QUARTERLY REPORT ON INFLATION
March 2011

MAGYAR NEMZETI BANK

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Act LVIII of 2001 on the Magyar Nemzeti Bank, which entered into effect on 13 July 2001, defines the primary objective of Hungary's central bank as the achievement and maintenance of price stability. Low inflation allows the economy to function more effectively, contributes to better economic growth over time and helps to moderate cyclical fluctuations in output and employment.

In the inflation targeting system, since August 2005 the Bank has sought to attain price stability by ensuring an inflation rate near the 3% medium-term objective. The Monetary Council, the supreme decision-making body of the Magyar Nemzeti Bank, performs a comprehensive review of the expected development of inflation every three months, in order to establish the monetary conditions consistent with achieving the inflation target. The Council's decision is the result of careful consideration of a wide range of factors, including an assessment of prospective economic developments, the inflation outlook, money and capital market trends and risks to stability.

In order to provide the public with clear insight into the operation of monetary policy and to enhance transparency, the Bank publishes the information available at the time of making its monetary policy decisions. The Report presents the inflation forecasts prepared by the Monetary Strategy and Economic Analysis and Financial Analysis Departments, as well as the macroeconomic developments underlying these forecasts. The Report is published quarterly. The forecasts of the Monetary Strategy and Economic Analysis and Financial Analysis Departments are based on assumption of endogenous monetary policy. In respect of economic variables exogenous to monetary policy, the forecasting rules used in previous issues of the Report are applied.

The analyses in this *Report* were prepared by staff in the MNB's Monetary Strategy and Economic Analysis and Financial Analysis Departments and Financial Stability Departments. From chapters 1 to 4 and 6 were prepared under the general direction of Ágnes Csermely, Director while chapter 5 was directed by Áron Gereben, Director. The project was managed by Barnabás Virág, Senior Economist of Monetary Strategy and Economic Analysis. The *Report* was approved for publication by Ferenc Karvalits, Deputy Governor.

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The *Report* incorporates valuable input from the Monetary Council's comments. The projections and policy considerations, however, reflect the views of staff in the Monetary Strategy and Economic Analysis and the Financial Analysis Departments and do not necessarily reflect those of the Monetary Council or the MNB.

The projections is based on information in the period to 17 March 2011.

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Summary

Despite the cost-push shocks, inflation may fall back to target by the end of 2012 without further monetary tightening…

Inflation rose slightly towards the end of 2010 as a result of cost-push shocks hitting the Hungarian economy. However, the pass-through to the core inflation slowed significantly relative to the period prior to the financial crisis, due mainly to the negative output gap and the loose labour market. Accordingly, the expected path of core inflation shifted down relative to the projection in the November 2010 Quarterly Report on Inflation. Inflation in 2011 remains materially above the Bank's 3% target due to the commodity price shocks, by the end of 2012 our medium-term target may be met even without further policy tightening.

…as the negative output gap and the loose labour market cushion the inflationary effects of cost-push shocks

Economic growth is likely to accelerate over the forecast period. Alongside continued strong external demand, domestic demand is expected to recover slowly in 2011. Based on information becoming available since last November and the economic policy measures announced by the government, the recovery in domestic demand is likely to be more subdued than previously thought; however, it is expected to contribute markedly to economic growth. The output gap is likely to remain negative and unemployment to stay high over the entire forecast period, which, in turn, may reduce inflationary pressure in the economy by exerting discipline on price and wage-setting behaviour.

The economic recovery is associated with substantial sectoral heterogeneity

The structural diversity behind economic growth is still evident: strong external demand is expected to remain the key driver of the recovery from recession, with domestic demand expected to pick up only gradually. While industrial production growth remained unbroken for one and a half years, the performance of the service sectors stalled, and construction output continued to decline. Actual output is estimated to be 4% below its potential level, with substantial heterogeneity across sectors. Industrial output may have risen back to pre-crisis average capacity utilisation levels. The recovery in the service sectors has been much slower, consequently, there remains significant spare capacity in the economy.

The tentative recovery in household consumption faltered during the final months of 2010. Low wages towards the end of the year, coupled with rising monthly instalments on foreign currency loans due to the strength of the Swiss franc, led to a reduction in the sector's disposable income. Households had strong precautionary saving motives throughout the year, as reflected in high saving rate relative to pre-crisis years.

Investment demand by companies and households declined sharply in 2010. A number of large-scale investment projects were underway mainly in manufacturing, concentrated in a couple of large companies. Indicators of the housing market deteriorated further.

Wage growth remains moderate, due to loose labour market conditions

In the labour market, while the participation rate remained historically high, employment growth stalled towards the end of 2010. Consequently, the unemployment rate stayed above 10%. Employment grew materially only in manufacturing. Private sector wage growth remains subdued, due to loose labour market conditions, which may help restore profitability in the corporate sector without raising prices significantly.

Consumption is likely to pick up on the forecast horizon as a result of opposing developments

The reduction in personal income taxation and the disbursements of real returns on private pension funds are likely to boost household consumption in 2011. But the unpredictability of the Swiss franc exchange rate and only slowly rising employment may strengthen precautionary motives. At the same time, tight credit conditions continue to be a drag on consumption growth. The planned fiscal adjustment may lead to a significant reduction in disposable income in 2012 through cuts in social benefits, changes to the indexation of pensions and public sector layoffs. Measures of the Government's Structural Reform Programme (also known as the Széll Kálmán Plan) are likely to depress not only household consumption but also, directly, government consumption. On balance, relative to our previos expectations consumption in 2011 is likely to be in line, however fall behind in 2012.

The turn in investment suffers a delay due to tight credit conditions and the uncertain macroeconomic environment

Weak domestic demand, continued tight credit conditions and increased business uncertainty due to sector-specific extra taxes and changes to corporate income tax regulations are expected to weigh down on investment growth. Although the announced large-scale investment projects in the car industry increase production capacities significantly, corporate investment trends in general are judged to be unfavourable. Consequently, the investment projection for the next two years has been lowered.

In the housing market, the uncertain labour market environment, weak bank lending and the accumulation of a housing stock used as collateral behind non-performing mortgage loans have led to a period of subdued demand and supply, with the market unlikely to turn around before the end of 2011.

The Széll Kálmán plan will also affect government investment, which also lowers economic growth in 2012.

Employment follows the economic recovery only slowly and with a significant lag

Private sector employment is expected to follow the economic recovery only slowly and with a lag. Despite the slight rise in employment, the unemployment rate may remain flat at its current level, around 10%, due to a further increase in the participation rate. Consequently, labour market conditions are expected to remain loose over the entire forecast period. In addition to loose labour market conditions, lower labour taxes may also point towards lower nominal wage growth. Historically low nominal wage growth is expected in the entire forecast period. Real wage growth in the traded sector may enduringly fall behind the growth of productivity.

Tight credit standards continue to impede the recovery in domestic demand

Outstanding lending to the private sector fell further in the final quarter of 2010. Declines were concentrated primarily in long-term corporate loans and household foreign currency loans. Although international experience suggests that a pick-up in lending often lags behind a recovery of the economy from recession, there are a number of signs that credit constraints are binding. Credit standards were tightened again at the end of 2010, and the latest lending survey suggested that banks did not plan to materially ease them in

2011 H1 either. In addition to a further deterioration in credit quality, the extra taxes also contributed to the decline in profitability. Banks reported that they did not plan to expand the supply of credit either to households or the corporate sector in 2011, despite the slow increase in demand for credit. As a result, loan markets may remain tight in the coming years as well.

Weak demand, the persistently loose labour market and previous interest rate increases may help bring inflation back to target in 2012, despite the cost shocks

The latest energy and unprocessed food price shocks raised domestic inflation in the latter part of 2010. However, the continued low level of core inflation suggests that a loose labour market together with weak demand slowed the pass-through of cost-push shocks.

Divergent trends behind the headline inflation are apparent and are likely to remain during the forecasting period as well. On the one hand, the global cost-push shocks put upward pressure on inflation, which will appear in the core inflation items as well. On the other hand the loose labour market and weak domestic demand are likely to put sustained downward pressure on inflation. As a result, annual CPI inflation is expected to increase slightly in the short term. Rises in global energy and unprocessed food prices are expected to gradually pass through to a wider range of domestic consumer prices and to keep inflation at around 4% throughout 2011. The government's measures aimed at moderating the increase in energy prices for households are expected to slow or delay this pass-through. In the current projection, the cost-push shocks in the adverse demand environment wear off by 2012 H2 and inflation returns to around 3%, a level consistent with price stability. The Monetary Council's recent interest rate increases may also contribute to the reduction of second-round effects of the cost-push shocks.

Investor sentiment remains volatile, but continues to be determined by overall benign global and country-specific factors

Global financial market sentiment has recently been driven mainly by the improvement in economic prospects and increases in sovereign risks in the euro area. Political tensions in North Africa and the earthquake in Japan reduced investor's appetite for risk. It is difficult to judge based on available information how long the deterioration in investor sentiment will last. Nevertheless, sentiment towards emerging market economies is broadly positive, although capital flows into the majority of countries has slowed since January, with inflows to some Asian countries drying up or reversing.

Country-specific factors, in addition to global market sentiment, played a role in developments in Hungarian asset prices. Reaction to the downgrade of Hungary's sovereign credit rating was relatively modest and short-lived, as the move had mostly been priced in by the market. The start of the policy tightening cycle at the end of November may have increased non-residents' demand for forint-denominated assets. Perceptions of the risks associated with the Hungarian economy were greatly influenced by the government's structural measures as well as by cautiously optimistic expectations in the period leading to the announcement of the measures. A number of risk indicators have fallen since the beginning of the year, and non-resident holdings of Hungarian government debt securities have increased significantly. The composition and size of the measures announced in early March differed little from expectations, and therefore left the market broadly unaffected.

Hungary's external financing capacity continues to be high and is likely to remain so over the entire forecast period

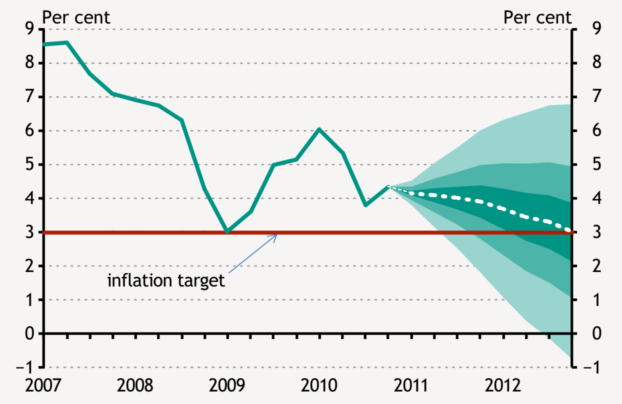
The external financing capacity of the Hungarian economy continued to be high, due to export-led growth and weak domestic demand. Private sector savings fell slightly during the last quarter, but that was offset by a decline in general government borrowing requirement.

The external financing capacity of the Hungarian economy may settle around 4% of GDP over the entire forecast period. Export growth, driven by strong external demand, together with subdued domestic demand are likely to continue to offset the rising income account deficit; and transfers from the EU are expected to rise further. The net saving position of the economy is likely to remain high, given the strong financing capacity of the private sector.

The intention of the government to lower fiscal deficit is evident by the announced plan; however, until further details of the measures are made public the overall effect cannot be judged

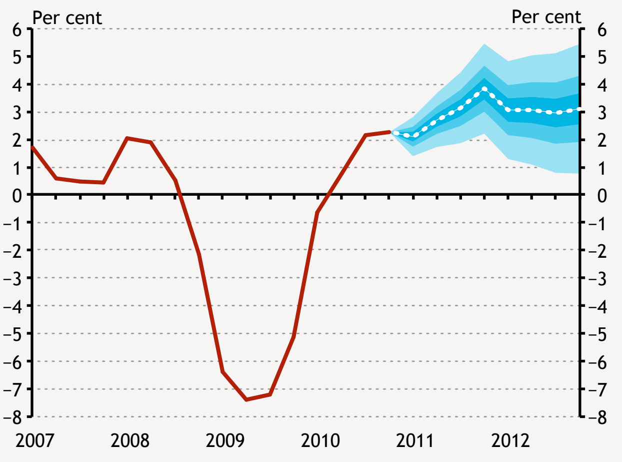
Our fiscal forecast is associated with higher than usual uncertainty. The announced Széll Kálmán plan confirms the intention of the government to lower fiscal deficit. As we lack important details about the measures, only a few of them can be taken into account in our rule-based forecast. Without the temporary effect of the private pension wealth takeover the ESA-based fiscal deficit is likely to stay within the band of 4-5% of GDP during 2011–2012. In addition to our rule-based forecast an alternative forecast was prepared for 2012 with the assumption that the government manages to achieve all the gross savings announced in the plan. In this case the government deficit in 2012 may be 3.6% and then fall back to 3% due to the cyclical movements in tax revenues.

Fan chart of the inflation forecast



Fan chart of the GDP forecast

(based on seasonally adjusted and reconciled data)



Summary table of baseline scenario

(Our forecasts were based on assumption of endogenous monetary policy.)

	2009	2010	2011	2012
	Fact		Projection	
Inlation (annual average)				
Core inflation[1]	4.1	3.0	2.3	2.4
Consumer price index	4.2	4.9	4.0	3.4
Economic growth				
External demand (GDP based)	−4.2	2.3	2.1	2.3
Household consumption expenditure	−8.1	−2.1	2.8	3.0
Gross fixed capital formation	−8.0	−5.6	1.2	3.6
Domestic absorption	−10.8	−1.1	2.1	2.0
Export	−9.6	14.1	9.6	9.3
Import	−14.6	12.0	9.3	8.6
GDP*	−6.7	1.2	2.9	3.0
External balance[2]				
Current account balance	−0.5	2.0	1.4	2.0
External financing capacity	0.8	3.9	3.7	4.6
Government balance[2]				
ESA balance	−4.4	−4.4	2.5	(−3.6) – (−4.6)
Labour market				
Whole-economy gross average earnings[3]	0.5	1.5	2.3	5.2
Whole-economy employment[4]	−2.5	0.0	0.4	0.5
Private sector gross average earnings[5]	4.4	3.3	4.1	4.9
Private sector employment[4]	−3.8	−1.0	0.6	1.3
Unit labour costs in the private sector[4,6]	9.0	−2.0	0.9	2.7
Household real income[7]	−5.2	−1.4	2.4	1.6

[1] *From May 2009 on, calculated according to the joint methodology of the CSO and MNB.*

[2] *As a percentage of GDP. The 2010 data is a nowcast. In 2012 the higher deficit figure reflects our rule-based forecast, while the lower deficit figure presents the effect of the Széll Kálmán plan.*

[3] *Calculated on a cash-flow basis.*

[4] *According to the CSO LFS data.*

[5] *According to the original CSO data for full-time employees.*

[6] *Private sector unit labour cost calculated with a wage index excluding the effect of whitening and the changed seasonality of bonuses.*

[7] *MNB estimate. The current forecast and the actual data of the household real income does not include contributions to the mandatory pension funds.*

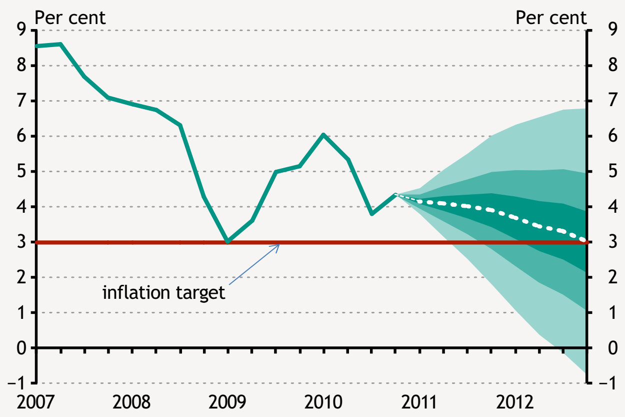
* *Data are not adjusted for calendar effects.*

1 Inflation and growth outlook

1.1 Inflation forecast

According to our baseline projection, the duality in inflation developments since the middle of last year will continue in the years to come. Due to the continued failure of economic output to reach potential levels and slow earnings growth under persistently slack labour market conditions, domestic inflationary pressure may remain low over the entire forecast horizon. At the same time, significant increases in global commodity and food prices may give rise to more pronounced supply-side inflationary effects in the economy on a continuous basis. As a net result of these two contradictory effects, the consumer price index may reach a value well above the 3% target for the entire year while, as the primary effects of commodity prices on raising price levels gradually fade away, inflation is expected to moderate gradually. By the end of 2012, the medium-term inflation target is attainable even without further monetary policy tightening. The interest rate path of our forecast is in the range of the market expectations and yields implied by the yield curve.

Chart 1-1
Fan chart of the inflation forecast



The duality observed in inflation trends over the past period will continue over the forecast horizon. The growth rate of the economy may surpass the potential rate of growth in the years to come, while the output gap will remain negative over the entire forecast horizon. Output falling below its potential levels is accompanied by persistently high and slowly shrinking unemployment in the labour market. The combination of slack labour market conditions and a negative output gap will put severe downward pressure on prices and earnings in the years to come, thus the inflationary pressures originating from domestic demand and the labour market may remain moderate over the entire time horizon. In contrast, global cost-push shocks over the past few months have intensified, gradually passing through to an increasingly widening range of consumer prices. The moderate domestic demand notwithstanding, the pass-through effects of the cost-push shocks may prove less pronounced than historical observations would suggest and the moderate core inflation, the consumer price index, may remain around 4% throughout 2011. By the second half of 2012 cost-push shocks will gradually diminish, allowing inflation to attain, without further monetary tightening, the 3% target corresponding with price stability (Chart 1-1). The Monetary Council's past rate hikes will also have a smoothing impact on the second-round effects of cost-push shocks.

The supply-side inflationary pressure will be reflected directly in the non-core inflation. Oil prices have increased markedly, by around 20%, since November, which has rapid

Chart 1-2
Change in oil price assumptions
(in euros)

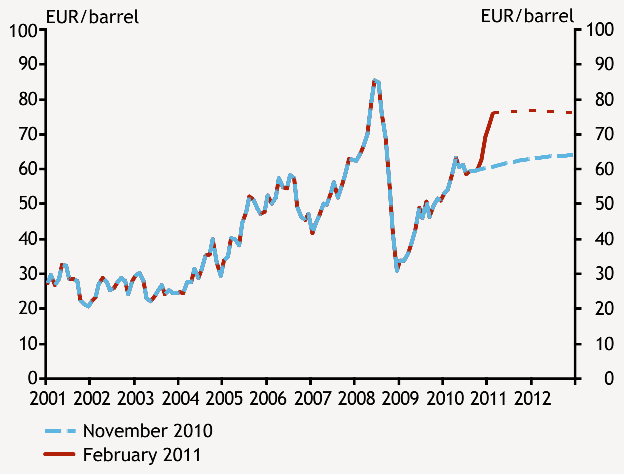
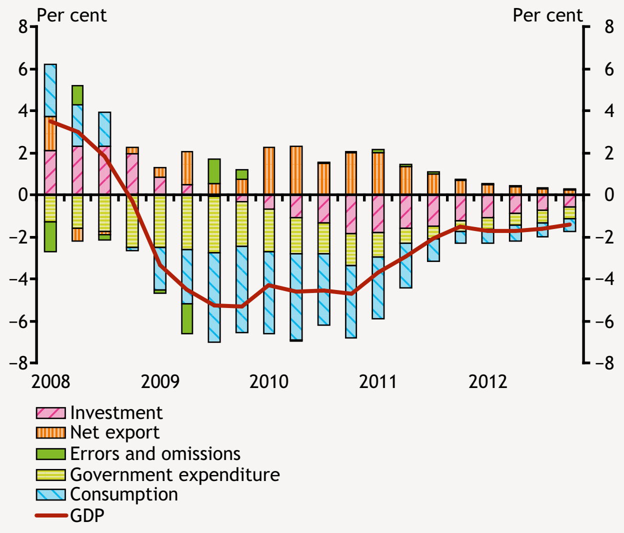


Chart 1-3
Decomposition of the output gap*
(2008–2012)



* *Trend filtering has been performed for the main demand side components. If the level of a component remains below the trend implied by the convergence path of the economy, it appears as a negative value (negative cyclical position) in our decomposition.*

pass through to fuel prices (Chart 1-2). According to our assumptions based on futures contracts, the rise in oil prices will come to a halt at the end of 2011; however, we do not expect any significant adjustment in the following year. Considering unprocessed food, we expect further consumer price increases until the new harvest appears in the market, and price pressure may subsequently alleviate in the case of better yields in agricultural production.

Changes in regulated prices will have a disinflationary effect by mid-2011, primarily owing to decisions passed by the government to cap or moderate increases in household energy prices (e.g. distant heating prices). If global commodity prices remain persistently high, the containing of retail energy prices will require significant budgetary resources or a rise in debt levels. Our forecasts are based on the assumption that, if oil prices are in line with our expectations, government measures will basically affect only the timing of those price increases, therefore the price pressure accumulated with the service providers over recent quarters will be gradually passed on to consumer prices from the end of 2011. Given the lack of sufficient detail, we had to disregard the direct inflationary effects that may arise from the government's Széll Kálmán reform plan, which is expected to affect primarily regulated prices (Table 1-1).

In summary, we expect a price increase of approximately 8 percent within the product range outside of core inflation in the first half of 2011, with the highest contribution from fuel price increases. Thereafter, the index will gradually decrease and drop to around 4 percent by the end of next year.

In the case of the core inflation, the price-reducing effect of weak demand may be a predominant factor through the entire forecast horizon (Chart 1-3). The pass-through of cost-push shocks to consumer prices is significantly reduced by the constraints of slack labour market conditions on wages, which contributes to the stabilisation of corporate profitability. Cost-push shocks may give rise to an increase

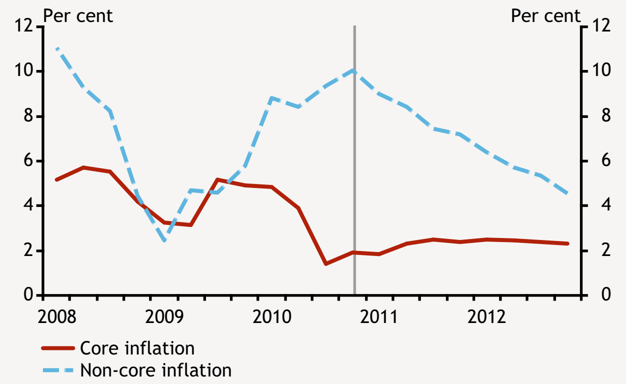
Table 1-1
Details of the inflation forecast

		2010	2011	2012
Core inflation		3.0	2.3	2.4
Non-core inflation	Unprocessed food	6.6	10.0	3.7
	Gasoline and market energy	18.1	10.0	1.5
	Regulated prices	6.5	6.6	7.8
	Total	9.2	8.0	5.5
Consumer price index		**4.9**	**4.0**	**3.4**

in core inflation in the short term; however, the phasing out of these effects may result in a reduction in core inflation from mid-2011. The core inflation index is expected to remain in the range of 2 percent 2.5 percent in the long run, down from the levels observed in previous years over the entire time horizon. The index may fall to approximately 2 percent by the end of 2012 (Chart 1-4).

Our baseline projection suggests that the current policy rate of 6 percent may be sufficient to neutralise the medium-term inflationary effects the cost-push shocks may have, and may assist in attaining the 3 percent inflation target by 2012. The interest rate path of our forecast is in the range of the market expectations and yields implied by the yield curve.

Chart 1-4
Our forecast for core and non-core inflation
(2008–2012)



Box 1-1
Role of the endogenous policy rate path in forecasts

Starting in March 2011, the staff of the National Bank of Hungary moved on to the preparation of a forecast with endogenous policy rate path from former forecasts with unchanged policy rate. The change is in line with the practice of inflation targeting central banks, the majority of which also having shifted to forecasts with endogenous policy rate path.

Basically, the endogenous policy rate path is to reflect monetary policy responses to shocks inflicted on the economy. When the rate of inflation is on the rise on a permanent basis, central banks usually raise the policy rate, or when the rate of inflation is decreasing permanently, central banks usually lower the policy rate to ensure that inflation remains in line with the medium-term target. In line with the change in the assumption regarding the applicable policy rate, the assumption on developments in exchange rate has also changed. Formerly, the exchange rate was assumed to be unchanged, now with the new forecast, the future path of the exchange rate is estimated on the basis of the difference between domestic and foreign policy rates and the risk premium attached to the country.

Models using the endogenous policy rate path have the reaction function of the central bank as an important constituent part, which reflects the central bank's choice of variables and the extent thereof for the purposes of its decisions on policy rates. In the forecast, we assume that on the one hand the Monetary Council changes the policy rate primarily on the basis of the deviation of inflation from the target and the extent of the output gap, and on the other hand – due to the uncertainty of economic developments – the Council will implement the change regarding the policy rate substantiated by the rate of inflation and the output gap gradually rather than in one move.

One of the important advantages of forecasts with endogenous policy rate paths lies in easy comprehension. They provide an answer to the question concerning how major macroeconomic variables are expected to change giving due heed to the response from monetary policy, rather than what would happen had the central bank failed to respond to economic developments. For this reason, the forecast from the central bank will provide economic actors with information that is easier to use and easier to compare with other forecasts.

The model using an endogenous policy rate path is a better tool for decision-makers to communicate interest rate policy in the future, since in addition to the direction of changes in the policy rate it will also provide information on the extent thereof.

The assumed policy rate path is not made public in the Report on Inflation, but qualitative suggestions are given concerning the expected direction of policy rate measures. One of the reasons lies in the fact that changes in economic developments and inclusion of new information will also have an impact on the policy rate path calculated under the model on a continuous basis. On the other hand, the baseline scenario of the forecast is to reflect the opinion of the staff, which may differ from the position held by the Monetary Council. Finally, we deem it important to draw attention to the fact that the policy rate as calculated under the model is to be determined in line with mechanical rules and thus is unsuitable for reflecting the complexity of the economic developments and the full range of decision criteria regarded by the Council Members as important.

1.2 Real economy outlook

Real economy outlook has been subject to considerable changes since the November issue of the Report on Inflation. In our forecast we expect a dynamic upswing in exports; however, based on the growth path of the global economy, increasingly significant risks are expected to emerge. We assume that the large investment projects pre-announced in the automobile industry will be completed as scheduled; however, corporate investment activity may prove to be weaker than expected in the context of sluggishly recovering domestic demand, sustained tight credit conditions and the corporate tax measures deteriorating the predictability of the general business environment. Despite the slow improvement in labour market conditions, government measures will substantially increase the income of households this year, which is likely to encourage consumption perceivably. At the same time, the reduction of welfare benefits and government spending as described in the Széll Kálmán plan is expected to reduce retail consumption. Although the output gap is expected to narrow over the forecast horizon, it will remain in the negative domain.

Chart 1-5
Fan chart of the GDP forecast

(based on seasonally adjusted and reconciled data)

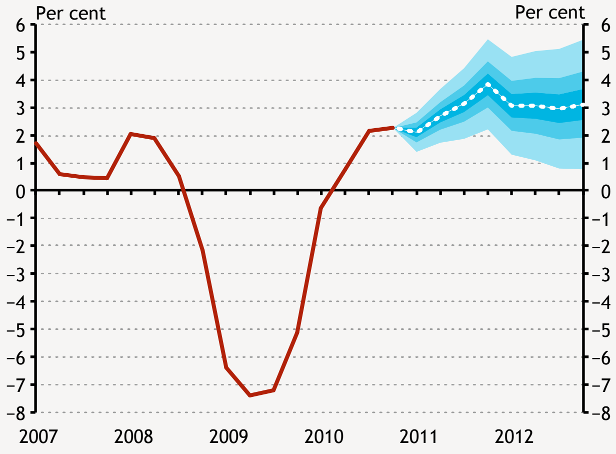
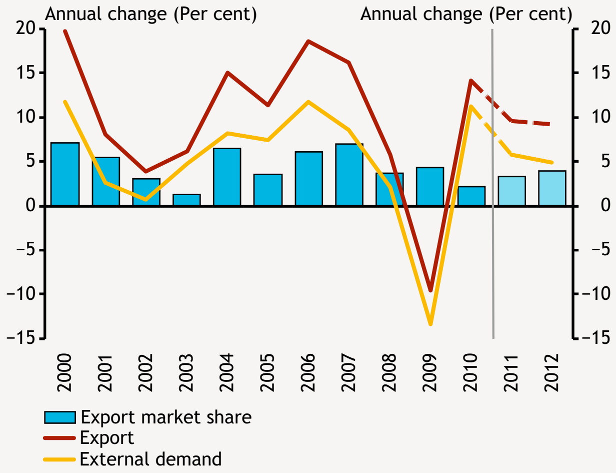


Chart 1-6
Changes in export market share



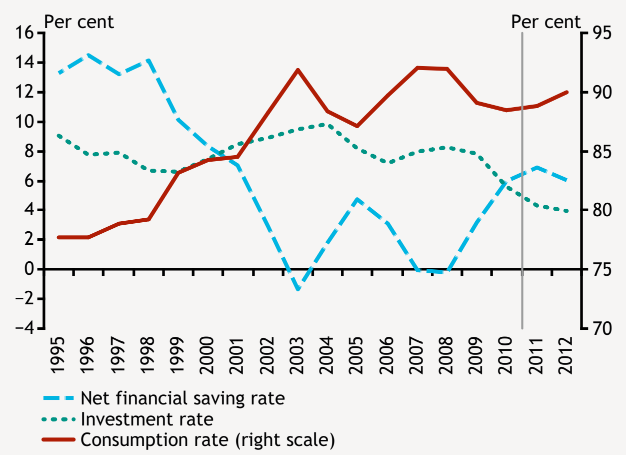
In our forecast we anticipate the GDP growth rate may be around 3% both in 2011 and in 2012 (Chart 1-5). Given that the potential growth rate of the economy is estimated to reach 1.5%-2% in this period, the output gap will gradually diminish. That notwithstanding, it will remain negative across the entire forecast horizon. In the November issue of the Report on Inflation we anticipated a slow and gradual narrowing of the output gap. In this forecast we expect that the narrowing of the output gap will accelerate in 2011, owing to the pick-up in consumption which, however, will slow down on the back of fiscal adjustments in 2012.

So far, the only positive growth factor supporting the recovery of the Hungarian economy from the economic recession has been strong external demand. Looking ahead, we expect that our main trading partners will experience a more subdued growth than we had foreseen. The declining trend in inventory rebuilding, the likely fiscal adjustments, high commodity prices, sustained unemployment, as well as further balance sheet adjustments by the private sector may restrain growth in the euro area.

The export performance of the Hungarian economy in 2010 was supported directly and indirectly by demand from outside the euro area, particularly from the Far East. Growth in developing economies may remain dynamic in the years to come; however, sharply rising commodity prices and overheated domestic demand may increasingly pose risks to the sustainability of this growth. Accordingly, we assume a gradual slowdown in demand for domestic exports in these economies (Chart 1-6).

Household behaviour in our forecast horizon will be determined by significant, often conflicting shocks, as well as a slow improvement in labour market conditions,

Chart 1-7
The use of household income*
(in share of disposable income)

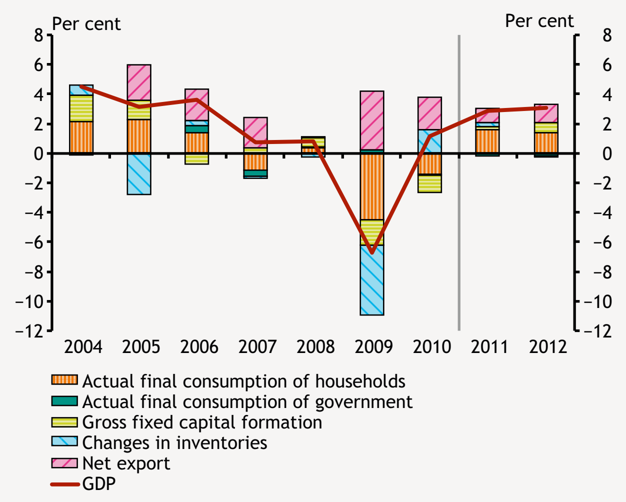


** Net financial savings of households exclude mandatory contributions payable to the private pension funds.*

sustained tight credit conditions and continuing balance sheet adjustments. Despite the sluggish improvement in labour market conditions, already adopted government measures will increase households' income substantially this year. A part of this extra income derives from reduced personal income tax burdens and the disbursement of real yields[1] generated by private pension funds payable after the reform of the private pension system. Increased income in 2011 may generate a substantial increase in household consumption compared to previous years; however, the intensifying precautionary considerations resulting from the crisis will elevate the level of financial savings significantly. This latter is largely expected from the disbursement of real private pension yields (Chart 1-7).

The anticipated government measures – in contrast to this year – will reduce households' disposable income through the curtailment of direct government consumption and investment expenditure, and the reduction of welfare benefits. The negative impact of these measures on demand may be offset by improving labour market conditions in the context of accelerating growth in employment and an increase in wages. Credit conditions are expected to remain tight over the entire forecast horizon, thus – in contrast to the 2006–2007 period – households will not be in a position to offset the short-term impacts of lost state benefits by taking out loans. In summary, household consumption may decelerate again in 2012.

Chart 1-8
Changes in GDP growth



Private sector investment may prove to be more unfavourable than we indicated in our November forecast. Although the scheduled completion of the large investment projects in the automotive industry will contribute significantly to growth over the forecast horizon, beyond this, corporate investment projects are not expected to expand significantly. In view of the tight corporate lending conditions and increased uncertainties about the prospects for demand and the regulatory environment, companies may decide to improve the utilisation of existing capacities rather than increase them (Chart 1-8).

Household investment may continue to contract significantly this year. The balance sheet adjustments for indebted households, tight credit conditions and the prolonged moratorium on home repossessions may put a break on new home construction on a permanent basis; therefore, the residential property market is not expected to stabilise before 2012.

Direct government consumption and investment expenditure may decline significantly in 2012 on the basis of the Széll

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[1] We used our estimation for the disbursment (cca. 220 billion HUFs).

Kálmán plan. The rate of the reduction largely depends on the extent to which the relevant local government sectors and public companies can replace lost state funding by own resources or new loans. In addition, the growth effect may be dampened by a potential improvement in the efficiency of the public sector under the new measures. Given the lack of adequate detail, however, the extent of this cannot be estimated accurately for the time being.

Box 1-2

How were the impacts of the Széll Kálmán plan taken into account in our macroeconomic forecast?

Our forecast concerning the macroeconomic path is affected by considerable uncertainty as regards the impacts of the Széll Kálmán plan announced by the government. The uncertainty is fed by two sources. On the one hand, we had at our disposal the budgetary estimates on expenditure cuts and revenue increases, amounting to 2% of GDP in 2012; however, without being aware of the detailed list of measures.[2] Therefore we are not in a position to determine whether the figures known to us reflect the gross impact of the various measures or the expected net improvement in budgetary balance.

There is a considerable difference between the two items, as all items in government spending – depending on the type of the particular expenditure item – have their inherent tax content; and for the imposition of stricter rules on the availability of public benefits we should count on the amount payable on other forms of public benefits that might provide even less support proving higher than earlier. With no details about the specific measures it is difficult to assess the extent and speed at which economic actors can adapt to new conditions, e.g. to what extent government consumption will drop with the reduction in price subsidies (e.g. purchase of subsidised drugs, community transport service volumes), what inflationary pressures are to be expected and to what extent inclusion of overhead costs in the official price range will counterbalance their effect on the consumer price index. Finally, due to lack of adequate data, we are unable to make estimates regarding the time frame in relation to which the improved budgetary path under the measures will deliver apparent improvement in assessment of the Hungarian economy from an investor perspective, and on the speed positive developments in the labour market may arise.

The second source of uncertainty manifests itself in the difficulty – being unaware of the details of the measures – of assessing the possible macroeconomic impacts the budgetary consolidation will have. Since the outbreak of the crisis, a number of new studies have been published in an attempt to make an estimate regarding 'fiscal multipliers'[3], with a view first to elaborating a policy capable of ensuring the most effective growth and second to providing support for a budgetary consolidation with the best capabilities to promote growth. The findings thus draw attention to the differences among countries and the differences in effects being subject to the structure of the adjustment measures, and they provide fewer references as to the quantification of these effects. The study issued by IMF in 2009[4] could be taken as a starting point, where a range of multipliers are identified as a rule of thumb for its own analyses from former studies, primarily for the assessment of the effects of then current expansion policies. Assuming an unchanged interest policy, for large countries an index of 1.5–1, medium countries 1–0.5 and small open economies 0.5 or less is deemed realistic. As regards budgetary consolidation, Alesina and Ardagana pointed out in their article (2009)[5] that attempts of budgetary consolidation in countries between 1970 and 2007 proved successful for the permanent reduction of sovereign debt where it was based on measures of expenditure cuts and, in addition, they are much less likely to exert effects leading to recession. The study by Ilzetski et al. (2011)[6] points out that the extent of fiscal multipliers is relatively lower in open economies, where the exchange rate is free to fluctuate, and in heavily indebted and less developed countries. Based on these studies, we can be confident that budgetary adjustments will have a moderate impact in restricting growth or may reverse to growth surplus with short notice. We assume within our forecast horizon up to 2012 that the measures will primarily exert Keynesian effects, given the fact that the majority of economic actors have an inadequate supply of liquidity at their disposal due to the crisis of the past few years, preventing consumption from being smoothed out and scheduling capital investments for an earlier date.

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[2] In Chapter 5 of the Report, we – in putting forth our fiscal forecast – have described in detail the problems in quantification of impacts from the Széll Kálmán plan on budgetary developments.

[3] The fiscal multiplier is the ratio of a change in national income to the change in government spending that causes it.

[4] Spilimbergo, A., S. Symansky and M. Schindler (2009): Fiscal multipliers. *IMF Staff position note,* SPN/09/11, 20 May 2009.

[5] Alesina, A. and S. Ardagana (2009): Large Changes in Fiscal Policy: Taxes versus Spending. *NBER Working Paper Series,* 15438.
URL: http://www.nber.org/papers/w15438.

[6] E. Ilzetski, E. G. Mendoza and C. A. Végh (2011): How Big (Small?) are Fiscal Multipliers? *IMF Working Paper,* 1152, March.
URL: http://www.imf.org/external/pubs/ft/wp/2011/wp1152.pdf.

Taking all this expertise into consideration, but being aware of the high uncertainty, we made the simplified assumption in our growth forecast for 2012 that nearly half the effects on aggregate demand from expenditure cuts adjusted with average inherent tax content is manifested in the growth figures. This assumption may be supported by the efficiency of the measures and a gradual manifestation of non-Keynesian effects alike. On familiarising ourselves with the complete set of measures we may have to amend our forecast either to the positive or the negative domain. However, we deem this interim approach to be more useful for the assessment of economic developments than application of any extreme values, namely either neglecting the set of measures or considering full efficiency and/or assuming Keynesian effects only. Our assumption on the potential growth effects from budgetary measures suggests that the output gap will close at a slower pace in 2012. At the same time, we found no hint for the estimation of the effects that the scheduled measures may have on inflation. Therefore, our forecast contains no quantified data in this respect.

1.3 Labour market forecast

Slack labour market conditions are expected to prevail over the entire forecast horizon, resulting in a lower-than-expected nominal wage path compared to our November forecast. The improvement in employment will follow the economic recovery with a lag. High unemployment and the reduction of employee tax burden will enable companies to offset their reduced profitability from cost-push shocks by the reduction of their wage bill rather than by increasing prices.

Chart 1-9
Employment and unemployment, total economy
(2002–2012)

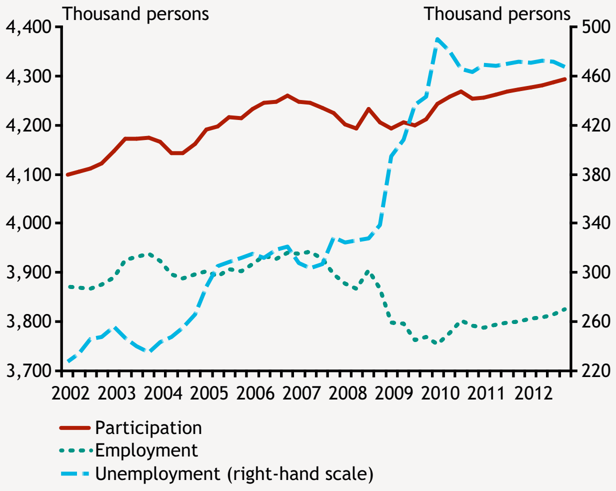
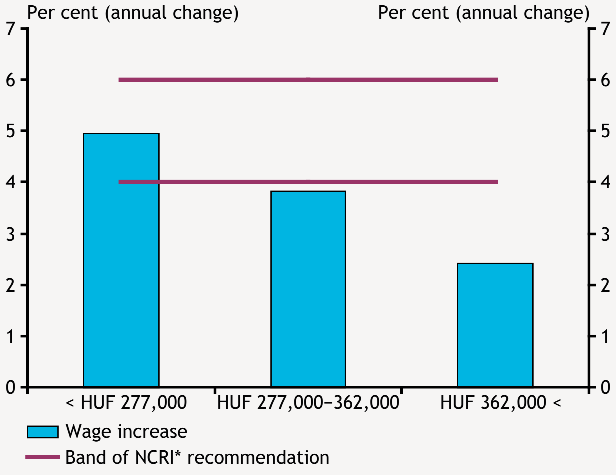


Chart 1-10
Planned wage increases in different revenue categories
(HAY-Group survey)



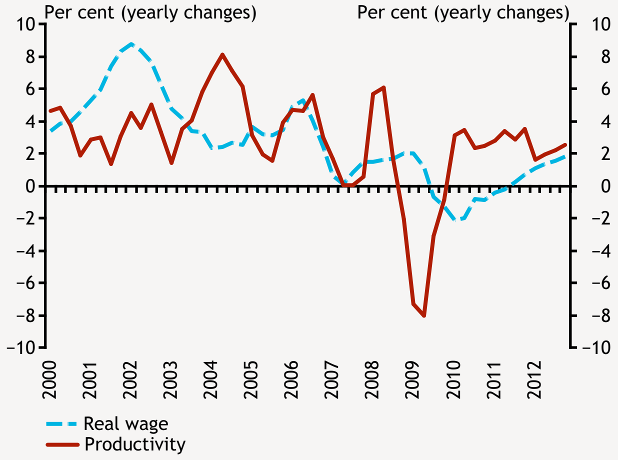
* *NCRI = National Council for the Reconciliation of Interests.*

It is typical in the Hungarian economy as well that the response of private sector employment to business cycles is lagged and moderate. Accordingly, the labour hoarding observed during the recession will lower the demand for new labour force in the initial phase of the recovery. In 2012 the increase in the number of those employed may be somewhat more vigorous and approach its long-term trend. Government measures affecting labour market conditions also point to an easing in this segment. More stringent regulations on disability pension and early retirement, as well as changes in unemployment benefits may elevate the level of activity. Likewise, the expected reform of the community work programme may have similar effects, in that it is intended to maintain the same level of employment through reduced hours, part-time employment and higher participation. In addition, more layoffs are expected in the public sector both this and the next year. In addition to employment developments, this increase in activity justifies our forecast of a historically high unemployment rate, which we expect to stand at 10% until the end of 2012 (Chart 1-9).

Slack labour market conditions arising from high unemployment will lead to a considerable slowdown in wage dynamics in the private sector. On the one hand, the corporate sector has very limited ability to raise prices in the context of weak demand, which increases the significance of the wage channel in the adjustment process. Restrained wage dynamics will contribute to the restoration of profitability of the corporate sector through the reduction of the wage bill and unit labour costs. On the other hand, reduced personal income tax rates also contribute to more modest wage increases relative to former periods. As the new tax regimes imply lower tax rates primarily for those with higher wages, wage increases as compensation measures from the employer may be more significant for those in the lower-than-average wage brackets, thus the recommendations from the National Council for the Reconciliation of Interests (OÉT) may be relevant in their

Chart 1-11
Changes of gross real wages and productivity in the private sector

(2000–2012)



case. This is confirmed by the findings of the most recent survey conducted by the HAY Group, according to which respondent companies applied selective wage increases, and have effected higher wage increases in lower wage brackets, with lower increases in higher wage brackets (Chart 1-10).

As a result of these developments, we expect wage indices below 4% for the first six months of 2011. Furthermore, we expect no significant acceleration in wages in 2012 with historically low wage indices at around 5%. The above factors − considering the inflation path − will materialise as an increase in the gross wage bill in real terms only from the beginning of next year, but the real wage will lag behind the productivity growth throughout the entire forecast horizon (Chart 1-11).

Table 1-2
MNB forecast compared to other institutions' forecasts

	2011	2012	2013
Consumer Price Index (annual average growth rate, %)			
MNB (March 2011)	4.0	3.4	–
Consensus Economics (March 2011)[1]	3.3 – 3.9 – 5.2	2.7 – 3.4 – 4.5	3.3*
European Commission (November 2010)	3.9	3.7	–
IMF (February 2010)	4.1	3.5	3.0
OECD (November 2010)	2.9	3.1	–
Reuters survey (March 2011)[1]	3.6 – 4.0 – 4.9	2.8 – 3.5 – 4.9	2.4 – 3.2 – 4.2
GDP (annual growth rate, %)			
MNB (March 2011)[4]	2.9	3.0	–
Consensus Economics (March 2011)[1]	2.0 – 2.5 – 3.1	2.7 – 3.2 – 3.5	3.3*
European Commission (November 2010)	2.8	3.2	–
IMF (February 2010)	2.8	3.0	3.0
OECD (November 2010)	2.5	3.1	–
Reuters survey (March 2011)[1]	1.9 – 2.6 – 3.1	2.5 – 3.3 – 4.2	–
Current account balance (percent of GDP)			
MNB (March 2011)	1.4	2.0	–
European Commission (November 2010)	0.4	−0.4	–
IMF (February 2010)	0.1	−0.6	−1.1
OECD (November 2010)	−1.1	−1.3	–
Budget Balance (ESA-95 method, percent of GDP)			
MNB (March 2011)[6]	2.5	(−3.6) – (−4.6)	–
Consensus Economics (March 2011)[1]	(−2.5)–(−3.3)–(−5.2)**	(−2.4)–(−3.0)–(−4.0)	–
European Commission (November 2010)	−4.7	−6.2	–
IMF (February 2010)	5.7	−5.2	−7.2
OECD (November 2010)	−3.1	−2.9	–
Reuters survey (March 2011)[1]	(−3.0) – 1.6 – 5.8	(−3.7) – (−2.5) – 2.9	–
Forecasts on the size of Hungary's export markets (annual growth rate, %)			
MNB (March 2011)	5.6	4.8	–
European Commission (November 2010)[2]	6.2	6.7	–
IMF (October 2010)	5.1	–	–
OECD (November 2010)[2,3]	6.6	5.2	–
Forecasts on the GDP growth rate of Hungary's trade partners (annual growth rate, %)			
MNB (March 2011)	2.1	2.3	–
Consensus Economics (March 2011)[1]	2.2	2.3	–
European Commission (February 2011)[2]	2.1	–	–
IMF (January 2011)[2]	2.2	2.5	–
OECD (November 2010)[2,3]	2.3	2.4	–
Forecasts on the GDP growth rate of euro area (annual growth rate, %)			
MNB (March 2011)[5]	1.6	1.7	–
Consensus Economics (March 2011)[1]	1.7	1.7	–
European Commission (November 2009)	1.6	–	–
IMF (January 2010)	1.5	1.7	–
OECD (November 2010)	1.7	2.0	–

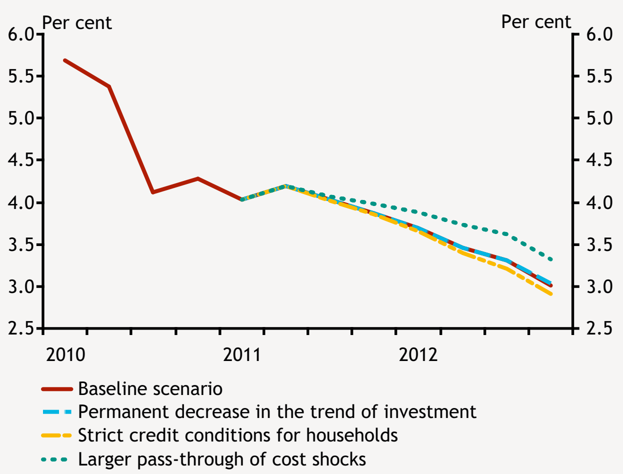
[1] *For Reuters and Consensus Economics surveys, in addition to the average value of the analysed replies (i.e. the medium value), we also indicate the lowest and the highest values to illustrate the distribution of the data.*
[2] *Values calculated by the MNB; the projections of the named institutions for the relevant countries are adjusted with the weighting system of the MNB, which is also used for the calculation of the bank's own external demand indices. Therefore, these figures may deviate from the figures published by the specified institutions.*
[3] *OECD did not publish any information about Romania, therefore Romania is not included in our OECD forecast.*
[4] *Data not adjusted for calendar-day variations.*
[5] *Aggregate based on euro area members included in our external demand indices.*
[6] *In 2012 the higher deficit figure reflects our rule-based forecast, while the lower deficit figure presents the effect of the Széll Kálmán-terv (Széll Kálmán plan).*
* *Average of midium range forecasts*
** *Without incomes from private pension funds.*
Sources: Eastern Europe Consensus Forecasts (Consensus Economics Inc. [London], March 2011); European Commission Economic Forecasts (November 2010); IMF Country Report No.11/35 (February 2011), IMF World Economic Outlook Database (October 2010); IMF World Economic Outlook Update (January 2011); Reuters survey (March 2011); OECD Economic Outlook No. 88 (November 2010).

2 The impact of alternative scenarios on our forecast

We wish to illustrate the risks around the baseline scenario by presenting three alternative scenarios. In these three scenarios the permanence of the decline in investments, banks' propensity to lend, and the uncertainties surrounding cost shock pass through are presented. Overall, we may conclude that monetary policy responds to the shocks and offsets most of the inflationary effects. In line with this pattern, the shifts in the inflation paths are smaller and those in the GDP paths are larger in the alternative scenarios.

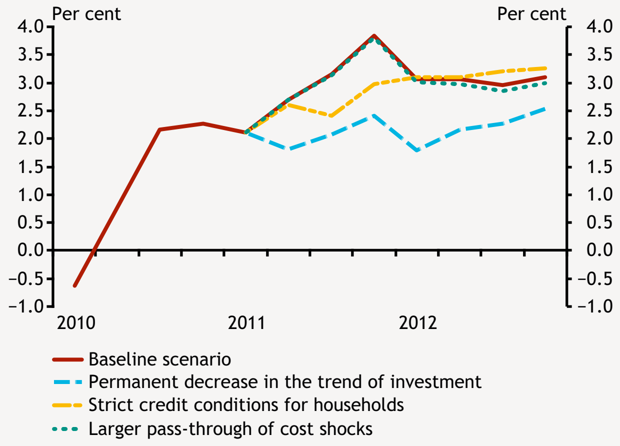
Based on the cyclical developments experienced in 2010, a larger than expected part of the decline in capital investment during the crisis can be considered as permanent, and thus the trend seen in capital investment may be lower than what is presented in the baseline scenario. With the exceptions of a few large individual projects based on previous business decisions, corporate investment is rather weak, which pose risks for the future as well. In the model this has two effects. First, in the initial condition, the output gap is narrower; second, looking forward the potential growth rate of the economy might be lower. In this case, compared to the baseline scenario, capital investment and GDP are expected to increase more moderately in the next few years. GDP growth would not accelerate compared to the dynamics observed at end-2010, and could hover around 2-2.5 per cent until end of next year. All this will have an impact on the initial value of the output gap: in our alternative scenario, this may be 1 per cent narrower than in the baseline scenario. The disinflationary effect of the narrower output gap is also smaller and the interest path also shifts slightly upwards; nevertheless, even in this case significant monetary tightening will not be required.

Chart 2-1
Effect of the alternative scenarios on our inflation forecast



Similar to our previous projections, we still consider developments in bank's lending activity highly uncertain. The starting point for credit developments is the equilibrium of credit supply and demand. In this simulation, we have modelled the restriction of credit supply, thus we have presumed that along the entire projection horizon (household) credit conditions have remained tighter than those included in the baseline scenario. In this case resources available for consumption are lower by a similar magnitude as the real pension fund yields increase it. Lower consumption demand entails stronger disinflation, which will, in turn, allow gradual easing in 2012. In sum, due to

Chart 2-2
Effect of the alternative scenarios on our GDP forecast



the effect of looser monetary conditions and lower demand the inflation path would be very near to that of the baseline, while GDP growth rate would be lower till mid-2012.

The most recent inflation data suggest that, due to the negative output gap, cost shocks fed through to the core inflation to a far less extent than previously observed. In light of the above, with moderate inflation pass through in the baseline scenario, we expect weak second-round effects, and recovery in profitability in the corporate sector will take place through more moderate wages. In contrast, in the risk scenario we assume that if the inflationary expectations are insufficiently anchored then simultaneously with cyclical recovery nominal wage rises may be higher, and the corporate sector integrates cost pressure into its prices to a greater extent. Thus monetary policy will perform substantive tightening already in 2011, and interest rates will not have decreased to 6 per cent even by the end of 2012. Among the three risk scenarios, this would have the most significant inflationary impact. According to our simulation, despite the reaction of monetary policy, inflation would be higher by 0.5 per cent than in the baseline, while the impact on GDP would be negligible (Chart 2-1 and 2-2).

3 Financial markets

Global market sentiment is basically determined by the favourable global economic growth prospects and the increased sovereign risks emerging in the euro area. In addition, the tensions in North African countries and the earthquake in Japan have had an unfavourable impact on the risk appetite of investors. According to the developments in risk premia, investor sentiment towards emerging markets remains basically positive. However, capital inflow slowed down in some Asian countries, while in certain countries it has been halted completely.

Besides global sentiment, country-specific factors also affected domestic asset prices. At the beginning of the period, the credit rating agencies downgraded the rating for the sovereign Hungarian debt, which, however, prompted no significant, permanent market reactions. The rate hike cycle commenced at the end of November may have stepped up demand on the part of non-residents for assets denominated in forint, which is reflected mainly in the portfolio of assets with short-term maturity and in the appreciation of the forint exchange rate. The risk assessment of Hungary was determined by expectations concerning government measures aiming at structural reforms. The markets have displayed high expectations and moderate optimism as regards these measures since January. Most of the risk premium indices have decreased since the beginning of the year and the portfolio of government securities held by non-residents has undergone a steep increase. The composition and extent of reforms announced at the beginning of March were to a large extent in line with expectations, therefore no material change occurred in market trends.

3.1 International financial markets

Chart 3-1
Global risk indicators

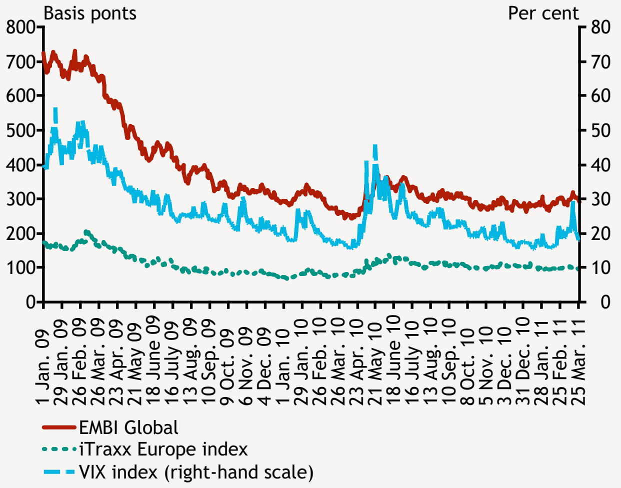
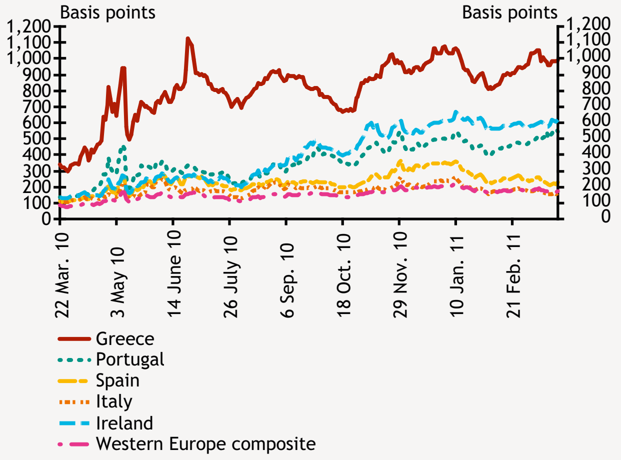


Chart 3-2
CDS spreads in selected eurozone countries



International financial markets have been characterised by larger-than-usual volatility in the period since the November report. Variability in investor sentiment was influenced partly by favourable growth prospects in the global economy, and partly by higher sovereign risks in the euro area. Equity indices in developed and emerging economies continued to rise, with a reduction in corporate risk premia as well (see Chart 3-1). The favourable market developments are attributable to macroeconomic data and profits in the ongoing reporting season suggesting better-than-expected economic recovery. Increasing commodity prices are an unfavourable consequence of the improved outlook for economic activity.

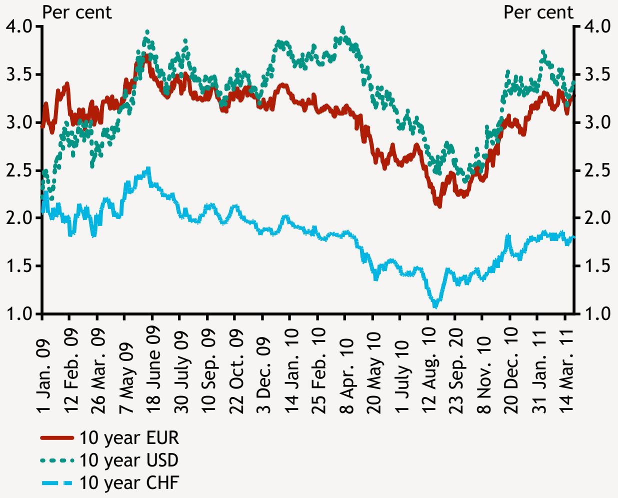
The rise in risk premia due to uncertainties around the fiscal sustainability in certain member states of the euro area, however, has had an opposite effect. In certain periods, elevated sovereign risk had an unfavourable effect on the risk appetite of investors even on a global level. These developments, however, had the potential to reverse the positive trends in financial markets on a temporary basis only (see Chart 3-2). Despite considerable increases in Irish and Portuguese risk premia in successive waves in December and January, the European Commission – by raising the funds available in the EFSF (European Financial Stability Program) – gave an institutional response to the debt problem whereby it could prevent the sovereign debt problems from spreading to other countries and financial markets for the time being.

At the same time, global risk appetite was unfavourably affected by concerns around tensions in Northern African countries and the economic consequences of the earthquake in Japan. Data at our disposal allow no sound judgement as to the durability of the market effects resulting from these developments.

According to the developments in risk premia, investor sentiment towards emerging markets remains basically positive. However, capital inflow slowed down in some Asian countries, while in certain countries it has been halted completely. It is worth noting that there are three risk factors that can hamper capital flows to the entire set of emerging markets: significant deterioration of growth

Chart 3-3

Long-term benchmark yields in the US, Switzerland and the Eurozone



outlook, shift in monetary policy stance and a rise in sovereign risk premia stemming from the sustainability of the fiscal position.

Most of the central banks in emerging countries made rate hikes due to the increased inflation pressure. A number of developed countries also moved towards monetary tightening. Certain developed countries have also made a move towards stricter monetary policies. Among large economies, only Switzerland, Japan, the USA and the UK can be expected to apply low interest rates in the longer term (see Chart 3-3). For Hungarian financial markets, it is important that the European Central Bank has indicated the launching of a tightening cycle.

The tightening cycles were commenced in emerging markets first due to the fact that these areas are characterised by more robust growth on the one hand and that the rise in commodity prices fuels inflation to an extent surpassing that of developed counties on the other.

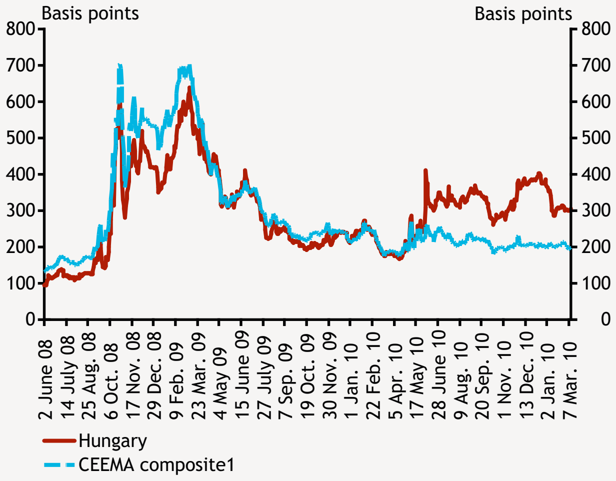
3.2 Risk assessment of Hungary

In addition to the global developments referenced above, risk assessment of Hungary was materially influenced by a number of country-specific factors.

The downgrading of the Hungarian sovereign debt by two credit rating agencies had a moderately negative effect. At the beginning of December, Moody's downgraded the Hungarian sovereign debt from Baa1 to Baa3, followed by Fitch's similar move to BBB–. As a consequence the forint weakened temporarily and yields rose slightly. However, these negative market effects proved temporary only, mainly due to two factors. One is that this measure had already been priced in, and the very fact of downgrading did not come as a surprise, only the two-notch downgrading was unexpected. The other is that this piece of news hit the market when investor sentiment was improving, and the favourable international environment, especially the considerable capital influx to emerging markets, in which Hungarian assets have a significant share, may have offset the adverse consequences.

The policy rate hike cycle was commenced at the end of November. Although the policy rate increase was unrelated to the risk assessment of the country, it however has a favourable impact on non-residents' attitude towards assets denominated in forint. This was mostly reflected in the build-up of long HUF exchange rate positions.

Chart 3-4
Development of the Hungarian and the Central Eeastern European CDS

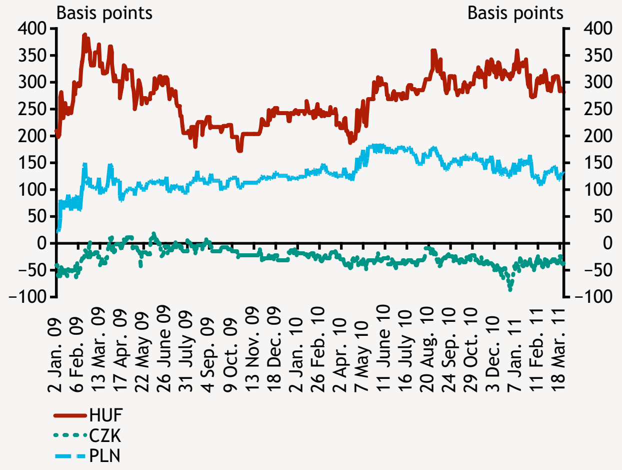


Risk assessment of the country was influenced to the largest extent by the announcement of measures aiming at the structural reform of public finances. Market expectations regarding the measures were priced in the value of assets denominated in forint gradually over the past few months.

The composition and extent of reforms announced at the beginning of March were mostly in line with expectations, therefore no material change occurred in market trends. Market participants were, however, disappointed by the omission of effective measures intended to attain the set targets.

These developments materially contributed to the improvements of the risk indicators of the country between November and March: the five-year CDS fell from 375 in

Chart 3-5
5 year implied spreads over euro rates in 5 year's time

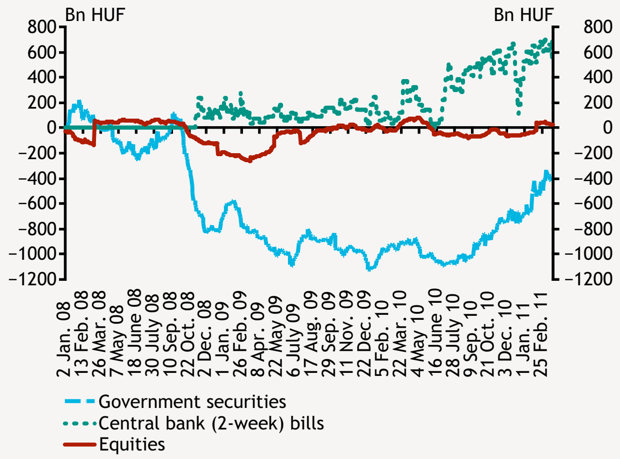


November to a value below 300 basis points (see Chart 3-4), with the 5-year eurobond spreads falling from 400 to 270 basis points as compared to German government bonds. The forward 5-year yields in 5 years' time has undergone a significant reduction as the spread compared to euro yield dropped from 330 in November to 310 basis points in March (see Chart 3-5). These reductions in spreads exceeded the average value characteristic in the Central European countries, indicating that the relative risk assessment of Hungary has improved.

3.3 Non-residents' demand for HUF assets

Improved risk perception and the general investor sentiment towards emerging markets resulted in a build-up of demand for HUF denominated assets. The most pronounced increase was in non-residents' demand for government bonds. This was accompanied by a continuous appreciation of the forint against the euro.

Chart 3-6
Demand by non-residents for forint financial assets



The portfolio of government bonds held by non-residents increased at an unusually fast pace (see Chart 3-6). Since the end of November, non-residents purchased government securities in an amount exceeding HUF 350 billion. There was a moderate interest for discounted T-bills on their part, with the central bank bill portfolio held by them for the time being currently corresponding to the level prevailing in November. The majority of government bond purchases were made in the primary market, which is reflected in excess over-subscription of issues made by the Government Debt Management Agency (ÁKK). In the first 10 months of 2010, bond issues met an average of twofold demand, while auctions in the past four months were characterised by an average of 2.5-fold demand, with increased allocations involved on a number of occasions.

Non-residents' demand for government bonds materially contributed to the improvement of the liquidity in the secondary market also. Market liquidity returned to pre-crisis levels. Market turnover has risen considerably since January, with bid-ask spreads narrowing and accompanied by the increase in the number of transactions and the volume of individual deals.

In addition to purchasing long term government bonds, non-residents increased their exposure to Hungary also through short term financial instruments. The HUF liquidity needed to purchase these assets was mostly raised through outright spot transactions instead of FX swaps. The latter would have meant FX risk hedging. A limited portion of non-residents' FX liquidity providing FX swaps – crucial in local banks' FX liquidity management – gradually phased out. On the other hand, non-residents' HUF liquidity providing transactions decreased in December and then rose considerably as from mid-January. The net FX swap portfolio held by non-residents currently corresponds to the end-of-November levels.

3.4 Developments in the foreign exchange markets

Chart 3-7
HUF/EUR exchange rate and implied volatility

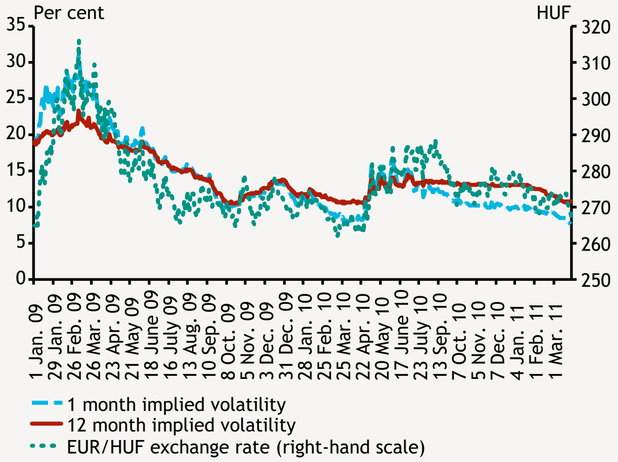
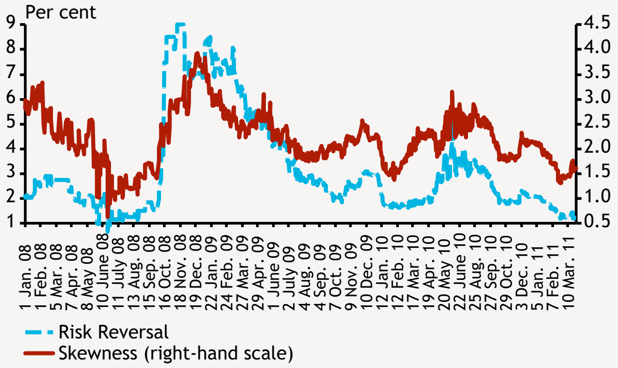


Chart 3-8
Risk reversal and skewness of the HUF/EUR exchange rate expectations

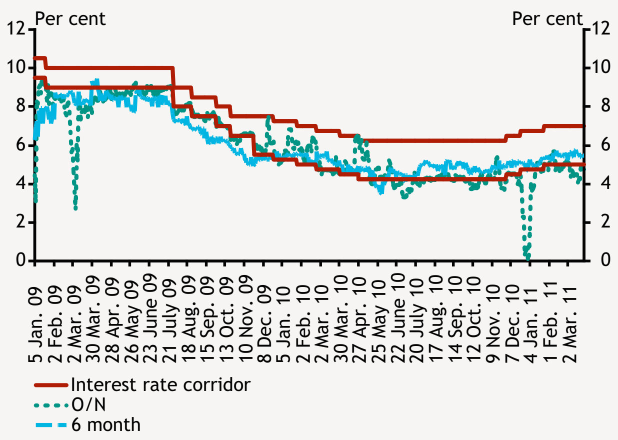


In the foreign exchange markets – in addition to the strengthening of the exchange rate – implied volatility calculated from option transactions also underwent a material decrease, from 10.5% in November to 8.5% over a one month horizon, and from 13% to 10.7% over a one year horizon (see Chart 3-7). In addition, it is worth noting that the skewness of the estimated distribution in expected exchange rate pointing to weakening also underwent a material decrease (see Chart 3-8). Reduction in skewness pointing to weakening in line with strengthening of the exchange rate has been a novelty in trends in recent month. Formerly, these values were moving in opposite directions, thus indicating an implicit exchange rate band assumed by investors. In addition, the phenomena was supported by rising expectations in the market regarding government measures on structural reform, also resulting in the build-up of option strategies on the strengthening of the forint. Option market liquidity was favourably influenced, with average monthly turnover over the past few months exceeding the average of the past two years.

Despite the basically favourable developments in the Hungarian financial markets, temporary tensions emerged in the FX swap market in the last two weeks of December. In the last two weeks of 2010, non-residents' sales of assets denominated in HUF caused severe disturbances in the FX swap market. This sell off was purely due to year-end window dressing. The swap instruments of the MNB were also utilised for overnight maturity items. The market disturbance primarily arose in O/N and T/N maturity transactions and quotes, where decreasing bid-side swap point quotes entered the negative domain from the middle of the second week. Tensions were more pronounced in the USD-HUF market for the entire period, with tensions spreading also to the EUR-HUF market, albeit with less intensity. The central bank bill portfolio held by non-residents in this period underwent a significant decrease. The majority of the forint liquidity thus released was converted to FX-denominated liquidity on the O/N FX swap market, which led to the reduction of the implied HUF yield (see Chart 3-9). After the balance sheet date, the foreign actors concerned restored their central bank bill portfolio in the first days of January, in line with a supply of foreign exchange also in the FX swap market, and the implied yields thus returned to their usual levels. These events may draw attention to the remaining vulnerabilities on the swap market. Nevertheless, these market turbulences do not affect interbank HUF interest rates and thus do not cause any distortion in monetary transmission.

Chart 3-9

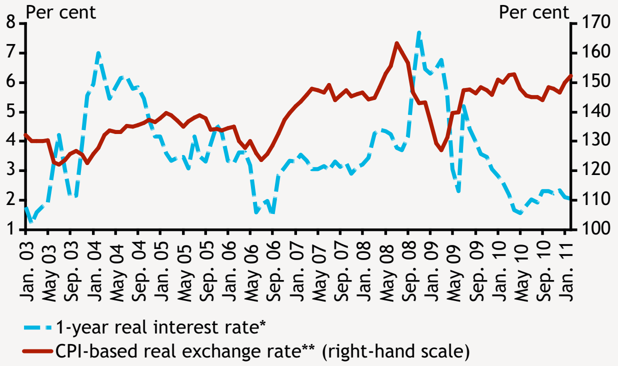
Implied HUF yields based on FX-swap market trades and quotes



3.5 Monetary conditions

Chart 3-10

Evolution of the forward-looking real interest rate and the euro/forint real exchange rate



** Based on the one-year forward-looking inflation expectations of analysts calculated by the MNB using the 1-year zero coupon yield and the Reuters poll.*

*** Monthly depreciation of the exchange rate against the euro (monthly rate of devaluation until April 2001), adjusted for the given domestic inflation indicator and the harmonised inflation of the EU (1 January 1997 = 100%; an increase means appreciation).*

Over the past few months, monetary conditions have changed to a small extent only (see Chart 3-10). The real exchange rate and real interest rate displayed differing dynamics. The one year real interest rate slightly decreased, mostly caused by increased inflation expectations. One year nominal interest basically corresponds to the level prevailing at the end of November.

The appreciation of the EUR/HUF real exchange rate since mid-2010 has continued. Appreciation was largely due to the strengthening of the nominal exchange rate, with developments in the rate of inflation in the euro area and Hungary also contributing to such appreciation. Over the past three months, the rate of inflation in Hungary was significantly higher than in the euro area.

4 Macroeconomic overview

4.1 Aggregate demand

Since the deep recession of 2008–2009, the recovery of the Hungarian economy has been in progress for the past five quarters. The perceivable improvement in the demand environment has so far been limited to the export sectors, with the main components of domestic demand only reaching their trough in the second half of 2010. Owing to the sluggishly improving labour market, continuing tight credit conditions and the increase in the price of commodities, inflation remained stuck at high levels; as a result, internal demand may only improve slightly over the coming quarters, and thus recovery may continue to be driven by dynamically growing export sales.

Chart 4-1
Changes in Hungarian GDP
(2005–2010)

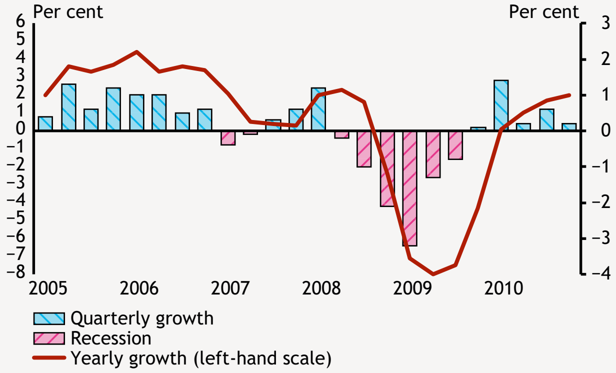
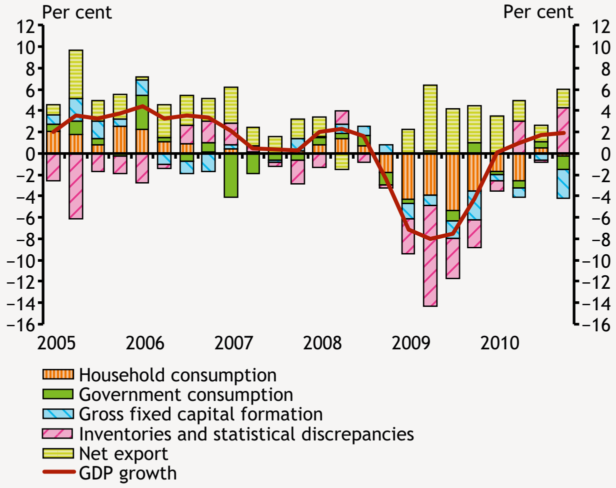


Chart 4-2
The stucture of the yearly GDP change in Hungary
(2005–2010)



In the second half of 2010 the Hungarian economy continued on its slow recovery path. GDP was nearly 2 percent higher at the end of last year than that observed in the previous year; however, the weak (0.2%) quarter-on-quarter increase points to the fragility of the recovery process (Chart 4-1). At the same time, many one-off factors (payment of year-end bonuses being pushed over to early 2011) also contributed to the weak growth in Q4; correction of these factors may result in a material upswing over the upcoming quarters.

As in each quarter since early 2009, economic growth continues to be driven by dynamically expanding export sales in the context of strong external demand.

Although domestic demand remains subdued, it may have reached its trough in the second half of 2010 and thus has restrained the recovery of the Hungarian economy to a smaller extent since then. Owing to high unemployment and tight credit conditions the investment and consumption spending of firms and households remained at low levels. The only significant boost in demand was attributable to the gradual replenishment of inventories following rapid destocking during the recession (Chart 4-2).

4.1.1 EXTERNAL DEMAND

The global economy continued to improve in the second half of the previous year. Developing economies, often posting double-digit growth, continued to be the driving forces of the upswing. Although recovery in developed economies somewhat slowed down in the last months of 2010, growth might stabilize within this group of countries as well (Chart 4-3).

Chart 4-3
Changes in GDP in developed regions of the world

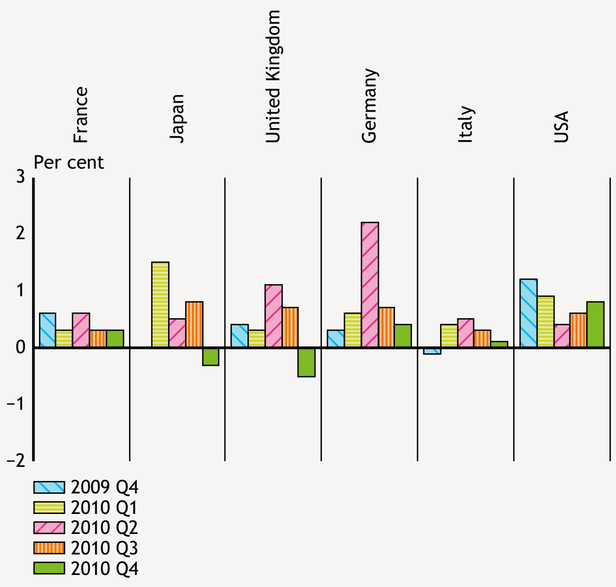
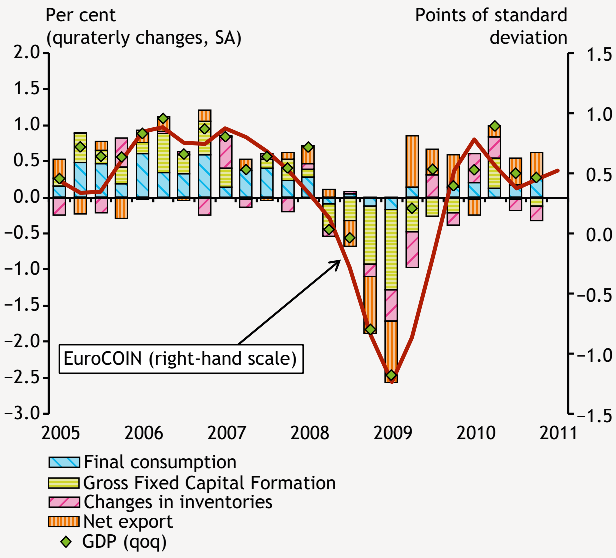


Chart 4-4
Changes in GDP in the euro area and the EuroCOIN* indicator
(2005–2010)



* *The (New) EuroCOIN is a monthly indicator moving together with the trend (cleaned of short-run noises) of euro area GDP growth. The indicator is computed by CEPR from monthly data with dynamic factor model (http://eurocoin.cepr.org/).*

So far, the growth figures of developed countries have not generated a material improvement of labour market developments, which had been hit hard during the recession. Unemployment was stuck at high levels and currently still exceeds pre-crisis levels substantially (with the sole exception of Germany).

The risk appetite of the banking sector is low, and tight credit conditions continue to restrict the consumption and investment decisions of households and firms. The effects of the government stimulus measures implemented during the crisis have gradually faded away; in the upcoming years focus may shift to the adjustment measures aimed at achieving fiscal sustainability.

Although these effects are rather broad-based across the developed world, the pace of the recovery differs from country to country even within this group. Economic growth in the United States was more dynamic following the recent recession as well, while certain economies — typically the most indebted ones — experienced a slight slowdown at the end of 2010.

The German economy and German exports are the driving force of euro area growth, while domestic consumption has improved even in the larger economies in recent quarters. At the beginning of 2011 main European confidence indices reached historic highs, reflecting an economic environment that remains optimistic. Accordingly, our main foreign trade partners may continue to show strong demand for Hungarian exports at the beginning of this year (Chart 4-4).

Despite the optimistic short-term outlook, upside risks once again pose a threat to developments in the global economy. The global imbalances cited as one of the main factors triggering the 2008–2009 crisis intensified over the past year, while sustained high oil prices may curb the growth potential of oil-importing economies as well. Moreover, the social tensions emerging in several countries on account of high food prices, as well as the recent natural disaster hitting Japan may represent an additional risk.

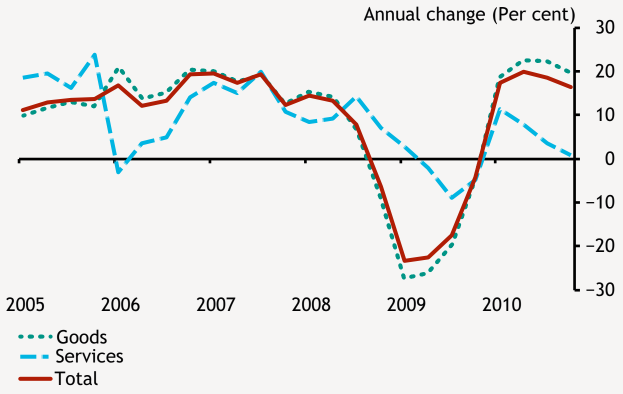
Central and Eastern European economies showed more dynamic growth during the recovery than the European average; therefore, economic convergence may continue in the upcoming years, albeit at a slower rate than before the crisis.

4.1.2 HUNGARIAN FOREIGN TRADE

In line with the rebound in external demand, demand for the products of the Hungarian exporting sector has improved continuously in recent quarters. In 2010 year-on-

Chart 4-5
Hungarian export growth

*(2005–2010, in euro terms)**



* *Preliminary data for 2010 Q4.*
Source: balance of payments.

Chart 4-6
Changes in Hungarian export by destination countries

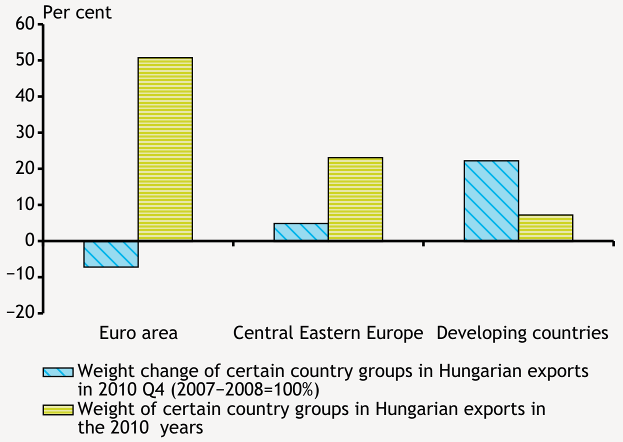
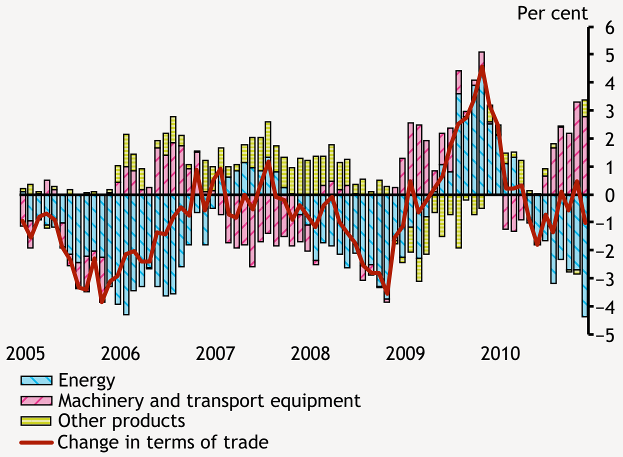


Chart 4-7
Year on year change of terms of trade



year export growth nearly reached its elevated pre-crisis levels. The increase in exports mainly affected the sales of goods, whereas the export of services increased to a smaller extent (Chart 4-5).

Export sales aimed at developing economies increased by almost 40 percent during the crisis. Accordingly, demand from rapidly expanding (Asian and South American) economies also stimulated Hungarian exports directly, while the effects of global economic activity materialised indirectly, through economic relations with developed European economies (Chart 4-6).

Movements in the economy's import demand were similar to those observed in exports. Subdued domestic demand, however, continuously kept import dynamics below the level of export growth. Thus in previous quarters, the balance of the real economy remained to be characterised by the surplus that had been accumulated during the crisis. Taking into account the positive short-term prospects of Hungary's export markets and the sluggish and fragile recovery of domestic demand, this phenomenon is expected to remain unchanged over the coming quarters as well. Net exports may remain the primary driving factor of growth.

As the Hungarian economy is a net importer of energy, rising energy prices quickly exerted a downward pressure on the terms of trade. Favourable external price developments in the manufacturing sector managed to offset this effect (Chart 4-7). Strong growth in some manufacturing sectors may have contributed to improving terms of trade among manufactured goods. However, significant one-off effects may have also played a role, changing the composition of trade and influencing average export and import prices (for example, Samsung relocated some production capacities from Slovakia to Hungary).

The rising terms of trade of manufactured goods improves the profitability of mostly foreign-owned manufacturing exporters, but rising energy import prices hurt a wide range of domestic consumers. Therefore, the overall impact of recent terms of trade developments on domestic demand could have been negative.

4.1.3 HOUSEHOLD CONSUMPTION

The upswing seen in the consumption demand of households in the middle of 2010 faltered during the last months of the year. The slight drop in year-end retail turnover suggests that following the crisis the recovery of consumption demand may be slow and protracted (Chart 4-8).

Compared to the previous year, the income developments determining the consumption decisions of households displayed a gradual improvement over the course of 2010. Decelerating inflation preceding the autumn months combined with the declining tax burden of employees and rebounding employment figures following the trough observed in the middle of 2010 all contributed to an improvement in income conditions. This improvement came to a halt in the last months of 2010. Low year-end wages stemming partly from temporary factors (non-payment of year-end bonuses), as well as the renewed acceleration of inflation reduced the real value of households' disposable income, while the appreciation of the Swiss franc exchange rate depleted the funds available for consumption for households with FX loans.

The decline in the tax burden on personal income coupled with the payment of the bonuses postponed from 2010 to the first months of 2011 point to a renewed upswing in demand in the first few months of 2011; however, its dynamics may remain subdued.

Households' behaviour has changed substantially during the crisis. Increasing precautionary considerations dampened the consumption and investment rate perceivably, while simultaneously increasing households' willingness to save. This shift continued in the second half of the year as well (Chart 4-9).

4.1.4 PRIVATE INVESTMENT

The investment demand of firms and households contracted substantially in the course of the year.

As regards firms, only a few investment projects – those implemented as planned, primarily in the manufacturing sector – contributed to a material increase in capacity; otherwise, investment activity remained weak in most of the other sectors. Given the tight credit conditions, rather than launching new investment projects, firms reacted to the slow improvement in demand by more effectively utilising their existing capacity (Chart 4-10).

Housing market developments typically react to macroeconomic changes with a substantial lag. Housing market indicators have continued to deteriorate over recent quarters and, based on the number of building permits issued, this trend is not expected to improve in the coming quarters. Amid uncertain labour market conditions and the poor retail lending activity of the banking sector

Chart 4-8
Retail sales, household consumption expenditure and income
(2001–2010)

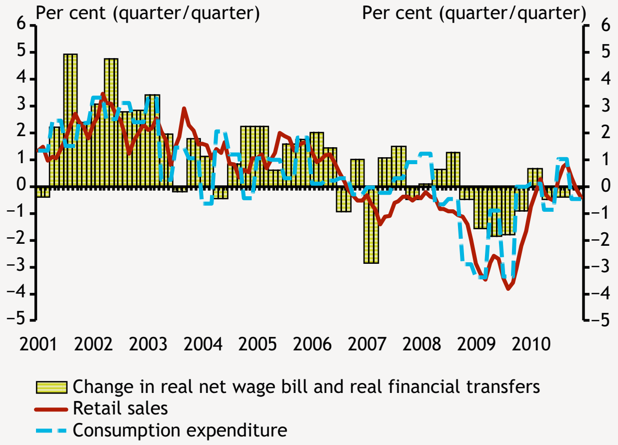


Chart 4-9
Consumption and net financial saving rate of households
(2000–2010)

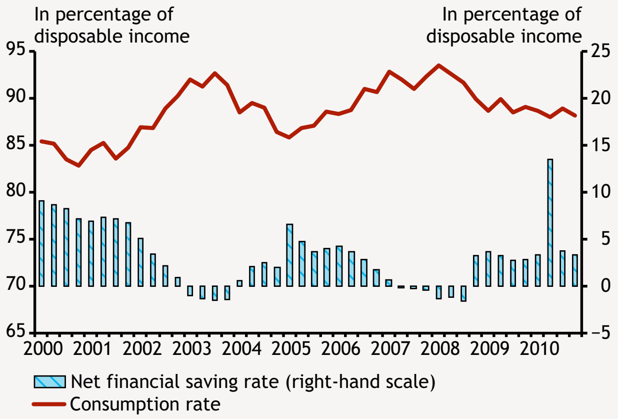


Chart 4-10
Investment in machinery and equipment; manufacturing
(2001–2010, year-on-year)

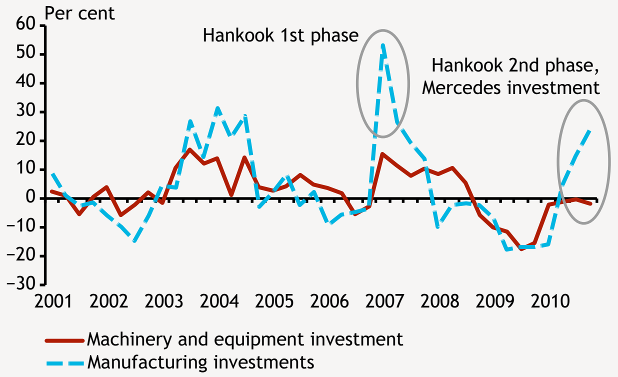


Chart 4-11
New dwelling construction permits, dwellings put to use
(1993–2010)

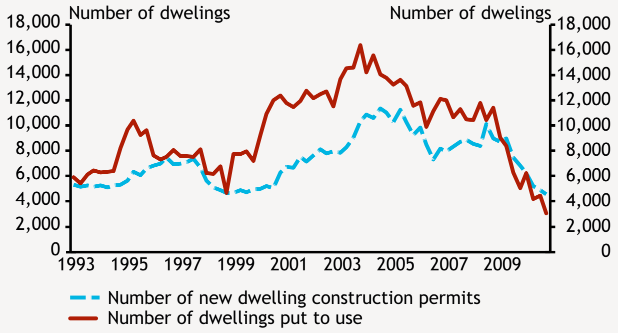
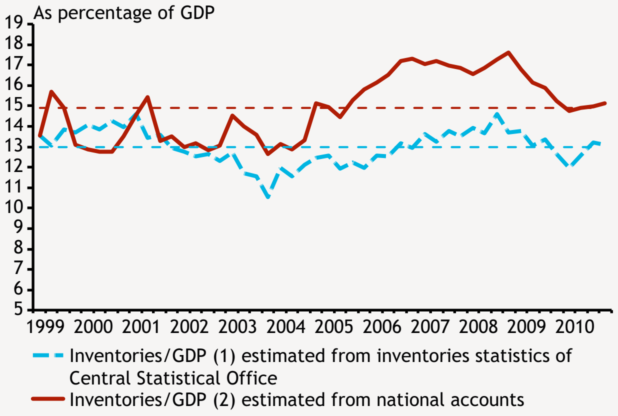
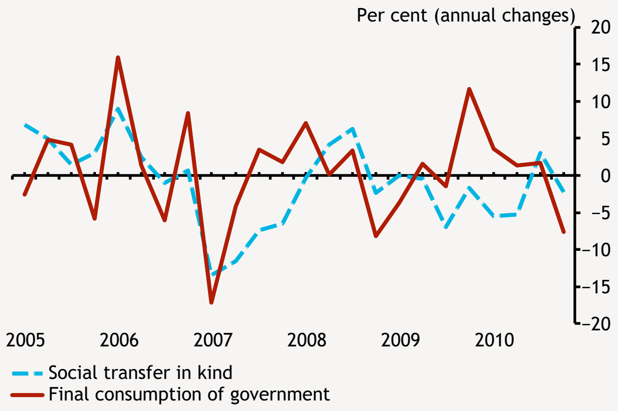


Chart 4-12
Inventories as percentage of GDP
(1999–2010)



Dashed line=historical average.

Chart 4-13
Changes in government consumption
(2005–2010)



households may decide to put off their housing investment decisions over the long run. The process may be decelerated even further by the gradual selling off of the collaterals of defaulting mortgage loans (Chart 4-11).

4.1.5 INVENTORY ACCUMULATION

The sharp fall in production during the crisis was followed by a gradual downsizing of corporate inventories. In line with the turnaround of the economy, the destocking observed in the national economy has come to a halt in recent quarters – primarily as a result of growing inventories in manufacturing. However, inventories have not been replenished yet. Prudent inventory-building behaviour may also be justified by the weak corporate lending environment and fragile domestic demand prospects; as a result, no substantial demand effect is expected in relation to the replenishment of inventories in the short run (Chart 4-12).

The contribution of changes in inventories and other unspecified expenditure components to domestic growth was exceptionally significant in Q4. However, this did not result from a change in inventory-building behaviour, but rather from increased uncertainties on the expenditure side of GDP measurement. The substantial contribution of this item highlights the significant measurement uncertainties surrounding some key expenditure items. This issue is expected to be resolved by the ex-post review of the Hungarian Central Statistical Office.

4.1.6 DIRECT CENTRAL GOVERNMENT DEMAND

Direct central government consumption demand has been highly heterogeneous in recent quarters. The gradual expansion of government employment programmes increased community consumption, while the ongoing cost reductions of government bodies and municipalities curbed other government consumption. The sharp increase observed in transfers in kind in H2 can be partly attributed to base effects and partly to a subsequent addressing of the tensions seen in the financing of certain sectors (primarily healthcare) (Chart 4-13).

Box 4-1
Effect of national account revisions

In November 2010 the Central Statistical Office issued its new publication of the national accounts of Hungary, which includes comparable data for the period 1995–2009. The forecast presented in the March issue of the Inflation Report was prepared by incorporating this revised information base. This box describes the most important changes affecting GDP statistics.[7]

The published data revision reflects corrections resulting from the regular data reviews pertaining to previous years on the one hand, and methodological enhancements on the other hand, of which three enhancements exerted a significant impact on GDP and its items:

- The consumer base of FISIM (financial services indirectly measured) has been reduced and, consequently, money-market funds and non-resident financial institutions were removed from the circle of FISIM consumers. In another change, as opposed to the previous method of being deflated by the consumer price (sub)index of financial services, current price loan and deposit holdings are now deflated by the general consumer price index. The improvements in the calculation of FISIM readjust the value of GDP retrospectively until as far back as 1995.
- The accounting for EU cereal interventions has been modified in that the whole amount of product subsidy and the costs of holding cereal inventories are now recorded in the production account.
- Another change concerns the import of goods. As GDP calculations are based primarily on the production approach, changes in relation to the CIF/FOB[8] adjustment have no direct effect on the value of GDP (the CSO ensured consistency between the two sides by the adjustment of the statistical deviation).

Table 4-1
Annual growth of main GDP expenditure items

	Household consumption expenditure		Government consumption		Gross fixed capital formation		Export		Import		GDP	
revision	before	after	before	after	before	after	before	after	before	after	before	after
1996	−3.5	−3.5	−3.5	−3.4	3.8	3.8	11.1	11.1	9.1	9.0	1.0	0.7
1997	1.6	1.6	0.1	0.4	6.5	6.5	20.9	21.0	22.3	22.2	4.3	3.9
1998	4.3	3.7	0.5	−0.3	11.5	11.5	16.5	16.5	22.9	22.9	5.2	4.8
1999	6.4	6.3	2.8	2.4	6.0	6.0	11.1	11.1	12.3	12.3	4.2	4.1
2000	4.1	4.1	0.2	0.5	7.2	7.2	19.7	19.7	18.0	18.0	4.9	4.9
2001	6.6	6.6	0.9	1.4	4.7	4.7	8.1	8.0	5.3	5.4	4.1	3.8
2002	10.8	10.9	5.5	5.3	10.5	10.5	3.9	3.8	6.8	6.7	4.4	4.1
2003	8.4	8.7	4.1	4.0	2.1	2.1	6.2	6.2	9.3	9.3	4.3	4.0
2004	3.0	3.0	-0.1	-0.3	7.9	7.9	15.0	15.0	13.7	14.3	4.9	4.5
2005	3.2	3.2	-0.1	0.0	5.7	5.7	11.3	11.3	7.0	7.1	3.5	3.2
2006	1.9	2.1	4.9	4.7	−3.6	−3.2	18.6	18.6	14.8	14.8	4.0	3.6
2007	0.3	0.2	−4.3	−4.2	1.6	1.7	16.2	16.2	13.3	13.3	1.0	0.8
2008	−0.5	0.5	−0.3	0.1	0.4	2.9	5.6	5.7	5.7	5.8	0.6	0.8
2009	−7.6	−8.1	1.0	2.2	−6.5	−8.0	−9.1	−9.6	−15.4	−14.6	−6.3	−6.7
Average	**2.8**	**2.8**	**0.8**	**0.9**	**4.1**	**4.2**	**11.1**	**11.0**	**10.4**	**10.5**	**2.9**	**2.6**

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[7] For a detailed description of the changes see the latest relevant publication of the CSO on the following website: http://portal.ksh.hu/pls/ksh/docs/hun/xftp/idoszaki/monsz/monsz0709.pdf.

[8] Cif: (i.e. cost, insurance and freight price) the price of goods delivered at the frontier of the importing country, including any insurance and freight charges incurred to that point.
Fob: the market value of goods at the customs frontier of the country from which they are exported, including freight and insurance costs to that point.

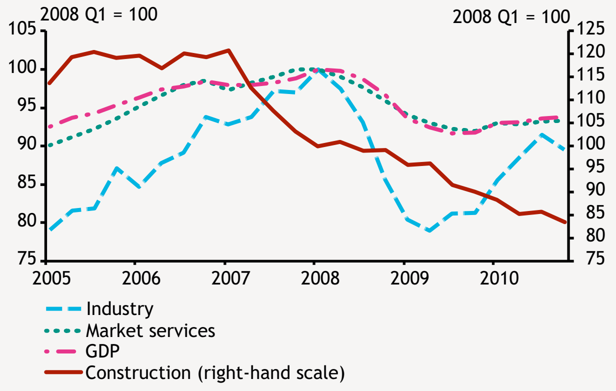
As a result of data revisions and methodological improvements, the average growth rate of the Hungarian economy decelerated by 0.3 of a percentage point in the period 1996–2010. As the revision applies to a longer time period, not only the growth rate of the specific years was revised downward, but also the potential growth rate of the Hungarian economy. The shifts did not affect the internal items of GDP significantly; predominantly, they reduced the growth contributions of changes in inventories and other unspecified items of expenditure.

Only 2008 and 2009 saw substantial structural changes. In 2008 household consumption improved by one percentage point, and the time series of gross fixed capital formation was significantly revised as well. As regards 2009, the more favourable base in 2008 may have contributed to the deterioration of the year-on-year performance of consumption and investment, while net exports declined for foreign trade and the volume index of government consumption was revised upward.

4.2 Production and potential output

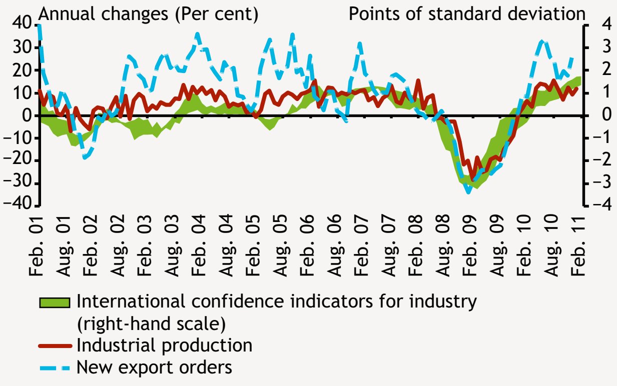
Output increased slightly at the end of 2010. The duality of domestic and external demand also determined developments in production. Industrial production increased steadily from early 2009, while the performance of services broadly stagnated and the construction sector sustained a continuous decline. The financial crisis of recent years has damaged both actual output and the production potential of the economy. Thus, in line with global developments, the growth in the production potential of the economy is expected to be more muted in the coming years than its pre-crisis levels.

Chart 4-14
GDP and the value added of main private sectors*
(2005–2010)



* *Chain-linked volumes. GDP is measured at market prices, sectoral value added is measured at basic prices.*

Chart 4-15
Short-term indicators of industrial production*
(2001–2011)



* *The band of confidence indicators is constructed from the normalized values of the EABCI, Ifo and OECD CLI survey indicators. The series of new export orders is a three-month moving average.*

National output increased slightly in Q4 2010 (Chart 4-14). GDP grew by 0.2% compared to the previous quarter. Despite its fall at the end of the year – attributed mostly to temporary factors – industrial output expanded steadily in the course of 2010, owing to strong external demand. In contrast, the performance of sectors dependent on domestic demand was subdued.

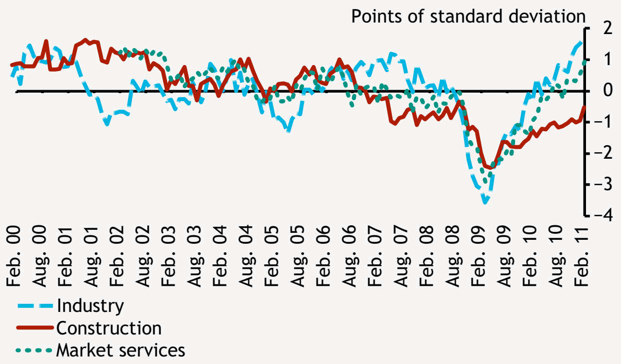
At the same time, special taxes imposed on certain sectors were paid in Q4. These taxes reduce the value added at basic prices of the sectors concerned and render the interpretation of the figures rather difficult. Excluding these effects, the output of services sectors may have grown slightly faster at the end of the year. Among the smaller private sector branches, in 2010 construction industry declined steadily, while the performance of agriculture was poor owing to adverse weather conditions.

Although GDP increased continuously in the course of the past five quarters, it is still well below its pre-crisis peak. The value added of industry and the services sector was considerably lower in Q4 2010 than at the beginning of 2008. However, the production dynamics of these two sectors are different. Industry, typically affected by stronger cyclical fluctuations, has been on the rise after a decline of 20 percent. In contrast, the services sector exhibits signs of protracted stagnation.

The rapid growth in industrial output may have continued in early 2011 (Chart 4-15). Confidence indices suggest that the upswing observed in global industrial activity may continue. Moreover, the new export orders of the Hungarian industrial sector increased substantially in the last few months of 2010. In contrast, domestic sales dropped in Q4. This indicates that within the sector there may be a pronounced difference in the situation of export-oriented firms and those producing for the domestic market.

Primarily attributable to one-off factors, the expansion in production faltered temporarily in December. Adverse weather conditions may have created disturbances in global trade. On the other hand, the scheduling of year-end holidays may have been different than usual (as traditional holidays coincided with weekends). These impacts phased out in January, allowing output to recover.

Chart 4-16
ESI confidence indicators of the private sector*
(2000–2011)



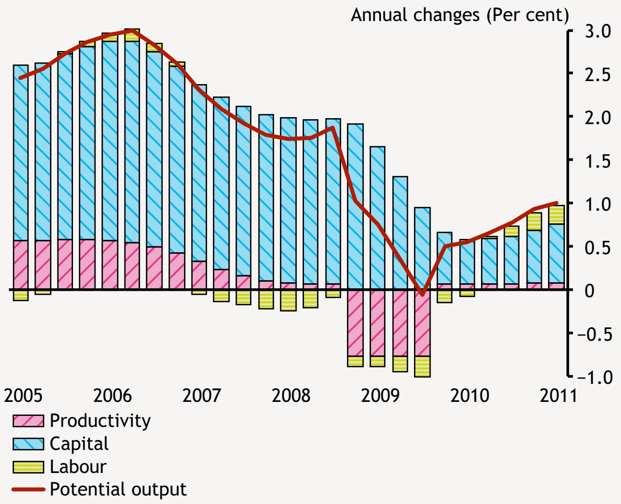
* *The series are normalized. The series of market services is the average of indicators for retail and other services, weighted with value added shares.*

The business conditions of the services sectors improved further in early 2011 (Chart 4-16). In 2010 sectors closely associated with the industrial boom (e.g. transportation) prospered, while the sluggish recovery of domestic demand contributed only slightly to the growth in the services sectors.

The reform of the personal income tax scheme in 2011 may encourage household consumption. This may contribute to a more positive assessment by firms in retail trade of the current developments in sales and the expected developments in demand. However, no material improvement is expected to take place in the performance of financial, real estate and other services. Lending activity remains restrained, and the real estate market typically lags behind developments in economic activity.

Construction industry prospects remain gloomy. The contract portfolio deteriorated continuously in H2 2010. The stagnation of the housing market continues and government investment projects may decline compared to the relatively high base in 2010. Developments financed from EU funds and some industrial investment projects may only cushion the fall affecting the construction industry.

Chart 4-17
The evolution of potential output*
(2005–2011)



* *Production function based estimates with the DELPHI model.*

Based on the developments in the main sectors, GDP increase may accelerate in Q1 2011. The increase in industrial output may remain decisive and the steady improvement in domestic demand may contribute markedly to the performance of the services sectors.

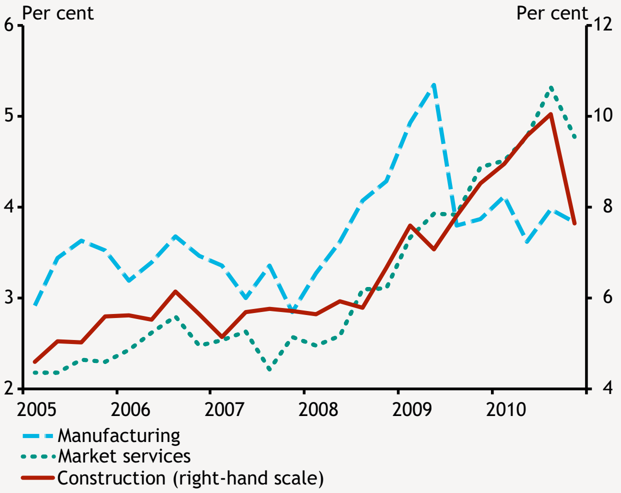
In addition to actual production, the crisis significantly deteriorated the potential growth rate of output as well. Every factor of production may have contributed negatively to the lower growth potential.

- In times of financial crisis, the credit crunch inhibits investments for prolonged periods. Moreover, the existing capital stock may depreciate if the crisis generates permanent changes in the structure of demand. Finally, government investment projects have also decreased gradually in recent years.

- The negative contribution of labour to growth primarily stems from the fact that the recession pushed up the natural level of unemployment. Long-term unemployment deteriorates the job opportunities of those unemployed as their skills are eroded by lack of work.

- Finally, productivity may have also deteriorated substantially. Short-term funding problems may have driven otherwise operational firms to bankruptcy. In addition, research and development expenditures are typically scaled back in times of recession, which may slow down technological development.

Chart 4-18
Corporate bankruptcy rates*
(2005–2010)



* *Ratio of bankrupt companies relative to the number of companies four quarters before.*

According to our current estimate, the potential growth rate in early 2011 may be in the range of 1-1.5 percent (Chart 4-17).

The supply of production factors has increased only slightly in recent quarters. Capital accumulation and productivity growth probably remained weak in the early phase of the recovery. Only labour supply is judged to have increased, as a result of government measures raising labour market participation.

The poor supply potential of the private sector is also reflected in the evolution of corporate bankruptcy rates (Chart 4-18). As the crisis hit the manufacturing sector first, the bankruptcy rate of this sector peaked in early 2009. While the share of bankruptcies has decreased since then, it is still above pre-crisis levels. The number of defaulting firms has increased continuously in construction and market services owing to protracted demand constraints; however, a turnaround may have been reached in H2 2010.

4.3 Employment and the labour market

The labour market follows developments in economic activity with a substantial lag and at a slow rate. Following its trough during the recession, the unemployment rate has improved only slightly. The duality perceived in growth is reflected in labour market developments as well; however, firms are still faced with an extremely slack labour market environment.

Chart 4-19
Private sector employment
(Seasonally adjusted data, 2005–2010)

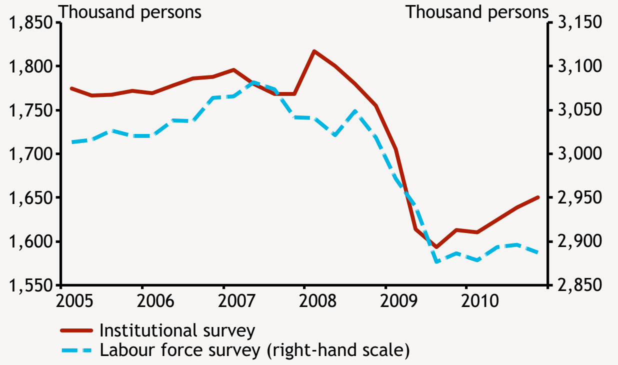
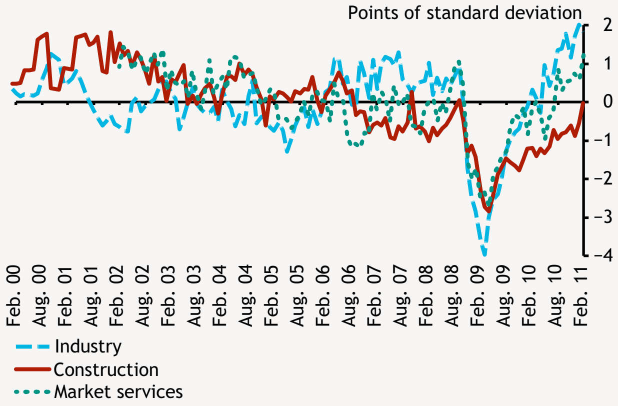


Chart 4-20
Employment expectations in the private sector*
(2000–2011)



** Employment expectations for the next three months according to the ESI survey. Standardized data. The series of market series is the average of indicators for retail and other services, weighted with their employment shares.*

The improvement in employment slowed in Q4 2010. The halt in production growth at the end of the year restrained firms' labour demand. It is difficult to assess these developments as the results of various surveys provide different signals (Chart 4-19). While the institutional survey indicates a further increase in employment among firms of over five employees at the end of 2010, the labour force survey based on household responses indicated a stagnating private sector employment rate in H2 2010.

The recession claimed approximately 150,000 private sector jobs. According to the labour force survey, the number of those employed has barely changed since it bottomed out, while institutional statistics point to a labour force increase of 50,000 persons. The controversy may partly be explained by the fact that the past quarters have seen an expansion in the output of larger, export-oriented firms, while the situation of smaller firms focusing on the domestic market has hardly improved. Firms with less than five employees (i.e. those excluded from the staff number statistics) presumably fall within the latter group.

The diverging production developments of the private sector are also reflected in the changes in employment (Chart 4-20). The staff number of the manufacturing sector increased significantly in the course of 2010, although it remains well below the levels observed preceding the crisis. Forward-looking indicators, however, suggest a further increase in employment. In the services sector only recruitment firms saw a rise in employment, mainly filling the demand for temporary labour in manufacturing. In the short term we do not expect a marked improvement in the employment of other service sectors due to existing labour reserves.

Activity increased continuously during the recession (Chart 4-21). This phenomenon was globally observable during the recent economic downturn. Improved labour market participation can be partly associated with previous

Chart 4-21
Employment and unemployment

(2000–2011, seasonally adjusted data)

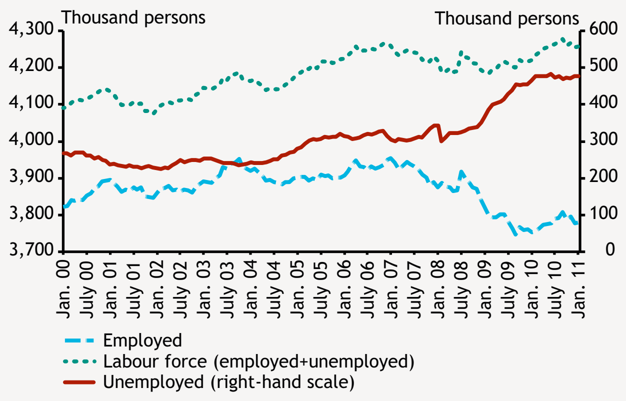
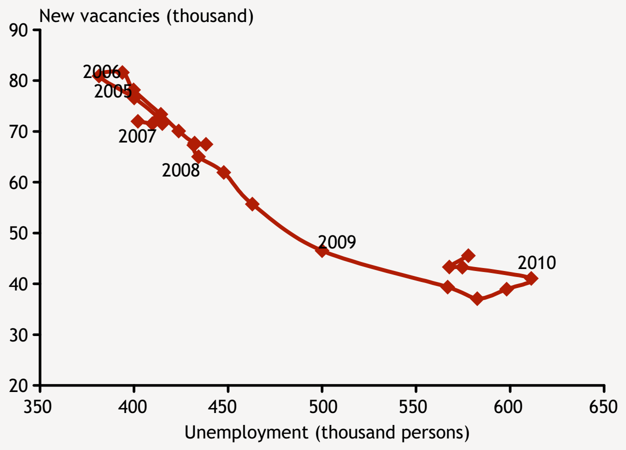


Chart 4-22
Evolution of the Beveridge curve*



* *The Beveridge curve shows the number of new (unsubsidized) private sector vacancies relative to registered unemployment.*

stimulus measures (such as early retirement and a tightening of the criteria for disability retirement). Although this trend appeared to falter at the end of 2010, it is expected to continue in the following quarters. As labour supply increased simultaneously with employment during the time of recovery, the number of those unemployed did not decline significantly.

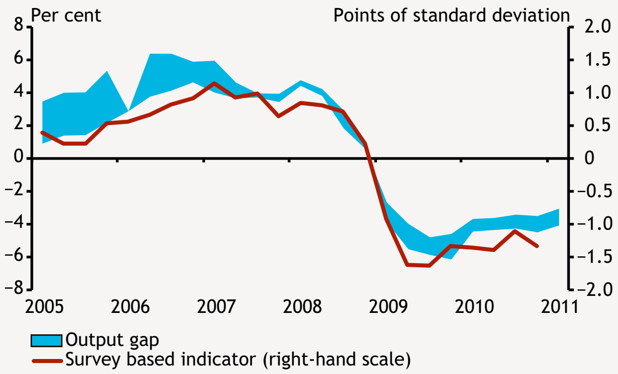
The slack labour market environment is also underlined by the fairly high number of job seekers relative to unfilled positions (Chart 4-22). Compared with five to six registered unemployed persons for each vacant position in the private sector preceding the crisis, in 2009 this figure stood at fifteen. This ratio improved somewhat in the course of 2010; however, it still significantly exceeds the average of previous years.

Another consequence of scarce job openings is an increase in the number of the long-term unemployed. While the percentage of those unemployed for over 12 months was only 3 percent during the decade preceding the crisis, their proportion had increased to 5.7 percent by 2010. This increase suggests that the natural unemployment rate may remain persistently higher following the crisis, which would have a negative impact on the production potential of the economy.

4.4 Cyclical position of the economy

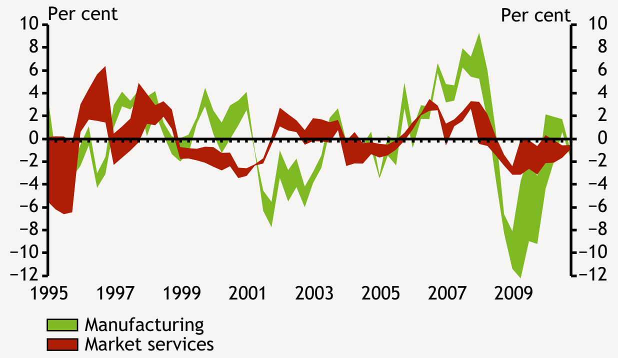
Our current estimate suggests that output may fall short of its potential level by 4 percent. The wide negative output gap emerging during the crisis is closing up slowly. The closing of the gap is associated nearly exclusively with the exporting sector, with no improvement in the cyclical position of domestic demand. The closing of the domestic demand gap is hindered by the combination of tight credit conditions, the debt burden accumulated preceding the crisis, sluggish labour market recovery and rising inflation in the context of increasing commodity prices. Consequently, while the capacity utilisation of industry is in line with the historical average, substantial spare capacity may have remained in the services sector.

Chart 4-23
Evolution of the output gap*
(2005–2011)



* *The band of output gap estimates is derived from various methodologies for measuring the output gap. The survey based indicator is derived with principal component analysis from data indicating capacity utilization in the private sector.*

Chart 4-24
Capacity utilization in the private sector*
(1995–2011)



* *Percentage deviations from the trend. The bands are derived from various methodologies capacity utilization measures.*

The cyclical position of the real economy is traditionally described by the output gap (i.e. the difference between current output and potential output). According to our current estimate, the output gap has been negative since late 2008, and may have bottomed out at -6 percent during the recession. As the economy began to recover gradually, the output gap may have narrowed slightly from H2 2009. Current output may be around 4 percent lower than its potential level (Chart 4-23).

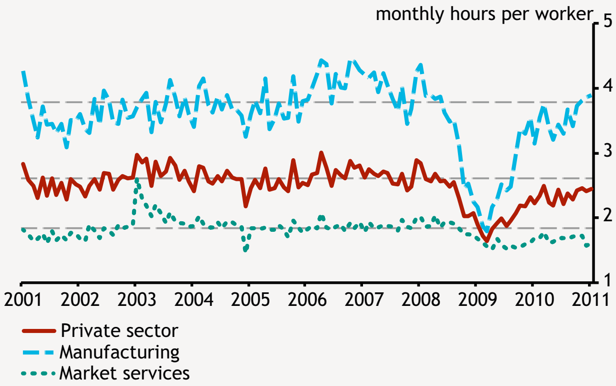
Our estimate pertaining to the output gap is confirmed by the evolution of a number of indicators. For one, other macroeconomic variables also reflect the effects of substantial excess capacity. Unemployment substantially exceeds the average of recent years. Weak demand improved Hungary's external equilibrium position relative to the historical average: the current account balance was positive throughout 2009 and 2010. Finally, low core inflation reflects the moderating effect of the negative output gap on prices.

In addition, several sectoral activity indicators suggest that substantial spare capacity remains in the private sector (Chart 4-24). Certain components of business surveys, labour productivity or the number of hours worked overtime, typically move in tandem with the business cycle.

These indicators point to significant spare capacity in the pricate sector. At the same time, the level of free capacities might be different in individual sectors. The fluctuations of industrial production are much more pronounced than those observed in the services sector. Accordingly, industrial capacity utilisation fell sharply between the end of 2008 and the beginning of 2009. Subsequently, large-scale layoffs coupled with favourable developments in global activity led to a rapid improvement in resource utilisation. By the end

Chart 4-25
Overtime in the private sector*

(2001–2011)



* *Three-month moving averages of seasonally adjusted data. Dashed lines indicate historical averages.*

of 2010 industrial capacity utilisation could have reverted to its historical average.

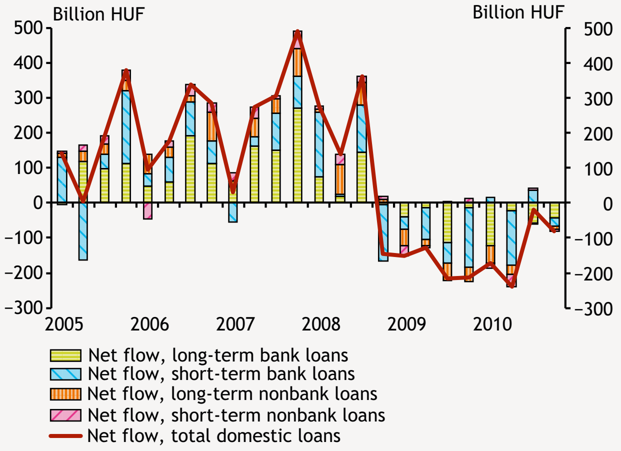
In contrast, the cyclical position of internal demand remains weak. Reflecting the sluggish recovery of domestic demand, the downturn is proving to persist much longer than that experienced in the manufacturing sector. This implies that substantial spare capacity may have remained in the services sectors.

Overtime hours by sectors show a similar picture (Chart 4-25). In manufacturing, hours worked overtime have already climbed to their historical average, although they remain well below their pre-crisis values. On the other hand, the indicator of market services is still below its long-term average.

4.5 Activity of financial intermediaries and the developments in credit conditions

As a result of the banking system's protracted balance sheet adjustment, lending to the private sector moderated further in 2010 Q4 both in the corporate and in the household sector. In contrast to the turnaround in the economy, the net increase in loans to the corporate sector remained negative: while the decline in long-term loans may be strongly related to the postponed capital investments, demand for short-term lending may face supply constraints. Besides the regulation measures which came into force in 2010, household lending was affected rather by weak demand: because of the level of their disposable income and their continuing balance-sheet adjustment, households are still net loan repayers. MNB's lending survey suggests that tight credit conditions will be maintained, for the most part, in 2011 H1, primarily due to banks' low risk appetite. However, according to the lending survey, an increase in demand is expected in 2011 H1 for the corporate as well as for the household segment.

Chart 4-26
Quarterly net increase of loans to non-financial corporations from domestic financial intermediaries



Note: Loans granted by banks, foreign branches, cooperative credit institutions and other financial intermediaries. Seasonally unadjusted change in outstanding amounts, with rolling exchange rate adjustment.
Source: MNB.

4.5.1 CORPORATE LENDING

Despite the turnaround in the economy, lending to the corporate sector declined in 2010. Up to the end of 2010 production volumes were altogether 5.6% lower than prior to the crisis in 2008, while during the same period the corporate credit portfolio dropped by 10%. Although the production volume slightly increased in 2010 (by 1.2%), so far lending of financial intermediaries has not followed this trend: the corporate credit portfolio dropped by a further 3% in 2010. However, decline in lending despite economic growth cannot be considered as a Hungarian peculiarity: international experience shows that the lending cycle follows economic recovery only with a delay.

Changes in the outstanding amount primarily affected foreign currency loans, while in a breakdown of maturities, two-thirds of the decline were seen in long-term loans (see Chart 4-26). At lower capacity utilisation, as a rule, no new projects were required for increasing companies' current production; thus decline in longer-term lending can be considered as a natural concomitant of weak economic performance. Short-term credits typically follow production cycles more closely (working capital financing); however, in 2010 even this type of lending did not start to grow. A permanent divergence of short-term lending dynamics from the production volume developments suggests the existence of credit constraints.

According to the MNB's Lending Survey,[9] in proportion of their market shares, the majority of banks tightened

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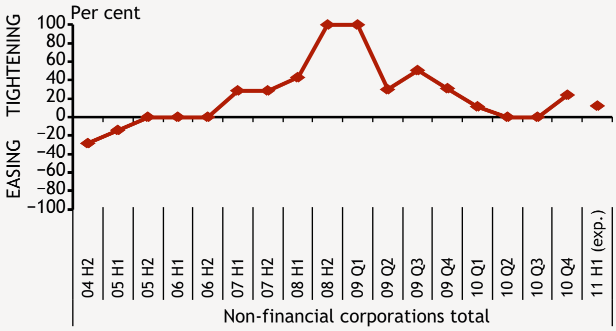
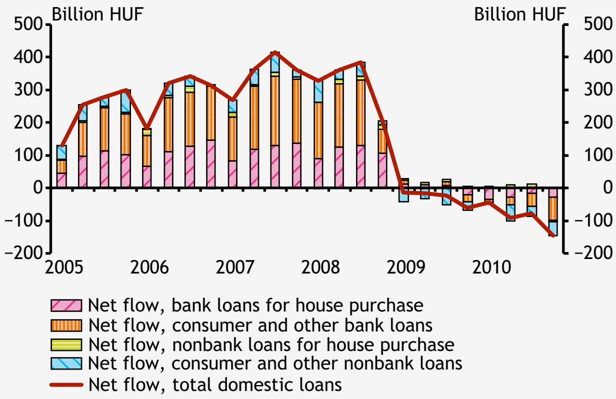
[9] The MNB's lending survey: Senior Loan Officer Survey on Bank Lending Practices. February 2011. http://english.mnb.hu/kiadvanyok/hitelezesi_felmeres/mnben_hitelezesi_felmeres_201102

Chart 4-27
Credit conditions in the corporate sector



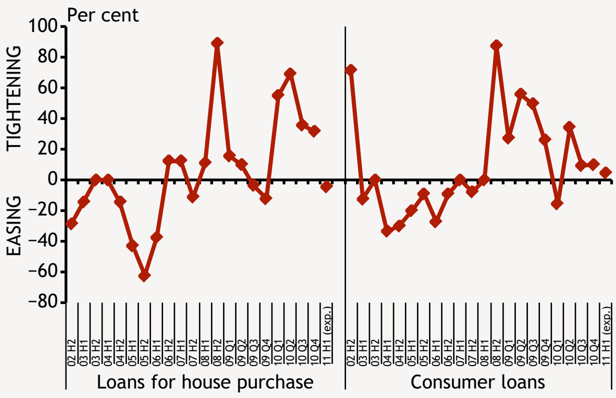
Note: Net difference between the ratio of banks tightening and easing (weighted with market share).
Source: MNB.

Chart 4-28
Quarterly net increase of loans to households from domestic financial intermediaries



Note: Loans granted by banks, foreign branches, cooperative credit institutions and other financial intermediaries. Seasonally unadjusted change in outstanding amounts, with rolling exchange rate adjustment.
Source: MNB.

Chart 4-29
Credit conditions in the household sector



Note: Net difference between the ratio of banks tightening and easing (weighted with market share).
Source: MNB.

further their credit conditions to the corporate sector in 2010 Q4. Banks explained tighter credit conditions mainly by a change in their risk appetite and deteriorating profitability. The majority of banks expect continued tightening for the entire corporate segment in 2011 H1 (Chart 4-27). Nevertheless, as a further sign of economic activity, the banks participating in the survey perceived increasing demand for their credit products.

Nominal interest rates on HUF and foreign currency corporate loans remained unchanged in 2010. Meanwhile, spreads above interbank interest rates started to decrease slowly. This can be explained with two main reasons. On the one hand, while there are ever fewer economically viable companies, banks try to reduce the number of their clients to the most creditworthy ones, as a sign of credit rationing. These creditworthy clients are less risky than others excluded from lending; hence they can achieve credits with a lower interest rate. On the other hand, there is an increasingly strong price competition in acquiring creditworthy clients, resulting in lower interest rates.

4.5.2 HOUSEHOLD LENDING

In terms of volumes, the decline in foreign currency loans for households continued in line with the previous quarters. The decrease exceeded the otherwise positive developments in HUF loans in both home and consumer loans (see Chart 4-28). The negative net flow can be explained mainly with the level of households' disposable income and their balance-sheet adjustment. While the labour market shows only a moderate improvement, the permanently strong exchange rate of Swiss Franc resulted in a high debt service burden for households. As a further basis of the weak demand, because of the regulatory constraints which came into force in 2010 (Decree on Prudent Lending and the prohibition of mortgage lending denominated in foreign currencies) households can only borrow forint denominated loans with relatively higher interest rates in comparison to the former foreign currency products.

According to the lending survey, the credit conditions applied to housing as well as to consumer loans were tightened in 2010 Q4 (Chart 4-29). On the demand side, improvement was seen in the reviewed period and a further increase is expected in 2011 H1. However, the formerly built-up tight credit conditions can only ease at a moderate pace; hence the improving demand may face supply constraints in the coming periods.

4.6 Costs and inflation

In 2010 Q4 the rate of inflation was considerably up against Q3 and stood at 4.7 percent in December. For the most part this increase was due to rising fuel and food prices driven by a global hike in commodity prices, while domestic inflationary pressure can still be considered subdued. This is suggested by the fact that despite considerable cost shocks, core inflation increased more slowly and remained below 2 percent in the first few months of the year. Development of wages in the private sector proved to be quite volatile at the end of last year and in the first month of this year due to the timing of bonus payments. Aside from this volatility, the loose labour market conditions continue to have a strong wage reducing effect resulting in historically low dynamics in regular wages.

Chart 4-30

Development of wages in the private sector

(seasonally adjusted annual change filtered from the effect of whitening)

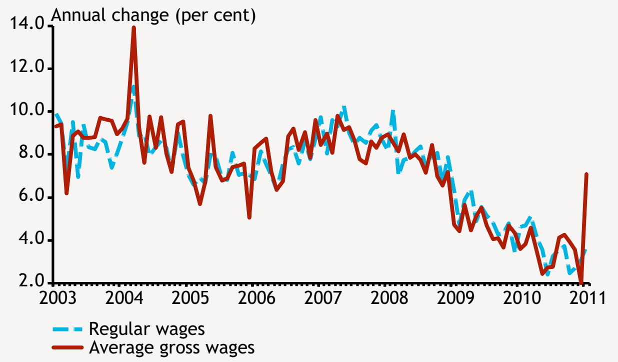
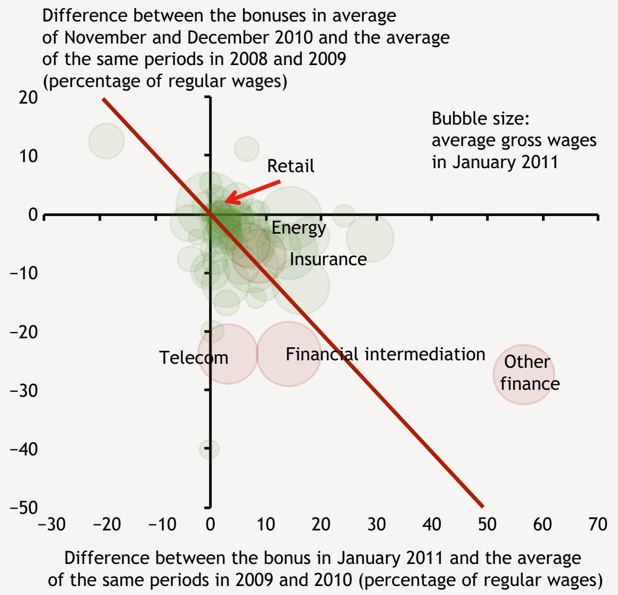


Chart 4-31

Bonus payments in the branches of the private sector on the turningpoint of 2010–2011



4.6.1 WAGES

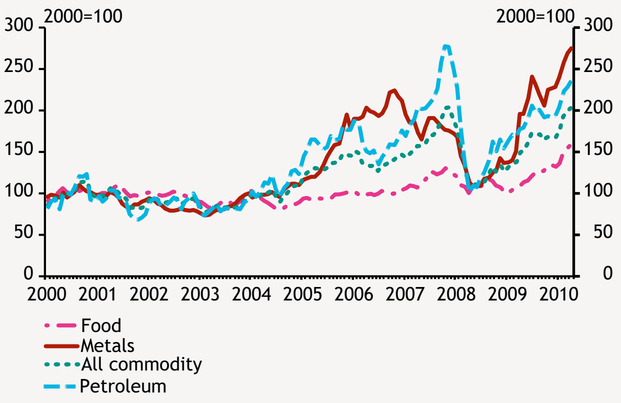
In 2010 Q4 wage increases continued to slow down in the private sector. The rise in regular wages was more moderate than in the previous years across a wide range of sectors, which suggests the wage reducing effect of the loose labour market (Chart 4-30).

The decrease in the gross average earnings in November and December 2010 was to a considerable extent due to the curtailing of the bonuses paid. Lower bonus payments compared to previous years are likely to have resulted from the simultaneous effects of several factors:

- One likely factor is that the weak domestic demand and loose labour market may have generally resulted in lower payments.
- Another contributor is that in the sectors affected by crisis taxes operating costs were cut, which may have been reflected in the reduction of bonus payments.
- A third factor is that change in the personal income tax regulations may have encouraged the carry-over of bonus payments from 2010 to 2011, primarily in higher income brackets, where the marginal tax rate dropped significantly. This is confirmed by the correlation between the size of sectoral average earnings and the unpaid portions of bonuses.

Presumably, all three factors contributed to the reduction in bonus payments, which is confirmed by the data of January. In those branches where bonus payments were significantly lower at the end of last year than the average payment of the previous two years, there was an increase in January. This suggests strong optimisation in timing due

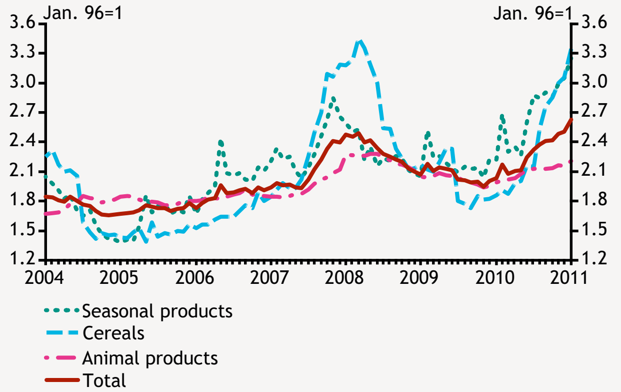
Chart 4-32
Development of global commodity prices in euro



Source: IMF.

Chart 4-33
Agricultural producer prices

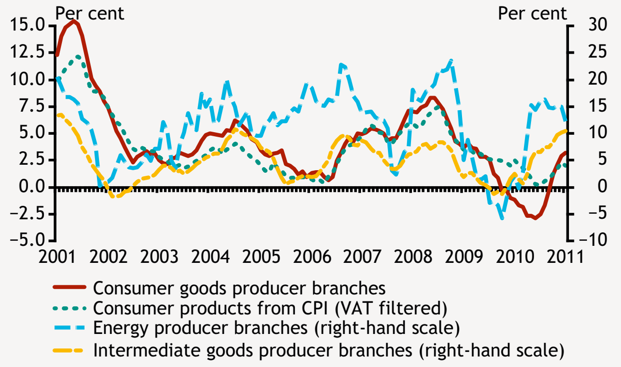
(price level compared to January 1996)



Seasonal products: fruit, vegetables, potato, cereals: wheat, oil seeds; products of animal origin: pork, poultry meat, egg, milk; weighting was based on the estimated size of the effects on the consumer price index.

Chart 4-34
Industrial producer prices and consumer prices

(annual change)



Note: Consumer prices refer only to products produced in industry.

to the changes in personal income tax regulations. However bonuses cumulatively paid since November are still lower than in previous years, which can be explained by the weak profit situation of firms. The low, 3-4 percent growth in regular wages shows the effect of the loose labour market (Chart 4-31).

Overall, the inflationary pressure of labour costs can still be considered low.

4.6.2 IMPORT PRICES

Simultaneously with the global recovery, the global market prices of a wide range of commodities increased further in the past quarter (Chart 4-32). In the case of food, the rise in commodity prices exceeded even the level seen during the 2007–2008 shock. Political risks also added to oil price hikes. Thus the inflationary pressure of commodity prices has grown considerably since the November 2010 Report on Inflation.

For the time being the effects of commodity prices have not yet been passed through to more processed import products. The increase seen in inflation in the euro area in the past few months resulted primarily from hikes in energy prices included in the consumer basket. So far, the rise in the prices of energy and food commodities has fed through to the prices of core inflation products, including industrial goods and processed food, only to a slight extent.

4.6.3 PRODUCER PRICES

In line with the increase in global commodity food prices, Hungarian agricultural producer prices have also significantly risen since autumn 2010. For the time being, a significant rise has mainly affected cereals; however, over time it may pass through to the producer prices of foods of animal origin via feed prices. The rise in the producer prices of cereals, meat and other food of animal origin also put pressure on the consumer prices of processed food. The increase in the producer prices of seasonal food was also significant and appeared almost immediately in the consumer prices of unprocessed food (Chart 4-33).

Hikes in food and oil prices contributed to the rise in industrial producer prices. Oil price hikes primarily increased the index of energy producing branches, while the rise in raw foodstuff prices affected the food processing branches. As a result, the year-on-year index of the consumer goods manufacturing sectors also started to rise. Based on historical experience, this index strongly correlates with consumer prices. Since mid-2009 it has had considerably lower values. In recent months the index has converged to

Chart 4-35

The consumer price index and the core inflation

(annual change)

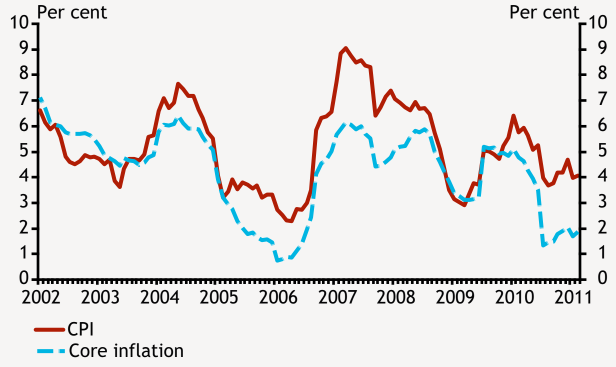


Chart 4-36

Inflation of market services

(seasonally unadjusted, VAT filtered, monthly change)

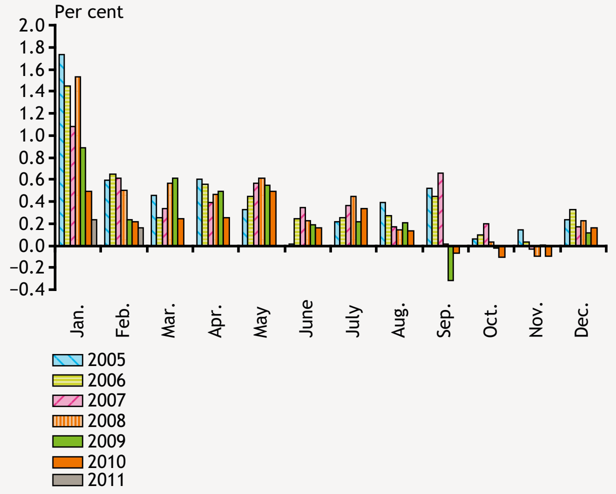
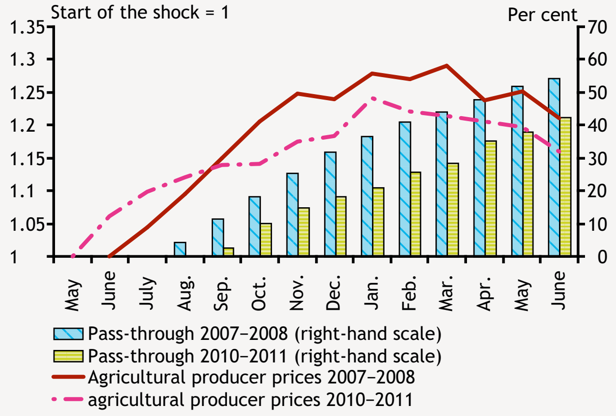


Chart 4-37

The pass-through of agricultural producer prices to the consumer prices of process food

(in 2007–2008 and 2010–2011)



Note: Forecast for the period to follow February 2011.

the consumer prices, suggesting that the disinflationary developments seen during the crisis have stopped as a result of the rise in raw material prices (Chart 4-34).

4.6.4 CONSUMER PRICES

In the past few months, core inflation developments have remained below our expectations in the November 2010 Report. The main reason for the surprise in core inflation was that the rise in agricultural prices has passed through to the prices of processed food to a lesser extent than expected. Reduction in the prices of tobacco products, pushed down by increasingly sharp competition in the tobacco market, has also contributed to the moderation of core inflation (Chart 4-35). The reported data showed no perceptible pricing in of crisis taxes. In our opinion, this will remain insignificant even in a forward-looking perspective.

In January and February core inflation dropped below 2 percent once again, and a moderate price rise was seen in the price of a wide range of products. Within core inflation, for the time being, rising raw material prices have only had a moderate effect on the price of processed food. Most of the February 2011 acceleration of inflation in this product group can be associated with a sharp rise in the price of a single product, namely sugar.

Price rises in market services were historically low at the beginning of the year. As the prices of this product group characteristically increase significantly at the beginning of the year, a permanently low inflation rate of market services can be expected for this year. Low market service inflation is likely to have been supported by the weak domestic demand and the low wages paid in the sector (Chart 4-36).

As a result of a weaker HUF/EUR exchange rate in the second half of 2010, the prices of industrial goods increased less than justified by the underlying historical relationship. This may have been due to the weak demand.

In the next few months an increase in the inflation of processed food prices can be expected; however, due to weak demand, the pass-through of raw material prices may be considerably less than what was seen in 2007-2008 (Chart 4-37). Due to the above, core inflation may remain moderate in 2011 Q1. This is confirmed by, among others, the fact that underlying inflation indicators remained at a low level of around 1-2 percent during January and February 2011 (Chart 4-38).

Lower core inflation was offset in recent months by the effect of rising fuel prices due to higher oil prices. Among

Chart 4-38
The range of underlying inflation indicators

(January 2004–February 2011)

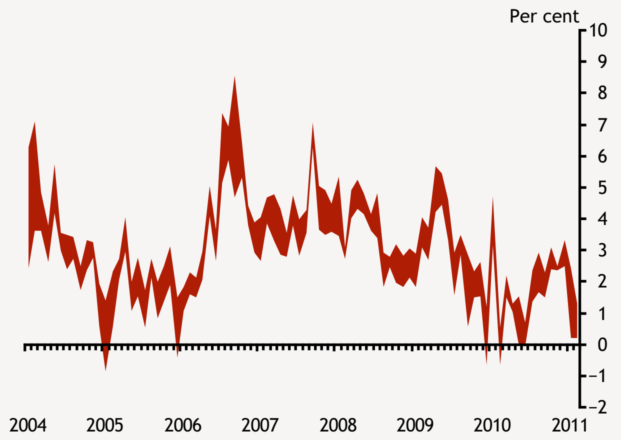
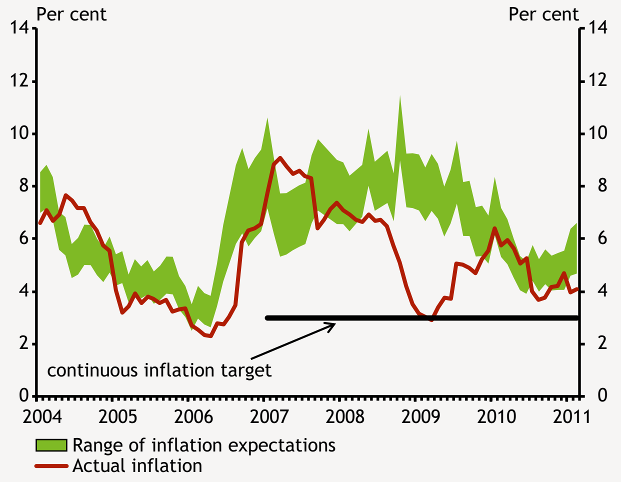


Chart 4-39
Households' inflation expectations

(January 2004–February 2011)



Source: MNB calculations based on data from the EU Commission.

non-core inflation items, however, regulated prices rose moderately in comparison with the typical value for the beginning of the year. Part of the lower price rise is due to the unexpected timing, and thus can be considered temporary; however, its major part may prove to be permanent. Of the items with larger weights, price increases of district heating, local public transport and medicines may be lower than our previous expectations. Prices of medicines, however, may be affected by the measures of the announced Széll Kálmán plan, but we cannot take that into consideration in our forecast due to the lack of details about the plan (Box 1-2).

In the case of unprocessed food, in line with a faster increase in agricultural product prices, the 2011 H1 rise in inflation is expected to exceed even our November projection.

Despite the fact that, overall, domestic inflationary pressure can still be considered subdued, the inflationary shocks caused by the rise in global commodity prices may keep inflation in Hungary invariably above 4 percent.

4.6.5 INFLATION EXPECTATIONS

After the beginning of the crisis, households' inflation expectations continuously decreased in Hungary until mid-2010. Subsequently, expectations remained broadly flat for a few months, only to start rising at the end of 2010. Currently, they are between 5 and 6 percent, significantly higher than the inflationary target (Chart 4-39).

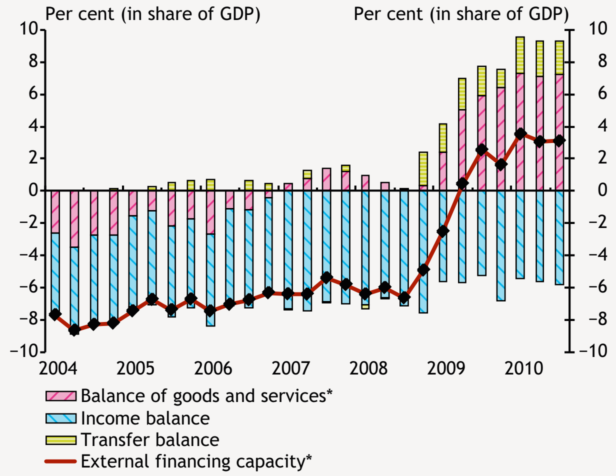
As inflation expectations show a close correlation with actual inflation, the increase in expectations is likely to reflect the effects of rising food and fuel prices. Meanwhile, in the medium term high inflation expectations still carry a risk.

5 The balance position of the Hungarian economy

5.1 External balance and financing

In 2010 Q3 the external financing capacity of the Hungarian economy remained significant, slightly exceeding 3% of GDP. In addition to strong external and subdued domestic demand, the balance of goods and services still has a considerable amount of surplus and more than offsets the moderately rising deficit in the income balance. In addition to the above, a considerable inflow of EU transfers also contributed to the maintenance of the net saving position.

Chart 5-1
The main components of external financing capacity
(seasonally adjusted, GDP proportionate data)



** Data adjusted for the import increasing effects of the difference caused by import prescheduled due to Hungary's accession to the EU and the customs warehouses wound up on account of the accession, as well as the Gripen fighters.*
Note: Time series are adjusted directly for seasonal effects, thus the sum total of external financing capacity does not necessarily correspond to the adjusted values of the external financing capacity.

The seasonally adjusted surplus in the balance of goods and services was around 7% of GDP, approximately identical with the data recorded in the preceding quarter. Real economic developments showed the continuation of the trends observed in previous periods: although import growth slightly increased – as a result of a decrease in consumption and investment – its rate was considerably exceeded by export sales. Significant amounts of EU transfers were used in Q3, and made a solid contribution to the maintenance of the financing capacity (Chart 5-1).

The deficit of the income balance kept slightly increasing and reflected the estimated rise in profit expenditures.[10] However, this process is markedly mitigated by the sectoral special taxes. Meanwhile, in agreement with the HUF and EUR interest rate developments, a stabilisation of net interest expenditure was observed in 2010 Q3.

The reason why the external financing capacity stabilised at a high level in 2010 Q3 was that the reduction in private sector savings was offset by moderation in the general government's financing requirement. The lower fiscal deficit was due primarily to the special taxes imposed on financial institutions and amounting to HUF 90 billion, some 1.3% of quarterly GDP. Through lower income outflows, this special tax, paid by banks in foreign ownership, increases the external financing capacity, while the special tax paid by banks in Hungarian ownership is likely to have contributed to the decline in the private sector's financing capacity. The financing capacity of non-financial corporations is likely to have moderated as a result of stockpiling, while the household sector's financial savings returned to the levels characteristic before the extremely high value recorded in 2010 Q2.

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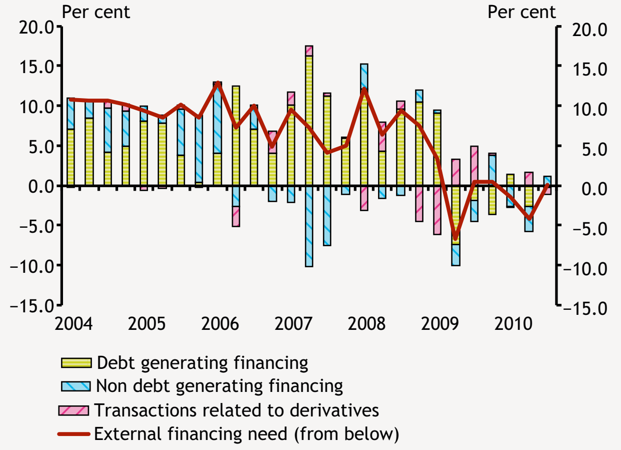
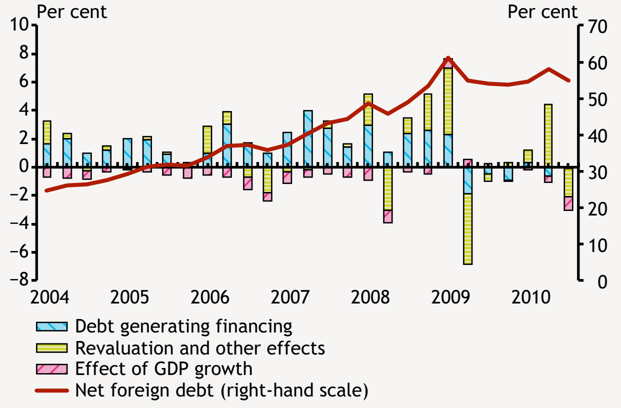
[10] The income flow data related to direct capital are based on estimates in the balance of payments statistics. The estimate is replaced by data based on reported corporate data next September.

Chart 5-2
Forms of financing as a percentage of GDP



Note: The financing requirement calculated by a bottom-up method corresponds to the total of the external financing requirement and the BOP balance of statistical errors and residuals.

Chart 5-3
The main components of net foreign debt*
(in share of GDP)



* *Calculated from the HUF value of the debt.*

In addition to a slight inflow of non-debt type funds, the balance of debt-type financing was around zero, while the slight negative balance of derivative transactions resulted in an overall financing requirement close to zero, according to bottom-up calculations (see Chart 5-2).

After a significant amount of capital outflow in the previous quarters, in 2010 Q3 slight inflows were recorded for net non-debt generating funds. Although direct capital inflow was also experienced, transactions related to portfolio equity resulted in the outflow of funds. As opposed to pre-crisis times, characterised by significant FDI influx to Hungary, since 2009 they have decreased significantly due to the fall in intercompany loans.

In 2010 Q3 debt-generating funds remained practically unchanged. More specifically, banks and the foreign transactions of the general government developed in opposing directions. A sizeable outflow of funds was recorded from the banking system, while the external sources of the general government subject to consolidation with MNB grew at a similar pace. The underlying reasons for that were that foreign investors' MNB bill portfolios continued to rise, and that non-residents' demand for Hungarian securities appeared in government bond purchases. According to the data available at the end of the year, external debt dynamics remained different in the two sectors in the last quarter of 2010.

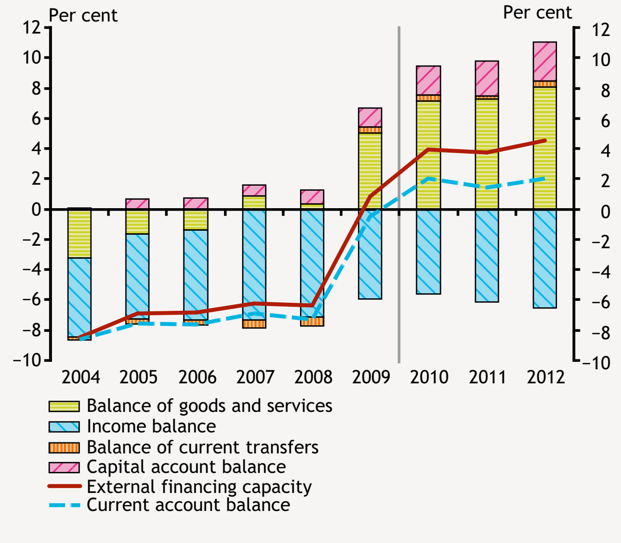
In September 2010, the net external debt rate amounted to 55% of GDP, down on the previous quarter (see Chart 5-3). As no marked outflow of debt-generating funds was recorded in 2010 Q3, the most significant factor reducing the debt indicator was the strengthening of the HUF, while GDP growth had already made a slight contribution to debt rate decrease. Debt indicators, however, still exceed the levels recorded before the crisis. The reason for this is that, in addition to an outflow of debt-generating funds, the HUF exchange rate remains considerably weaker than before the crisis.

5.2 Forecast on the external borrowing position

Hungary's external financing capacity is expected to remain significant and is expected to be around 4% of GDP over the entire forecast horizon. This is because the widening deficit on the income balance is counterbalanced by the real economic surplus, and we expect a further increase in the inflow of EU transfers. The economy's net saving position is linked to the prevalence of significant financing capabilities of the private sector.

In addition to data received on foreign trade developments, external demand that is expected to rise to a large extent and changes in forecasts on domestic use would indicate a higher-than-expected real economic surplus for the future. Household final consumption expenditure may rise at a lower-than-expected rate and the increase in investments may also fall short of projections made in November to a large extent. In line with the slowdown in domestic absorption growth, the real economy surplus is expected to rise in 2012, also supported by the net export boosting effect of production picking up with the completion of investment projects scheduled in the automobile industry.

Chart 5-4
The structure of external financing capacity
(as percentage of GDP, per cent)



The improvement in corporate profitability may continue in 2011, which will bring about a widening deficit on the income balance; however, this process will be further slackened by the extra taxes levied on companies. Inflation trends suggest – in contrast to former expectations – that companies will not shift the burden of extra taxes on profits onto their clients, which will result in a lower income balance deficit; with the banking tax prevailing in 2012 in full also giving rise to lower income balance deficit. At the same time, the steepening of the euro and forint yield curves point to a larger-than-expected increase in net interest expenditures on debt (see Chart 5-4).

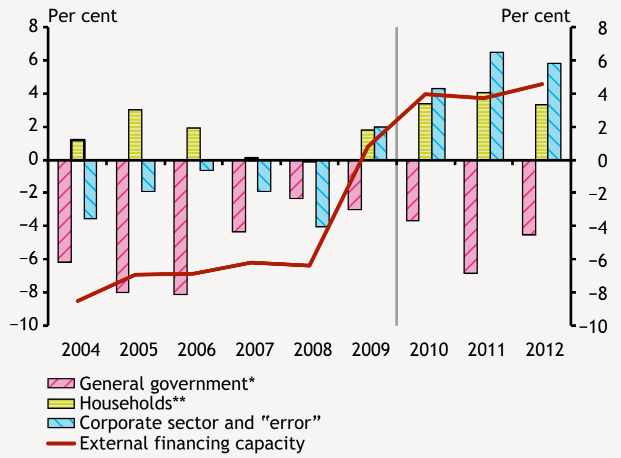
Inflows of EU transfers in 2010 rose significantly and are expected to rise considerably in the years to come, which is seen in the higher surplus in the balance of current transfers and the capital balance.

The economy's net saving position was due to the considerable financial savings of the private sector as the

Table 5-1
Changes in net financial saving of households
(as percentage of GDP)

	2009	2010	2011	2012
Net financial saving in the financial accounts	3.5	4.6	–5.7	3.3
– *Accrual basis accounting of the second pillar*	*1.6*	*1.2*		
+ *Wealth effect due to leaving the second pillar*			*9.8*	
Financial saving consistent with augmented SNA deficit	1.8	3.4	4.1	3.3

Chart 5-5
Net financing capacity of specific sectors
(as percentage of GDP, per cent)



* *In addition to the central government, the augmented general government includes local governments, ÁPV Ltd., institutions discharging quasi-fiscal duties (MÁV, BKV), the MNB and authorities implementing capital projects initiated and controlled by the government but formally implemented under PPP schemes.*
** *Financing capacity consistent with the SNA deficit of the general government which, does not take account savings in private pension funds. The official financing capacity of households in 2011 could be significantly lower (see Table 5-1).*

augmented SNA deficit of the general government exceeds the levels seen in previous years to a large extent. Households' consumption-saving behaviour is basically determined by two factors: the reduction of income tax rates and measures affecting pension funds (for the effects of measures on savings, see Table 5-1 and the Box 5-1). Reduction in tax rates and disbursement of real pension fund yields point to an acceleration of consumption. However, this impact may be mitigated by tax reductions benefiting primarily high-income households with higher saving propensity and precautionary savings due to higher risks associated with future pension benefits (Chart 5-5).

Favourable external demand combined with expected raises in EU transfers, the reduction of corporate tax in the previous year, moderate investments and inventory replenishment, suggest high financing capacity on the part of companies. The taxes imposed on financial institutions which may prevail in their entirety may contribute to sustaining the high level of the private sector's financial savings through a presumably subdued lending activity.

Box 5-1
The impact of the reform of the pension system on statistical accounting

The transformation of the private pension system brought about a restructuring between the household and public sector accounts. This transformation will give rise to a significant improvement in the balance of the government sector in the national accounts, while household savings will decrease in line with the magnitude of the assets thus transferred. With a view to allowing comparability of regular data, we have made corrections concerning the indices used in this analysis – as regards the public budget and households – to include private pension fund transactions effected by those leaving the private pension system. In other words, we describe how the two sectors balance would have evolved, had those now opting for the state-run pension system never been members of a private pension fund. The above correction corresponds to the assumption that the introduction of the funded pillars has not affected the decision of households as to whether to spend on consumption or invest in savings, that is, the public budget balance, ceteris paribus, benefits from the amounts involved in transactions (revenues from contributions and owners' revenues) and household savings suffered losses in the same amount.[11] Therefore, under the correction applied for the purposes of this analysis, the capital input from the transfer from private to public pension fund will therefore not improve the augmented (SNA) deficit, but is spread for the period starting in 1998. This approach was used for the transfer between the pension systems occurring at the end of 2009. Distribution of real yields in 2011, however, will increase the augmented (SNA) deficit, in the same way it is taken into account as income for households. This is because this item is also expected to have its impact felt in household consumption.

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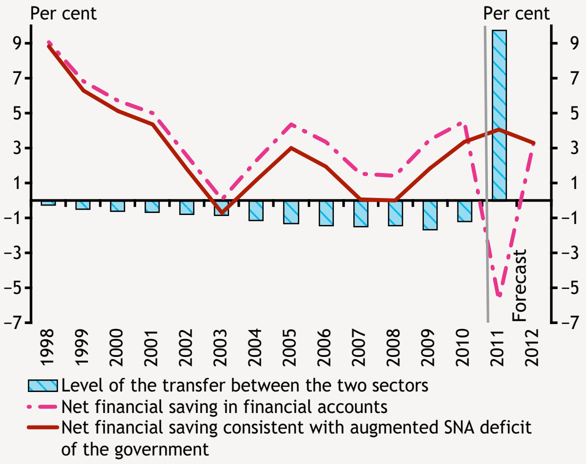
[11] It is not to be excluded from consideration that the state budget and households would have acted otherwise had the private pension system not been introduced; this approach however ensures consistency of the regular data.

Official statistics takes record of these developments in a different way. The measures adopted in 2010 practically put an end to the second pillar of the pension system, which will make it considerably difficult to properly interpret household and public budget sector data for 2011 and in particular data on financial accounts for the first quarter. As a result of the transformation of the pension system, the assets of those returning to the pay-as-you-go system will be transferred to the state, which will have a profound effect on the financial savings of households. The statistical accounting will be similar to that applied in the transfers at the end of 2009: asset transfer will be recorded statistically as transactions; therefore financial assets of the sector and the net financing capacity thereof have reduced in line with the magnitude of the asset thus transferred, namely HUF 2,800 billion, corresponding to approximately 10% of GDP. Therefore, net financial savings of households will turn markedly negative in the first quarter of 2011, and this position will decrease to levels lower than formerly, due – apart from other factors – to unearned contributions, also in the quarters to come.[12] The distribution of real yields and savings from non-payment of supplementary membership contribution, however, will improve financial savings of households in 2011 Q3. The statistical balance of the government sector is improved by the value of the asset thus transferred – corresponding to the amount lost by the household sector under the corrections, while payment of the real yield reduces this amount.

Chart 5-6

Financial saving consistent with the augmented SNA deficit and the official financial saving of households

(as percentage of GDP)



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[12] Loss of pension fund contributions will reduce the financing capacities of households at a rate of more than 1% of GDP each year on a permanent basis.

5.3 Fiscal position and outlook

The Széll Kálmán plan, announced in early March, clearly indicates the Government's intention to reduce its deficit. However, the majority of the measures included in the Programme are not adequately detailed to allow determination of their likely effects on the economy with a degree of confidence. Consequently, only a smaller portion of the measures can be taken into account in preparing the rule-based projection, in line with the current forecasting method. Alongside the rule-based forecast an alternative scenario, which assumes that the gross amount is realised in full as planned by the Government, has also been developed for 2012.[13]

5.3.1 DEVELOPMENTS IN FISCAL DEFICIT INDICATORS

The 2010 ESA deficit is unknown as yet; however, it is likely to have been above the 4% level recorded in 2009. In 2011, the government budget is expected to have a substantial one-off revenue due to people opting back into the state pension pillar. As a result, the ESA balance may be in a 2.5% surplus. However, the deficit, excluding extra revenue from the transfer of pension fund assets, may once again exceed 4% of GDP. In 2012, it may amount to 4.6% along the rule-based path including the effects of measures in the Széll Kálmán plan. Explanation for this is that the tax reduction measures already enacted will offset the impact of rising tax revenue as a result of the cycle and of persistently higher contribution receipts due to changes to the pension system.

In early 2011 the Government set aside a HUF 250 billion stability reserve within the budget as an insurance against the risk of breaching the deficit target. The Government intends to find cover for the reserve, among others, through implementing expenditure freezes and spending cuts. For the time being, only savings backed by detailed measures, amounting to 0.1% of GDP, have been taken into account. If the stability reserve is cancelled in full, then the budget balance for 2011 may improve by 0.5-0.6 percentage points, excluding the tax content. This, however, is unlikely to improve the 2012 budget balance in the absence of detailed measures.

Under the projection presented in the alternative scenario and taking into account the direct and indirect tax revenue

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[13] The macro-economic projections used for making the rule-based and alternative deficit forecasts also take into account the divergent effects of the budgetary measures and therefore a loss in tax revenue. The fiscal fan chart, which summarises macroeconomic and other non-policy related risks, is excluded from this *Report*. One reason for this is that the distribution of macroeconomic risks became symmetrical according to our current projection rules, another being that major risks are currently related to the details of the measures, which cannot be included in the fan chart.

Table 5-2
General government balance indicators
(as a percentage of GDP)

	2010	2011	2012	
	nowcast	forecast		alternative scenario
ESA balance	–4.4	2.5	–4.6	–3.6
SNA balance	-3.7	–6.8	–5	–4
Cyclical component	–2.4	–1.7	–1	–1.3
Cyclically-adjusted SNA balance	–1.3	–5.1	–4	–2.6

reducing effects of the measures, the government deficit may amount to 3.6% of GDP in 2012 as a result of implementing the Széll Kálmán plan. The deficit indicator is likely fall below 3% as an effect of the cyclical increase in tax revenue only in the medium term.

Although the final budget deficit is not yet known, based on the data of financial accounts the ESA deficit is around 4.4% of GDP in 2010.[14]

The indicator reflecting the medium-term general government position without governmental measures, the cyclically adjusted, augmented SNA balance, the so-called medium-term position spreads the one-off capital revenue stemming from the return from private pension funds over the past, thus its development represents the persistent determinants of long-run fiscal position the far better than the ESA balance.[15] Hence, the development of this indicator is worth a closer scrutiny.

As a result of multi-year adjustments, the most favourable value of the medium-term position was achieved in 2010. In 2011 due to tax reduction measures and the payment of real returns of private pension funds, medium-term position deteriorates significantly, and our rule-based forecast suggest that it only improves slightly in 2012.

The above mentioned developments are reflected in the medium-term position. Improvement in 2011 is due to the temporary surplus from the capital revenues earned from private pension fund members returning to the public pension fund. Without this the indicator will continuously suggest an ESA deficit between 4% and 5% in 2011 and 2012.

In addition to our rule-based forecast, we have also made an alternative scenario. The reason for this is that in early March 2011 the Széll Kálmán plan aimed at reducing the deficit by a gross amount of 1.8% in 2012 was announced. In line with our previously adopted forecasting principles only 0.3 percentage point of this can be considered as a gross effect in our rule-based forecast. If the remaining 1.5 percentage points were actually realised, after netting the measures for taxes, the ESA deficit would improve by 1 percentage point, the cyclically adjusted, augmented SNA deficit would do so by 1.4 percentage points. Therefore, if the alternative scenario is realised, the 3% deficit target cannot yet be achieved in 2012, however, in the medium term it could be a realistic target.

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[14] Based on the preliminary financial accounts, transactions of financial assets and liabilities were equal to this amount. Historically, this measure differed slightly from the ESA deficit, defined as the difference between revenues and expenditures, however, up to its publication in April, our assumption will be the above figure.

[15] For a more detailed discussion see Box 5-1 and Box 5-2.

Box 5-2

Impact of return from private pension funds on the medium-term general government position

We apply the cyclically adjusted, augmented SNA deficit, which adjusts the ESA indicator for the items that automatically reverse, to estimate the medium-term fiscal position. Such self-reversing items include, for instance, the cyclical component of the budget and the quasi-fiscal expenditures (e.g. yearly growth of MÁV's debt) that appear later (upon the settlement of debts) as ESA expenses. In 2010 the asset wealth paid by those who returned from private pension funds during 2009 and 2010 was identified as a reversing item, and thus, rather than recognised as a social contribution, it was adjusted retroactively to 1998 as if it had always been collected as a state revenue. The same solution was applied to the 2011 private pension fund capital revenues. Consequently, reversed capital transfers (debt consolidation) appear in the SNA balance as current expenses and asset wealth revenues as social contributions, thus the ESA and SNA balances have been brought closer to each other in the past few 'ordinary' years.

5.3.2 CHANGES IN THE FORECAST COMPARED TO NOVEMBER 2010

Our forecast of the ESA balance and that of the medium-term fiscal position, has been modified significantly relative to the November 2010 Report on Inflation. The factors that have had the most pronounced effect on the ESA balance include changes in the proportion and time schedule of the return to public pension funds. However, part of the reduction in taxes seen in 2010 and early 2011 have a permanent effect deteriorating the medium-term position. The expenditures raised during the adoption of the 2011 budget also permanently deteriorate the general government position; however, starting from 2012 our rule-based forecast also reflects the effects of the balance improving measures (partly related to certain parts of the Széll Kálmán plan).

The change in our forecast of the ESA balance has been mostly induced by the differing realization of return to public pension funds than expected. In November 2010 we still reckoned with the realisation of the capital revenues specified in the Budget Act (amounting to 1.9% of GDP) at the end of 2011, with a similar amount of capital revenues being carried over to early 2012. This meant that the

Table 5-3
Changes compared to November forecast

	2010	2011	2012
Change in cyclically-adjusted SNA balance I+II-III	**0.9**	**–2.1**	**–0.4**
I. Change in ESA forecast 1+2+3+4	**–0.6**	**5.2**	**–1.6**
1. Change due to pension reform reversal	**.**	**6**	**–0.8**
capital income due to pension measures	.	7.2	
social security contributions due to pension measures	.	0	0.6
balance of interest of the central government	.	0.2	0.3
debt consolidation of MÁV	.		0
2. Effect of the base 2010	**–0.6**	**–0.5**	**–0.4**
corporate income tax and consumption taxes	–0.3	–0.3	–0.2
local governments' deficit (shortfall of local sales tax)	–0.2	–0.1	–0.1
other	–0.1	–0.1	–0.1
3. Approval of 2011 budget act	**.**	**–0.3**	**–0.3**
extra expenditure of budgetary units (compared to budget act)	.	–0.2	–0.2
lower austerity pressure due to higher transfers to local governments	.	–0.1	–0.1
4. Effects in 2011 and 2012	**.**	**–0.4**	**0**
lower excise tax and social security contrubutions revenue	.	–0.3	–0.3
lower corporate income tax revenues due to sport act	.	–0.1	–0.1
net corporate income tax effect of sector-specific extra tax on fin. institutions	.	0	0.2
ceasing of expenditure (EU presidency)	.	0	0.1
others (e.g. transfers)	.	0	0.1
II. Changes in SNA correction	**1.2**	**–7.3**	**1.5**
capital income due to pension measures	.	–7.2	1.8
spreading of capital income due to pension measures	0.6	0	0
debt consolidation of MÁV	.	1	0
payment of real returns	.	–0.7	0
others (e.g. quasi-fiscal expeditures)	0.6	–0.4	–0.3
III. Changes in cyclical component	**–0.3**	**0**	**0.3**

revenues collected from contributions of the corresponding ratio (38%) would also have been reclassified from 2012.

Our current estimate shows that the return to the public (pay-as-you-go) pension scheme reaches 90% of the assets held in private funds, and its full amount is accounted for in 2011. Thus capital revenues stemming from this event is higher than previously expected, but there will be no such revenue in 2012. The higher rate of return persistently increases the social contribution revenue and improves the fiscal interest balance to greater extent than previously assumed. New information that some part of the capital revenue would be earmarked for the takeover of the debts accumulated by MÁV in the past few years.

A shortfall in taxes in 2010 compared to our projections has had significant and partly permanent impacts. Corporate, consumption and local business taxes (and through the latter, deficit of local governments) are less favourable.

During the approval of the 2011 Budget Act, transfers to the chapters, budgetary units and local governments were increased in a way that was formally offset by raising certain revenue appropriations without taking any tax measures.

Our forecast was also changed by information affecting 2011 and 2012. Based on available data of 2011, revenues from excise taxes and contributions remain lower than expected. Corporate tax revenues may be reduced (especially from 2012) by the tax credit allowing the write-off of certain kinds of support granted to sports. From among the measures envisaged in the Széll Kálmán plan, we have accepted that the rate of the sector-specific extra tax imposed on financial institutions would remain unchanged in 2012 and would not be halved as we previously assumed. This measure, amounting to 0.3% of GDP, will improve the deficit only by 0.25%, as the corporate tax base can be reduced by these amounts. The 2012 expenses are automatically decreased by the exclusion of the expenses related to the EU Presidency. This year's stability reserve measures may reduce subsidies of transport-related consumer prices and the sick leave benefit measure approved in the Széll Kálmán plan (the latter has a minor effect).

Part of the major changes affecting the ESA balance is not reflected in the augmented SNA approach (as they have been adjusted). Thus the assumption of MÁV's debts does not need to be recognised in the augmented SNA deficit, as MÁV's financing requirement is added to the deficit every year. Similarly, the 2011 capital revenue associated with the pension reform reversal, which can be 7.2% of GDP higher than expected, has been removed from among the augmented SNA revenues, as in 2012 the 1.8 percentage point adjustment is not required. The additional contribution (0.6%) earned on account of the higher proportion of return to the public pension scheme has already been taken into account for the period between 1998 and 2010. Disbursement of real yields on pension fund deposits, which increases household income, has also been recognised among augmented SNA adjustments.

5.4 Our rules-based projection for 2012 and an alternative scenario

Under our rule-based approach, regarding 2012, account is taken only of the measures whose details have already been disclosed or approved; accordingly, only one-fifth of the overall effects of the Széll Kálmán plan can be taken into account. Under our rule-based scenario, we assume that the expenditure items where no specific measures have been taken will grow to an extent identical to that of the potential growth of GDP. This projection principle is in line with international practice and the principles of cyclical adjustment. As, in our interpretation, the no-policy-change principle applies only to the central government, we expect gradual adjustments in 2011 and 2012 for the local governments (that is, we do not assume that they can sustain 2010 level of deficit as they can in election years. In order to be able to show the impact on the general government balance of that part of the Széll Kálmán plan which was excluded from the rule-based scenario, we have projected an alternative scenario netted with the estimated loss of taxes. This means that the rule-based projection and the alternative scenario are based on different macro-economic paths. If details of the government's measures are disclosed during the year, we will include their impacts in our rule-based projection.

Table 5-4
Difference between Széll Kálmán plan and rule-based scenario in 2012
(as a percentage of GDP)

Items	
1. Széll Kálmán plan's gross impact	1.8
2. Special tax on banks and sick pay measues in the rule-based scenario	−0.3
3. Gross impact not incorporated in the rule-based scenario (1+2)	1.5
4. Direct and indirect tax-content (estimation)	0.6
5. Net impact not incorporated in the rule-based scenario (3−4)	0.9
6. Interest payment savings (estimation)	0.0
7. Difference of rule-based and normative scenario (5+6)	1.0

The Széll Kálmán plan, the objective of which is to reduce government deficit between 2012 and 2014, was announced in early March 2011. With regard to 2012, our rule-based projection takes account only of the adequately detailed measures, i.e. the maintenance of the sector-specific extra taxes imposed on financial institutions at an unchanged level and the tightening of the sick leave benefit.

The other baselines of the Programme are, for the time being, of normative nature because the amounts to be saved have not been broken down or transferred to other lines of the budget. This means that neither the gross savings that can be expected from the individual measures, nor their direct impact on tax revenues, nor their indirect impact via changes in the macroeconomic path can be established.

Nor can indirect impacts such as the additional fiscal costs caused by savings in the individual budgetary items be quantified (e.g. individuals crowded out from a certain type of social transfers may be eligible for another type of transfers).

The quantification of the effective net impact of Széll Kálmán plan becomes more complicated by the fact that the EU funds of the New Széchenyi Programme are often referred to as the source of funding for associated costs of the Reform Programme. The impact of the New Széchenyi Programme is also hard to assess because expected deficit reduction through replacing existing expenditure with such funds may have limitations.

If we only make an estimate for the expected direct and indirect tax impact or quantify the interest savings from a lower financing requirement, a balance that is better by 1% of GDP could materialise in 2012.

Table 5-5 shows in detail how our rule-based baseline scenario for 2012 was prepared. The principle underlying the no-policy-changes expenditure scenario is in line with international practice as well as the principles of cyclical adjustments, according to which a sizeable part of the expenditure side grows at the pace of the potential GDP growth. We wish to highlight the impact of three factors from among the factors shown in the table.

We reduced the 2010 base of chapter expenses only by the revenues from Hungary's EU presidency. We took no account of the possibility that this year's blocked amount accounting for 0.8% of GDP can be included in the base, because, under the rule-based approach, we cannot accept that, without specific measures taken, the net spending of the individual chapters can be reduced. The reason for this is that in recent years expenses have had to be curbed by administrative measures in order to reach the planned level, which is not a sustainable practice. There is no information as to the magnitude of the tensions that had to be managed because of the temporarily curbed expenses, which might turn out to be an upward risk to the deficit.

It is important to stress that, although EU funds grew markedly in 2010, under our baseline scenario, these revenues fail to reach both 2011 appropriations and 2012 plans. In principle, EU funds do not reduce deficit, because they incur additional expenses, and we assumed this in respect of 2012. In contrast, if existing expenses could be covered from such funds, a possibility also referred to in the Széll Kálmán plan, that could reduce deficit. Investment expenditure has been financed from such funds for years now (in practice budgetary capital investments can be financed from EU funds only); therefore, this can only happen in the case of current expenses, but only to a limited extent.

Finally, relative to GDP, the ratio of funds within the general government allocated to the local governments will grow in 2012 after a temporary decrease in 2011. Although the PIT revenues shared with the local governments will be lower because of the lagged effects of 2010 tax cuts, this will, based on the fiscal outlook for 2012, be amply offset by fiscal subsidies. As we took account of this in the rule-based scenario, this can, in part, ensure the necessary reduction in too high financing requirement; nevertheless, local governments also have to make adjustments.

Box 5-3

The forecast method of budget items of the rule-based scenario for 2012

Table 5-5
Rule-based scenario for 2012

Revenues	
Central budget, social security and decentralized funds	
personal income tax	base 2011 multiplied by growth rate of wages, withdrawal of the half of the supergross component and tax-credit
corporate income tax	base 2011 multiplied by growth rate of nominal GDP, deduction of tax allowance earmaked for sport clubs and the impact of loss-carryforward
social security contributions	base 2011 mulitplied by growth rate of wages, deduction of social security constributions in the private pension funds
consumption taxes	base 2011 multiplied by growth rate of nominal consumption expenditures
sector specific taxes	kept fixed
EU funds	estimation
own revenues of chapters and budgetary units	base 2011 multiplied by potential growth rate
interest revenues	estimation based on yield curves
Local governments	
charges and fees	based on medium-term trend
interest revenues	estimation (based on yield curves)
local taxes	base 2011 multiplied with the growth of nominal GDP
shared personal income tax revenues	40% of personal income tax revenue in 2010
transfer from central budget, social security, decentralized funds	from social seurity: base 2011 multiplied with potential growth rate, from budget: in accordance with the budget act for 2012
EU funds	estimation
Expenditures	
Central budget, social security and decentralized funds	
subsidies to corporations	base 2011 multiplied by potential growth rate, deduction of subsidy to MALÉV and the impact of price subsidy cuts
family allowances	base 2011 multiplied by CPI
expenditures of chapters and budgetary units covered by own revenues	equals to the sum of EU funds and own revenues
expenditures of chapters and budgetary units funded by central government	base 2011 multiplied by potential growth rate, adjusted with the cease of EU presidency
transfer to local governments	from social security: base 2011 multipiled by potential growth rate, from central budget: in accordance with the budget act
capital transfer to households	estimation
interest expenditures	estimation (based on yields curves and expected issuance schedule)
covering central bank's losses	MNB forecast
pension expenditure	base 2011 mulitplied by CPI and by certain part of real wage growth rate if real GDP growth rate exceeds 3%
other transfer to households	base 2011 multiplied by potential growth rate, adjusted with sick pay measures
allocation to healthcare	in accordance with the budget act
transfer to unemployed	change in unemployment multiplied by the change in total wage bill
acitve labor market policy expenditures	in accordance with the budget act
Local governments	
interest expenditure	estimation (based on yields)
primary expenditures	estimation, assuming austerity measures

5.5 Expected developments in government debt

At end-2010 gross general government debt amounted to 80.3% of GDP, which, under our projection, signifies a peak in the debt ratio, as we are expecting GDP-proportionate debt to start to decrease from 2011. The causes of a lower debt ratio are a pick-up in economic growth and the impacts of the transformation of the pension system.

Table 5-6
Debt reducing effect of portfolio revenues from private pension funds
(as a percentage of GDP)

1. Total portfolio	10.8
2. Securities of members staying at private pension funds	1.1
3. Payable real yield	0.7
4. Portfolio transferred to general government (1–2–3)	9.1
of which	
5. Hungarian goverment securities	4.1
6. memo: T-bills and bonds redeemable after 2011	4.0
7. other securities	5.0
8. memo: other securities used for financing in 2011	3.2
9. Debt reducing effect (6+8)	7.2
10. Assets available for financing at the end of the year (7–8)	1.8

In 2011 debt ratio will be influenced by, in addition to the fundamental trends, the one-off impact of the transfer into state ownership of the overwhelming part of the private pension fund portfolio. At end-2010 the total portfolio amounted to 11% of GDP; excluding the assets of the private pension fund members who decided to stay and the real yields to be disbursed, a portfolio amounting to 9% of GDP is likely to be transferred into state ownership. Regarding the portfolio, a distinction must be made between government securities and other instruments. The debt management agency will redeem the government securities, as a result of which government debt will decrease in equal measure. With a significant impact materialising already during the year, the debt reducing impact of the redeemed government securities is likely to amount to 4% of GDP.[16]

Amounting to 5% of GDP, the remaining instruments in the portfolio will be transferred to the Pension Reform and Debt Reducing Fund. The Fund will be able to contribute to reduction in the debt ratio gradually by using these instruments rather than issuing new debt to cover part of the government's financing need. In order to cover the fiscal deficit as estimated by MNB, maturing debt and other items, taking into account the debt management agency's issuance plan for 2011, the government will have to use the fund in an amount corresponding to 3.2% of GDP this year. This will reduce the debt ratio to an extent identical to this measurement compared to the scenario in which this financial need would have been covered by bond issuances. The unused part of the revenues will increase the funds available for the government.

In 2011 the debt ratio will fall by 5% of GDP. The underlying developments with a dominant impact on debt (fiscal debt

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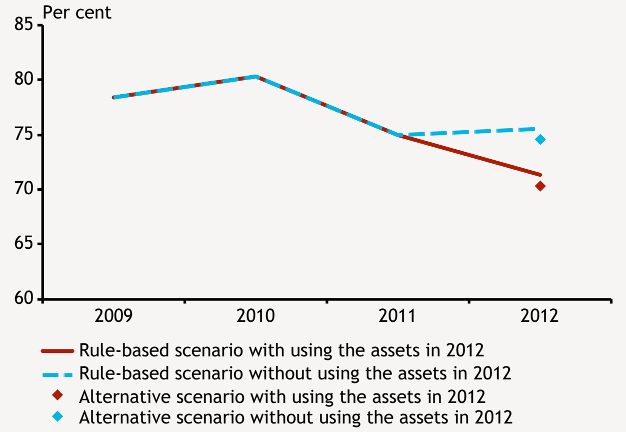
[16] Bonds maturing in 2011 will not reduce debt because they would be honoured anyway. The redemption of these bonds reduces refinancing requirement only to a small extent; however, we assumed that the debt manager would not respond to this by reducing bond issuances. Our assumption for Treasury bills was different: we revised down our earlier projection for Treasury bill issuances by that portion of the redeemed portfolio that expires in 2011. Overall, of the redeemed government securities portfolio, bonds with a maturity of over one year and Treasury bills, which make up nearly the entire portfolio in question, reduce the debt as at end-2011.

Chart 5-7
The gross public debt
(as a percentage of GDP)



calculated in a manner that no account is taken of the one-off portfolio revenues but including assumption of the debt of MÁV; the exchange rate of the forint and yields) could increase debt slightly. However, this is offset by the one-off portfolio revenues amounting to over 7% of GDP.

In early 2012 the government is still likely to dispose over a sizeable sum amounting to more than 5% of GDP. This sum is made up of the Pension Reform and Debt Reducing Fund and deposits accumulated earlier (an unused part of IMF and EU loans). Developments in the debt ratio depend on the decision as to the use of such assets. The reason for this is that the amount to be used will obviate the need for new debt issuance, i.e. reduce the debt ratio. At the same time, however, it will also reduce the reserves set aside to tackle any financing difficulties that may emerge in the future. We present two extreme scenarios: (i) the government decides not to use these funds at all in 2012 and (ii) the government decides to use almost the entire amount of these funds already in 2012. The difference as at end-2012 between the two debt trajectories thus established will amount to approximately 4% of GDP, with the actual rate of debt remaining in the band between these two trajectories.

The debt at end-2012 will also depend on the size of the fiscal deficit. The rate of debt may be higher under our rule-based fiscal scenario than under the alternative scenario taking account of the net fiscal impact of the Széll Kálmán plan.

The debt ratio that will materialise in a few years will not be affected by when exactly the government will use the financing reserves available to it. Obviously, the use of the reserves will reduce the debt ratio, and, all things being equal, the rate of debt will be the same irrespective of the scheduling of the use of the reserves.

6 Special topics

6.1 Monetary Policy Model (MPM) – A brief description of the new forecasting model of the MNB

Since the first quarter of 2011 forecasting and policy advice of the MNB has been supported by a new tool, the Monetary Policy Model (MPM). This simple sentence includes a number of important statements worthy of a more detailed explanation. Accordingly, this analysis is intended to provide a brief overview of the most important characteristics of the use of the new model and the expected advantages of its application.

How does the new model fit into the forecasting and policy advice work of the MNB?

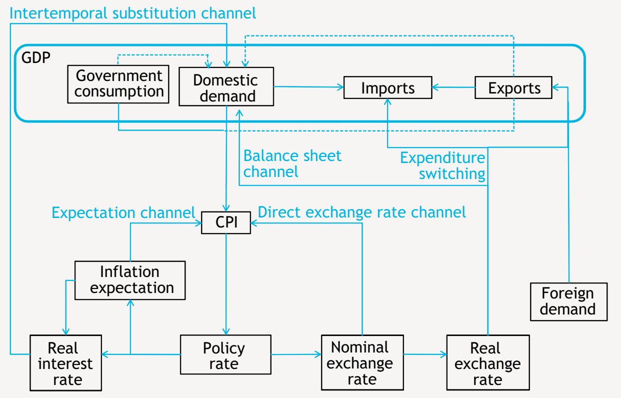
The functioning of the new model can be characterised as follows:

1. The function of the model is limited to providing background and support. This model is a tool to structure our expertise in a uniform framework and a logically consistent system. Our forecasting and analysis system remains unchanged in that we will continue to present the best efforts of our experts in each professional area. We are still of the same opinion concerning the fundamental correlations in the Hungarian economy, and this understanding is reflected in our new tool as well.

2. From now on, in preparing our forecast and preparing background material for the monetary policy decisions we rely on the same tool, the MPM. So far, our forecasts have been based on the assumption that monetary conditions remain unchanged over the forecast horizon. Thus, it is an important novelty that the MPM on which we base our future forecasts explicitly captures the driving forces of monetary policy decisions, as well as the main channels of monetary transmission. In each forecasting round, the new model explains what kind of monetary conditions are consistent with the projected macro path; in other words, in addition to making projections, it also provides support for interest rate decisions. (For details about the endogenous interest rate path, see the Box 1-1).

3. The new method is structured around the determinants and consequences of monetary policy. In the past, we typically used bottom-up models (aggregating sectoral correlations), which provided a fairly detailed and markedly disaggregated overview of the Hungarian economy. In these models – given that the forecasts assume constant monetary conditions – the monetary policy transmission mechanism did not play a central role. From this perspective, the MPM model represents a new approach: while the picture it presents of the Hungarian economy is somewhat more aggregated, it provides explicit details about the transmission mechanism of monetary policy.

Chart 6-1
Functional scheme of the MPM model


Intertemporal substitution channel
GDP
Government consumption
Domestic demand
Imports
Exports
Balance sheet channel
Expenditure switching
Expectation channel
CPI
Direct exchange rate channel
Inflation expectation
Foreign demand
Real interest rate
Policy rate
Nominal exchange rate
Real exchange rate

The Chart 6-1 indicates a concise summary of the model's structure:

The most important interactions are performed along the vertical axis of the chart between domestic demand (real economic activity), inflation (the target variable of monetary policy) and the key interest rate (the main instrument of monetary policy). A tightening of the monetary policy stance, i.e. raising the nominal interest rate, will affect the economy through the following channels.

1. *Exchange rate channel.* A higher domestic interest rate path *(ceteris paribus)* makes forint-denominated instruments more attractive, thus increases demand for them and leads to the appreciation of the domestic currency. Through the moderation of import prices, a stronger nominal exchange rate reduces inflation directly (direct exchange rate channel). Moreover, the exchange rate also affects the real economy through two additional channels that have different implications for inflation. On the one hand, the currency appreciation deteriorates the competitiveness of domestic firms (expenditure switching) and thus decreases demand and moderates the price increase. On the other hand, given the substantial foreign currency debt held by domestic agents, the exchange rate appreciation increases available income (by reducing the forint value of foreign currency debt holdings and revaluating interest payments) and thus boosts domestic demand which, in turn, gives rise to *(ceteris paribus)* higher inflation.

2. I*nterest rate (intertemporal substitution) channel*. Amid sticky prices over the short horizon, a nominal interest rate increase leads to higher real interest rates, and thus changes the key demand decisions of the private sector. On the one hand, rising real interest rates encourage households to increase the level of their savings; in other words, to spend a smaller portion of their income on

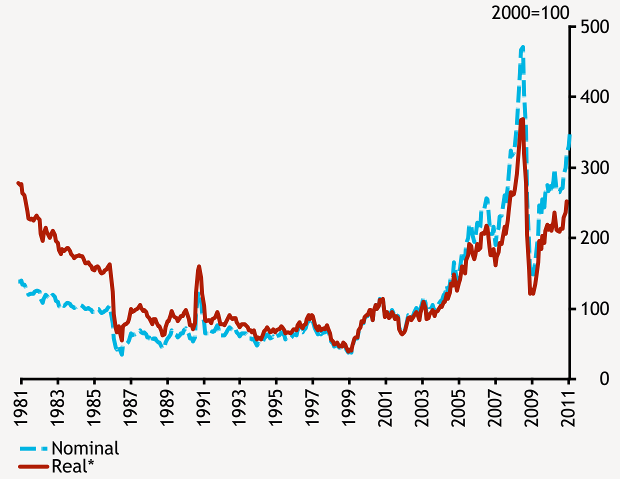
current consumption. On the other hand, firms will be more inclined to postpone their scheduled investment projects. Reinforcing one another, these two factors reduce domestic demand which, in turn, alleviates demand side inflationary pressures.

3. *Expectations channel.* The monetary policy not only affects current demand conditions, but also exerts an impact on the expectations of the private sector. More stringent monetary conditions make domestic economic participants aware of the fact that the central bank is committed to ensuring lower inflation, and – since monetary policy is considered credible – they will reduce their expectations about future inflation. Since the private sector makes forward-looking decisions, lower inflation expectations influence domestic price and wage setting as well.

A characteristic feature of the MPM model is that it was designed to cover the time period of the business cycle (i.e. a forecast horizon spanning 1-3 years). This means that the model focuses on the cyclical component of the real variables; in other words, their deviation from the trend. Mainly because we believe that it is over the business cycle horizon that monetary policy can exert a real economic effect, more long-run trend-like developments are typically outside of the scope of monetary policy. From the perspective of the model this means that the most significant behavioural equations are between the nominal variables (inflation, exchange rate, interest rate) and the cyclical components of the real variables (GDP and its sub-components, external demand). Each real variable is composed of a trend and a cyclical component. We map the trends prevailing across the forecast horizon outside of the model on the basis of expertise; making certain that they are in line with our medium-term vision of convergence (i.e. the statements included in the Report on Convergence). Our most important cyclical variable relevant for monetary policy is the output gap, which indicates the extent of aggregate excess demand and as such captures inflationary pressures originating from the real economy and appears directly in the response function of monetary policy. In view of its key importance and direct relevance to monetary policy, we provide real-time estimates for this variable by relying on several different methods.

6.2 The effects of rising oil prices on the Hungarian economy

Chart 6-2
Oil price



** Real price is the oil price level deflated by USA consumer price index.*
Source: IMF.

Global energy prices have fluctuated heavily in recent years. The trend-like rise in prices observed in the first half of the 2000s peaked in the first two quarters of 2008, when crude oil prices reached USD 130 per barrel. Against the backdrop of the severe global recession prices fell sharply, by around 60 percent, in a matter of a few months. However, as the real economy started to recover from 2009 a pronounced price increase was observed again and, in early 2011, intensifying geopolitical uncertainties pushed oil prices up to above USD 100 again.

The fluctuations of energy prices exert a significant impact on both inflation and growth prospects. This box reviews the channels through which energy prices impact the macro economy[17] and proceeds to quantify the domestic effects of oil price shocks with the MNB's new forecast model.

How do rising oil prices affect the economy?

The increase in energy prices redistributes income from oil energy importing countries to exporters. The main supply side impact is the rise of production costs, which reduces the value added produced by firms. Demand also contracts: households' disposable income falls, which sets back consumption, particularly the purchases of energy-intensive durables (e.g. vehicles). Supply must also follow the shifts in demand, which can lead to higher structural unemployment. Finally, the deteriorating production outlook can constrain investment activity.

These effects can all decrease potential output. However, several factors can mitigate their impact. Firms may substitute oil with other inputs (e.g. other energy sources, capital or labour). Households may increase labour supply to maintain their income position. Finally, exports to oil producing countries may rise.

An increase in energy prices may affect inflation through three channels. Firstly, it drives up the prices of energy bought directly by customers. Secondly, production and transportation costs of core inflation items are also on the rise. The evolution of the output gap determines whether firms can pass cost increases on to consumers. Finally, the inflation expectations of economic participants may increase over a longer time horizon, which could, in turn, induce a self-fulfilling rise in inflation.

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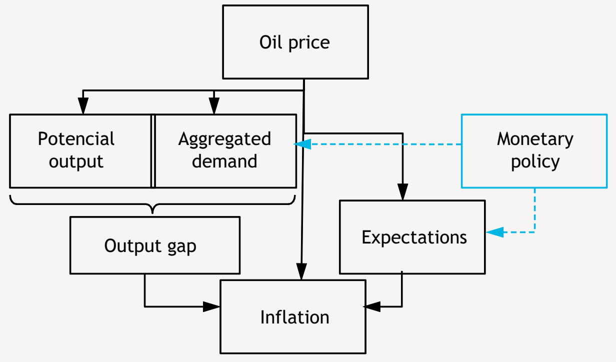
[17] The effects of oil price shocks are summed up, for example, in Kilian, L. (2008): 'The economic effects of energy price shocks', *Journal of Economic Literature*, Vol. 46, No. 4, December, pp. 871–909.

Rising commodity prices inevitably change the relative price of energy and other products. However, monetary policy can influence the inflation rate during this adjustment process. If oil price increases reduce potential output more than actual output, short-term inflationary pressures will increase. If inflation expectations are not firmly anchored to the inflation target of the central bank, the cost shock can exert a lasting effect on price and wage setting decisions. The central bank can counter these effects by tightening the monetary stance, which temporarily dampens aggregate demand.

Chart 6-3
The pass-through of oil price shocks



Oil price shocks generally reduce output. However, the literature does not give a clear indication about the damage to potential output. Some authors argue that this impact is negligible, and the fall in GDP is attributed to tighter monetary policy.[18] Others argue to the contrary, implying a more pronounced fall in potential output.[19]

What is the link between oil prices and global economic activity?

Global commodity prices depend on developments in global activity, which makes it difficult to quantify the effects of oil price shocks. It is conceivable that the rise in commodity prices is driven by robust growth in the global economy. In such cases booming exports may offset the negative growth effects of higher energy prices. In recent years research has pointed out that accelerated global economic growth contributed significantly to the trend-like increase that was observed in commodity prices in the 2000s.[20] The emergence of China and other developing countries has played a prominent role; indeed, these economies consume more oil per unit of output than more developed countries.

In order to quantify domestic effects we need to understand, in particular, the response of our main foreign trade

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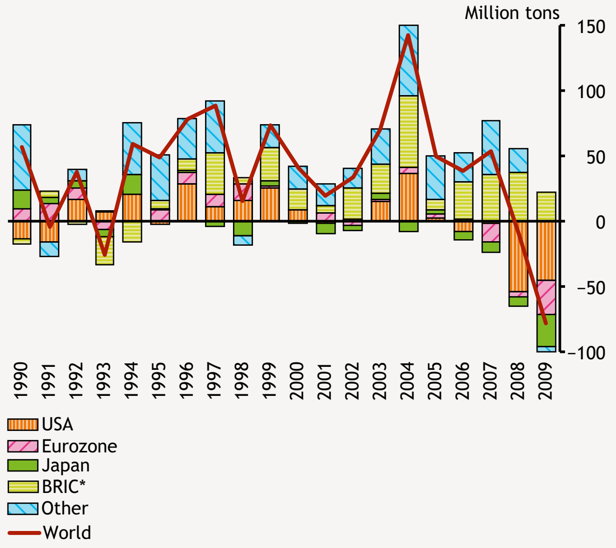
[18] For example Medina, J. P. and C. Soto (2005): 'Oil shocks and monetary policy in an estimated DSGE model for a small open economy', *Central Bank of Chile Working Paper*, 353, (December). Similar conclusions emerge from a production function based estimate of potential output by Cournède, B. (2010): 'Gauging the impact of higher capital and oil costs on potential output', *OECD Economics Department Working Papers*, No. 45, (July).

[19] E.g. Carlstrom, C. T. and T. S. Fuerst (2006): 'Oil prices, monetary policy, and counterfactual experiments', *Journal of Money, Credit and Banking*, Vol. 38. No. 7, pp. 1945–1958, (October).

[20] See, for example, Hamilton, J. D. (2009): 'Understanding crude oil prices', *Energy Journal*, Vol. 30 No. 2, pp. 179–206.

Chart 6-4
Change in world oil use



** BRIC = Brazil, Russian Federation, India, China.*
Source: BP Statistical Review of World Energy 2010.

partner, i.e. the euro area. Empirical estimates[21] suggest that oil price shocks may generate various effects, depending on the source of the price increase.

In the case of a sharp decline in oil production, growth in the euro area would decelerate only sluggishly. The main reason for this is the fact that wages are indexed to inflation in several European countries, which delays the response of consumption. In addition, oil exporting economies (e.g. Russia) are important trading partners of the euro area. High oil prices translate into a reallocation of income to the energy exporters, which in turn pushes up the import demand of these countries. In the longer term, however, the economic performance of the euro area will deteriorate. Moreover, wage indexing leads to strong second-round effects, to which European monetary policy responds by raising interest rates.

If the increase in oil prices is driven by robust global economic activity, overall, the output of the euro area will grow. At the same time, the positive output gap intensifies inflationary pressures. This prompts a stronger monetary policy reaction, which results in the appreciation of the euro exchange rate.

How do high oil prices affect the Hungarian economy?

In quantifying the domestic effects, we relied on the new forecast model of the MNB. This model captures the effects of oil price shocks on aggregate demand and inflation. It also explains how monetary policy would be able to contain the second-round effects of a cost shock.

We examined two scenarios where USD-denominated oil prices are subject to a sustained 10% increase. The ensuing external demand and foreign inflation developments, interest rate levels and EUR/USD exchange rates vary depending on whether the driving forces behind the oil price increase were supply or oil demand shocks or developments in global economic activity. Changes in potential output cannot be inferred from theory and empirical experience. Therefore we made two alternative assumptions. In the first case potential output does not change, and the reaction of GDP is entirely due to the systematic behaviour of domestic and foreign monetary policy. In the second case, potential output declines immediately and permanently due to rising oil prices.[22] Actual economic developments are likely to fall between these two paths.

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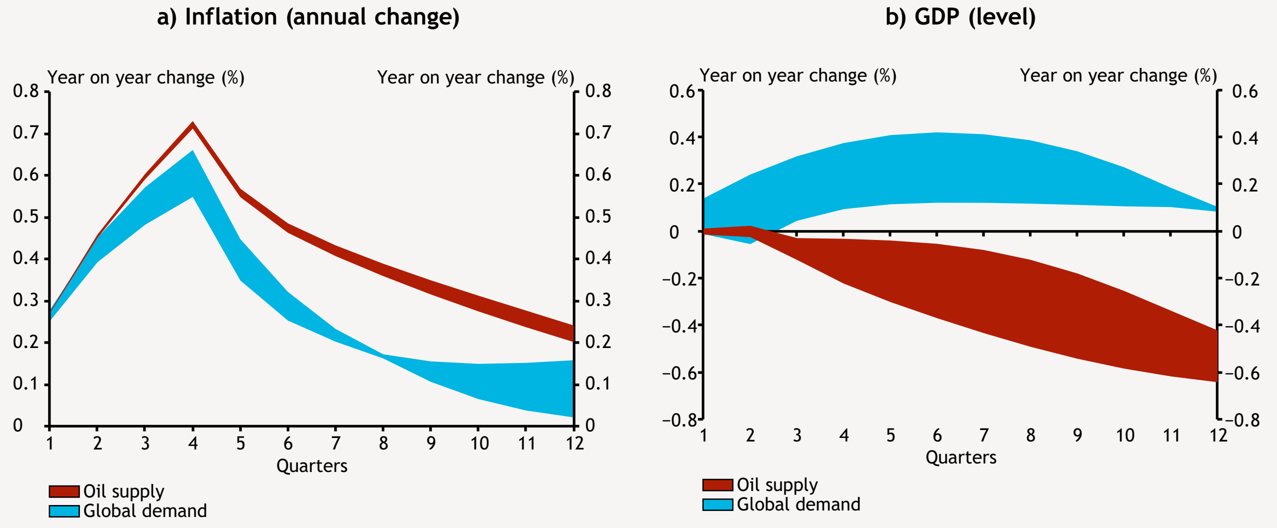
[21] See, for example, Baumeister, C., G. Peersman and I. Van Robays (2010): 'The economic consequences of oil shocks: differences across countries and time', in: Fry, R., C. Jones and C. Kent (eds): *Inflation in an era of relative price shocks,* Reserve Bank of Australia, Sydney.

[22] We calibrated the change of potential output as the long-term impulse response of euro area GDP, estimated by Baumeister et al. (2010).

Chart 5-6
Changes in Hungarian inflation in case of a 10% oil price shock by source of shock*



** The ranges indicate the uncertainty regarding changes in potential output.*

Inflation evolves similarly in both scenarios. The consumer price index peaks in the fourth quarter. Monetary policy responds systematically to rising inflation. The interest rate increase strengthens the exchange rate, cools aggregate demand and steers inflation expectations close to the medium-term target. This contributes to moderating inflation in later quarters. By the end of the third year following the shock, the inflationary shock largely fades away. If strong growth in the world economy is responsible for oil price increases, its inflationary impact diminishes faster in Hungary, because monetary tightening in the euro leads to a stronger euro. In the longer term this reduces oil prices in euro terms, facilitating disinflation in Hungary.

However, the effects of the two oil shocks are entirely different in terms of developments in economic activity. If the rise in oil prices is attributable to a boost in global demand, Hungarian exports may experience a dynamic growth. This would more than offset the demand-reducing effect of high energy prices. Oil market shocks, on the other hand, have negative growth effects. The extent and pace of the downturn primarily reflects changes in the economic activity of the euro area, as well as changes in potential output.

The above results should be interpreted with due caution. On the one hand, the quantification of the effects of global economic activity was based on an estimate surrounded by significant uncertainties. On the other hand, it is not only the level of oil prices that may influence economic developments, but also their volatility (for example, by aggravating uncertainty about the return on investment).

Finally, we assumed that the central bank exactly appreciates the change in potential output – which is not obvious, according to international experience.

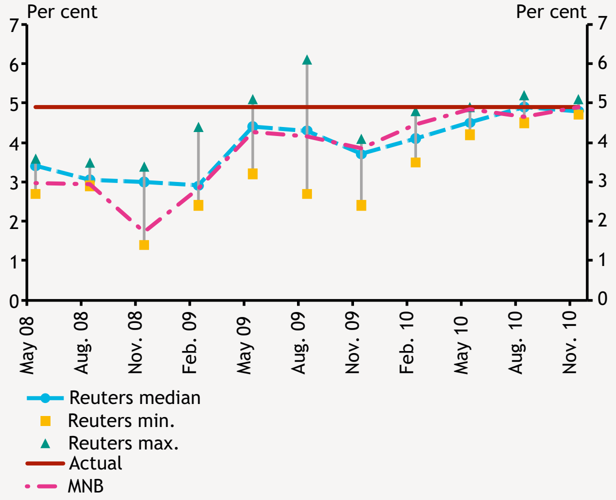
This notwithstanding, our scenarios draw fairly similar conclusions as regards the inflationary effects and the role of monetary policy. If oil prices increase by 10 per cent, the inflationary shock peaks at around 0.5-0.7 of a percentage point. Monetary policy reacts systematically to price increases, to steer inflation gradually to its medium-term target level.

6.3 Evaluation of our inflation forecasts for 2010

In line with previous years' practice, this year we again provide an assessment about the performance of our inflation projections for the previous year. Our analysis is intended to identify the factors which may have contributed to potential forecast errors, and to review how accurately our models captured the trends which have actually materialised. The information gained from this exercise can be useful for the preparation of future forecasts and, at the same time, it can serve as a good basis for improving the accuracy of our forecasting models.

Our evaluation was based on two aspects. As a first step, we compared our projections to the forecasts prepared by market analysts. However, this method disregards the fact that the MNB's forecasts are rule-based and conditional, and thus it is difficult to compare them with the unconditional forecasts produced by market analysts. Secondly, we decompose our errors into exogenous and endogenous factors relevant to our forecast. This enables us to run controls to assess the accuracy of the rule-based assumptions on which we based our forecast.

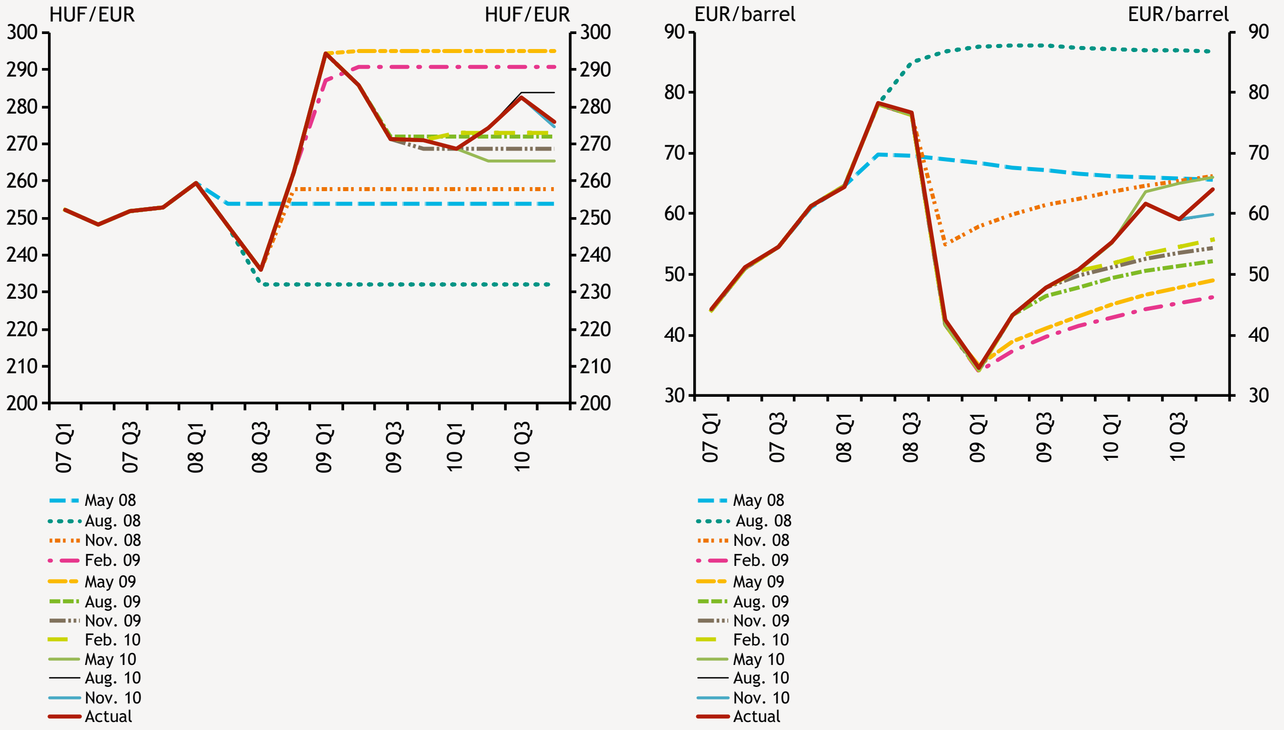
Chart 6-6
Forecasts of the analysts participating in the Reuters survey and the 2010 average annual inflation forecast of MNB*



** In November 2008 the MNB published a band; the chart indicates the average of the edges of the band.*

Our first forecast for inflation in 2010 was issued in May 2008. In May and August 2008 we could not foresee the downward pressure that the crisis would exert on prices, and on average we expected inflation to stand at around 3 per cent in 2010. In view of the intensifying uncertainty in the context of the economic downturn and the unfolding crisis, in November 2008 we anticipated a clear disinflationary trend and expected inflation to undershoot the target. Subsequently, we gradually raised the level of our forecast to adjust for several additional external factors which affected the developments in inflation in 2010. In February 2009 preliminary plans were being developed in respect of an indirect tax increase to be introduced in July 2009; however, due to the lack of final figures we anticipated the raise to be more moderate. The actual rate of the VAT increase was finalised in May and we responded by raising our forecast above 4 per cent to account for the increased tax effect. Subsequently received data, however, suggested that the pass-through of the VAT increase was more modest than expected. In consideration of that and the continuing downturn in internal demand, we slightly lowered our forecasts in the following two reports. In the

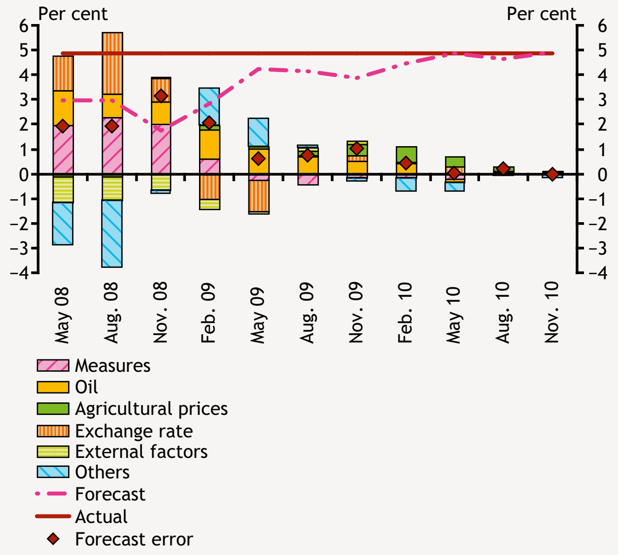
Chart 6-7
Changes in our assumptions about the HUF/EUR exchange rate and euro denominated oil prices



course of 2010 gradually improving external economic activity pushed up the prices of commodities; moreover, a global food price shock put an upward pressure on prices in the second half of the year. These effects pointed to an upward revision of our forecast. It was in August 2010 that, owing to poor crop yields, our projections reflected an increase in the prices of raw and processed food products for the first time. Nonetheless, this effect was somewhat dampened by the moratorium imposed on the prices of gas and distant heating.

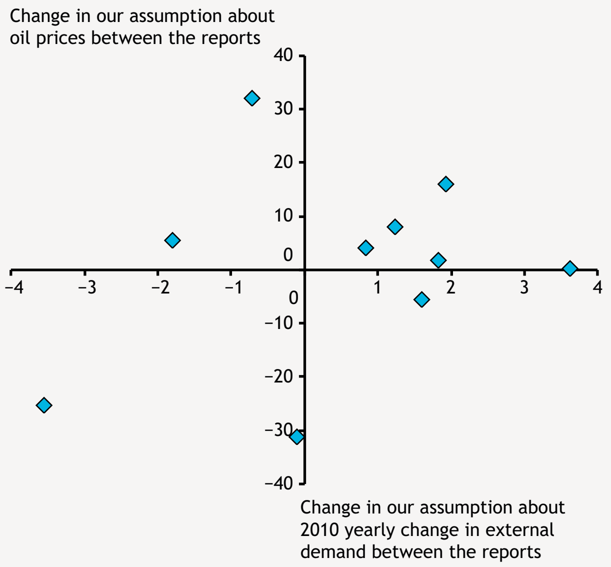
Comparing the MNB's forecast to the median of the projections prepared by the analysts participating in the Reuters survey, we may conclude that the forecasting errors are nearly identical in magnitude on both sides. Until the end of 2009 the forecasts were very similar, the only notable exception being in November 2008. The difference can attributed to the fact that weak demand was expected to have a more pronounced price-reducing effect in our forecast. It is indicative of the uncertainty surrounding the assessment of the disinflation effect of the crisis that, from November 2008, market expectations were dispersed in an increasingly widening band and, as new information was incorporated, the standard deviation of these expectations gradually declined. From November 2009 we responded faster than the market to the fact that the level of inflation remained high.

Chart 6-8
Average inflation forecast error for 2010 and its decomposition*



** The error indicates the difference between the forecast and the actual value.*

Chart 6-9
Differences between our reports as regards assumptions about euro dominated oil prices and external demand



In decomposing the forecast error, it is worth distinguishing between the errors stemming from rule-based assumptions (oil prices, HUF/EUR exchange rate) and those influenced by endogenous factors relevant to our forecast (economic activity, wages). In addition, for the purposes of the model, we also consider the effects of agricultural prices, foreign prices, external demand and government measures (such as changes in VAT, the excise tax, etc.) as external factors. Endogenous error is derived by excluding the effect of these errors. This error contains unanticipated changes in the inflation effect of macroeconomic developments, as well as the error of the model used in the inflation forecast. For example, in May 2008 we would have anticipated lower inflation than the actual figure proved to be if information about the exogenous factors had been available.

Initially, the forecast error was positive, primarily owing to the effect of unforeseen measures – the indirect tax increase – and the difference between the actual figure and our basic assumptions (oil prices, exchange rate). In addition to the level of oil prices (exchange rate), the size of the error also depends on the magnitude of the change which, in the case of a flattening long-term futures curve (a greater exchange rate change) may result in an even bigger error. In May and August 2008 the effects of these exogenous factors were somewhat offset by the then unanticipated price-reducing effect of weakened demand, which would have called for a lower inflation forecast. Initially, we overestimated the disinflation effect of the crisis, which would have justified a higher inflation forecast. From the middle of 2009 we captured the price-reducing effect of the downturn in demand accurately. Gradually, the size of the forecast error – which can be traced back primarily to exogenous factors – diminished.

Decomposing the errors stemming from exogenous assumptions could be beneficial as well. The error deriving from oil prices had a positive contribution to the actual forecast error throughout the period. It is worth mentioning that change in our picture in external demand showed a positive relationship with change in our assumption about oil prices, which confirms that there have been substantial demand effects behind significant price increases over the most recent quarters.

Our assumptions about the HUF/EUR exchange rate resulted in a significant positive error in 2008, whereas the exchange rate assumption we applied in 2009 H1 – which proved to be higher than the actual figure – produced a negative effect. In the periods to follow the error associated with our exchange rate assumption became smaller. We should also take note of the error deriving from the indirect tax increase. Information about the VAT increase introduced in July 2009 first became available in February 2009, and the exact rate of the increase was not known until May 2009. However, on the back of the crisis consumer prices reflected the effect of the VAT increase to a lesser extent than we would have assumed based on previous experience, which would have called for a downward revision of our projection.

Overall, we may conclude that the errors of our forecast for 2010 were largely attributable to unforeseen cost shocks. The error in our long-term forecast was relatively significant, primarily reflecting uncertainties about the crisis, in particular as regards its magnitude and duration. Our projection, made inside a year, quickly adapted to the changed macroeconomic conditions, such that forecasting errors have decreased substantially.

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