short of the rate for 2001, which implies that real income loss arising from appreciation is partially passed on to households. Based on the forecast that consumption decreases at a lower rate than income, households on the whole continue to reduce their financing capacity in 2002.

The projection for the current account of the balance of payments is derived as the difference between the external financing requirement and the capital account balance (unrequited foreign capital transfers). It has also been taken into consideration that due largely to differences in accounting treatment, balance of trade data derived from customs statistics and the balance of payments statistics have shown a roughly EUR 1 billion annual difference. The projection for 2001 assumes that this difference remains unchanged, while the projection for the current account in 2002 assumes as a risk factor that this difference decreases, which may add another EUR 500 million to the deficit on the current account on a cash-flow basis. Based on the above mentioned factors, the projection for the current account deficit as a proportion of GDP is in the range of 3.8–4.3% in 2001 and 3.9–4.5% in 2002 (see Table III-4).

Furthermore, the substitution effect of relative import prices on which appreciation puts downward pressure – leading to a rise in imports – is another major source of uncertainty in the current account projection. In respect of the lower-range of the projections, this effect is regarded as negligible, while for higher values, the substitution effect is considered significant, with particular regard to consumer goods.

[2] The "Final sales" projection is based on the assumption that stockbuilding growth, which also includes the statistical discrepancy, is neutral to GDP growth, equals with consumption, fixed capital formation and net exports growth. In other words, we assumed a constant stockbuilding rate as a proportion of GDP. The Bank's macroeconomic projections are based on the Final sales category, while the projection for total GDP is only given for reference purposes. Social benefits in kind and public consumption – the estimation and interpretation of which are surrounded by higher-than-average uncertainty – are projected using a simple rule of averaging the growth rates of the previous eight quarters.

1.1 Household consumption

Compared with the moderate rate in 2000, households increased consumption expenditure at a brisker pace (of 5.4%) in the first quarter of 2001.[3] This marked increase was due to faster growth in wages and salaries than last year. Real gross earnings rose by 7.2% in 2001 Q1. In terms of government transfers, benefits in cash and benefits in kind are estimated to have increased by 0.9% and 1.1%, respectively, in real terms. Taking into account other components of household income, household real income growth is estimated to be 4% in 2001 Q1.

Financial savings statistics for 2001 Q1 also indicate greater propensity to consume by households. The net financing capacity of households also declined in nominal terms, relative to the same quarter a year earlier (to HUF 10.4 billion[4] from HUF 46.9 billion), as a result of a fall in financial assets and an increase in liabilities.[5] Housing loans and consumer credits contributed nearly equal measure to the increase in liabilities. Thus, consumer credit continues to play an important role in the pick-up of consumption, putting nearly 1-percentage-point upward pressure on household consumption expenditures in 2001 Q1.

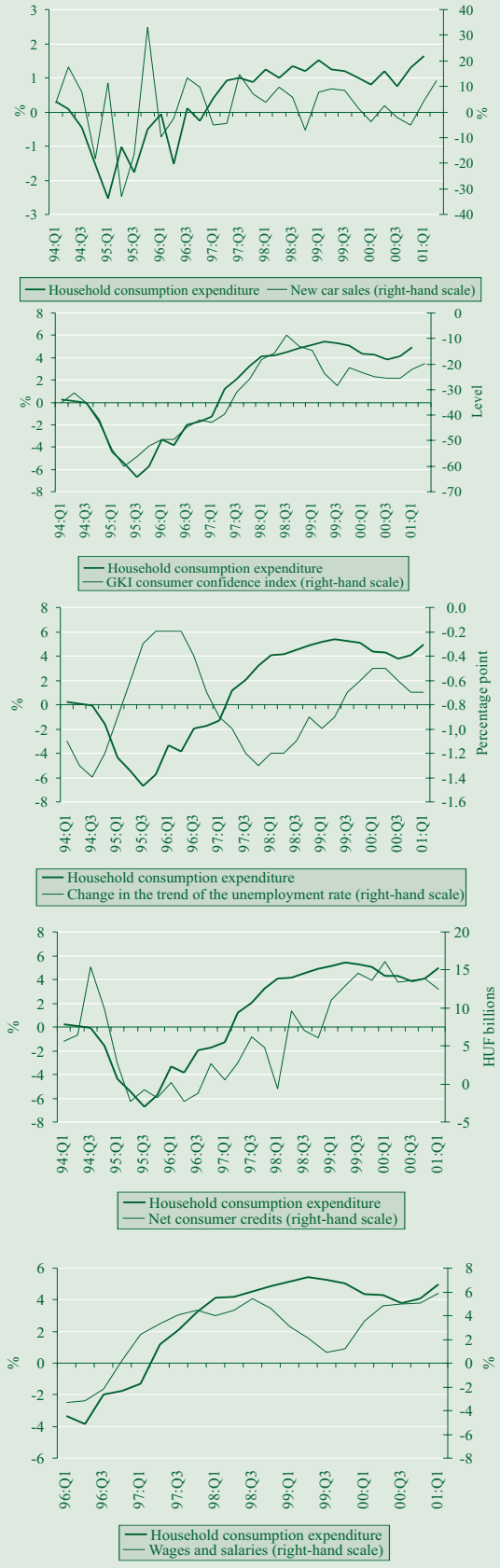
In addition to stronger propensity to borrow, other indicators also point to strengthening consumer confidence. The rise in household confidence indices and the pick-up in new car sales[6] also point to an increase in household consumption. In addition, the drop in the rate of unemployment exerts upward pressure on aggregate consumption as well (see Chart III-1).

In light of the above factors, the increase in household consumption expenditure is estimated at 5.2% in 2001 and 4.6% in 2002. In 2001, wages and salaries are assumed to grow at a real rate of over 6%, with the projected rate for 2002 somewhat lower than that at 5.3%.

The strengthening of the forint may cause this basic trend to shift in either direction. First of all, the negative wealth effect may dampen consumption growth both in 2001 and 2002: the nominal appreciation of the forint will lead to a decrease in the value of households' foreign currency deposits expressed in forint terms, due to revaluation. In an international comparison, however, with Hungarian households' low financial wealth to disposable income ratio, financial wealth has low elasticity in relation to consumption. Therefore, no significant effect is expected through this channel.

In 2001, the strengthening of the exchange rate has a temporary positive effect on household consumption via the labour market channel, while this effect may become negative in 2002. Due to stronger-than-expected disinflation, a "surprise" increase

Chart III-1 **Household consumption expenditure and certain related indicators**



Note: Seasonally adjusted data. The first chart shows quarter-on-quarter changes in household consumption expenditure and new car sales. The other charts show annual growth rates of household consumption expenditure and wages and salaries. The chart showing the confidence index depicts the level series, and the one with the rate of unemployment shows the year-on-year change in the trend. Net consumer credits are given in HUF billion at 1995 constant prices.

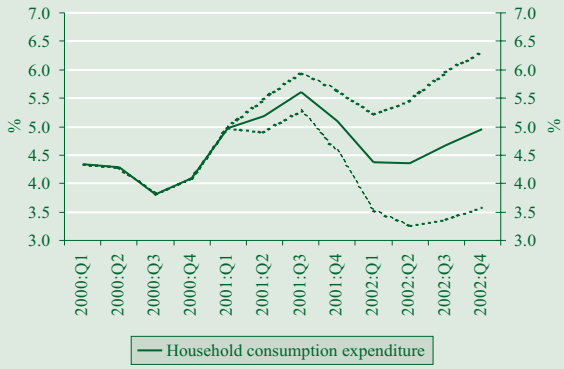
[3] The analysis of household consumption focuses on the category of consumption subject to household decisions, namely household final consumption expenditure (personal spending on consumption) rather than total household consumption. This is because the rate of social transfers in kind is not directly affected by household consumption decisions.

[4] Data on savings are operational categories, controlling for the effect of compensation for inflation incorporated in interest rates.

[5] Changes in financial assets and liabilities also relate to the net operational financing capacity.

[6] Source of data: Association of Hungarian Car Importers and Magyar Suzuki Rt.

Chart III-2* Growth in household consumption expenditure
Percentage changes on a year earlier



* Quarterly growth rate of the seasonally adjusted series. The confidence interval has been constructed using past forecasting errors. Thus, there is 68% probability that the future consumption will fall in the specified interval.

Chart III-3* Average capacity utilisation in manufacturing

* Seasonally adjusted data. Source or original data: Kopint-Datorg Rt. The survey typically represents enterprises owned by Hungarian residents..

in real earnings is projected for 2001. From the second half of 2001, the labour market is assumed to embark on a process of adjustment via the revision of payments received on an irregular basis in the first step and then of basic wage settlements, which is expected to mitigate the above-noted effect. However, the negative income effect of the appreciation of the exchange rate may appear in 2002: an end to full corporate accommodation could reduce the pace of household disposable income growth.

In 2002, the strengthening of the forint's exchange rate may retard household consumption growth by 0.3–0.5 percentage points altogether (see Chart III-2). The greatest uncertainty in this projection stems from overestimating the degree of wage adjustment assumed for 2002, i.e. from higher real earnings growth than the central projection. The upside risk associated with real earnings growth may lead to faster consumption growth.

1.2 Investment

In 2000, investment grew at a moderate rate. Based on the high rate of capacity utilisation and other indicators, we expected investment to pick up pace in 2001, but this was not confirmed by final data for the first-quarter (5.3%) (see Chart III-3). The rate of investment within the corporate sector remained lower than expected in respect of both manufacturing and services.

The subdued rate of public investment was one of the factors contributing to the low volume of investment seen in 2001 Q1. Direct public-sector investment fell short of the rate for 2000 even at current prices, and the state-financed motorway construction projects were behind schedule.

In 2001 Q1, household investment continued to accelerate. After the trough in 1998/99, investment gathered pace from the start of 2000, thanks to an upsurge in home building projects. Based on the seasonally adjusted data, the number of home building permits started to rise as of mid-1998, which is followed by an increase in the number of homes built (i.e. actual construction) with a roughly 1.5-year time lag. One factor behind increased home building expenditure has been the availability of housing credit with better terms.

In spite of the weaker investment data early in the year, the projection for growth for 2001 is higher than last year at around 8–9% and the projection for 2002 is 7–8%.

The projection for investment growth in 2001, at 2 percentage points higher than the rate for 2000, is largely based on a pick-up in investment by households and an upswing in investment indirectly financed by the state. In addition to steadily increasing activity in residential construction, road-construction investment is projected to be several times higher than the figure for last year. We expect home building and motorway construction projects to remain the driving force behind investment in 2002, but the base-period effect will lower the growth rate.

In the corporate sector, investment indicators and business surveys point to higher investment activity at the moment, both in manufacturing and in services (see Chart III-4). Capacity utilisation indicators in excess of 80% for a long time now and capital goods imports both suggest faster growth. Accordingly, investment growth is forecasted to continue picking up pace in 2001.

Since investment is relatively rigid, the appreciation of the forint is projected to make an impact for 2002. The slowdown in the export demand of manufacturing and the worsening profitability outlook may put downward pressure on investment. On the other hand, the fall in the relative prices of capital goods may stimulate stronger investment within the service sector. According to our estimations the appreciation of the forint will dampen corporate investment growth by 0.6 percentage points in 2002 (see Table III-5).

The uncertainty surrounding the projections is on the downside for both years: road construction may be further postponed in 2001 and the negative impact of the stronger forint on manufacturing investment may be stronger than expected.

1.3 The fiscal stance

According to our projection fiscal policy will be expansionary in 2001, while the fiscal stance is forecasted to be neutral in 2002. Expansion in demand only takes place gradually, via increasing capital transfers and road-construction investment and the higher-than-average rises in civil servants' wages, in addition to the easing of the tax burden and social security contributions. In the first half of 2001, fiscal policy increased demand by merely 0.4% of GDP through direct channels, but subannual developments cannot be relied on due to the annual nature of fiscal policy (see Table III-6).

In terms of the official projections, the direct increase in demand amounts to 2.4% of GDP in 2001, of which the official primary balance accounts for 0.5% and other SNA factors [ÁPV Rt (Hungarian Privatisation and State Holding Company), MFB Rt (Hungarian Development Bank Ltd.), concession-related receipts, deposit account] for 1.9%. As in the previous year, against the background of higher than officially projected inflation, general government revenues will also be higher. The main tax bases (such as consumption and wages) are assumed to increase at a faster rate than the official plan, even in real terms. In this Report's central projection, about 50% of the receipts arising from the better-than-planned position will be spent in a way that is expected to stimulate demand. In the central projection, the direct fiscal impact on demand in 2001 is assumed to be 2.1%.

The fiscal stance for 2002 is determined to a great extent by the balance in 2001, since the budget target relates to the level and not the movement of the deficit. If expansion in demand is greater in 2001, this could entail a restriction of demand in 2002, and vice versa. The base effect of these excess receipts and excess spending taking place in 2001 may improve the primary balance by 0.3% of GDP (0.1–0.5%), and developments during this year may result in a further improvement of 0.2%. The reason for this lies more in the conservative official projections of receipts than in inflation or real developments (tax bases) diverging from the plan. The assumption is that fiscal policy is assumed to use one-half of the excess receipts in a way that stimulates demand, leading to an increase in demand at 0.2% of GDP.

The public sector's demand effect manifests itself partly through wage payments. In 2001 and 2002, public-sector average wages are projected to rise by over 18% and 15%, respectively. This takes place simultaneously with a 1% lay-off rate of public-sector workers in both years.

Chart III-4 **Investment and certain related indicators**

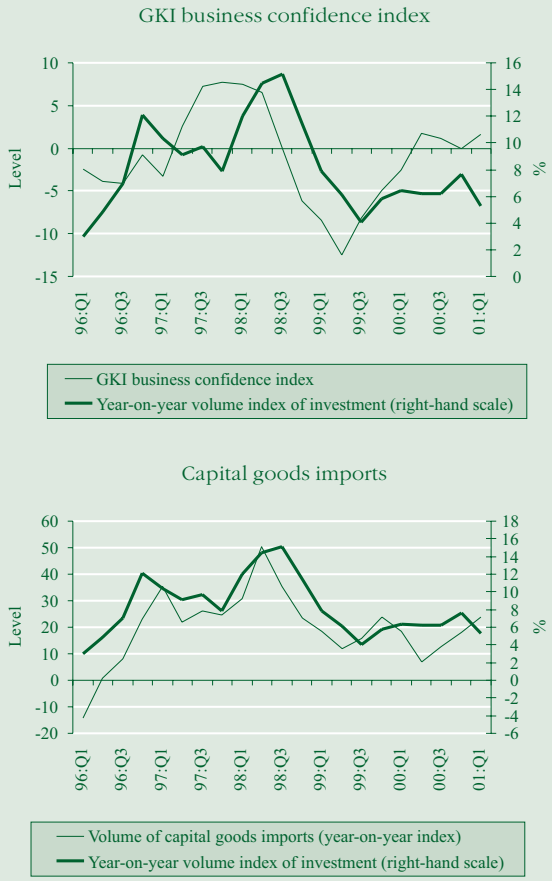


Table III-5 **Sectoral breakdown of investment**

Volume indices, percentage changes on a year earlier

Per cent

	Actual	Projection	
	2000*	2001	2002
Corporate sector	4.6	6–6.5	5.5–6.0
Of which:			
Manufacturing	4.1	5.5–6.5	4–5
Services	5.5	6–6.5	7–8
State**	13.2	14–16	8–9
Of which:			
Direct by state-financed	10.8	3–3.5	3–3.5
Households	8.5	11–13	10–12
Total	**6.6**	**8–9**	**7–8**

* The sectoral breakdown for 2000 represents National Bank estimates.
** Includes the state's direct investment and spending on motorway construction.

Table III-6 **General government's demand effect**

Volume indices, percentage of GDP

Per cent

	1999	2000	2001		2002	
			Plan	Fore-cast	Plan	Fore-cast
1 Change in SNA operational deficit (2+3)	–0.9	–1.0	2.1	1.8	0.0	0.2
2 Indirect demand effect (Change in real interest rates)	–0.3	–0.3	–0.3	–0.3	0.0	0.0
3 Direct effect (4+5) (Change in SNA primary balance)	**–0.6**	**–0.6**	**2.4**	**2.1**	**0.0**	**0.2**
4 Change in GFS primary balance	–1.3	0.5	0.5	0.2	0.5	0.8
5 Change in other factors (SNA corrections)	0.7	–1.1	1.9	1.9	–0.5	–0.6

***Chart III-5* Relationship between gross capital formation and goods imports**
Percentage changes on a year earlier

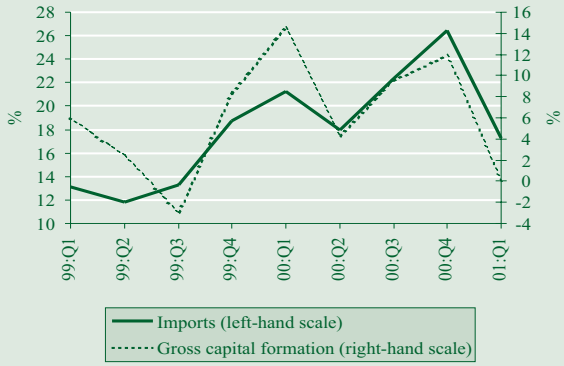
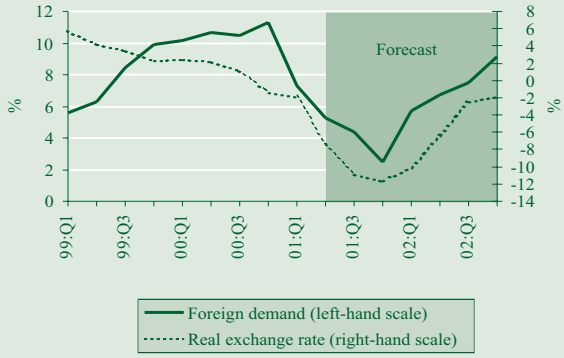
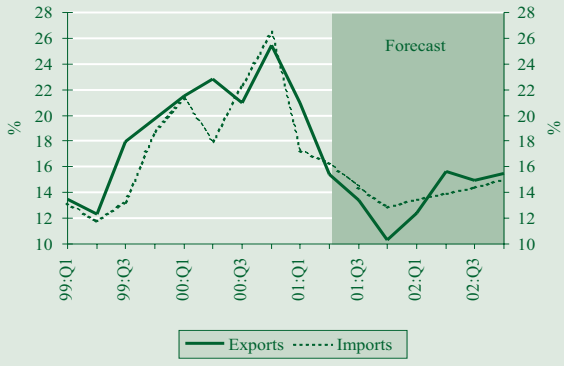


Chart III-6* Changes in external demand and the real exchange rate based on unit labour costs
Percentage changes on a year earlier



* External demand: weighted imports of Hungary's main international trading partners. Real exchange rate: based on unit labour cost in manufacturing cost. National Bank of Hungary estimates.
** Negative figure implies real appreciation.

***Chart III-7* Goods exports and imports**
Percentage changes on a year earlier



All in all, in the period between 1998 and 2002, the operational deficit – adjusted for the effect of the pension reform – is assumed to remain virtually unchanged, while the SNA-based primary balance deteriorates by 1–1.1% of GDP, due to the fact that the 1% improvement arising from indirect factors is used by fiscal policy to reduce its revenues (tax burden and social security contributions).

1.4 External trade

Until end-2000, growth in goods and services exports *gathered increasing pace*. By contrast, data on 2001 Q1 point to a *slowdown,* with export and import growth down by 3.5 and 9 percentage points, respectively, on the previous quarter.

The development of *external demand* (foreign imports weighted with Hungarian export structure) is a key factor behind slowing export growth. After peaking at end-2000, growth in weighted foreign imports lost significant momentum from 2001 Q1. Foreign import demand continued to expand at an accelerating rate in the course of 2000, despite the fact that the weighted GDP of Hungary's trading partners seemed to have slowed down during the second six months. The remainder of 2001 is projected to witness a further decline, but from 2002, international institutions expect another wave of recovery.

The real exchange rate based on unit labour costs depreciated at a steadily slowing rate until 2000 Q3 to be replaced by an annualised rate of 1–2% appreciation in real terms. The projection for 2001 and 2002 is 8% and around 5% rate of real appreciation for the year as a whole (see Chart III-6).

As a result of the changes in the business cycle position and unit labour costs, in 2001, *goods exports* are projected to fall by 8 percentage points in terms of volume growth. The slowdown is primarily due to worsening external demand, with the effect of real appreciation estimated to be less than one percentage point (see Chart III-7).

In 2002 export growth is assumed to be similar to that in 2001. This is because in 2002 business cycle factors exert favourable influence on export trends, being partially offset by the – now full – effect of real appreciation projected at 1.5–2 percentage points.

The sharp decline in *goods imports* growth experienced in the first quarter was influenced by the flat rate of *gross capital formation,* in addition to weaker export growth (see Chart III-5). Simultaneously with the extraordinary stockbuilding episode recorded in the final quarter of 2000, the rate at which goods imports grew was over 2 percentage points higher than that of exports, the correction of which took place in 2001 Q1.[7]

For 2001, growth in *goods imports is projected to slow by 7 percentage points,* to be followed by another 0.5-percentage-point decline in 2002. In 2001, the slowdown in *exports* puts downward pressure of around 5 percentage points on imports. Import growth for the whole of the year falls by nearly 3 percentage points because we do not expect stockbuilding on a similar scale to the previous year. The real appreciation of the exchange rate exerts upward pressure on goods imports (of roughly 0.5–1 per-

[7] For more on stockbuilding, please refer to the footnote attached to the GDP projection.

centage points for the year as a whole) in 2001, via the substitution effect. However, in 2002, weaker domestic absorption is assumed to reduce imports by *0.5–1.5* percentage points.[8]

The largest risk is represented by the external conjunctural position. If foreign demand grows on a similar scale as in 2001, growth in goods exports could decline by 2 percentage points and that of imports by *1–1.5* percentage points.

In 2001 Q1, the *services balance* continued to contribute to the improvement on the external balance. The balance of services ran a *EUR 45 million* higher surplus than a year earlier, thanks to an increase in the *travel surplus*.

In 2001, real appreciation is projected to hamper the improvement on the travel balance, and confidence indicators of travel industry also point in the direction of less favourable trends.[9] The assumption for 2002 is that the negative effect of real appreciation is offset by stronger external activity.

2 Supply factors – the labour market

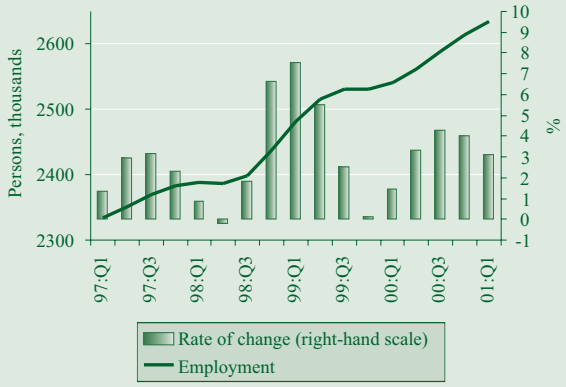
Over the forecast horizon, developments in the labour market determine the real economic costs of exchange-rate-based disinflation. This is because against an inflexible background of wage settlements based on high inflation expectations, the appreciating exchange rate and disinflation in the goods markets are assumed to put downward pressure on corporate profitability via both the income and cost sides. This will in turn slow the process of disinflation relative to the National Bank's projection. However, if the labour market is flexible, then enterprises are capable of mitigating the negative effects of both the income shocks and the faster-than-expected disinflation by reducing growth in labour costs.

While nominal wage settlements are negotiated for longer periods in advance, a number of prices (especially import prices) respond relatively quickly to changes in the nominal exchange rate. Consequently, appreciation could lead to a *surprise rise in real earnings* over the short term. In an inflexible labour market this undermines corporate profitability, while in a flexible labour market companies can either adapt to the situation by adjusting non-regular pay or by adjusting staff numbers – depending on the nature of the wage settlements. In view of the specific characteristics of the Hungarian labour market, the Bank's assumption is that firms will first try to adapt by reducing non-regular pay (such as bonuses and premiums): hence, no considerable negative employment effect is projected for 2001. In 2002, nominal wage settlements may also be revised, entailing moderate increases in real earnings and dampened employment effects.

Hungarian economic growth has been characterised by an extensive expansion of labour use in recent years. In the first quarter of 2001, private-sector labour use continued to increase. Simultaneously, the rate of unemployment declined even further,

[8] In the Report we assumed that the change in import prices has the following effect on consumption: a 1% relative change in the price of a product will cause the consumer to make a 1% change in the consumption of that product.
[9] The indices have been constructed by the GKI (Institute for Economic Research) at the request of the Hungarian Tourism Co.

Chart III-8* Number of employed people



* Central Statistical Office labour force survey (LFS). Based on seasonally adjusted data. Quarter-on-quarter changes, annualised in the non-public sector, excluding agriculture.

Chart III-9* Wage inflation in the private sector
Percentage changes on a year earlier

*Twelve-month data on businesses employing over five people recalculated using a statistical method; both the minimum wage effect and the seasonal fluctuations have been removed from the data (see related comments in text above).

with a rise in the participation rate, leading to an increase in both labour use and capacity utilisation. *Employment* growth within the private sector was robust, both in the sectors of manufacturing and of services (see Chart III-8).[10]

In effect, the expansion of employment can rely only on economically *active* (employed and unemployed) people as a labour pool. At the start of the year, 6% of the economically active were *unemployed*. Not all of these unemployed provide an effective labour reserve since the proportion of unqualified, less educated and long-term unemployed is rather high, and the geographical mobility of this group is low. The possibility of labour-market bottlenecks appearing is increased by the fact that unemployment in the central parts of Hungary west of the Danube hardly exceeds 4%, implying that the industrial activity in the area and the associated services will have to face tight labour supply.

The number of *hours worked* by manual workers is another indicator of the tightness of the labour market. The past year has seen an increase in per capita monthly hours worked in the private sector, against the backdrop of rising employment, which could be viewed as a sign of adjustment on the intensive margin. However, first-quarter data imply an interruption of this trend, with the number of daily average hours worked by the manual labour force remaining flat. Thus, in the light of a slowdown in employment growth, the stagnation in hours worked and the cyclical slowdown expected to take place this year, the Bank does not project the sectoral and regional tightening to become widespread over the forecast horizon.

2.1 Wage inflation

In measuring labour costs, the combined effect of *wage inflation*[11] and changes in tax regulations should be taken into account. In January 2001, the minimum wage was raised from HUF 25,500 to HUF 40,000. As a result, first-quarter official wage statistics indicated an over 20% rise in average earnings in the private sector, which is due partly to a statistical bias which has been eliminated from our corrected wage inflation index (see Chart III-9).

According to Bank estimates, actual wage inflation was much lower than that suggested by official employment statistics. The bias arises from the fact that in parts of the economy, previous actual wages effectively paid out exceeded the level of the official minimum wage, while taxes and social security contributions

[10] This information has been derived from the household labour force statistics. This seems to be in contrast with the flat employment rate recorded by institutional statistics based on a survey of enterprises. An increase in the number of entrepreneurs relative to employees helps explain the discrepancy, in addition to the rising popularity – at least according to statistical records – of part-time or contract-based employment. These all might provide the employer with an escape route from high payment obligations associated with the substantially higher minimum wages and/or wage costs. On the other hand, this may introduce a bias into official statistics, leading to an understatement of employment rates (and an overstatement of wage inflation, see later sections).

[11] Since the National Bank's wage inflation index removes the effects of sectoral and structural composition and the number of working days from the data published by the Central Statistical Office, it represents the actual increase in the price of labour.

were based on the official minimum wage.CSO statistics based on a survey of businesses imply an exceptional rise in official wages, thus overstating actual earnings growth. Another instance of corporate adjustment to the January rise in minimum wage was the change in the status of workers from full time to part time, and presumably, some firms dismissed less productive, low-paid staff. This resulted in a shift in the employment structure towards higher-paid labour, introducing another upward bias into wage statistics. The statistical bias was most pronounced in small enterprises and in the services sector.

Removing this bias arising from minimum wage-related factors, the seasonally adjusted data on wage inflation points to a stabilisation of wage inflation at a high level rather than a persistent increase.

Due to stronger-than-expected disinflation, high nominal labour cost increases early in the year may lead to excess labour cost growth in real terms over the short term in 2001. In the pay structure of the private sector, pay components received on an irregular basis (bonus, premium, etc.) account for nearly one-fifth of total earnings. For the most part, this type of earnings is concentrated over the last months of the year. This enables employers to curb potential losses via this kind of pay provided on an irregular basis over the second half of the year.

In 2002, worsening profitability prospects are assumed to force companies to adopt a more restrictive wage policy as early as the start of the year, and even earnings received on a regular basis are likely to grow at a slower rate. In the event of less flexible labour market accommodation than assumed in the basic projection, this high nominal wage growth may result in higher real labour costs. Therefore, the risks to the Bank's wage projection for 2002 are weighted to the upside.

Even though the rise in minimum wages would likely be – for the first time in the history of Hungarian minimum wage hikes – binding in 2002 and is thus a potential source of negative employment effects, it does not affect the market of higher-productivity qualified labour, leaving both the labour market bottlenecks and the economic growth rate unaffected.

In 2002, employers' *social security contributions* are projected to decrease by 2 percentage points.[12] The Report's projection is based on the hypothesis that employers use this reduction to mitigate profit losses arising from the appreciation of the forint rather than sharing the savings in labour taxes with employees.

The public sector is assumed to show a strong rate of wage increases in both years of the projection. However, we do not expect this to affect wage rates or employment significantly in the private sector, since the two sectors have different structures, both in terms of occupational structure and levels of qualification. Substitutability is also weakened by the low geographical mobility of the Hungarian labour force.

On the whole, the projection for private sector gross earnings growth envisages a downward move from 16% in 2000 to 14% in 2001 and below 10% in 2002, for the year as a whole. This puts real labour cost growth at 3–4% this year and 2–3% in 2002.

[12] Assuming a constant wage bill, this enables a 1.5% savings in wage costs.

3 Imported inflation

The key determinants of imported inflation include the world price for crude oil, the euro-dollar exchange rate and euro-area tradable goods prices. Changes in oil prices and cross exchange rates affect domestic fuel and household energy prices both directly and indirectly, in addition to longer-term effects on market service prices by influencing production costs. Tradable goods price inflation recorded by Hungary's main trading partners affects the Hungarian tradable goods price level first by changing production costs and second by being directly incorporated in the prices of consumer goods imports (see Chart III-10).

In 2001 Q1, the rise in imported inflationary pressure, which started in late 2000, continued. The fall in the world prices for oil and the strengthening of the euro appeared to put downward pressure on imported inflation, while inflation experienced by Hungary's main trading partners – i.e. increases in euro-area tradable goods prices – had an opposite effect. By contrast, in the second quarter, all three factors of imported inflation appeared to increase inflationary pressure.

Following the earlier rapid increases, the price of crude oil began to decrease slightly in the final quarter of 2000. However, in May and June prices began to edge up again, eventually stabilising in the range of USD 24–25. The path of world prices for oil can be forecast using information derived from option prices. This appears to be more reliable than conventional forecasts by analysts as there is "genuine" trade at the indicated prices. A comparison of the prices in April and July also provides information on the course of market consensus. The fan charts depict the implicit path of the price for oil as suggested by option prices on the forecast horizon to mid-2002. The central range clearly shows that market participants expect a gradual decrease in the level of oil prices. The two distribution charts illustrate the likelihood of extreme outcomes, with the balance of risks about oil prices weighted to the downside (see Charts III-11 and III-12).

After a temporary strengthening at the start of 2001, in the second quarter the euro/dollar exchange rate returned to the rate of 0.87 seen at end-2000. Major foreign investment banks average forecasts for three, six and twelve months ahead predict an appreciation of the euro. However, the size of the appreciation grows smaller with each forecast date as the year progresses (see Table III-7).

Until June 2001, annual inflation in tradable goods excluding energy prices rose by one percentage point in the euro area. The steady increases involving effectively each item in the category of tradable goods pushed up the headline rate to 1.6%. Rising inflation reflected the protracted impact of import price increases in 1999/2000, the feed-through of recent oil price increases and euro depreciation into tradable goods prices. The euro-area tradable goods price index, after reaching historical highs unseen for the past four years, is projected to gradually slow down over the next one and a half years. According to a number of international institutional forecasters *producer price* disinflation within the euro area, which began in 2001 Q1, continues and inflation declines to 1.5–2% at end-2002. *Headline CPI* measured in terms of the HICP is projected by the ECB to rise by 2.3–2.7% in 2001 and

Chart III-10 **Inflation rates in the euro area**
Percentage changes on a year earlier

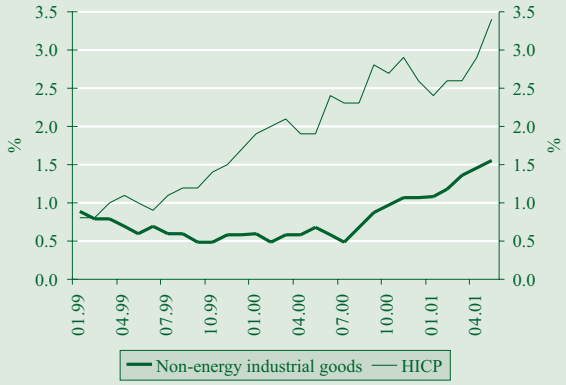


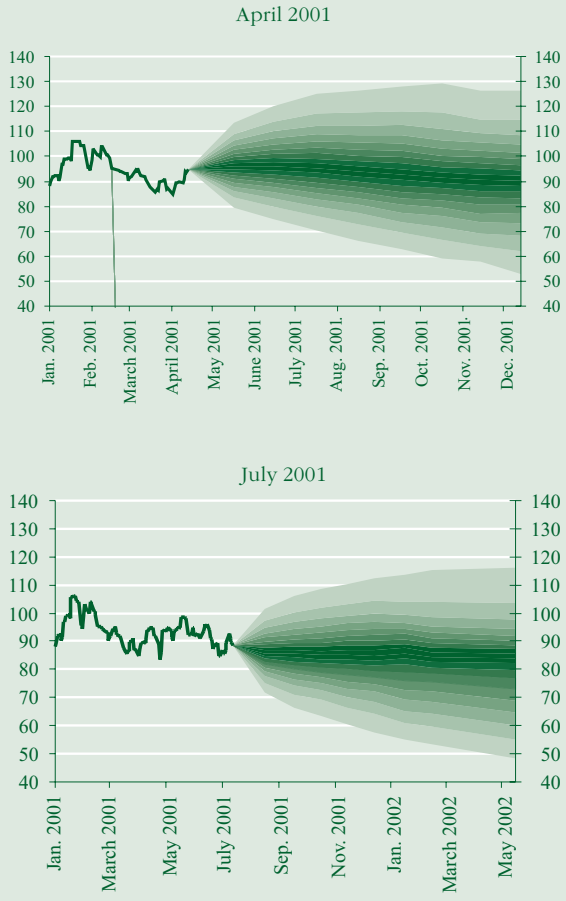
Table III-7 **Forecast for the euro/dollar exchange rate***

Per cent

Forecast date	Forecast horizon		
	Three months	Six months	Twelve months
April 2001	0.93	0.96	0.95
May 2001	0.91	0.92	0.92
June 2001	0.88	0.88	0.89

* Given as the mean of forecasts by 11 major investment banks.

Chart III-11 **Projection based on oil option prices***
Average for 2000 = 100



* National Bank estimate derived from option prices of WTI oil.

by 1.2–2.4% in 2002. The July poll of the weekly *Economist* forecasts euro-area inflation to be at 2.7% this year and 1.9% next year.

4 Effect of regulation and extraordinary factors

Regulated prices, accounting for roughly one-fifth of the consumer basket, are expected to increase by 7.8% for the year as a whole. This is assumed to comprise energy price increases of about 8.5% and service price rises of 6.6%. With regard to services, rent and community charges are expected to increase by 9–11%. Based on fiscal projections and commitments, the rise in the services price level is projected at 6.5% in 2002. This rate comprises 8% and 5.5% increases in energy and service prices, respectively.

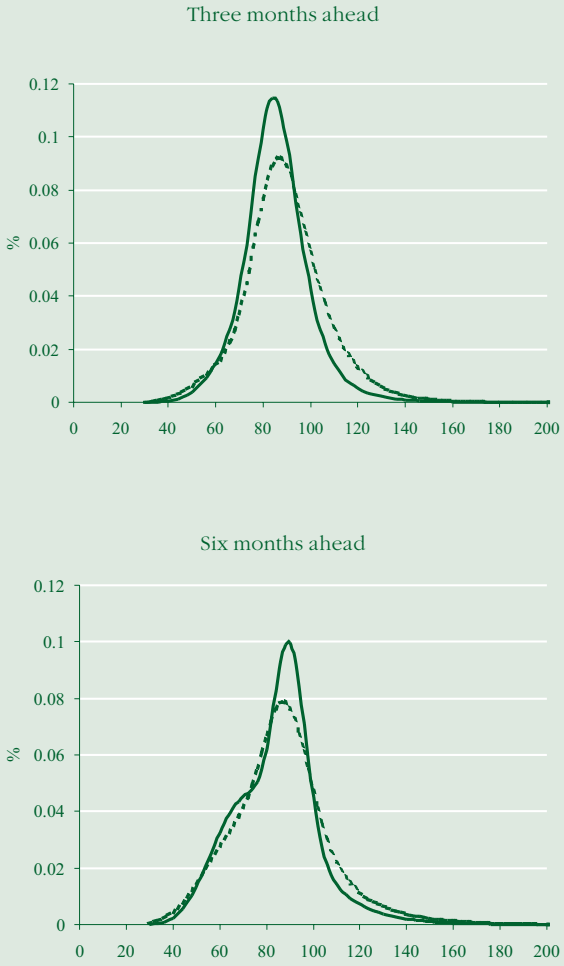
Excise duty rates are projected to be similar to those in 2001, barring one important exception. Excise duties on vehicle fuel (the tax on petrol has been HUF 93 since 2000) will not be raised this year because of high oil prices. The Bank's assumption is that valorisation will only take place in July 2002, near the deadline set by the Government. The rise then will bring the rate up to the level set by the excise duty Act (to HUF 103 + VAT). This move is expected to pull up fuel prices by nearly 6%.

As noted above, the May jump in the price for pork, at an annualised rate of 68%, led to an inflationary shock. Another unforeseen factor was the higher increase in cereal prices, (at 40% between January and May 2001), due to poor weather conditions last year. These unforeseen effects could not be offset by regulatory devices, which led to a nearly 2 percentage point excess inflation in the CPI, due to the increase in agricultural producer prices. Nevertheless, the remainder of the year is expected to witness more effective regulation in greater accord with the requirement of price smoothing. The central projection includes a stabilisation of producer prices for meat in the second half of 2001 and the first half of 2002.

At the same time, the balance of risks about the assumptions on domestic agricultural prices is on the upside, as it is possible that meat market participants will not comply with the agreed self-imposed price restrictions. This may resulting in meat prices continuing to rise in the second half of 2001. Another extraordinary inflationary pressure may arise from the tightening of animal health regulations, while the WTO agreement on reducing export subsidies, effective from the start of 2002, may in turn put downward pressure on agricultural prices.[13]

Chart III-12 **Changes in the distribution of oil options prices***

Average for 2000 = 100**.** The dotted line represents data based on April NIMEX quotations and the full line those based on July NIMEX quotations



* National Bank estimate derived from option prices of WTI oil.

[13] This effect could be neutralised by allocating subsidies through different channels.

IV. Forecast of th consumer price index and risk assessment

The National Bank's inflation projection is organized along consumer basket categories which exhibit clearly distinct patterns and were developed at the NBH. The projection assumes stable monetary conditions throughout the entire forecast horizon, since it is aimed at informing market participants of the probability of achieving the set inflation target if monetary conditions remain unchanged. In practice, the inflation projection is based on taking the average forint exchange rate (HUF 247.1/euro) of the last complete calendar month (June 2001) as constant for six three-month periods.

1 The forecast

In the Bank's central projection, CPI inflation would be 7.7% in December 2001 and 4.2% in December 2002, which implies average annual rates of 9.3% and 5.4%, respectively. The Bank considers the uncertainty associated with this central projection to be significant in both years. The risks around the central inflation projection are weighted to the upside in 2001, due to the uncertainty about unprocessed meat prices. By contrast, the distribution of risks is forecast to be symmetrical in the projection for 2002.

Comparing the central projections and the shape of the uncertainty distribution with the inflation targets suggests that the central projection in December 2002 falls in the lower part of the target range, but the risk of inflation exceeding the upper target of 5.5% is not negligible (at 30%). With regard to the December 2001 target, even the central projection falls in the upper edge of the target range: thus, there is a greater probability (40%) of inflation exceeding the 8% upper limit. At the same time, the probability of inflation falling below the lower limit of the target range set by the National Bank – i.e. of "excessive" disinflation – is forecast to

Table IV-1 **Central projections for inflation ***
Percentage changes on a year earlier

Per cent

		<– Actual data | Projection –>										
	Basket weight	2000	2001					2002				
		Dec./Dec.	Q1	Q2	Q3	Q4	Dec./Dec.	Q1	Q2	Q3	Q4	Dec./Dec.
Food	19.0	13.6	16.6	19.5	13.6	15.8	15.8	15.2	9.1	5.6	4.9	4.8
Unprocessed	(5.3)	17.4	17.8	20.9	10.3	14.4	14.5	14.1	8.3	3.4	3.7	4.1
Processed	(13.7)	12.1	16.2	19.0	15.1	16.3	16.3	15.6	9.5	6.5	5.4	5.1
Tradables	26.8	4.9	5.0	5.2	4.3	2.9	2.3	1.5	0.2	–0.6	–1.1	–1.1
Market services	20.4	12.5	13.3	11.9	10.4	9.1	8.7	7.8	7.8	7.2	6.7	6.5
Market-priced energy	1.3	34.0	32.4	22.8	13.6	0.0	–2.4	–2.8	–1.5	–1.4	–1.3	–1.2
Vehicle fuel	5.0	15.2	5.3	3.3	–4.9	–6.8	–5.0	–0.9	–4.3	6.6	6.5	6.5
Alcohol and tobacco	9.1	11.3	11.3	11.7	11.5	10.8	10.8	10.6	8.8	8.4	8.1	8.1
Regulated prices	18.5	7.6	7.6	8.0	9.4	8.5	8.6	8,4	7.3	6.6	6.5	6.5
CPI	**100.0**	**10.1**	**10.3**	**10.6**	**8.6**	**7.9**	**7.7**	**7.3**	**5.3**	**4.6**	**4.2**	**4.2**
Annual average		**9.8**					**9.3**					**5.4**

* The uncertainty intervals associated with the central projection are shown in Chart IV-1.

be at only 10% in December 2001, but 40% in December 2002 (see Table IV-1).

Achieving the inflation target set for monetary policy is based on a sharp decrease in the tradables goods price index, via the exchange rate channel. In the projection, the strengthening of the nominal exchange rate will have a gradual impact depending on the exchange-rate pass-through. On the whole, tradable prices are projected to deflate slightly by 2002, with the category of durable tradable goods affected first.

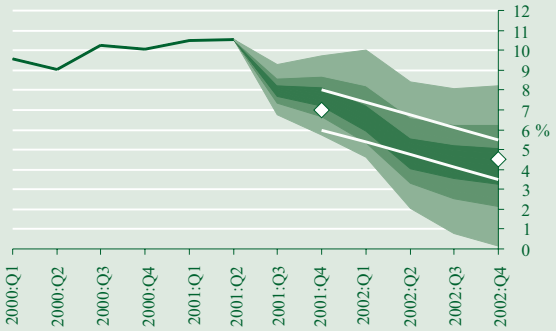
Inflation of market services generally takes a longer time to change, and its rate generally exceeds that of headline inflation. The reason for this is that over the long term the persistent productivity differential between the tradable and nontradable sectors creates excess services price inflation. At the same time, the pick-up in domestic demand, cost-side pressures and, to a certain extent, inflation inertia are also among the factors that excess inflation in market services prices relative to tradables prices will fluctuate in the range of 6 to 8% in the future.

Movements in unprocessed foodstuff prices are characterised by extreme volatility and can be viewed as exogenous to monetary policy over the short term. Due to high base values last year, there will be a temporary drop in the annual price inflation of unprocessed foodstuffs in the next quarter. Disinflation will only accelerate from the second half of 2002. Changes in processed food prices are partly governed by unprocessed food price inflation and partly by other demand and cost-side factors. Disinflation for this category is also projected to gain momentum most clearly in 2002 H2.

As regards vehicle fuel, the exchange-rate pass-through is practically instantaneous. Up to mid-2002, the assumption for petrol prices is downwards, due to the base effect and assuming constant world prices for petrol. This downward trend is interrupted in the middle of next year, due to a rise in excise duties. Against the assumptions of constant world market prices for energy and a fixed forint exchange rate, market-priced household energy prices, accounting for a small share in the consumer basket, are projected to undergo steady disinflation.

Alcohol and tobacco prices, influenced indirectly by the authorities through excise duties, are assumed to follow the trend of headline CPI. There will be a considerable rise in the tax content included in the price of such goods. As such products have low demand elasticity and market competition is weak, the assumption is that producers will pass on the excise tax increase fully to consumers by raising their prices. Changes in directly regulated prices are viewed as exogenous over the forecast horizon.

Chart IV-1* Inflation projection
Percentage changes on a year earlier



* The fan chart depicts the probability distribution of the outcomes around the central projection. The central band with the darkest shade covers the central projection. The entire shaded area covers 90% of all probabilities, with a 5%-5% likelihood that the inflation outcome will fall outside the uppermost or lowest shaded band. Around the central projection, the bands each represent a 15% probability. The uncertainty intervals have been estimated on the basis of the Bank's past forecasting errorse, taking into account the uncertainties associated with current projection. The two white dots represent the December inflation target points (7% and 4.5%); the straight lines mark the ±1% tolerance band on either side of the target rates.

2 Assumptions of the central projection

Asset prices and world energy prices are difficult to forecast. Therefore, National Bank projections use average values for the last observed month with regard to both the relevant (Mediterranean) petrol prices (at EUR 331/tonne, equalling roughly USD 26.7/barrel for Brent oil) and the euro/dollar cross rate (EUR 0.854 to the USD).

Exchange rate pass-through is assumed to be the most important monetary transmission channel. The pass-through parameter measures the extent and duration of the change which a given shift in the exchange rate triggers in domestic prices. Since there is no Hungarian precedent for either nominal appreciation or such a flexible exchange rate regime, the magnitude of the effect can only be calibrated using international experience (see Special topics). Accordingly, in the central case the projections assume that in respect of tradable goods the exchange-rate pass-through amounts to 50% over the one year horizon and 75% over two years. With regard to the entire CPI, this represents a nearly 20% pass-through over the projection horizon of one and a half years.[1] Tradable goods prices are also strongly influenced by imported inflation. German tradable goods price inflation is assumed to be the relevant import price index in respect of Hungarian tradable goods. It differs from the traditional import price index insofar as it captures import price changes specifically with respect to consumer goods rather than intermediate and capital goods.

In respect of non-tradable goods (with special regard to market-priced services), in addition to tradable goods price inflation, a crucial role is also played by domestic demand, which the National Bank has also set in numerical terms in the projection for the sum of household consumption expenditure and investment, and for household real income. [2]

Of the supply-side (cost) factors with an impact on inflation, (1) productivity growth; (2) labour costs; and (3) agricultural raw material prices have been taken into account. The last of these factors represents an especially great uncertainty and is not independent of agricultural market regulation.

Prices regulated or influenced by the state authorities are also viewed as exogenous from the point of view of monetary policy. Projections for this category, accounting for nearly one-fifth of the CPI, are prepared on an item by item basis with the knowledge of the Budget Act.

3 Balance of risks

The distribution of forecast uncertainty associated with the central projection is asymmetrical in 2001: the risk of a 1% divergence from the 7.7% central projection is weighted to the upside. This is primarily due to the inflationary risk associated with raw meat prices. By contrast, the uncertainty of the inflation projection for 2002 is symmetrical: the probability of a ±1% divergence from the 4.2% rate is similar in both directions.

All the above factors relate to the inflation projection itself, independent of its relation to the inflation target. From a monetary

[1] The seemingly low rate of exchange rate pass-through is based on the assumption that over the forecast horizon (1) regulated prices will not respond to an exchange rate change; (2) the same is to be expected in the case of alcohol and tobacco, with prices governed by rather inflexible inflation expectations; (3) unprocessed food prices are likewise not sensitive to exchange rate changes over the short term. Also, this estimate is based on the assumptions of exogenous wages. In all, that 20% estimate refers to a partial or technical interpretation; the "general" estimate being probably larger than 20%.

[2] As public goods and social transfers in kind are not directly represented in the goods market as effective demand, they typically exert indirect inflationary pressure.

policy point of view, however, it seems expedient to compare the central path of the inflation projection and the uncertainty distribution with the target rates set for inflation. In December 2001, there is a high likelihood of inflation exceeding the upper (8%) tolerance limit. By contrast, at end-2002, there is a greater probability of inflation falling below the bottom tolerance limit, due to the central projection falling below the 4.5% target and the distribution being symmetric. It should be noted, however, that the uncertainty of the projection is much higher over the 1.5-year horizon.

The following key factors have a significant bearing on the uncertainty of the inflation projections and the shape of the probability distribution. As far as the euro/dollar cross rate is concerned, the divergence in the distribution from the assumption based on the constant average June rate is symmetrical in 2001, while in 2002, there is greater likelihood of a slightly stronger euro exchange rate, according to the market consensus. The uncertainty surrounding global energy prices is asymmetrical both in the short and the long terms. This is because in 2001, the prices of petrol and oil began to diverge from each other, due to one-off events, and this divergence may be corrected towards lower petrol prices. At the same time, information derived from the NIMEX options market indicates the probability of lower oil prices in 2002.

As noted above, in respect of imported inflation the Bank's assumptions pertain to the long-term trend, thus the related uncertainty distribution is assumed to be symmetrical. The numerical significance of this lies in the fact that every 1-percentage-point rise in international tradable goods price inflation will raise headline CPI by 0.3 percentage point.

In respect of domestic absorption, the central projection for household consumer demand, which has more significance for inflation, is weighted slightly to the upside in 2002, which may cause an upward shift in the services price index. However, this has only negligible numerical effect on headline inflation.

The distribution of the uncertainty surrounding the estimate for exchange-rate pass-through is also symmetrical. A stronger or weaker outcome than projected has an equal likelihood, depending on exchange rate volatility, domestic product market competition and other factors. A stronger outcome of 67%, instead of the 50% annual assumption for the tradable goods category would push down projected inflation by 0.3–0.4 percentage points in December 2001 and by 0.2 percentage points in December 2002. A weaker outcome of 33% would cause inflation to be 0.4 percentage points higher at the end of both years.

As noted above, labour market adjustments in 2002 suggest that the risks surrounding the projection for real earnings is weighted to the upside, introducing positive uncertainty into the inflation projection both from the demand (consumption) and supply (cost) sides. The assumption on productivity is based on a long-term trend, thus potential divergences would only prove inflationary over the longer term.

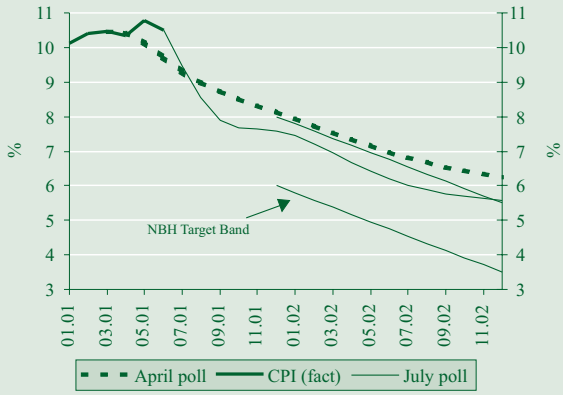
The uncertainty surrounding the development of agricultural raw material prices is extremely high. The balance of risks associated with meat prices is clearly on the upside in 2001, which is of crucial importance. The uncertainty about regulated prices is assumed to be symmetrical.

4 Market participants' inflation expectations

Inflation expectations of money market and economic research institutes' analysts for end-2001 are practically identical with the National Bank's central projection. By contrast, market forecasts for December 2002 are higher than the Bank's projection (see Chart IV-2).

Following the band-widening and the subsequent announcement of the inflation targeting regime, money market participants revised their inflation forecasts for end-2002 downwards. Nevertheless, the latest forecasts are still higher on average than the Bank's projection. Since the Reuters survey suggests that macroanalysts expect the exchange rate to essentially be the same as the June average (the basis for the National Bank central projection), the difference cannot be attributed to differences in exchange-rate expectations, but rather to those associated with the exchange-rate pass-through.

***Chart IV-2* Market analysts' inflation forecasts**
Reuters poll, excluding research institutes



Note: the expected inflation path is derived from the average of expectations and from those relating to December and the subsequent month, choosing the curve that most smoothly fits the actual data. Inflation rates are shown relative to a year earlier.

Special topics

1 New system of monetary policy

Objective of monetary policy

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. The National Bank contributes to the enhancement of social prosperity and long-term economic growth by fostering a predictable and stable economic environment. The Act seeks to facilitate the achievement of low inflation by reinforcing and extending safeguards for central bank independence, in accordance with EU requirements.

Using an inflation targeting system, in the next couple of years the National Bank seeks to achieve a gradual but firm reduction in inflation to around 2%, practically corresponding to price stability. The Bank's objective is to help Hungary meet the Maastricht criterion on inflation in 2004–2005. This is a necessary condition for Hungary's entry to the Economic and Monetary Union in 2006–2007. Accordingly, the National Bank, in agreement with the Government, has set an inflation target of 7% for December 2001 and 4.5% for December 2002. Aware of the fact that an instant offsetting of unexpected inflationary shocks would necessitate an active monetary policy that economic agents would find very difficult to adjust to, the National Bank has set a ±1% tolerance band on both sides of the announced disinflation path. This band allows for unexpected inflationary pressures causing a temporary upward or downward shift in the desired rate of price increases. Nevertheless, the Bank will respond to any persistent deviations from the announced path by easing or tightening monetary policy.

Why was the change necessary?

The narrow-band crawling peg exchange rate system, introduced in 1995, had two objectives. Its primary aim was to break the adverse trend of inflation expectations and establish the credibility of monetary policy. This monetary policy regime, founded on a predictable, pre-announced exchange rate path, was successful in bringing down the rate of inflation from over 30% to 10% and in enhancing economic competitiveness. However, over the past two years, there was no further decline in the rate of inflation. Although the factors to blame for this unfavourable development included a series of negative inflationary shocks and a higher rate of imported inflation over the past two years, there was also an increasing risk of inflation expectations becoming "stuck" and inflation inertia building up. This reflected a decline in the efficiency of the crawling peg regime, under which the Bank regarded disinflation based on coordinating expectations as its primarily objective. The central bank had to subordinate its interest rate policy to external developments – in fact, the only freedom left for the Bank and the Government lay in setting the magnitude and date of decreases in the rate of devaluation.

The National Bank's senior decision makers drafted a proposal for the Government on the establishment of a system providing greater independence for monetary policy in pursuing a relatively faster and more effective anti-inflationary policy. The cornerstone of this new policy was a restructuring of the exchange rate regime. Based on the joint decision of the National Bank and the Government, the Bank widened the intervention band of the forint's exchange rate to ±15% as of 4 May 2001, while retaining the 0.2% monthly rate of devaluing the forint's central parity. A key consideration in setting the new fluctuation band was the idea that by further reducing and ultimately eliminating the forint's devaluation, the system will become compatible with ERM II, the European Exchange Rate Mechanism. Facilitating a more effective transmission of monetary policy actions also required the elimination of some existing restrictions on capital flows, which became effective as of 18 June 2001.

How will the new system function?

The objective of monetary policy is to achieve and maintain price stability. The central bank's primary instrument in attaining this goal is to change its benchmark rates. In this way, the Bank can influence inflation partly through the exchange rate's direct disciplinary power over price increases and partly through the effect of the real exchange rate and real interest rates on aggregate demand. In small countries such as Hungary, the exchange rate channel is the central bank's most powerful and fastest means of influencing domestic prices. Therefore, the exchange rate will retain its prominent role even though the Bank has much smaller power over the path of the exchange rate than under the previous narrow-band regime. In the future, if the National Bank wishes to influence the exchange

rate in support of the inflation target, it will do so primarily by changing interest rates. The option to intervene in the foreign-exchange markets will be reserved for emergency situations when, in addition to other measures, intervention is also needed in order to stabilise the market and expectations.

The extent of the exchange rate change triggered by central bank interest rate moves cannot be foreseen, as it is primarily determined by the expectations of money and capital market participants. Therefore, future monetary decisions will continue to be taken with due consideration of international capital market developments, in an effort to ensure that the combined impact of changes to the real interest rate and real exchange rate leads to an optimal degree of monetary tightening or easing. However, the central bank does not have the ability to fine-tune nominal exchange rate changes, thus the exchange rate path in consistence with the disinflation path will be the product of a continuing series of undershooting and overshooting episodes.

Time horizon of the central bank's policy

The central bank's interest rate moves, transmitted via various channels, affect inflation over a longer period of time. In fact, the Bank estimates the time in which the full impact of a rate raise or cut feeds through to be at least 1.5 years. If inflation deviates from the targeted path due to unforeseen events over a shorter horizon, the central bank is confronted with the following dilemma. If it views its function in a narrow sense in terms of maintaining the inflation path even over the short-term horizon, then it will have to respond promptly and change policy before previous measures have had their full impact. This kind of monetary policy could lead to excessive volatility in output, causing losses to society. Therefore, the National Bank's goal is to meet the inflation target at a minimum cost in terms of output volatility, by confining policy responses solely to divergence over a longer horizon of 1 to 1.5 years.

In order to provide the public with a clear understanding of the operation of the central bank's policies, in the future the National Bank will publish the projections and considerations underlying the decisions taken by the Monetary Council. Inflation projections will always cover the forthcoming six quarters. In making decisions, the Monetary Council will focus on price developments expected to occur 1–1.5 years later, as inflation over the next two quarters is governed by events that have already taken place. Due to the fact that inflation is determined by factors which work in complex and unpredictable ways and show a degree of volatility across time, the National Bank will have to decide on a case-by-case basis which factors were relevant and influential in a given period. However, since flexibility should not infringe upon transparency, the Bank also intends to publish the considerations behind monetary policy decisions as well as to analyse the achievement of the inflation target.

2 Forecasting methodology

National Bank projections are always created using a combination of methods, which are compared to produce the central projection. In terms of methodology, the approach is pluralistic, relying equally on specialist information, inferences derived from theoretical models and statistical forecasting techniques. Some of the methods start from the very bottom, using disaggregated – company, sectoral, product level, etc. – information, while others seek to capture the behaviour of larger aggregates. The central projection is based on the assumption of constant monetary variables (the nominal exchange rate and the interest rate). The resulting projection thus forecasts key macroeconomic variables over the next six quarters, assuming that the current monetary and external conditions remain constant.

The uncertainty in the projections stems from two sources: (1) how correctly the economic mechanism bearing on the reviewed phenomenon have been captured; and (2) the actual outcome with regard to exogenous factors may diverge from the assumptions. For this reason, an uncertainty interval has been designated around the central projection.

Our risk assessment is represented graphically in the form of a fan-chart, adopting the practice of inflation targeting countries. The bands marked by different colours/shades in the chart represent a given probability of a particular interval of inflation outcome. There is a 50% likelihood that inflation will be higher or lower than the central projection (so it is the median value). This is compared with the inflation target range to determine the likelihood that the actual inflation is above or below the target band. It should be noted that although towards the end of the forecast horizon the fan-chart covers a wider and wider area, this does not imply that the actual inflation outcome will have that probability. The reason, in fact, is that as time progresses, unforeseeable events, diverging from the forecast, and monetary policy actions aimed at altering the inflation path could change both the central path and the probability distribution. Therefore, the inflation projection should be viewed as a conditional forecast, reflecting the current knowledge of the National Bank.

Theoretical assumptions underlying the inflation forecast

Changes in the nominal exchange rate have a direct impact on tradable goods prices. The size of this effect is one of the key variables in inflation forecasting as a whole (see Special Topics, Section 3). Since market services are not traded on international markets, their prices are primarily governed by domestic conditions, in contrast to tradable goods. In the long run, the productivity difference between these two sectors, domestic demand and changes in the terms of trade are the factors affecting market services price inflation. Over the short term, inflation in market services can diverge from the long-term path, as a result of changes in processed food prices and the slow adjustment of market participants (i.e. price rigidities). Prices of unprocessed foodstuffs are projected mostly using specialist information, also taking account of information extracted from futures prices. The projection for processed food prices is derived from unprocessed food prices, wages (as a demand variable) and the nominal exchange rate. The forecast of regulated energy and services prices are prepared on the basis of the Budget Act and pre-announced regulated energy price changes. Inflation with regard to market-priced energy moves in line with that of tradable goods and energy prices. The projection for vehicle fuel prices (petrol) is derived from world market prices for petrol and the nominal exchange rate, taking account of planned excise duty changes.

3 Inflationary effect of exchange rate changes

In a small, open economy, the rate of exchange is crucial to the domestic price level. Since Hungarian import transactions are almost exclusively denominated in foreign currency, the forint's exchange rate transmits foreign prices to domestic market participants. Under the former narrow-band crawling peg regime, tradable goods prices were seen to almost exactly follow the pre-announced rate of devaluation. Hence, the value of the exchange-rate pass-through was in effect 100%.

It is highly likely that the widening of the exchange rate band will have some impact on the exchange rate pass-through as well. The predictability of the forint exchange rate has declined considerably, which may even lead to large volatility in the domestic foreign-exchange market. In fact, this already occurred in the early part of July 2001. Both the National Bank's own research and international findings suggest that exchange rate volatility is in negative correlation with the size of the pass-through. There is a plausible reason for this. Consumer prices are generally fixed for longer periods of time and are not changed every time the exchange rate moves, because of high costs arising from a number of factors.

The degree of the exchange rate pass-through depends to a great extent on market participants' perception that the change in the exchange rate is temporary or permanent. If the exchange rate exhibits considerable volatility, reflecting uncertainty surrounding market participants' expectations, they are much less likely to allow the change to pass through into prices. From this it follows that no numerical estimates of the pass-through can be derived from historical Hungarian data. This is all the more difficult as in the aftermath of the band-widening there was an unprecedented strengthening of the forint. It cannot be ruled out that a depreciation or appreciation of the same extent will have different impact on the rate of inflation, as certain prices may be inelastic downwards.

Accordingly, the Bank has used the experience of other European small open countries to draw conclusions on the expected impact of an exchange rate change on Hungarian tradable goods prices. Five countries, similar to Hungary in respect of size and openness, have been analysed. These countries have operated floating or broad-band exchange rate regimes for several years, and experienced appreciation during this period. Naturally, sample periods have been chosen to ensure that the monetary regimes pursued during the reviewed period are homogenous if possible: for the Czech Republic and Greece, the periods start at mid-1996 and March 1998, respectively, and for Ireland and Portugal the periods end in December 1998. In respect of Sweden, the analysis focuses on the past seven years.

In the long run the estimated model meets the equalisation requirement of tradable goods prices with a small difference, potentially triggered by a trend divergence of wages. The latter effect stood at 0.3% in Hungary annually, i.e. in the long run, tradable goods consumer prices rise by this annual rate relative to Germany, measured in common currency.

By contrast, over the shorter term, exchange rate changes appear to make a smaller impact. In numerical terms, the Czech Republic and Greece experienced the strongest pass-through of the five countries: in respect of both countries, a permanent change in the exchange rate led to a nearly 50% and 75% pass-through after one year and two years, respectively. The other three countries produced lower numbers, with the pass-through only at 40% even after two years.

The National Bank uses the average of the Czech and Greek figures to estimate the exchange rate pass-through in Hungary, as Hungarian monetary policy will most probably exhibit the closest resemblance to these two countries. At the same time, the National Bank is aware that the risks surrounding the Hungarian outcome are equally weighted to the upside and the downside. Uncertainty is made all the greater as the properties of the individual goods and the market structure can also influence the numerical value of the pass-through. For instance, the pass-through may be faster in respect of mass-produced tradable goods, while exchange rate pass-through associated with specific brand-name products may be smaller. The business cycle and the demand/supply ratio may also influence the magnitude of pass-through. For example, if supply is strong and competition is active in the market – a typical situation with regard to tradables – but demand is low, then the pass-through of an episode of depreciation will be lower than that of appreciation. By contrast, during an economic recovery and strong demand a possible depreciation will pass through to prices to a greater extent than an appreciation. These effects have been taken into account in estimating the uncertainty interval.

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