MONETARY BULLETIN

2007•3

Contents

The objective of the Central Bank of Iceland's monetary policy is to contribute to general economic well-being in Iceland. The Central Bank does so by promoting price stability, which is its main objective. In the joint declaration by the Government of Iceland and Central Bank of Iceland from March 27, 2001, this is defined as aiming at an average rate of inflation, measured as the 12-month increase in the CPI, of as close to 2½% as possible.

Professional analysis and transparency are prerequisites for a credible monetary policy. In publishing *Monetary Bulletin* three times a year, the Central Bank aims to fulfil these principles.

It includes a detailed analysis of economic developments and prospects, on which the Board of Governors' interest rate decisions are based. *Monetary Bulletin* also represents a vehicle for the Bank's accountability towards the government authorities and the public.

The framework of monetary policy, its implementation and instruments are described in the Chapter on Monetary policy and instruments on pp. 81-83 of this edition of *Monetary Bulletin*.

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Icelandic letters:

ð/Ð (pronounced like th in English this)
þ/Þ (pronounced like th in English think)
In *Monetary Bulletin*, ð is transliterated as d and þ as th in personal names, for consistency with international references, but otherwise the Icelandic letters are retained.

Symbols:

*	Preliminary or estimated data.
0	Less than half of the unit used.
-	Nil.
...	Not available.
.	Not applicable.

Monetary policy statement by the Board of Governors of the Central Bank of Iceland

Tighter monetary policy needed

The Board of Governors of the Central Bank of Iceland has decided to raise the Bank's policy interest rate by 0.45 percentage points to 13.75%. Inflation has gained pace recently and is likely to be higher in 2007 and 2008 than previous forecasts have indicated. The policy interest rate path that the Central Bank's July forecast was based on is insufficient to control inflation quickly enough and thereby anchor inflation expectations. The inflation forecast presented in this issue of *Monetary Bulletin* allows for the attainment of the inflation target within an acceptable time frame; that is, in the third quarter of 2009. The baseline forecast assumes an immediate policy rate increase of 0.2 percentage points, followed by an increase of 0.25 percentage points in December, after which the policy rate remains unchanged from December until mid-2008 and then falls rather quickly, approaching 4% by 2009. As before, the policy rate path in the baseline forecast does not represent a statement or commitment on the part of the Board of Governors.

The Board of Governors' decision to raise the policy rate immediately by 0.45 percentage points demonstrates an unswerving commitment to a tight monetary stance. It does not change the policy rate path in the baseline forecast in other respects than raising the rate in one step instead of two.

The indicators that have appeared since the last issue of *Monetary Bulletin* and, in particular, following the Board of Governors' policy rate decision of 6 September show that demand has grown faster than was projected in July. It has also emerged that output growth in 2006 exceeded previous estimates. Private consumption growth resumed in Q2/2007, and there are signs that it will grow even faster in Q3. Investment has been greater in 2006 and 2007 than previously projected. The growth in public investment has been large in spite of commitments and expectations to the contrary. Prolonged excess demand has caused a persistent shortage of labour and a resultant wage drift, and unit labour costs appear to have risen more than expected in 2006. In 2006 and 2007, disposable income has grown unusually rapidly as a result of wage increases and tax cuts. Real estate prices have been climbing rapidly, which largely explains the recent surge in inflation. The Housing Financing Fund's interest rates have not risen in line with the interest rate changes in the market, and this promotes higher housing inflation.

As before, the exchange rate of the króna causes uncertainty concerning the inflation outlook for the next few years. A high real exchange rate and the prospect of continuing external debt accumulation weaken the foundations of the króna. The króna could depreciate abruptly if global market conditions deteriorate to any substantial degree.

There is significant uncertainty surrounding wage developments. The labour market is still extremely tight and, as is stated above, inflation is higher than was forecast in July. Both of these factors enhance the likelihood that wages will rise more than is compatible with price stability. These uncertainties and others increase the risk that inflation will be greater than is assumed in the baseline forecast. If wage and exchange rate developments prove more negative than the baseline forecast allows for, there will be a sharper contraction in demand and employment than would otherwise occur, even though the contraction might come later.

Over the course of the forecast horizon, factors that have deterred disinflation could change. Conditions have deteriorated in the global financial markets, and higher mortgage rates could cool the real estate market, as has already happened in many other countries. The baseline forecast takes such developments into account, but the contraction could be greater than projected, although signs to that effect have yet to emerge.

Chronic inflation and the wide current account deficit indicate that domestic demand must contract if the economy is to achieve a sustainable balance. Postponing such an adjustment will not soften its effects in the long run. The decision to raise the policy rate reflects the Board of Governors' view that the long-term interests of the nation are best served by attaining the inflation target within an acceptable time frame. Other things being equal, this cannot be achieved except through a tighter monetary stance, as is reflected in today's decision.

Had monetary policy not been as tight as it has been, inflation would be even higher than it is, with well-known consequences for the income and balance sheets of businesses and households. Thus it is necessary to break out of the snare of inflation that has tethered the Icelandic economy. This cannot happen without its being felt. A laxer monetary stance now would only trigger more persistent inflation and a more painful adjustment later on. It should be obvious to all that the less restraint there is in other areas of the economy – in public finance, in the labour market, and in lending activity by financial institutions – the greater the burden on monetary policy.

The next policy interest rate decision by the Board of Governors of the Central Bank will be announced on Thursday 20 December 2007.

Economic and monetary developments and prospects[1]

Domestic demand stronger than previously forecast, but financial conditions have deteriorated

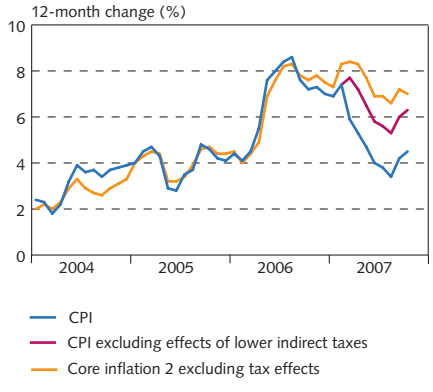
Demand growth accelerated once again around mid-year, and inflation followed suit. Output also expanded at a faster pace in 2006 than earlier national account estimates indicated, and wages did likewise. Despite waning investments in the aluminium and power sectors, other investments have filled the gap to a large degree. Private consumption has resurged, fuelled by hefty growth in real disposable income, both in 2006 and well into 2007. Conditions in the labour market have tightened further in the run-up to the forthcoming wage negotiations, and businesses expect to be able to pass wage increases and higher supply costs into retail prices. The near-term outlook for inflation has therefore worsened since the July forecast, and the same applies to the outlook for the entire three-year forecast horizon, assuming the policy rate path from Monetary Bulletin *2007/2. Strong domestic demand is counterbalanced by rising risk premia on the global financial markets which, together with a tighter monetary stance, have contributed to higher domestic interest rates. Global housing inflation is slowing, and housing prices are sliding in the United States and several other countries. It is probably only a question of time until the same happens in Iceland. Until recently, rapidly rising disposable income, the rigid interest rate policy of the Housing Financing Fund, and abundant credit supply have sustained buoyant demand for housing and contributed to rising real estate prices. Real disposable income has risen to a level that does not appear to be sustainable over the medium term. Hence, the upward trend seems unlikely to continue much longer, and a period of declining real disposable income appears likely over the medium term, but its timing and scale of contraction are highly uncertain. Unambiguous signs of such an adjustment have yet to emerge. According to the baseline forecast, the inflation target will be attained around the middle of 2009, assuming a slightly higher policy rate path than presented in July. Disinflation will not be achieved without a contraction in real disposable income and domestic demand.*

I Inflation outlook and monetary policy

Inflation again more than 1½ percentage points above target

Disinflation has proceeded more slowly than the Central Bank projected in the beginning of July. In the July issue of *Monetary Bulletin*, inflation was forecast to fall to 3.7% in Q3/2007 and 3.6% in Q4. From February to early August, inflation declined steadily and, in July, measured at less than 1½ percentage points above the 2.5% target. It exceeded the 4% tolerance limit once again in September and was measured at 4.5% at the beginning of October. The Central Bank was therefore required, in accordance with the joint declaration made with the Icelandic Government in 2001, to submit an open report to the Government (see Box I-1). In a letter from the Board of Governors, dated 18 September 2007, it was argued that after the Central Bank began to publish a policy rate forecast in March 2007, the questions referred to in the joint declaration were in fact answered in each issue of *Monetary Bulletin*. That analysis can also be found in this issue of *Monetary Bulletin*. Inflation has continually exceeded the Central Bank's target ever since May 2004 and was more than 1½ percentage points above target for the entire period from September 2005 to July 2007. Without the cuts in indirect taxes this past March, inflation would not have fallen below 4% in July and August. In fact, it has

Chart I-1
Various inflation measurements
January 2004 - October 2007



Source: Statistics Iceland.

1. This article uses data available on October 30, 2007 but the forecast is based on data until October 15.

Box I-1

Inflation above tolerance limits

A declaration made by the Government of Iceland and the Central Bank of Iceland on 27 March 2001 stated: "The Central Bank will aim at an annual inflation rate of about 2½ per cent. If inflation deviates by more than 1½ percentage point from the target, the Bank shall bring it inside that range as quickly as possible. In such circumstances, the Bank will be obliged to submit a report to the Government explaining the reasons for the deviations from the target, how the Bank intends to react, and how long it will take to reach the inflation target again in the Bank's assessment. The report of the Bank shall be made public."

The range specified in this declaration has sometimes been referred to as "tolerance limits". In a sense, this is an unfortunate term, as it can contribute to the misconception that inflation of up to 4% is considered acceptable. This is far from the truth. The inflation target is 2½ per cent – no more and no less. The main reason for specifying a benchmark of 1½ per cent deviation is to increase monetary policy transparency. In 2001 the Central Bank of Iceland, like most of the world's central banks over the past two decades, had full authority to use the policy interest rate to achieve its publicly stated objective of maintaining price stability. It is quite normal that an independent central bank with such political power be required to account for its actions. The Central Bank of Iceland fulfils this requirement primarily through the thrice-yearly publication of *Monetary Bulletin*. When the inflation target was determined, it was considered realistic to contain inflation within 1½ per cent of that target most of the time. Greater deviations would generally be attributed to temporary external factors or to errors in monetary policy implementation. It is considered appropriate that the Central Bank explain such deviations. Since the publication of the 2001 declaration, there has been a fundamental change in the way the Central Bank communicates its assessment of the inflation outlook. Instead of publishing two-year forecasts assuming no change in the policy interest rate or in market expectations, *Monetary Bulletin* presents a policy rate path that, in the opinion of the Bank's staff, is the path most conducive to the attainment of the inflation target across the three-year forecast horizon. Together, the policy rate path and the Bank's monetary policy statement describe the means by which the Central Bank intends to achieve its inflation target during the ensuing three years, given the information available at the time of publication. It can therefore be said that each issue of *Monetary Bulletin* meets the transparency requirements set forth in the declaration.

averaged 4.7% since the Central Bank adopted its inflation target in 2001. In the Bank's view, this is unacceptable. There is therefore every reason to examine closely the reasons behind the difficulties in attaining the inflation target. Such an examination cannot be conducted in sufficient depth in this forum, but it is nonetheless appropriate to summarise a few factors that critics of the Central Bank's monetary policy have given inadequate consideration. First, the Icelandic economy has been hit by massive shocks in the past few years: aluminium investment projects of unparalleled magnitude, an overhaul of the financial system, and substantial tax cuts. Second, global interest rates have been unusually low, partly offsetting the effect of a tight domestic monetary stance. Third, there have been problems in the implementation and transmission of monetary policy. These three factors have delayed both monetary policy response and the transmission of policy rate changes. The first two are beyond the scope of the Central Bank's influence, even though the Bank is required to counter their inflationary impact, but the third point is relevant to the Bank's own monetary

policy decisions. Some of the problems have already been addressed, e.g. with an improved forecasting framework and enhanced transparency in monetary policy communication. The Central Bank's publication of its policy rate path is an example of such transparency. It is appropriate, however, to consider carefully whether other improvements are necessary. The transmission mechanism still suffers from shortcomings whose correction requires policy action by authorities other than the Central Bank.

Output growth in 2006 and 2007 exceeds initial estimates and domestic demand rebounds

Output growth in 2006 appears to have been stronger than implied by the first national accounts estimates, but broadly in tune with the Central Bank's forecast prior to their publication. In fact, all along there were compelling indications that output growth was underestimated. The demand for labour, for example, seemed to grow much faster than was consistent with estimated output growth. A reassessment of last year's economic activity reveals that national accounts measures of labour costs have been underestimated as well.

Economic activity and wage costs far above previous estimates explain to some extent why inflation has repeatedly exceeded the Central Bank's forecasts. Because projections have been based on national accounts estimates, it can be concluded that the underestimation of output growth and underlying wage pressures delayed the necessary monetary policy response (see Box I-2 on p. 12). Estimates for Q2/2007 indicated growing demand after a temporary dip last year, with demand growth rising above the Bank's July forecast. Furthermore, there are clear indications that output growth, or at least domestic demand, gathered further momentum in the third quarter.

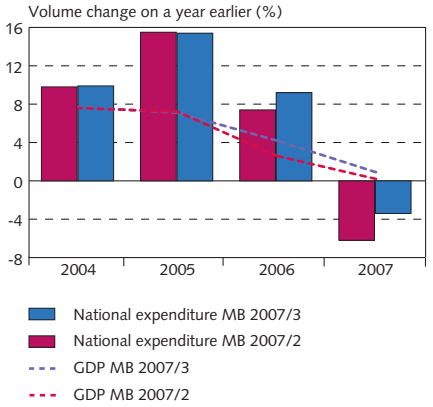
Strong disposable income growth fuels housing boom, triggering higher inflation

The primary source of increased domestic demand growth is the past two years' rapid rise in disposable income, which catalysed a rebound in the residential housing market and bolstered demand for consumer durables. Business investment activity is brisk as well, particularly investment in commercial and office space. The real estate boom has been the primary cause of the recent surge in inflation, but its effect has partly been offset by a relatively strong króna, which has contained goods inflation in spite of underlying cost pressures. In this respect, the current economic climate resembles that in 1999 and 2005. In both cases, housing inflation was the harbinger of broader-based inflation later on. This is a normal characteristic of inflation dynamics in a small, open economy: prices of non-tradable goods and services rise first, especially where supply is inelastic, while an appreciating domestic currency exerts temporary restraint on the price of tradable goods.

Temporary setback or chronic inflation problem?

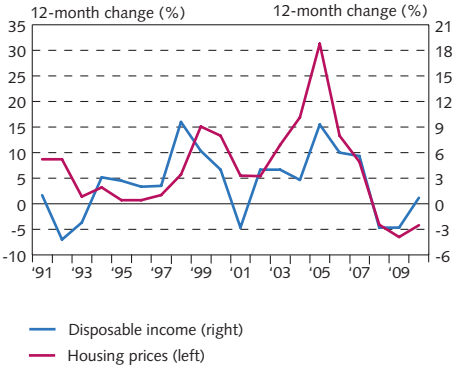
One of the fundamental questions surrounding current monetary policy is whether the recent resurge in domestic demand and the resultant inflationary pressures are merely a temporary detour on a disinflation

Chart I-2
National expenditure and GDP 2000-2007[1]



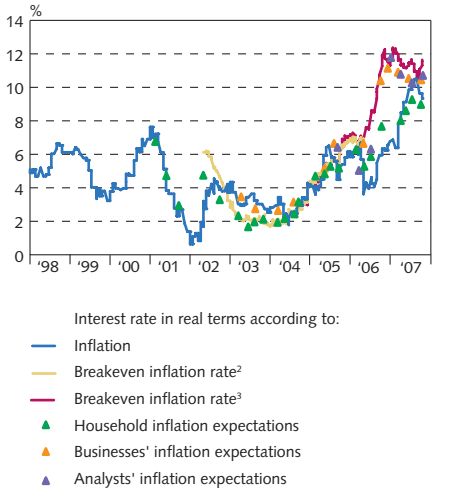
1. Central Bank baseline forecast for 2007.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-3
Housing prices and disposable income 1991-2010[1]



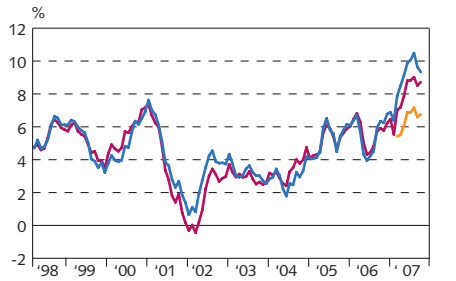
1. Central Bank baseline forecast 2007-2010. Disposable income is based on the Central Bank's estimate.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-4
Central Bank policy interest rate in real terms[1]
Weekly data January 7, 1998 - October 23, 2007



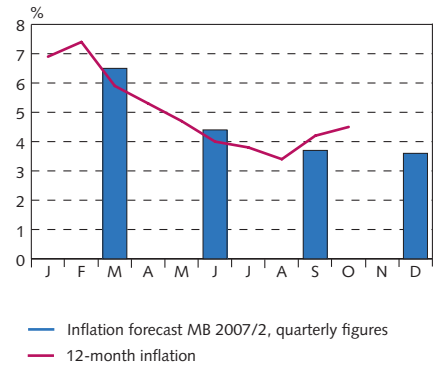
1. The policy rate has been converted to annual yield. 2. Spread between RIKB 13 0517 and RIKS 15 1001. 3. Spread between RIKB 13 0517 and HFF150914. Household, business and analysts' inflation expectations are based on inflation one year ahead.
Sources: Capacent Gallup, Statistics Iceland, Central Bank of Iceland.

Chart I-5
Real policy rate: Core Inflation
Monthly data January 1998 - October 2007



Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-6
Inflation in 2007 and Central Bank inflation forecast published in July



Sources: Statistics Iceland, Central Bank of Iceland.

path or a sign of a more persistent inflation problem. The fact that housing prices are already very high and residential investment is growing strongly may provide support for the former view, suggesting that the housing market will soon cool down. As rising housing prices have been the primary cause of inflation in the recent years, inflation can be expected to abate once housing prices stop climbing relative to other consumer prices. Critics of tight monetary policy have argued that because the housing boom reflects a structural change that leads to a one-time shift in relative prices, there is no need for monetary policy response.

This is wishful thinking that seriously underestimates the persistence of inflation and ignores the second-round effects of a protracted period of demand growth in excess of potential output on the labour market, the exchange rate, and inflation expectations, all of which require a strong monetary policy response. These effects are a matter for particular concern at present because wage negotiations are imminent at a time when the labour market is unusually tight and the sustainability of the external balance is not in sight over the medium term unless domestic demand contracts more sharply than anyone has forecast heretofore.

These conditions require a tight monetary stance over a protracted period, i.e. until broad balance in the labour, goods, and foreign exchange markets has been restored. According to most measures of real policy rates, the Central Bank's stance should be considerably tight already. As elsewhere, monetary conditions are not determined solely by the current and expected policy rate. Risk premia have been rising recently all over the globe, and Iceland is no exception. This could give monetary policy enhanced thrust in coming months. On the other hand, a depreciation of the króna, wage developments inconsistent with the inflation target, or other such shocks could lead to higher inflation expectations and offset some of the restraint of monetary policy. Hence, there are ample reasons to consider carefully whether the current policy stance suffices to bring inflation back to target within an acceptable horizon, especially in view of the fact that inflation has exceeded the target continuously for 3½ years and looks set to remain above target for some time to come. Prolonged deviations from target undermine the credibility of monetary policy.

The inflation outlook has deteriorated assuming an unchanged interest rate path

Various factors indicate that the recent surge in inflation is not merely a temporary detour on the disinflation path. Indeed, inflation seems considerably more entrenched than previously thought. Forecasts based on the policy rate path published in *Monetary Bulletin* 2007/2 suggest that the inflation target is unlikely to be attained within an acceptable horizon (see Box IX-1 on p. 55). Other indicators point in the same direction: businesses' inflation expectations have risen, whereas financial market expectations appear rather volatile. More businesses than before expect to raise output prices in coming months, wage demands are widely incompatible with price stability, commodity prices have risen, and the demand for labour could indicate that overall domestic demand has been underestimated.

The inflation target can be reached by 2009 if monetary policy is tightened

It appears that tighter monetary policy than was forecast in July is required to attain the inflation target within an acceptable time frame. The following baseline forecast (see Chart I-7a) shows the policy rate path that Central Bank staff consider most conducive to bringing inflation down to target in Q3/2009 and holding it close to target for the remainder of the forecast horizon (see Chart I-7d), given currently available information. Under the new forecast, the policy rate stays within the 50% confidence interval of the July forecast. In order to achieve the target soon after mid-2009, it is necessary to raise the policy rate and delay the easing cycle until the third quarter of 2008. The policy rate would peak at 13.75% early in 2008. A higher policy rate will not make much impact this year, and domestic demand will contract less in 2008 than in the July forecast. However, the contraction of both domestic demand and output in 2009 will be deeper than previously projected, while unemployment is expected to remain broadly in line with the July forecast. The outlook in 2010 is for a rebound in output growth, fuelled by a lower policy rate and inflation on target.

The risk profile remains tilted to the upside

A wide variety of uncertainties could affect inflation rates in the next few months. Most of them are the same as in the previous baseline forecast, though the weights of individual factors have changed. As before, the exchange rate of the króna is the main risk factor, as the real exchange rate is still high, both in a historical context and in terms of other measures of equilibrium real exchange rate (see Appendix 3). Furthermore, the baseline forecast indicates that a sustainable current

Chart I-7
Baseline scenario in *Monetary Bulletin* 2007/3
Forecasting period: Q2/2007 - Q1/2010

Chart I-7a
Policy rate

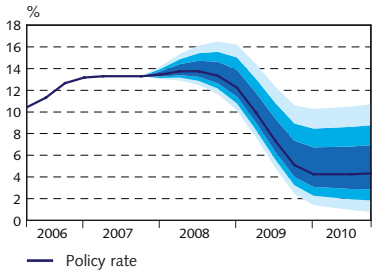


Chart I-7b
Effective exchange rate

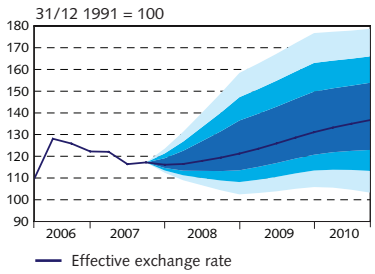


Chart I-7c
Output gap

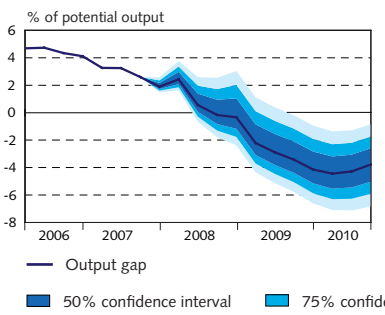
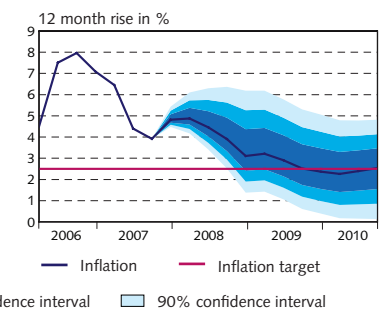


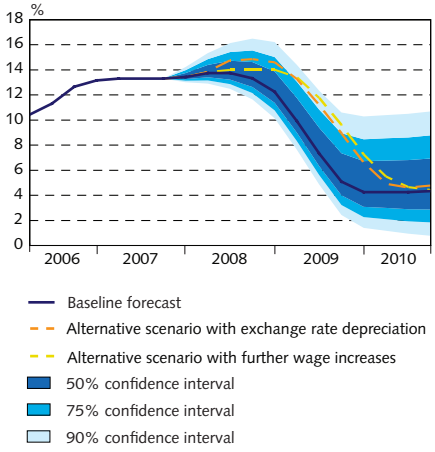
Chart I-7d
Inflation



50% confidence interval 75% confidence interval 90% confidence interval

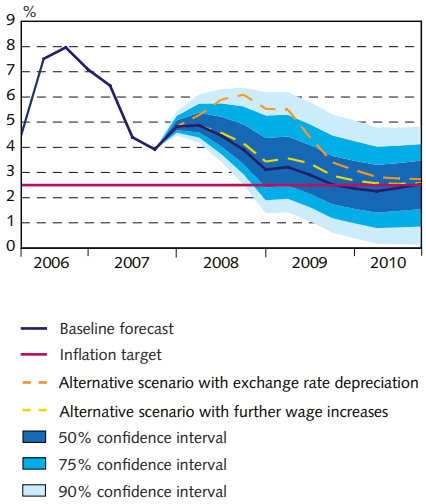
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-8
Policy rate - alternative scenarios



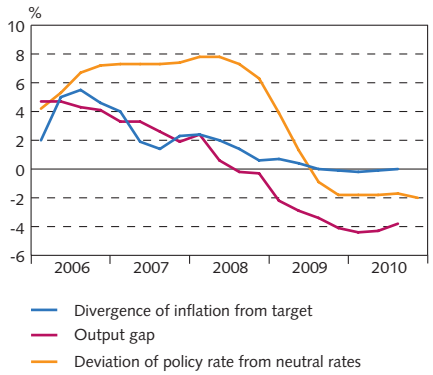
Source: Central Bank of Iceland.

Chart I-9
Inflation - alternative scenarios



Source: Statistics Iceland, Central Bank of Iceland.

Chart I-10
Divergence of inflation from target, output gap, and deviation of policy rate from neutral rates[1]



1. The equilibrium interest rate is a policy interest rate that is consistent with a neutral monetary policy stance. It is likely that the equilibrium re interest rate level is in the 3-4% range which, when added to the inflati target, indicates a neutral policy rate of 5.5-6.5%.
Sources: Statistics Iceland, Central Bank of Iceland.

account deficit during the forecast horizon is unlikely. The effects of a significant depreciation of the króna are detailed in the alternative scenario shown in Charts I-8 and I-9 (see also Box IX-2). Another element of uncertainty – and one of growing importance – is the outlook for wage developments following the upcoming wage settlements. Various indicators hint at a significant likelihood that wages will rise more than is assumed in the baseline forecast. Higher inflation, a poorer inflation outlook, and a growing shortage of labour in the prelude to wage negotiations are all factors that heighten the risk of excessive wage growth. The implications of this risk are also examined in an alternative scenario. Moreover, the two uncertainties mentioned above are interdependent and could amplify one another. In both instances, it could prove necessary to raise the policy rate still further in order to attain the inflation target during the forecast horizon. In the final analysis, such scenarios would imply a sharper, albeit delayed, contraction of domestic demand.

More factors could work against monetary policy in coming months. Given that output growth is considerably higher this year than previously expected, declining restraint in public expenditure – which was previously viewed as a countercyclical measure against diminishing construction activity in the power and aluminium sectors – could stimulate domestic demand at a most disadvantageous time. The upcoming wage settlements could derail the government's expenditure plans as well. An appropriate fiscal policy stance is therefore of the utmost importance.

Several elements of uncertainty could lend support to the monetary policy stance over the medium to longer term. First, rising risk premia on global financial markets could expedite monetary policy transmission across the yield curve, as has happened recently. In the short run, however, the probability that increased risk aversion or reassessment of risk among investors will exert downward pressure on the króna carries more weight, though this has not significantly affected the króna yet. Second, the residential housing market could weaken more than is assumed in the baseline forecast; for example, if a credit crunch is associated with falling house prices and rising mortgage interest rates. This could trigger a sharp contraction in residential investment, even though housing prices are generally characterised by downward rigidity. This is unlikely to happen in the near future, however, in view of the current strong momentum in the housing market. Furthermore, developments of this sort are most likely to occur in tandem with a substantial depreciation. The conclusion is a risk profile where inflation above the baseline forecast is considered more likely early on, while offsetting factors could carry increasing weight toward the end of the forecast horizon. Consequently, the likelihood that a policy rate path higher than that in the baseline scenario will be required to attain the inflation target within the forecast horizon appears greater than the likelihood that a lower policy rate path will suffice.

Improved transmission of policy

Since the Central Bank began publishing the policy rate path that the Bank's staff consider most conducive to the attainment of the

inflation target, there has been a notable improvement in monetary policy transmission. Forward interest rate developments since March provide strong evidence of this (see Box III-2). Market expectations of the policy rate several quarters ahead are much more consistent with the Central Bank's communication than before. The possibility cannot be ruled out, however, that this development partly reflects rising risk premia in the global financial markets.

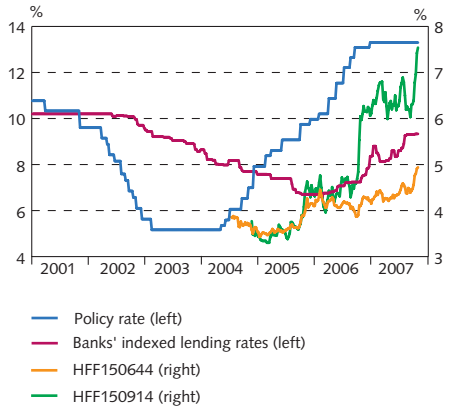
Interest rates are subject to considerable international "contagion" (see Box III-1). This fact, coupled with Iceland's recent difficulties in tackling inflation, has led some critics to conclude that monetary policy is utterly impotent. Recent developments indicate that this is an exaggeration, to say the least. On the other hand, it is obvious that very large interest rate changes may be needed in order to achieve an inflation target when economic conditions in Iceland are at odds with those in other countries. Wide interest rate differentials have numerous side effects, including a volatile exchange rate.

There is no simple solution to this problem. Avoiding conditions that demand abnormally stringent monetary policy is important, however. Avoiding initiating too many demand-stimulating measures at once will reduce the risk of overburdening monetary policy to such an extent that instability, and eventually a painful adjustment, becomes inevitable. It is most desirable that the public sector be flexible in planning its investments so as not to interfere with the necessary cooling of the economy. The countercyclical measures that were previously considered optimal for 2007 proved unnecessary, and there is no foreseeable need for them in the near future. Measures designed to facilitate the transmission of monetary policy would also be helpful. For example, more systematic Treasury and HFF bond issuance would contribute to a more efficient bond market and thus a more effective channel for monetary policy transmission than currently exists.

Central Bank independence should be safeguarded

Voices demanding a restriction of the Central Bank of Iceland's independence have been raised recently. However, the essence of the criticism and the conditions under which it is lodged actually highlight the need for the opposite. The global experience of the inflationary years of the 1970s and 1980s led to the general conclusion that monetary policy was best left in the hands of an independent central bank entrusted with the single objective of achieving price stability. To increase the impact of interest groups on monetary policy would be a throwback to the times of untamed inflation. The achievements of monetary policy reforms of recent years would be thrown away before their full effects were felt. Premature loosening of the monetary policy stance will not ease the difficulties that are inevitable after an extended period of overheating. At most, it would delay adjustment for a while, but it would probably make it more painful and costly in the end. The temptation to give preference to short-term vested interests over the long-term benefits of price stability is precisely the reason why the Central Bank of Iceland must retain its independence and be well protected against pressure from groups with particular interests to protect.

Chart I-11
Policy rate, HFF yields and average indexed interest rate
Weekly data, January 5, 2001 - October 26, 2007



Sources: Central Bank of Iceland.

Table I-1 Publication dates for *Monetary Bulletin* and interest rate announcement dates in 2007-2008

Date of interest rate decision	*Commentary published in*	*Weeks since previous interest rate decision announcement*
December 20, 2007	Press release	7
February 14, 2008	Press release	8
April 10, 2008	MB 2008/1	7
May 22, 2008	Press release	6
July 3, 2008	MB 2008/2	6
September 11, 2008	Press release	10
November 6, 2008	MB 2008/3	8

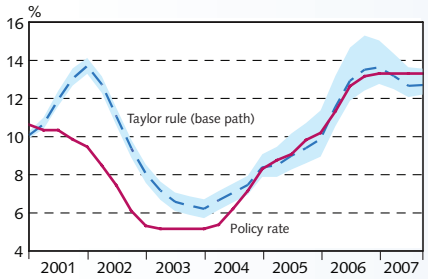
Box I-2

The policy interest rate according to the Taylor rule and the effects of revised estimates of the output gap

After the adoption of an inflation target in March 2001, the main objective of the Central Bank of Iceland's monetary policy has been to decide its policy interest rate with the aim of bringing inflation as measured by the twelve-month rise in CPI as close as possible to 2½%. The result has been unsatisfactory so far. Inflation has averaged 4.7%. It reached a high of 9.4% and a low of 1.6%. It would seem, therefore, that the Central Bank's monetary policy has not been sufficiently tight. Economic research has shown that a set of simple monetary policy rules named after John Taylor seems to mirror quite well the approach of central banks that have been successful in combating inflation.[1] This box reviews the policy interest rate path that would have resulted if the Central Bank had followed such a rule since the year 2001.[2] Also considered is the difference between two policy rate paths according to the Taylor rule: one based on the output gap estimate actually used in determining the policy rate, and the other based on the Bank's subsequent revision of the output gap assessment.

Chart 1

Actual policy rate path compared to Taylor rule path with real-time output gap estimate[1]

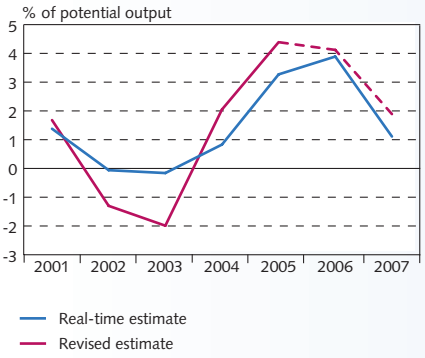


1. Baseline forecast: $R(t) = aR(t\text{-}1) + (1\text{-}a)[(R^* + P^*) + b(P(t) - P^*) + cG(t)]$, where R is the policy rate , P is inflation, and G is the output gap. R^* (neutral real interest rate) = 3.5%, P^* (inflation target) = 2.5%, a = 0.7, b = 1.5 og c = 0.5. The gap shows the various results obtained from applying the Taylor rule using differing values for R^* (3-4%), b (1.5-2.5), and c (0.2-1.0)

Source: Central Bank of Iceland.

Chart 2

Central Bank estimate of the output gap[1]



1. The real-time estimate of the output gap for each year is based on the Central Bank's estimate as published in *Monetary Bulletin* during that year. The chart should be interpreted with caution because the Bank's methods for estimating the output gap have changed during the period.

Source: Central Bank of Iceland.

A simple monetary policy rule as frame of reference

The Taylor rule describes in simple fashion how policy interest rates are a function of three key variables:[3] the equilibrium (neutral) real interest rate, the deviation of inflation from the inflation target, and the deviation of output from the economy's potential output – the so-called output gap. According to the rule, the policy interest rate should deviate from its equilibrium level if inflation deviates from target or if an output gap is present in the economy. Also, the so-called Taylor principle requires that the policy rate be raised (cut) more than one-for-one with inflation in order to increase (decrease) the real policy interest rate so as to tighten (ease) monetary policy and thereby ensure price stability.[4]

One of the rule's key advantages is that it systematically links monetary policy formation to current economic conditions in a manner that, on average, yields favourable results. Cecchetti et.al. (2007) show that deviations in the policy rate path of the world's major central banks from that indicated by the Taylor rule have declined significantly since the early 1980s, and they consider this the chief explanation for increased stability of prices and output.

1. See e.g. Taylor, J. B. (1993). "Discretion versus Policy Rules in Practice", *Carnegie-Rochester Conference Series on Public Policy*, 39, 195-214; Taylor, J. B. (ed.) (1999), *Monetary Policy Rules*, NBER Conference Report, University of Chicago Press, Chicago; Cecchetti, S. G., P. Hooper, B. C. Kasman, K. L. Schoenholtz and M. W. Watson, (2007). "Understanding the Evolving Inflation Process", U.S. Monetary Policy Forum 2007. Comments on the Taylor rule can also be found in *Monetary Bulletin* 2002/2, Box 5, pp. 23-25.
2. The conclusions are subject to certain reservations since it is clear that the paths of CPI inflation and the output gap would have been different from the actual ones if the Central Bank's policy interest rate path had in fact been consistent with the Taylor rule. No attempt is made to estimate what the resulting paths might have been.
3. The equilibrium interest rate is a policy interest rate that is consistent with a neutral monetary policy stance, i.e. one that neither dampens nor stimulates national economic activity. It is difficult to make a reliable estimate of this neutral interest rate but its level is probably relatively high in Iceland, where the savings propensity is low and return on capital is high. The low propensity to save reflects the nation's relatively young average age and is manifested in a high level of indebtedness. On the other hand, the high return on capital indicates that the Icelandic economy may not be as deep and efficient as, for example that of the United States, manifested in the economy's ability to support a relatively high level of long-term real interest rates. The Central Bank of Iceland assesses that the equilibrium real interest rate level is probably in the 3-4% range which, when added to the inflation target, indicates a neutral policy interest rate in the 5.5-6.5% range. The statistical procedures in the main text are based on the mid-point, a 6% neutral policy interest rate.
4. Since Taylor's original presentation of the rule (1993), research has shown that its correlation with actual policy interest rate paths is more robust if lagged policy rate variables are also taken into account.

Deviations from the Taylor rule always attract attention, and central bank officials often make a point of explaining them.[5] Taylor (1993, 1999) himself has always emphasised that central banks should not follow the rule blindly but rather use it as a frame of reference for their own policy formulation. In comparison with actual policy interest rate decisions, it is also of the essence to take into account that central banks base their policy decisions on imperfect data and uncertain forecasts of near-term economic developments. The output gap and the equilibrium policy rate are subject to considerable uncertainty, and neither variable can be measured directly but must be inferred from other data.

Policy interest rates according to the Taylor rule would have been higher through mid-2004 but very close to actual policy rates thereafter

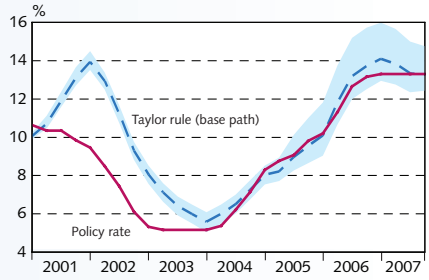
Chart 1 shows the Central Bank's policy interest rate path according to the Taylor rule from the year 2001, based on the real-time output gap assessments used by the Bank in connection with individual policy rate decisions. If the Bank had used a simple Taylor rule, it is clear that the policy rate would have been considerably above its actual level until mid-year 2004. The inflation path in 2001 and 2002 confirms that the monetary policy stance was not sufficiently tight in those two years. From mid-2004 to the present, however, the policy interest rate path indicated by the Taylor rule is very similar to the one that has in fact been pursued. Therefore, the tightness of the Central Bank's monetary policy stance during the past 3½ years has been approximately on par with practice other central banks might have been expected to conduct under similar circumstances, although outside comments have occasionally suggested otherwise.

If assessments of the output gap had been based on data now available, the Taylor rule would have required a higher policy interest rate path than indicated by actual assessments based on real-time data

Estimates of the output gap are subject to substantial revisions as more dependable national accounts data become available. During the past four years, the output gap has generally been revised upwards from real-time staff estimates (see Chart 2), as a result of considerable upward revision of output growth from preliminary figures. There remains considerable uncertainty with respect to the output gap in both 2006 and 2007. Chart 3 shows the policy interest rate path indicated by the Taylor rule applied to revised output gap estimates based on the most recent data. Data now available suggest that the policy interest rate path since mid-year 2004 has been broadly in line with the Taylor rule, although the larger than previously estimated output gap in 2006 may have led to a policy interest rate somewhat lower than that suggested by the Taylor rule (see Chart 4). According to the rule, the policy interest rate in Q4/2007 should be in the range of 12½-14¾%. Thus the actual policy rate appears to be of the right order of magnitude. Of course, that does not mean that it will appear in the same light in retrospect a few years from now.

Chart 3

Actual policy rate path compared to Taylor rule path with revised output gap estimate[1]

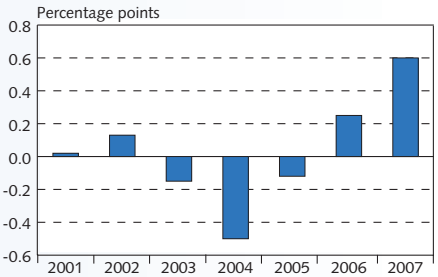


1. Baseline forecast: $R(t) = aR(t\text{-}1) + (1\text{-}a)[(R^* + P^*) + b(P(t) - P^*) + cG(t)]$, where R is the policy rate , P is inflation, and G is the output gap. R^* (neutral real interest rate) = 3.5%, P^* (inflation target) = 2.5%, a = 0.7, b = 1.5 and c = 0.5. The gap shows the various results obtained from applying the Taylor rule using differing values for R^* (3-4%), b (1.5-2.5), and c (0.2-1.0)

Source: Central Bank of Iceland.

Chart 4

Deviations in interest rates according to Taylor rule with revised vs. real-time output gap estimate

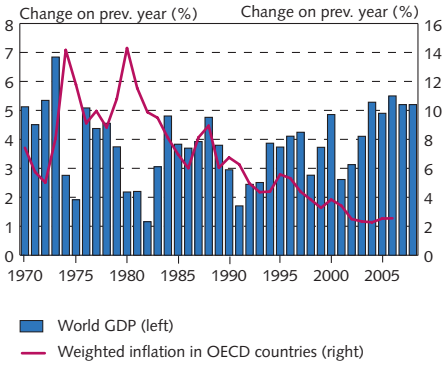


Source: Central Bank of Iceland.

5. See e.g. Blinder, A., and R. Reis (2006). "Understanding the Greenspan Standard", a paper presented at a Federal Reserve Bank of Kansas City seminar in Jackson Hole, Wyoming; Poole, W. (2007). "Understanding the Fed", Federal Reserve Bank of St. Louis *Review*, 89 (1), 3-13; Kohn, D.L., (2007), "John Taylor Rules", a speech delivered at a Federal Reserve Bank of Dallas seminar on John Taylor's contribution to monetary economics and policy formulation, held on October 12, 2007.

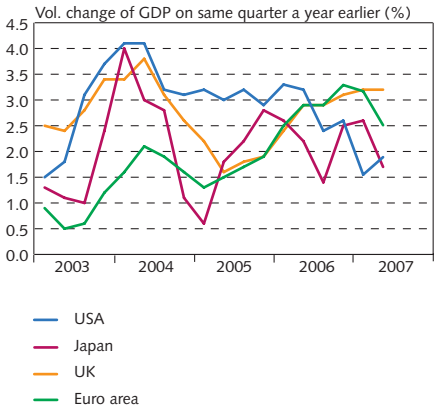
II External conditions and exports

Chart II-1
International economic developments 1970-2008[1]
World GDP and weighted inflation in OECD countries



1. Data on economic growth for 2007 - 2008 are IMF forecasts from July 2007.
Sources: IMF, Reuters EcoWin.

Chart II-2
Economic growth in main trading areas
Real GDP growth Q1/2003 - Q2/2007



Source: Reuters EcoWin.

External conditions have become more uncertain since *Monetary Bulletin* was published in July. Various indicators suggest that the impact of the subprime mortgage loan crisis and contraction in the US housing market will be considerably greater than previously expected. The dampening effect on output growth was initally concentrated in the US, but a slowdown in the US normally has a negative effect on global economic growth. Furthermore, the uncertainty generated by the subprime loan crisis will have a direct effect in Europe, partly because financial institutions in Europe and elsewhere had purchased substantial quantities of subprime mortgage-backed securities and other related risky credit assets. This development has led to rising risk premia and a lack of liquidity in the interbank market. Global financial conditions have therefore deteriorated. Increased risk aversion creates uncertainty about the future of carry trades, and this could affect the exchange rate of high-yielding currencies like the Icelandic króna, which has nonetheless been rather strong recently.

Uncertain global output growth in 2008

In recent years the Icelandic economy has enjoyed largely positive external conditions that have created a desirable framework for robust domestic growth. For quite a while, global output growth has exceeded the long-term average. According to the IMF, global output growth in 2004-2007 averaged roughly 5.2%. At the same time, inflation remained low and stable in the world's principal industrial nations. Such a growth episode accompanied by stable, low inflation rates is unique in recent decades (see Chart II-1).

The current growth episode was initially led by the US, but the balance has shifted more and more to the East, with emerging market economies in Asia driving the trend more recently. International economic forecasts indicate that China's contribution to global growth will outstrip that of the United States in 2007. After a weak first quarter in the US, output growth gained pace in Q2 despite a slowing in private consumption and a sharp drop in residential investment. Principal drivers of growth were increased exports, a contraction in imports, rising public consumption, changes in inventories, and non-residential investment. It is likely that the downturn in the housing market will trigger a further slowdown in private consumption growth in coming months, and difficulties in the financial markets, coupled with continuing downward trends in residential investment, will most likely dampen output growth in the latter half of the year.

In the euro area, output growth slowed in Q2/2007 after a strong first quarter. Growth is expected to remain weaker as a result of the financial turmoil and weaker growth in the US. Output growth in the UK was stable during the first half of the year, roughly half a percentage point higher than in the first half of 2006. In Norway (mainland economy) and Sweden, output growth gained pace in Q2, while it slowed down in Denmark and Finland. Growth in Finland was nonetheless among the highest in the euro area.

In Japan, growth was below expectations in the first half of the year. Growth in private consumption and investment dropped slightly, but in light of positive labour market developments and robust corporate earnings, the outlook is generally neutral in the second half. As is noted above, the continued burgeoning growth in Asia's chief emerging market economies offsets the bleaker outlook in the United States. Output growth measured 11.5% in China and 9.2% in India during the first half of the year.

Apart from the recent turbulence in global financial markets, the economic fundamentals in Iceland's main trading partner countries appear generally sound. According to Consensus Forecasts, output growth among Iceland's trading partners will be marginally lower this year and in the coming two years than assumed in the last forecast. Contractions in the US housing market could exert a greater downward pull on output growth in other countries than the US contribution to global output growth would normally indicate, however, which casts a shadow of uncertainty on the overall outlook.

Rising food and commodity prices generate increased inflationary pressure

Unemployment has dropped in Europe, and energy, food and commodity prices have risen. These developments could generate increased inflationary pressures. The monetary stance has slackened in the United States following the turbulence in the global capital markets, however, and the monetary policy tightening cycle of the ECB has been interrupted, as rising risk premia have a tightening effect.

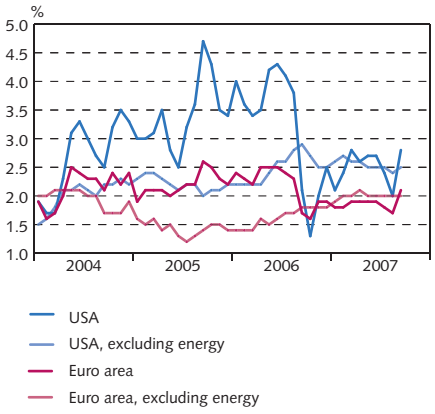
Inflation has slowed in the US in recent months and has so far remained somewhat lower than during the same period last year. Excluding energy prices, however, it has held rather stable. Inflation in the euro area exceeded the 2% benchmark in September after having held relatively steady at just below that level over the year to date. Inflation excluding the energy component has changed little during the year, however. Vigorous commodity price increases do not seem have been transmitted to general consumer price levels as yet.

This year's sharp rise in the price of food and other commodities appears not to have made a palpable impact on inflation in developed markets. This is partially explained by reduced production costs, as production has increasingly been transferred to low-wage countries. Going forward, higher food prices are likelier to trigger a general rise in price levels than are increases in other commodity prices. This could occur in the next several months (see Box II-1 on p. 16). If inflationary pressure is unleashed during a time of diminishing economic activity, stagflation could result.

Downturn in the US housing market could have repercussions

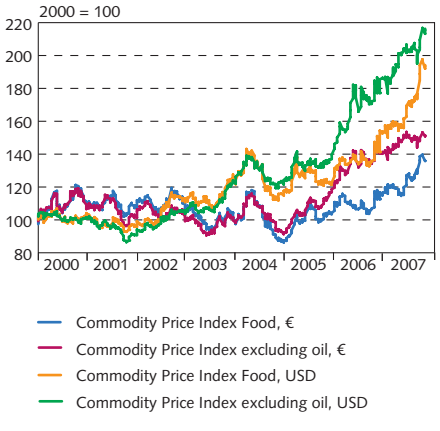
Increased trade between the euro countries and Asia has diminished the impact of the US market on output growth in the euro area. Furthermore, rising reciprocal trade among Asian countries insulates them somewhat from the ripple effect from the US. The danger that the mid-cycle economic slowdown in the US will have substantial

Chart II-3
Inflation in the US and euro area
January 2004 - September 2007
Inflation including and excluding energy prices



Source: Reuters EcoWin.

Chart II-4
World market commodity prices
Weekly data January 7, 2000 - October 26, 2007

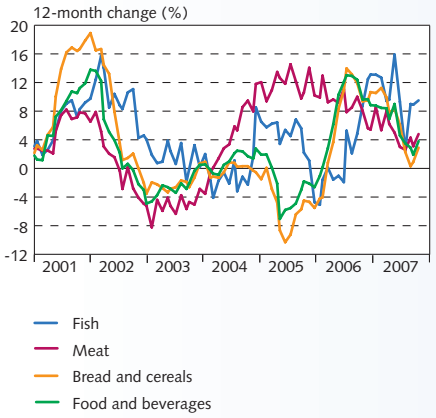


Source: Reuters EcoWin.

Box II-1

The effects of rising commodity prices on consumer prices and the national economy

Chart 1
Food prices January 2001 - October 2007[1]



1. After March 2007 tax effects are excluded.
Source: Statistics Iceland.

World market prices of Icelandic import commodities have increased considerably this year, whereas prices of export commodities and fish products have either fallen or remained stable. World market prices of food products measured in US dollars have increased by 20% since the beginning of the year, and general commodity prices excluding oil products by 16%. The reasons for the acceleration in food prices include increasing use of corn and other food items for biofuel production, poor weather conditions and supply disruptions in several countries, and growing demand in China, India and other emerging market economies. Oil prices have risen sharply this year on the back of supply uncertainty and declining crude inventories. A weakening in the US dollar may have also contributed to higher dollar prices. Prices of fish products, on the other hand, have remained relatively stable and the price of aluminium has declined. These developments may be expected to contribute to inflationary pressures in the period ahead. This Box considers the effects of rising commodity prices on consumer prices and the national economy.

Impact on food prices limited so far

An increase in commodity prices in the world market affects global inflation and inflation expectations because prices of food, oil and gasoline carry significant weight in consumer price indices. In Iceland the effects of rising commodity prices on goods prices have been limited but varied by goods categories. The impact is felt directly in the prices of imported food items and other imported consumption goods, such as oil. There are also indirect effects on domestic food prices through higher costs of domestic food production, which is dependent on imports of commodities. The aggregate share of food prices in the consumer price index is just over 11%. The share has declined since 1997, when it was 15%. Imported food and beverages in the Consumer Price Index account for only about 2.5%, and the share of fuel is close to 4.5%.

An increase in commodity prices can affect the inflation expectations of consumers to a greater extent than price increases of many other goods categories. The frequency of food and gasoline purchases entails significant price awareness among consumers, and there is often extensive media coverage of changes in commodity prices. Although changes in world market commodity prices fall outside the scope of the Central Bank's monetary policy, it must respond to the extent that higher commodity prices are expected to have long-term effects on inflation expectations.

In Iceland, the effects of rising commodity prices have been limited so far. Food prices have risen by just over 3% in the past six months. The price of wheat and meal has increased by almost 7% and meat product prices by 4% over the same period. Gasoline and oil prices usually respond promptly to changes in world market prices and have increased by close to 11% over the past six months. The effects of increased commodity prices on the CPI are alternately intensified or moderated by fluctuations in the exchange rate of the króna. The strengthening of the króna earlier this year seems to have outweighed rising commodity prices and moderated inflationary pressures. It is also possible that more active price monitoring and increased media coverage of food price developments following the cut in indirect taxes last March may have served to increase restraint and lead retailers to shoulder a part of the increase in commodity prices and costs.

On the other hand, it appears likely that food prices will increase in the period ahead, especially if the króna depreciates. Also, in the event of considerable and long-lasting exchange rate instability, firms may increasingly decide to pass on higher commodity costs to consumers through price increases (see Chapter VIII).

Imported commodity prices have increased sharply since the beginning of the year but prices of exported products have fallen or remained stable

Although it is difficult to estimate precisely the effects of changes in commodity prices during the past few months on Iceland's term of trade, most indicators show that they have deteriorated. It is clear that prices of key import categories have increased considerably in recent months. Among these, an increase in oil and gasoline prices weighs most heavily. World market prices of crude oil have increased by 36% so far this year. This affects the national economy directly since oil products represent about 9% of total imports. The price effects are felt directly through higher gasoline prices for the general public, but the indirect effects can also be considerable; for example, in the form of increased domestic transport costs.

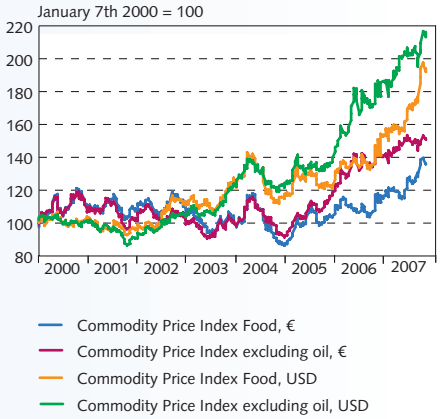
Average export prices of fish products have been more than 5% higher so far this year relative to 2006. However, they remained approximately constant during the first eight months of the year.[1] At the same time, US dollar food prices rose by 20% and euro food prices by 13%. Thus fish product prices are not closely linked to food commodity prices because only a small part, especially fish meal and fish oil, are classified as commodities.

Aluminium prices have fallen by 10% since the beginning of this year, but it is difficult to obtain an overall view of price changes of aluminium oxide used in the production of aluminium. Aluminium has accounted for 31% of total export value so far this year. Therefore it is likely that the price decline will have a considerable impact on the national economy. However, the effects of moderate fluctuations may be limited. Due to foreign ownership of the aluminium companies and the long gestation period of investment, variability in the profits of the aluminium companies may not have a strong impact on the domestic economy. The only direct link may be through receipts from electricity sales insofar as electricity prices are linked to aluminium prices. Icelandic electricity prices are generally independent of developments in world market oil prices, in contrast to what is usually the case in other aluminium-producing countries. Thus the competitive position of aluminium producers in Iceland is likely to have improved relative to producers in countries where the price of electricity is more closely linked to oil prices.

The overall effect of increased world market commodity prices on the Icelandic economy is ambiguous. On the one hand, the higher prices of fish products and aluminium have positive effects on export value and thereby on the profitability of export firms in these sectors. On the other hand, higher prices of food and oil products entail increased commodity costs for domestic food production, as well as higher transport costs. Also, rising commodity prices are likely to be reflected in rising domestic food prices in the period ahead.

1. Average foreign currency prices of fish products are weighted by the merchandise export basket.

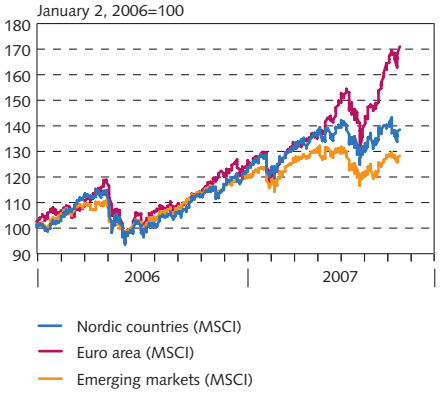
Chart 2
World market commodity prices
Weekly data January 7, 2000 - October 26, 2007



Source: Reuters EcoWin.

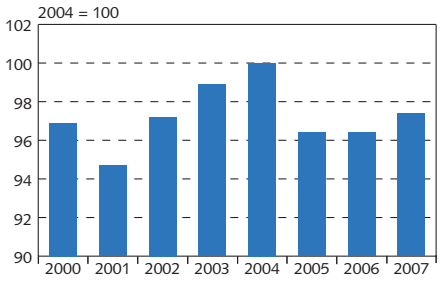
effect on economic growth in Asia and Europe has therefore receded, unless the US economy goes into a full-blown recession. However, the impact of the problems in the US housing market could spread even further worldwide as financial institutions generally manage their risk by diversifying their portfolio among different asset types and geographical areas, including US subprime asset–backed securities. The recent turbulence has bolstered demand for liquid assets and made banks reluctant to grant one another short-term credit. Central banks all over the world have taken steps to guarantee banks access to liquid assets.

Chart II-5
Equity prices in Europe and emerging markets
Daily data January 2, 2006 - October 26, 2007



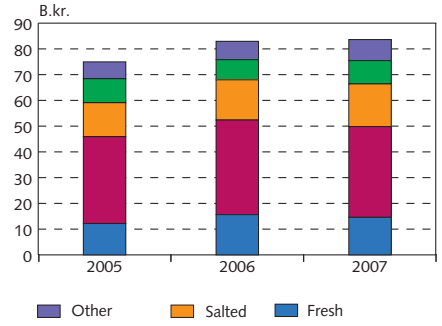
Source: Reuters EcoWin.

Chart II-6
Fish catch value 2000-2007[1]
At constant prices 2006



1. Annual data for 2000 - 2006, latest value for August 2007.
Source: Statistics Iceland.

Chart II-7
Marine export value 2005-2007
January - August



Equity prices plummeted in late summer, especially between mid-July and mid-August. The emerging market economies led the trend with a drop of about 15%, and the markets in the Nordic countries and the euro area fell by around 10%. By mid-September the European markets had recovered, and the weighted index for stocks in the main emerging markets stood higher than before the disturbance began (see Chart II-5).

Weaker demersal catches in 2007 and reduced TAC for cod

Measured at constant prices, the value of the fish catch rose slightly during the first eight months of the year, mostly due to a larger catch of pelagic species. The demersal catch, however, has dropped slightly, and the cod catch has been particularly poor this year. The rise in the total value of marine exports is largely due to price increases for most types of marine products. In August, the Ministry of Fisheries announced the total allowable catch (TAC) for the fishing year beginning on 1 September 2007. The TAC for cod was lowered by roughly 60 thousand tonnes, while for other demersal species it changed little from the previous year. The effects of this cut will emerge to some extent this year. The cod catch and the catch of other demersals has been weak in the first eight months of 2007, which resulted in larger unfished quotas at the beginning of this fishing year (September 2007-August 2008) than in previous years. The unused fishing quotas will most likely be used in the next few months and will offset the reduced TAC for cod to some extent in the coming calendar year.

Internal adjustment could partially offset cod quota cuts

Few sectors are as subject to fluctuation in external conditions as the fishing industry. Fishing companies are therefore accustomed to adapting to reductions in the catch – e.g. due to quota cuts – by making internal adjustments. In the early 1990s, for example, it proved necessary to cut cod quotas drastically. The drop in catch in those years was broadly equivalent to the reduction for the current fishing year. Between 1993 and 1995 the cod catch dropped by 60 thousand tonnes, although sizeable catches outside Icelandic waters moderated the contraction. Notably, despite the quota cuts and resulting contraction of the cod catch, the export revenue of marine products as calculated in foreign currency increased by 10% between 1992 and 1995. This was due to technological innovations, changes in the product mix, increased emphasis on harvesting outside Icelandic waters, rationalisation and mergers of fishery companies.

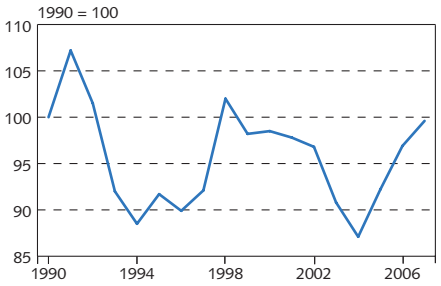
Past experience indicates that internal adjustment and strategic responses to external shocks will soften the effects of the quota cut on the economy. Fishing companies can react in various ways previously used; for example, through improvements in production management and changes in the product mix, both within and between branches of operation. In order to ease the impact of the quota cut, companies in the sector will doubtless use whatever scope they have to streamline, improve productivity, and use raw material more efficiently. In recent years the fishery sector has become market-oriented rather than production-driven. The operation of production has become

more responsive to the market than before in order to maximise sales revenues at any given time. Increased emphasis on international sales and marketing could offset the dampening effect of a smaller catch.

Marine product prices continue high

Demand for Icelandic marine products has been robust in recent years, and prices are high in a historical context. There are no marked changes since the July forecast, and the outlook is for an unchanged situation in the near future. As of the end of August, the year-on-year increase in marine products measured 4%. The high price of most demersal products could push consumers toward less expensive food options, but most domestic exporters and sellers believe there is still a fair amount of tolerance for price increases among foreign buyers, as the supply of comparable fish products has fallen off. The expectation of a smaller supply of cod from Iceland also supports high prices. Furthermore, the price of other foods, including raw materials for food production, has risen as well, thus increasing the competitiveness of the fishing industry. In the macroeconomic forecast, marine product prices are assumed to rise by 7% year-on-year in 2007 and by almost 5% in 2008, with further rises of 2% per year anticipated in 2009 and 2010.

Chart II-8
Export prices of marine products[1]
At constant prices 2007

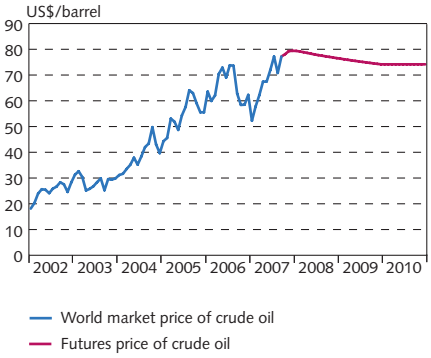


1. Deflated by the weighted CPI in main trading partner countries. Annual data for 1990-2006, latest value for August 2007.
Sources: Statistics Iceland, Central Bank of Iceland.

Oil prices remain high but a drop in aluminium prices is expected

Oil prices have been highly volatile for some time. Demand is soaring, especially in Asia, while the market is characterised by declining stocks and output limits in the OPEC countries. The geopolitical and military unrest in the Middle East and elsewhere has added to the uncertainty. On the other hand, high oil prices make it profitable to exploit more expensive oil reserves and various other energy sources. Analysts generally agree that prices will remain high but volatile in the next few years. The forecast published in this issue of *Monetary Bulletin* is based on present futures prices, which indicate a year-on-year oil price increase of 5% in 2007 and 10% in 2008.

Chart II-9
World market price of oil[1]
Monthly data January 2002 - December 2010



1. Forecast from end of September 2007.
Sources: Bloomberg, NYMEX, Reuters EcoWin.

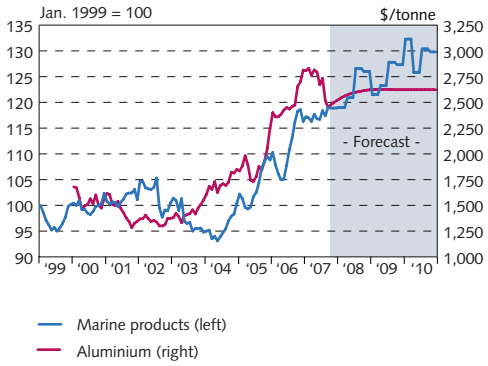
Table II-1 Exports and external conditions

	Current forecast[1]				*Change from previous forecast (percentage points)* [2]		
	2007	*2008*	*2009*	*2010*	*2007*	*2008*	*2009*
Exports of goods and services	4.2	14.1	5.0	5.2	-7.8	4.6	-0.5
Marine production for export	-5.0	-6.0	0.0	0.0	-6.0	0.0	0.0
Metals production for export	47.6	71.4	4.5	0.0	-14.3	10.2	3.5
Export prices of marine products[3]	7.0	4.7	2.0	2.0	0.0	1.0	-0.5
Aluminium prices in USD[4]	7.4	-2.1	1.4	-0.1	-2.6	1.4	4.4
Foreign fuel prices[5]	5.4	10.3	-3.5	-1.4	2.5	2.1	-2.5
Terms of trade for goods and services	-0.3	0.5	1.4	0.2	-0.2	-0.1	1.4
Global inflation[6]	2.1	2.0	2.0	2.0	0.3	0.1	0.1
Global GDP growth	2.5	2.3	2.2	2.4	-0.2	-0.1	-0.2
Foreign short-term interest rates[7]	4.3	4.0	4.1	4.3	-0.1	-0.6	-0.6

1. Percentage change year-on-year, except for interest rates. 2. Change since *Monetary Bulletin* 2007/2. 3. In foreign currency. 4. Based on aluminium futures. 5. In foreign currency, based on fuel futures. 6. *Consensus Forecasts*. 7. Based on weighted average forward interest rates of Iceland's main trading partner countries.

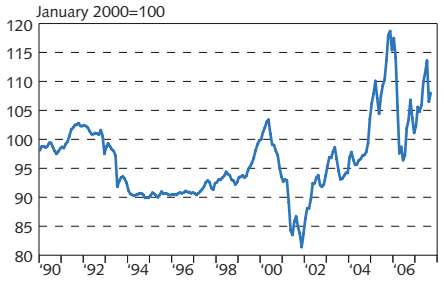
Sources: Bloomberg, Consensus Forecasts, IMF, New York Mercantile Exchange, Statistics Iceland, Central Bank of Iceland.

Chart II-10
Prices of marine exports and aluminium



Sources: London Metal Exchange, NYMEX, Statistics Iceland, Central Bank of Iceland.

Chart II-11
Real effective exchange rate of the króna
January 1990 - September 2007
Monthly data, based on relative consumer prices



Source: Central Bank of Iceland.

Aluminium prices dipped sharply following the tremors in the global financial markets in August and September, bottoming out in mid-September at 15% below June levels. Despite a partical recovery, prices in the beginning of October were still 10% below the January-September average. Production now exceeds demand, and global stocks have therefore increased. World production has grown by 12% in 2007, while consumption has risen by a more modest 9%. In addition, the ratio between stocks and production, which is considered a reliable indicator of price trends, has therefore risen. As before, the unrelenting growth in aluminium consumption in China and India is the main driver of demand. Futures prices indicate that average aluminium prices will be around 2% lower in 2008 and remain broadly unchanged in 2009.

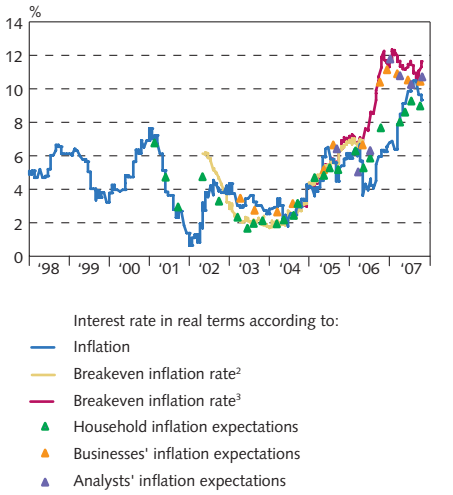
Real exchange rate far above long-term average

As of September, the monthly real exchange rate index in terms of relative consumer prices had risen by 5.6% since January. This increase far outstrips the nominal appreciation of the króna during the period, as domestic prices have risen more than those in Iceland's trading partner countries. In September the real exchange rate index was 12% above the average since 1990, when such measurements were introduced, and more than 9% higher than the average since the turn of the century. Most indicators imply that the real exchange rate is far above equilibrium at present. For further disussion of this topic, see Appendix 3.

III Financial conditions

The real policy rate has remained high since the publication of *Monetary Bulletin* in July. The publication of the policy rate path appears to have enhanced the transmission of monetary policy across the yield curve, and market expectations of the policy rate are more closely aligned with the Central Bank's communication than before this practice was initiated. Global financial conditions have deteriorated in the wake of the US mortgage market crisis. Domestic financial firms face tighter financing terms abroad after the global turmoil despite cuts in policy rates in the US and lower long-term bond yields in the US and Europe. Financial conditions of households and businesses have also deteriorated. Households have to a certain extent avoided higher interest rates through increased borrowing in foreign currencies, but interest rates on those loans may also rise in the period ahead.

Chart III-1
Central Bank policy interest rate in real terms[1]
Weekly data January 7, 1998 - October 30, 2007



1. The policy rate has been converted to annual yield. 2. Spread between RIKB 13 0517 and RIKS 15 1001. 3. Spread between RIKB 13 0517 and HFF150914. Household, business and analysts' inflation expectations are based on inflation one year ahead.
Source: Central Bank of Iceland.

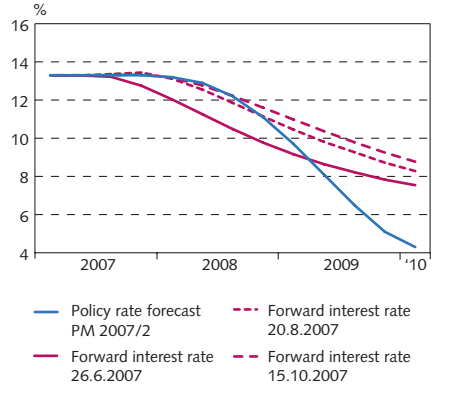
Fluctuations in the real policy rate concurrent with financial market instability

The real policy interest rate, as measured relative to past inflation and inflation expectations of firms has declined somewhat since the July issue of *Monetary Bulletin*. Inflation has been higher than anticipated by the Central Bank at the time, and inflation expectations increased following a weakening of the króna in the wake of the turbulence in financial markets around the world. Breakeven inflation on government bonds has recently been somewhat below its July level, however, following a temporary increase connected to the turmoil. These fluctuations are likely to reflect changes in the inflation risk premium on non-indexed bonds as well as a reassessment of investors' inflation expectations. Insofar as the decline in the breakeven inflation rate may reflect reduced inflation expectations, the real policy rate has been rising by this measure. The same is also true when the real policy rate is measured using household and market analysts' twelve-month inflation expectations. Various measures of inflation expectations do tend to fluctuate, however, making it difficult to arrive at firm conclusions with respect to short-term inflation expectations.

Expectations of a high policy rate for a longer period than previously

The increased transparency of monetary policy arising from publication of the Central Bank staff's policy rate forecast appears to have enhanced the transmission of monetary policy across the yield curve. After the initial publication last March of the Central Bank staff's assessment of likely developments in the policy rate, the expectations of market agents have been more closely aligned with the Central Bank's communication, as is discussed in Box III-2. Forward interest rates and most market analysts' forecasts suggest that they expect the policy rate to be kept high for a longer period than previously anticipated and that it will be eased considerably more gradually than suggested by the Central Bank's forecast. This probably reflects market expectations of new major aluminium investment projects, which are not assumed in the Central Bank's baseline forecast.

Chart III-2
Expected Central Bank policy rate based on forward interest rates and policy rate forecast in MB 2007/2



Source: Central Bank of Iceland.

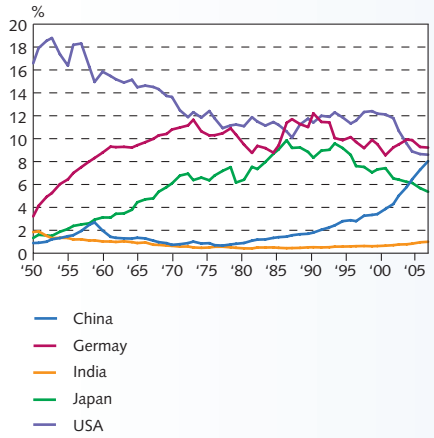
Box III-1

Globalisation and monetary policy in Iceland

Globalisation can be defined as the growing interdependence of national economies as reflected in the growth of international trade in goods and services, financial flows, and the movement of labour across borders.[1] The process of globalisation has accelerated over the last two decades as a result of economic and financial deregulation, political changes, advances in information technology and declining transaction costs. The effect on small open economies like Iceland may be particularly large. It has opened new export markets for Icelandic firms and the opportunity of expanding worldwide, but also brought greater competition to domestic product markets and tradable services. The opening of labour markets is of particular importance to volatile economies characterised by large fluctuations in investments.

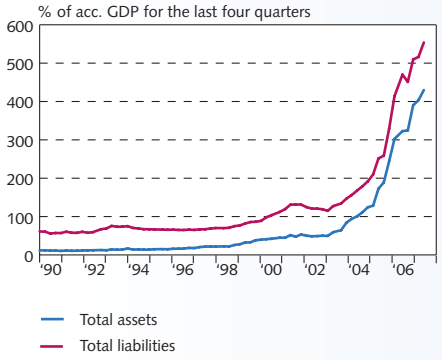
By making the economies of the world more interdependent, globalisation may have increased cross-border spill-over effects on domestic monetary policy. There are two strains of the debate on the effects of globalisation on monetary policy. One concerns the impact of globalisation on inflation, the other the implication of *financial globalisation* for the transmission mechanism of monetary policy and hence the ability of central banks to contain inflation. It is the latter aspect of globalisation that, in recent years, has probably had the most significant impact on the Icelandic economy. Financially, globalisation has played a part in the build-up of an enormous deficit on the current account in Iceland and many other countries and surpluses in others. Cross-border assets and liabilities have also multiplied as a result of the removal of capital controls. One should make a distinction, however, between globalisation as a long-term process and the recent conditions of abundant global liquidity, which are at least partly due to effects of monetary policy, for example in the US and China, and hence likely to be temporary.

Chart 1
Trade globalisation 1950-2006
Share of world exports



Source: WTO.

Chart 2
Financial globalisation
Iceland's foreign assets and liabilities. Q1/1990 - Q2/2007



Sources: Statistic Iceland, Central Bank of Iceland.

Globalisation and inflation dynamics

While one could easily argue on both theoretical and empirical grounds that globalisation has changed the transmission mechanism of monetary policy in Iceland in terms of being less effective and foreseeable in the long run, one should not jump to the conclusion that it is totally ineffective or without room for improvement. Domestic factors like the effect of liberalisation of Housing Finance Fund (HFF) lending rules and privatisation of the banks combined with cheap credit from abroad have contributed to intense competition in the mortgage market, leading to falling mortgage interest rates at a time when monetary policy was being tightened. This happened at a time when the economy was facing multiple demand shocks. Globalisation has contributed to some problems for monetary policy but has alleviated others. Domestic firms expanding abroad and foreign investments in Iceland have contributed to domestic labour shortages and fuelled excessive wage growth, but at the same time labour imports have alleviated wage pressure, though not enough to prevent a wage-inflation spiral.

Domestic financial market conditions

In the absence of currency risk, globalisation should in theory lead to the equalisation of long-term interest rates, but it does not fully do so due to exchange rate risk as well as other country specific risk factors. In fact, with a high degree of capital mobility, changes in the interest rate differential with abroad have a significant impact on the

1. For further reading, see the speeches by Charles Bean (2006), "Globalisation and inflation." Ben S. Bernanke (2007). "Globalization and monetary policy," and Svein Gjedrem (2006). "Globalisation and monetary policy in Norway" as well as the papers by Kenneth S. Rogoff (2006). "Impact of globalization on monetary policy" and Michael Woodford (2007). "Globalisation and monetary control."

exchange rate (a rise usually leads to a currency appreciation). To some extent this may make monetary policy more effective. However, the link between interest differential and the exchange rate is not very predictable. Exchange rate behaviour may also be affected by non-observable factors such as variable risk aversion, which at times can lead to heard-like behaviour in financial markets. That makes forward-looking monetary policy in a small open economy with a high degree of pass-through a challenging endeavour. Further, a global savings glut - which has fuelled global liquidity - could have made monetary policy more challenging, with a diminished ability of the policy rate to influence domestic real interest rates, especially longer-term rates.[2]

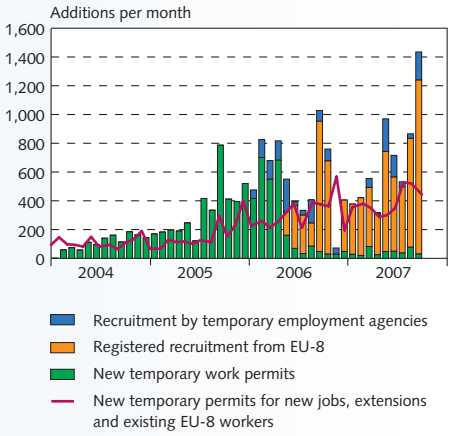
If inflation expectations are not sufficiently anchored, the interest rate differential required to bring inflation expectations back in line with target may induce large capital flows and hence exchange rate instability. It stresses that communication of monetary policy and the management of expectations is more crucial than ever.[3] In countries like New Zealand, which experience shocks of similar magnitude as Iceland, inflation has settled at low and stable levels, emphasising that achieving the target is possible as a result of high credibility of the monetary policy.

The conclusion is that globalisation has not interfered fundamentally with the ability of domestic monetary policy to control domestic inflation over the medium to long run, even in a small open economy like Iceland. However, it may have raised the cost of being seriously "out of sync" with the rest of the world by making the short term trade-off between inflation and output volatility less predictable. Although the interest rate channel of monetary policy may have been somewhat weakened as a result of abundant global liquidity, domestic obstacles that interfered with the pass-through of the policy rate into effective lending rates in the mortgage market have played an important role too. Before jumping to the conclusion that monetary policy has become totally ineffective as a result of globalisation, these imperfections should be addressed by policymakers.

2. Long-term (real) interest rates are increasingly co-moving across countries, a phenomenon also evident in other asset classes like equities and housing. Researchers affiliated with the Bank of International Settlements (BIS) have also reported results favourable to domestic inflation becoming increasingly influenced by a global output gap, and thus possibly weakening the near-term efficacy of domestic monetary policy. See Claudio Borio and Andrew Filardo (2007). "Globalisation and inflation: New cross-country evidence on the global determinants of domestic inflation," BIS working papers no 227. There is no consensus on the robustness of these results, however.

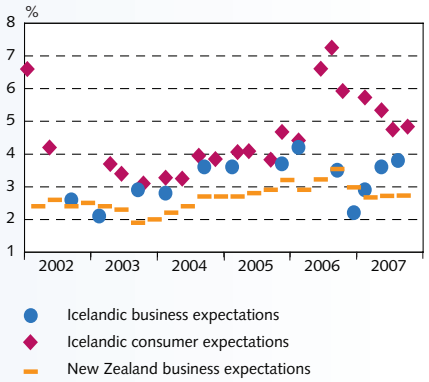
3. See Box III-2 on page 26 for an assessment of the effect of publishing the staff's projection of the policy rate path on the control of medium-term interest rates.

Chart 3
Labour globalisation
Foreign labour in Iceland



Source: Directorate of Labour.

Chart 4
Inflation expectations
in Iceland and New Zealand
Expectations according to surveys one year ahead

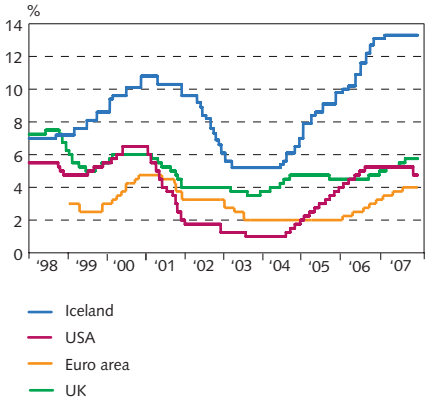


Sources: Central Bank of Iceland, Reserve Bank of New Zealand.

Global financial conditions have worsened following increased uncertainty in global financial markets ...

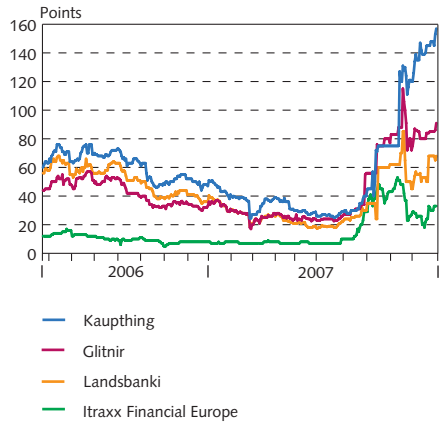
Overall, global financial conditions have worsened in the face of problems in the US mortgage market. A liquidity squeeze emerged, which central banks in many parts of the world have wanted to offset. The US Federal Reserve cut its discount rate and, shortly thereafter, its federal fund target rate by 0.5 percentage points, and the market expects the policy rate in the US to be lowered further in the near future. The actions taken by the US Federal Reserve appeared to calm the financial markets, at least for the time being. In early autumn, there was a widespread decline in equity prices, but most of the drop has reversed since. The decline was most pronounced in stock prices in emerging markets, but they are now above their levels prior to the

Chart III-3
Central Bank policy rate
Daily data January 1, 1998 - October 30, 2007



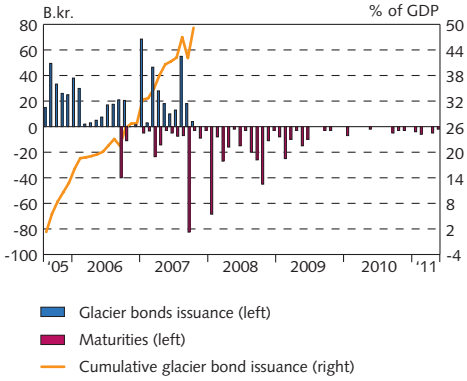
Sources: Reuters EcoWin, Central Bank of Iceland.

Chart III-4
CDSs of Icelandic banks
and Itraxx Financial Index
Daily data July 8, 2006 - October 30, 2007



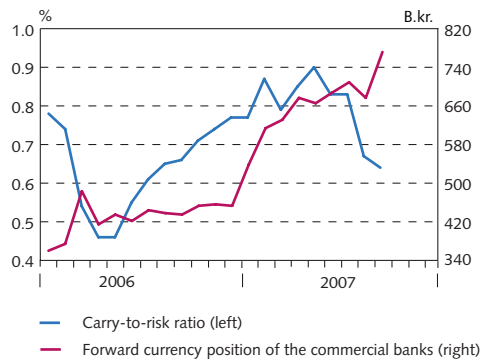
Sources: Bloomberg, Reuters.

Chart III-5
Króna Eurobond issuance[1]
Monthly data August 2005 - October 2007



1. Data until October 30, 2007 inclusive.
Sources: Reuters, Central Bank of Iceland.

Chart III-6
Carry to risk ratio[1] and forward currency
position of the commercial banks
Monthly data January 2006 - September 2007



1. Three-month interest rate differential divided by the implied volatility of an ISK/EUR option.
Sources: Bloomberg, Central Bank of Iceland.

onset of instability. Equity prices also declined considerably in Europe and the US. The impact of the uncertainty was more extensive on debt and interbank markets than on equity markets, with the differential between the interbank and government bond interest rates extended considerably. The risk premia have yet to revert to their previous levels, and it may suggest that investors assume that long-term investment risks have increased. The instability in global financial markets has also led to increased exchange rate volatility, which has affected the króna.

... and CDS spreads have increased

The CDS spreads of the Icelandic banks, as well as those of other foreign banks, rose in line with financial market turbulence. The increases have been largely reversed in the case of the foreign banks, but there has been no corresponding decline in the spreads for the Icelandic banks, whose spreads have increased even further. All the Icelandic banks have launched bond issues since the increase in the spreads, on terms less favourable than those obtained before the credit crisis. The domestic banks' risk premia on LIBOR rates have increased at the same time. The borrowing costs of domestic financial businesses abroad may therefore be expected to have increased despite expectations of declining US and European bond rates.

Reduced interest in carry trade reflects risk reassessment

Last September witnessed the largest redemption of glacier bonds to date. The effects on the króna were barely noticeable. There are probably two main reasons. First, the króna had declined considerably in August, which could suggest that the increase in global financial market instability may have led some carry trade investors to reduce their króna exposure earlier than otherwise would have been the case. Second, a large part of glacier bonds maturing in September may have been refinanced before maturity, as reflected in an increase of glacier bond issues in August. So far this year, the issue of foreign bonds in Icelandic krónas in excess of redemption has amounted to somewhat more than 100 b.kr., but their outstanding amount fell during the third quarter of the year.

It is conceivable that carry trade investors may now view domestic bonds as riskier than before the credit crisis and are therefore seeking shorter-term obligations that can be easily liquidated on shorter notice. An increase in collateralised loans from the Central Bank may also reflect a decision by some bond holders to take a position in the Icelandic króna through the money market.

Going forward, the global financial market turmoil could diminish interest in carry trade as investors reassess investment risk. The carry-to-risk ratio decreased in August and into September, which indicates that carry trade activity had become less attractive. After September, however, it has increased again concurrently with an appreciation of the króna. The forward foreign exchange position of the banks is an indicator of position-taking in the króna, and its development has followed the evolution of the carry-to-risk ratio (see Chart III-6). The forward position declined rapidly in early August but

increased toward the end of the month when the instability began to subside as is discussed further in the chapter Financial Markets and Central Bank Measures. Large adjustments in the carry-to-risk ratio have also coincided with increased turnover in the foreign exchange market.

Indexed mortgage rates have risen

Interest rates on new CPI-indexed mortgages have risen since the publication of the last issue of *Monetary Bulletin*. The mortgage rates of the Housing Financing Fund (HFF) have been considerably lower than suggested by yields on indexed bonds in the financial market, and the Fund has only issued the longest maturity of the housing bonds, which carry the lowest rates (see Chart III-7). This has dampened the effects of increases in the policy rate on the terms of indexed loans to households. Furthermore, the commercial banks have probably kept indexed mortgage rates lower because of competition from the HFF. The banks appear to find this increasingly difficult, however, as foreign and domestic financial conditions become less favourable. It is therefore becoming more difficult for the banks to fund their operations in the domestic market and remain competitive with the HFF on mortgage rates. In contrast, the HFF enjoys a government guarantee of its borrowings and can finance its operations by issuing bonds with very long maturities, thereby taking advantage of the fact that the real yield curve is sharply inverted. However, given the recent increases in HFF bond yields at the long end of the maturity spectrum, the HFF may soon be forced to raise its mortgage rates.

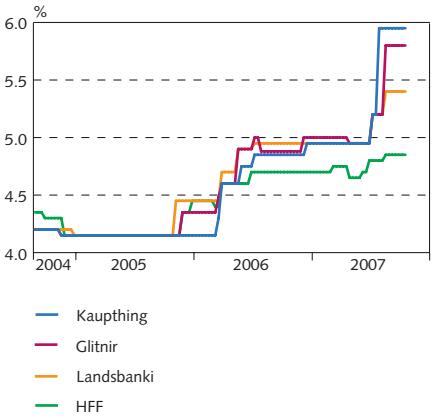
Increased foreign borrowing despite the strength of the króna

Foreign borrowing has recently increased sharply, and the share of foreign currency-denominated loans in total household borrowing has risen. Currency composition of such loans has also shifted notably in recent months, with the share of low-yielding rate currencies such as the Swiss franc and Japanese yen increasing. Such loans are subject to both interest and foreign currency risks. The share of foreign loans has continued to increase despite the króna's strength. The farther the króna's real exchange rate moves away from its equilibrium level, the greater the probability that the króna will weaken over the long term, thus increasing the risk of new foreign currency loans. Judging by exchange rate developments over the past couple of years, the debt service burden of foreign loans has probably been less than that of indexed domestic loans, but that situation could change quickly.

Credit supply appears to remain ample

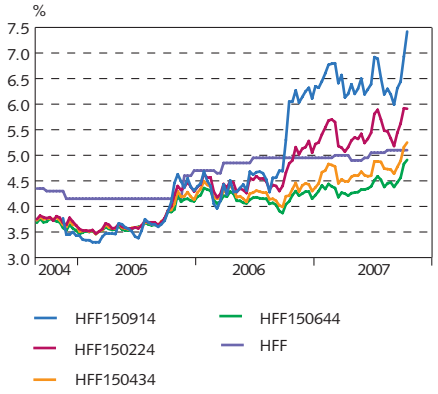
So far the credit supply appears to remain ample, in part because the competition of the banks with HFF has served to divert demand from indexed mortgage loans towards foreign currency-denominated loans. However, developments in foreign financial markets over the past three months suggest that the period of a virtually limitless global supply of cheap credit has come to an end. The Icelandic banks appear to be in a better position to deal with adverse external developments now than when they were faced with increases in their CDS spreads

Chart III-7
Interest rates on indexed housing loans[1]
September 1, 2004 - October 21, 2007



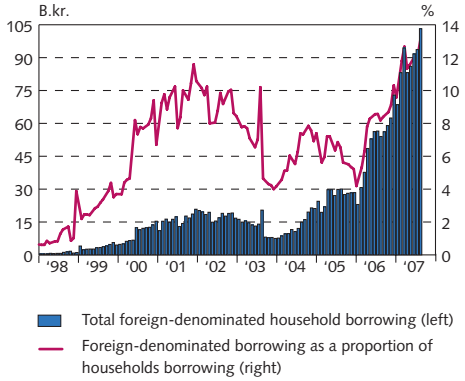
1. Interest with prepayment premium. For HFF, interest excluding prepayment premium prior until November 2005.
Sources: Housing Financing Fund, Central Bank of Iceland.

Chart III-8
HFF bond yields and HFF lending rates[1]
September 1, 2004 - October 21, 2007



1. Interest excluding prepayment premium.
Sources: Housing Financing Fund, Central Bank of Iceland.

Chart III-9
DMB Foreign currency-denominated borrowing by households and as a share of total household borrowing
Monthly data January 1998 - August 2007



Source: Central Bank of Iceland.

Box III-2

The impact of the publication of the Central Bank's policy rate path on forward interest rates and the effectiveness of monetary policy

In the March 2007 issue of *Monetary Bulletin*, the Central Bank of Iceland published for the first time a baseline forecast based on its own policy rate projection; i.e., a policy rate path that the Bank's staff considered compatible with the inflation target. In presenting such a forecast, the Bank followed the example set by the central banks in New Zealand, Norway, and Sweden. The change was a positive one: the impact on market expectations of future policy rate developments seems to have strengthened, thereby improving the transmission of monetary policy throughout the nominal and real yield curves.[1]

The main channel of monetary policy is through its impact on expectations

During the past decade, there has been a global trend towards greater transparency of monetary policy. The publication of policy rate paths can be viewed as a part of this trend, although to date only a few central banks have taken this step. This increase in transparency reflects the general consensus among central banks, that the more systematic and transparent monetary policy is, the more effective it will be. In this way, monetary policy exerts greater influence on the expectations of markets and the general public, thus increasing the effects it has on private decisions.

The key interest rate for expenditure decisions of households and businesses is the long-term interest rate rather than the policy rate; however, long-term rates are largely determined by expectations about the future developments of the policy rate. When inflation is above the target, it is not only a high policy rate today that matters for bringing inflation down again, but also (and even more so) expectations of a high rate in the future. This is especially important where long-term fixed-rate loans predominate, as they do in Iceland. In determining the terms of such loans, lenders must assess the likely interest rate developments over the maturity of the loan. If short-term interest rates are expected to be high for a sustained period, the rates offered on long-term loans must also be higher.

Publication of policy rate path strengthens the Central Bank's influence on expectations

By publishing its own policy rate path, the Central Bank can increase its influence on market expectations. Communication concerning the Bank's view of future monetary policy becomes much clearer. This should improve the understanding of current decisions and the factors behind the Bank's assessment of the inflation outlook, thus facilitating an independent evaluation of likely policy rate developments. It should also improve the quality of the Central Bank's forecasts and make them easier to interpret. All of this is conducive to improving the quality of the discussion on monetary policy, making it easier to understand, improving its credibility and, ultimately, enhancing its effectiveness. This benefit of greater transparency should be more in at times of uncertainty and turbulence, especially where inflation deviates significantly from target. In the past, the Central Bank of Iceland frequently published inflation forecasts with inflation far in excess of the target. This was because the policy rate path on which the forecast was based was not consistent with the inflation target, leading to forecasts that were likely to fuel inflation expectations. Such a formulation of inflation forecasts is therefore not conducive to effective anchoring of inflation expectations, and

1. A detailed discussion of the main arguments for and against policy rate path publication and a summary of other countries' experience with it can be found in Thorvardur Tjörvi Ólafsson (2007), "Publication of its own policy rate path boosts the effectiveness of central bank monetary policy", *Monetary Bulletin* 2007/1, pp. 71-86.

it reduces the effectiveness of monetary policy and undermines the credibility of the inflation target.

Forecasts of policy rates are always subject to considerable uncertainty

The economy will always be subject to unexpected shocks. The economic outlook is therefore uncertain, and new information requires constant reassessment of economic conditions. Policy rate forecasts are therefore just as uncertain as forecasts of other variables. This is also reflected in the changes in expectations concerning the future developments of the policy rate from implied forward rates (see Chart 1).

In the Central Bank's forecasts, this uncertainty is illustrated in the publication of confidence intervals surrounding the policy rate path with a so-called fan chart, which shows how uncertainty increases as the forecasting horizon lengthens. The shape of the fan also shows how the probability distribution can be asymmetric around the baseline path; for example, if it is considered likelier that the policy rate will exceed the baseline forecast than fall below it.

A systematic monetary policy does not represent an unconditional commitment by the Central Bank to adhere to a given policy rate path, but rather a commitment to a certain pattern of behaviour in setting the policy rate. This implies that the policy rate path will change in response to new information, but the responses should be systematic and predictable. The policy rate path represents the policy rate developments that Central Bank staff consider consistent with attaining the inflation target within the forecast horizon, given the information available at the time of the forecast. The probability distribution is an assessment of how unforeseen shocks could lead to changes in the interest rate path. Sensitivity analysis in the form of alternative scenarios is also included to demonstrate in greater detail the potential monetary policy responses to specific shocks.

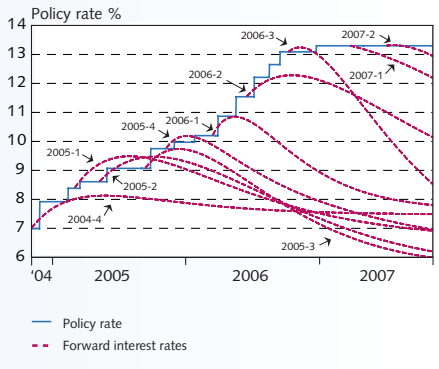
Market expectations concerning future policy rate developments are more in line with Central Bank communication ...

Although the Central Bank began publicising its own policy rate path only a short time ago, the impact of monetary policy on policy rate expectations for the next year or so has greatly improved. Previously, Central Bank policy only had a weak impact on long-term rates, despite sizeable increases in the policy rate. An important reason for this appears to have been a lack of credibility of the Bank's interest rate communication. The market seemed to expect the policy rate to fall rapidly even though the Bank emphasised that a high rate would be maintained for an extended period. This was reflected in a sharply inverted yield curve (see Chart 1). It represented a serious credibility problem for the Central Bank and had a detrimental impact on the effectiveness of monetary policy.

As can be seen in Charts 2 and 3, the publication of the Central Bank's policy rate path has brought expectations more into line with the Bank's communication concerning the need to keep interest rates high over a protracted period. Forward interest rates in March 2007 indicate that market agents expected interest rates to fall in late March, around the time *Monetary Bulletin* 2007/1 was published, and to continue falling rather rapidly thereafter. Following the Central Bank's publication of the policy rate path, market expectations rose gradually towards the published path. The effect on market expectations became even more pronounced after the policy rate path announcement in the July 2007 issue of *Monetary Bulletin*. At that time, the Bank announced that the easing of monetary policy announced in March would likely be delayed by six months because of deterioration in the inflation outlook. Market expectations adjusted

Chart 1

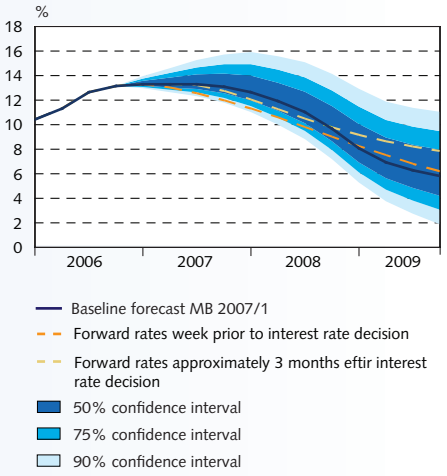
Policy rate and forward interest rates in Monetary Bulletin 2004/4 - 2007/2



Source: Central Bank of Iceland.

Chart 2

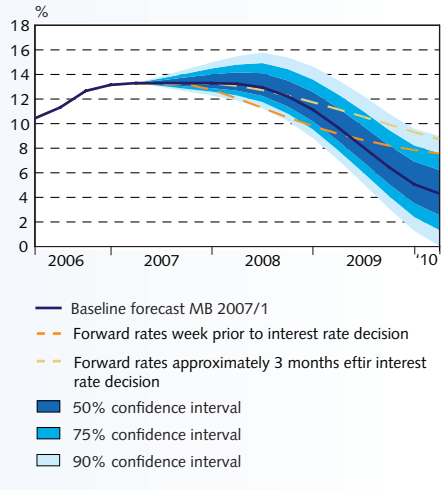
Policy rate path from MB 2007/1 and expected policy rate from forward rates



Source: Central Bank of Iceland.

Chart 3

Policy rate path from MB 2007/1 and expected policy rate from forward rates



Source: Central Bank of Iceland.

gradually to the revised policy rate path and seem more consistent with the Bank's published path through 2008, whereupon the Central Bank and the market's expectations begin to diverge.[2] This divergence should not come as a surprise, as the scope for different assessments of the economic outlook increases as the forecast horizon lengthens. It is likely, for example, that long-term yields reflect expectations of continuing investment in aluminium manufacturing facilities and power plants, which were not assumed in the Central Bank's baseline forecast in July. Projects of this sort would inevitably mean a more gradual easing of policy than assumed in the baseline forecast. It is also possible that market agents expect the króna to depreciate more sharply than the Central Bank has forecast, which would also call for a higher policy rate than is set forth in the baseline forecast.

... and transmission to other interest rates has improved

As can be seen in Table 1, the transmission of policy rate changes or communication to other interest rates seems to have strengthened since the Central Bank began publishing its own policy rate path. Though monetary policy is only one of the factors influencing market interest and general lending rates, it would appear that the influence across the entire nominal and real yield curve has strengthened. As is mentioned above, long-term nominal and real rates have frequently fallen despite policy rate hikes, but recently they have risen even though the policy rate has held steady for some time. An important reason for this is the expectation that the policy rate will continue to be high over the medium term, although changes in the international financial markets have also been a contributing factor.[3]

2. A corresponding change has occurred in financial analysts' expectations as reported in the survey results in each issue of *Monetary Bulletin*.

3. As can be seen, long-term nominal and real rates rose substantially following the publication of the July issue of *Monetary Bulletin*, despite falling long-term interest rates in the global markets. However, risk prema of domestic commercial banks rose as well.

Table 1 Interest rate changes in the wake of Central Bank policy rate decisions (percentage points)[1]

	PM 2006/1	*PM 2006/2*	*PM 2006/3*	*PM 2007/1*	*PM 2007/2*
Central Bank policy rate	0.75	0.75	0.00	0.00	0.00
3 month interbank rate	0.86	0.19	0.14	0.32	0.45
1 year bond rate (RIKB 08 0613)	-0.03	-0.04	0.03	0.73	0.85
6 year bonds rate (RIKB 13 0517)	0.74	-0.30	0.45	0.27	0.59
7 year indexed housing bond rate (HFF 1509 14)	-0.12	-0.05	0.09	-0.03	0.20
37 year indexed housing bond rate (HFF 1506 44)	0.08	-0.05	0.03	0.04	0.22
Indexed mortgage rates[2]	0.22	0.04	0.00	0.00	0.50
CDS spreads for domestic commercial banks	0.02	0.03	0.04	-0.06	0.19
Euro area 3 month interbank rates	0.05	0.14	0.07	0.10	0.13
Euro area 10 year bond rates	0.19	-0.23	-0.04	0.12	-0.28

1. Changes from the day before the policy rate decision until one month afterward. A longer period of time cannot be examined, as that would overlap with interest rate decisions between publications of *Monetary Bulletin*. 2. The average of the lowest mortgage rates offered by Glitnir, Kaupthing, and Landsbanki. 3. In interpreting the effects of the March 2007 decision, it is important to keep in mind that value-added taxes were cut in March. This resulted in a temporary dip in yields on indexed bonds, which temporarily obstructed the transmission of the policy rate to long-term real rates and terms of long-term indexed loans.

Sources: Central Bank of Iceland, Bloomberg, Reuters EcoWin.

in late 2005 and early 2006, but reassessment of credit market risk by investors may nevertheless entail reduced credit supply in the period ahead.

Increase in outstanding loans mainly due to foreign currency-denominated loans

Growth of credit system lending seems to have increased again in Q2/2007, after a substantial decline in Q1/2007. The annual growth rate remains very high. Growth in indexed lending by deposit institutions has clearly declined and has not been as low, both to households and to businesses, since the entry of the banks into the mortgage market. Growth in overdraft lending has also slowed down; therefore, increased credit growth has mainly reflected increases in foreign currency-denominated loans. It will become clearer in the months ahead whether the external borrowing terms available to the banks will worsen permanently, thereby pushing up interest rates on foreign currency loans even further.

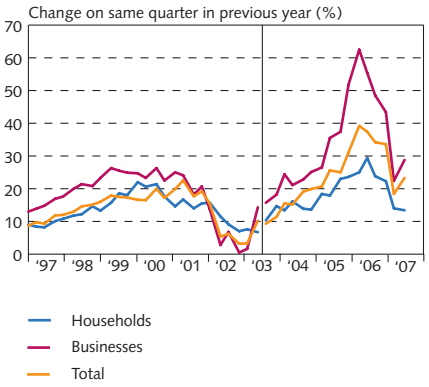
Corporate bond issuance has increased, thus strengthening the effects of monetary policy

Businesses have increasingly resorted to bond issues in the domestic market to finance their operations. Corporate bond issuance has approximately doubled from last year, and demand for these bonds appears to be strong. The terms of such financing of business operations are influenced by the Central Bank's policy rate; therefore, this development gives reason to believe that corporate financing will be increasingly influenced by the Bank's tight monetary stance. On the other hand, overdraft loans by businesses have been declining, and it appears that they are increasingly seeking long-term non-indexed loans at somewhat lower interest rates.

Substantial growth in money supply

The annual growth in the money supply has been significant recently, with growth concentrated where liquidity is greatest. It stems primarily from increases in current accounts, foreign currency accounts, and sight deposits. The hefty growth in the money supply gives an indication of the large amount of money in circulation, but the reasons for it have not been fully explained.

Chart III-10
Quarterly credit system lending growth[1]
Q1/1997 - Q2/2007

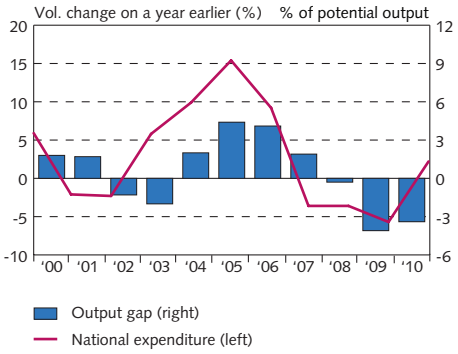


1. Due to a reclassification of lending, after Sept. 2003 data by sector are not comparable with earlier data.
Source: Central Bank of Iceland.

IV Domestic demand and production

The baseline forecast presents economic developments assuming a policy rate path that the Central Bank's staff deem sufficient to bring inflation close to 2.5% within an acceptable time frame and stabilise it near the inflation target thereafter. The following forecast reflects the fact that the economy was running at a higher than anticipated pace in 2006 and 2007. In 2006 it appeared likely that growth would slow fairly rapidly, and national accounts data for Q1/2007 seemed to support this projection. The most recent *Monetary Bulletin* emphasised, however, that there were various indications of more vigorous economic activity than preliminary national accounts estimates implied. This has now been confirmed. The output gap is wider than in previous forecasts. In the assessment of the Bank's staff, the policy rate will need to rise somewhat, and the downward trend must begin one quarter later than was forecast in July.[1] This will not have a major impact on GDP growth in 2007 and 2008, but it will cause a considerable contraction of domestic demand and a negative output gap in 2009, which will offset the effect of the depreciation of the króna.

Chart IV-1
National expenditure and output gap 2000-2010[1]



1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

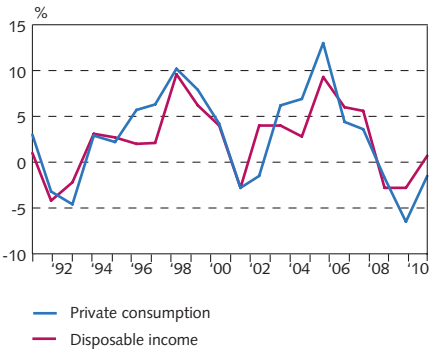
Private consumption growth contracted rapidly following last year's unrest but has regained impetus

Since 2003, growth in private consumption has been propelled by rapid growth in disposable income and further facilitated by an easier access to credit (see Chart IV-2 and further discussion in Box IV-1). Persistently low unemployment has also made households less reluctant to accumulate debt, the rise of which outstripped the increase in disposable income in 2003-2005.[2]

Last year private consumption grew more slowly than disposable income. Credit supply decreased and the lending terms of households and businesses worsened, reflected particularly in interest rates on the banks' indexed housing loans. The transformation, together with the weakening of the króna, resulted in a substantial temporary slowing in private consumption growth in late 2006 and early 2007.

The slow-down was short-lived. Strong disposable income growth last year and this year, as a result of high wage increases plus tax cuts, is the principal explanation. Higher ceilings on HFF loans, introduced prior to national elections, and increased emphasis by the

Chart IV-2
Private consumption and disposable income 1991-2010[1]



1. Central Bank baseline forecast 2007-2010. Disposable income is the Central Bank's estimate.
Sources: Statistics Iceland, Central Bank of Iceland.

1. See Appendix 1 on p. 62 for further details of the forecast. Principal changes to the macroeconomic forecast since the publication of *Monetary Bulletin* 2007/2 are discussed in Box IV-3. The main changes to the inflation forecast are covered in Box IX-1.
2. The discussion in the main text of this section is based on the Central Bank staffs's assessment of developments in disposable income, and not on the figures recently published by Statistics Iceland. The divergence between the two sets of figures is largely due to differing treatment of property income and expenditure. In the Central Bank's figures, changes in the value of equity holdings are treated as changes in wealth but not as changes in disposable income. The Bank has begun to revise its figures on disposable income to reflect the new data from Statistics Iceland. Further information on the Central Bank's estimate of disposable income can be found in Ásgeir Daníelsson, Lúdvík Elíasson, Magnús F. Gudmundsson, Björn A. Hauksson, Ragnhildur Jónsdóttir, Thorvardur T. Ólafsson, and Thórarinn G. Pétursson (2006), "QMM: A quarterly macroeconomic model of the Icelandic economy", Central Bank of Iceland, *Working Papers*, no. 32.

banks on foreign currency-denominated loans also revitalised consumer expectations (see Chart IV-3). The impact of higher purchasing power and renewed optimism appeared first in the real estate market, which picked up once more around the beginning of 2007. Purchases of automobiles and other consumer durables also surged after declining in Q1. A major cut in the TAC for cod, together with foreign financial market turmoil, has as yet made little impact on public expectations of future income and the employment outlook. There are indications that growth in private consumption has accelerated over the course of the year and turnover data suggest strong Q3 growth (see Chart IV-5).

Private consumption will contract in 2008 …

Growth in private consumption is expected to peak during the latter half of 2007 then slow rapidly next year. Consumption will begin to contract around mid-year 2008. The contraction is expected to increase into the latter half of 2009, after which signs of improvement will appear. The speed of the adjustment is difficult to assess with any certainty. The contraction of private consumption is mostly caused by a fall in disposable income, increasing debt service, higher interest rates and lower housing prices. Households still appear to expect disposable income to continue to rise, housing prices to remain high and a plentiful supply of credit at affordable rates to continue. According to the forecast, however, such expectations could prove illusory.

… due to the stronger impact of monetary policy, tighter foreign financial conditions, …

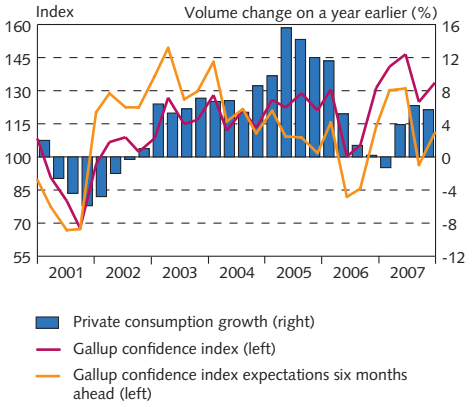
As described in Chapter III (see also Box III-2), the increased transparency of monetary policy appears to have raised the yield on both non-indexed and indexed bonds. Tighter credit conditions on foreign financial markets has also supported domestic monetary policy. Consequently, household debt service will likely increase in coming years, while at the same time rising housing prices will level off or begin to drop. These developments could result in substantially tighter access to credit. Tighter financial conditions should in particular affect the private consumption of households whose debt has increased the most in recent years. The indirect impact, through the effect on disposable income, is the most significant, however.

… a decline in disposable income …

In recent years, growth of disposable income has far outstripped underlying growth in productivity and potential output. This situation is not likely to last long. The large current account deficit and deteriorating net international investment position indicate that, eventually, real disposable income will have to contract temporarily. Experience of previous strong upswings in private consumption suggests a temporary contraction of real disposable income, to be followed by a contraction in private consumption.

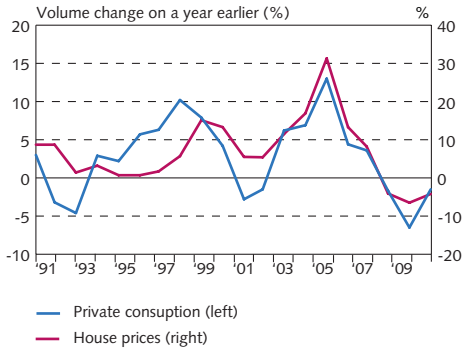
In the baseline forecast, it is assumed that disposable income growth will halt and decline temporarily. Growth will remain positive,

Chart IV-3
Private consumption and consumer confidence[1]
Q1/2001 - Q4/2007



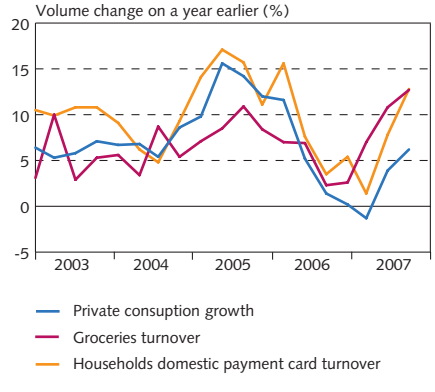
1. Value for private consumption growth in Q3 and Q4 2007 is Central Bank forecast. Value of index Q4/2007 is for October.
Sources: Capacent Gallup, Statistics Iceland, Central Bank of Iceland.

Chart IV-4
Private consumption and house prices
1991-2010[1]



1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-5
Private consumption, groceries and payment card turnover
Q1/2003 - Q3/2007[1]



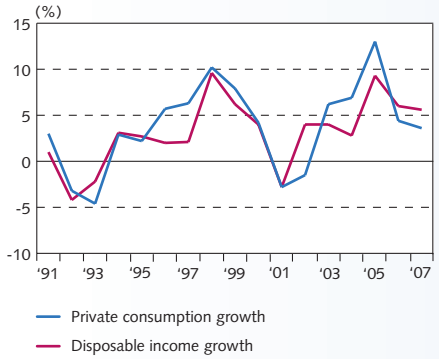
1. Private consumption growth in Q3/2007 is Central Bank forecast.
Sources: Statistics Iceland, Federation of trade and services, Central Bank of Iceland.

Box IV-1

The effects of monetary policy on private consumption

Chart 1

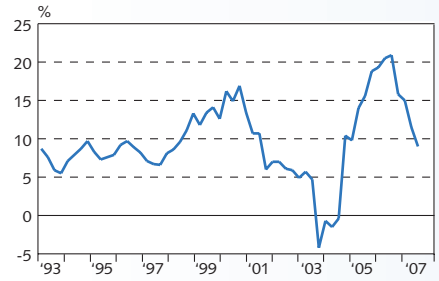
Private consumption
and disposable income 1991-2007[1]



1. Central Bank baseline forecast 2007. Disposable income is the Central Bank's estimate.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 2

Household debt Q1/1993 - Q2/2007



Source: Central Bank of Iceland.

It is sometimes suggested that the effects of the Central Bank's monetary policy on private consumption are negligible, as reflected, for example, in rapid private consumption growth in recent years despite tight monetary policy. However, those who consider monetary policy to be completely ineffective may be underestimating the short-term effects of structural changes in the economy on economic growth and overestimating their long-term impact on the effectiveness of monetary policy. The effects of the structural changes in recent years on disposable income and the households access to credit are considered in this Box. These are the two main driving forces of private consumption growth since 2003.

Structural changes contributed to rapid growth of disposable income ...

Real disposable income has increased rapidly in recent years despite the high rate of inflation. This increase may be attributed to major investment projects, the interaction between privatisation of the banks and reorganisation of the mortgage market, and tax cuts, at a time when the global supply of credit was unusually ample and international interest rates low. These conditions also made it possible for businesses to expand rapidly abroad. The result has been a large increase in wages, lower mortgage rates, and longer maturity of loans to households. The cut in income and consumption taxes reinforced the growth of disposable income.

The above conditions also contributed to an unprecedented increase in asset prices. It enabled households to increase their consumption by "collateralising" expected future income to a greater extent than before, in addition to increasing spending from substantially higher current income. The interaction of easier access to credit and expectations of a continuing growth of disposable income explains why private consumption increased beyond the growth of disposable income during 2003-2005. A major part of the increase during this period appears to have been driven by increased debt accumulation rather than by rising income. This was also the case when private consumption rose rapidly in the middle of the last decade (see Charts 1 and 2).

... and worked against the effects of monetary policy on private consumption ...

The fundamental changes noted above have offset the effects of monetary policy on private consumption in four different ways. First they contributed directly to increased growth of disposable income, as already noted. Second, they delayed the transmission of the effects of a higher policy interest rate across the yield curve relative to what would have been expected under normal circumstances. Interest rates on mortgage loans were on a declining trend for 1½ years after the Central Bank began to raise the policy interest rate and loan maturities were extended. Third, the structural effects contributed to easier access to credit, despite the rises in the policy rate by fuelling higher asset prices and thereby increasing the value of households' collateral. Finally, they increased the supply of foreign currency-denominated loans at low interest rates, thereby enhancing the expansionary effects of favourable circumstances in global financial markets.

... but the increase in disposable income and credit access will return to normal and the effects of monetary policy on private consumption will resurface

The above analysis suggests that the reason why the effects of the policy interest rate on private consumption appear negligible at first

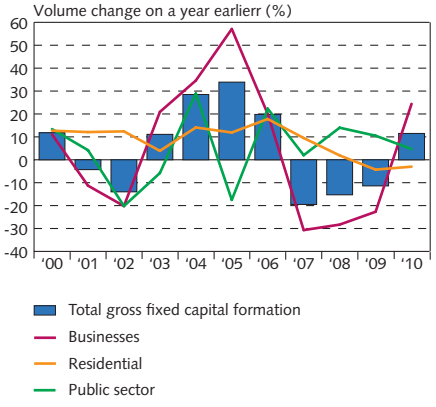
sight lies first and foremost in the combined magnitude of a set of shocks initiated by the government, which enhanced demand and thus offset the impact of monetary policy on private consumption, concurrently with greatly expanded access to credit and highly favourable conditions in global financial markets. However, structural changes of the magnitude observed in recent years are the exception rather than the rule, and their effects will gradually recede. Recently, long-term interest rates have risen and, in due course, housing prices will stop rising. The ability of households to increase private consumption beyond the growth of real disposable income through additional borrowing will then be curtailed. The effects of monetary policy on private consumption will become more apparent at this stage.

While it has been emphasised above that ultimately the policy rate will ulitimately affect private consumption and that the experience of the past few years is not unequivocal evidence to the contrary, there are still reasons to expect that the lag in the transmission mechanism will be longer and less predictable in Iceland than in most other countries. This is so for two main reasons. First, a substantial part of household debt is long-term, fixed real rate mortgages. As the Housing Finance Fund mainly issues bonds that span several business cycles to finance these mortgages, the effects of monetary policy on such long-term bonds will be less than on short-term bonds. Nevertheless, the effects appear not to be entirely absent, as indicated by the recent rise in interest rates on indexed long-term bonds (although circumstances in foreign financial markets may also have had an effect here). The policy rate also has strong effects on the debt service burden of short-term debt, even though it is a small part of household debt. As the supply of long-term credit diminishes, the weight of this transmission channel will increase.

Second, considering that an increase in the policy rate entails an appreciation of the króna's exchange rate, it may be argued that it has positive effects on the balance sheets and disposable income of households. The relative prices of imported durable consumer goods are temporarily reduced, thereby encouraging purchases of cars and other durable consumer goods that are usually credit financed. Exchange rate depreciation has the opposite effect. The positive effects on household balance sheets will be stronger the greater the share of their debt, which is either denominated in foreign currency or indexed to domestic prices. Since the exchange rate effects of an increase in the policy rate tend to be temporary in nature, the same is true of the effects on balance sheets. It is also important when considering recent developments that, in addition to the high exchange rate of the króna, asset price increases and their effects on households' balance sheet and access to credit, as explained above, have also encouraged purchases of durable consumption goods with borrowed funds.

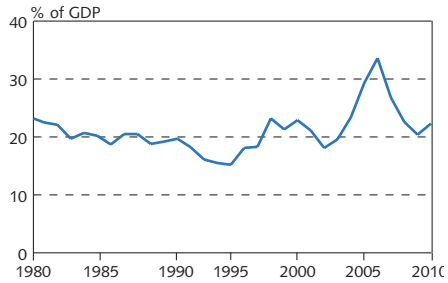
The weights that are attached to these opposite exchange rate effects on household balance sheets are partly related to the impact a strong currency has on household expectations about future exchange rate movements. If exchange rate changes are expected to be reversed, with associated effects on inflation and thereby on outstanding indexed debt and disposable income, this should serve to make rational individuals averse to additional borrowing. However, the expectations of individuals may not be fully rational. If some degree of herd mentality is present, this transmission channel may be weakened. A transparent monetary policy can help by increasing the impact on private expectations. Accordingly, the Central Bank of Iceland has substantially increased its transparency.

Chart IV-6
Gross fixed capital formation
and its main segments 2000-2010[1]



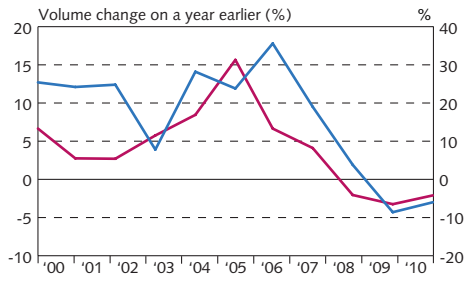
1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-7
Gross fixed capital formation
as % of GDP 1980-2010[1]



1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-8
Residential investment
and house prices 2000-2010[1]



1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

however, until mid-2008. The contraction of disposable income forecast in 2008 is on the same order of magnitude as the one in 2001, will last for two years and recover in 2010. The contraction should nevertheless not be as sharp as in 1992 and 1993.

... and a reversal of the housing market trend

Future developments on the housing market will play an important role in the adjustment of domestic demand to equilibrium. The systematic changes that took place in 2004 are at the root of the housing upswing. Lower interest rates, abundant supply of credit, and higher disposable income contributed to major rises in housing prices. The surge in housing prices of recent years reflects a global trend, probably fuelled by an unusually long period of low global interest rates. This situation is changing in the wake of the US housing market slump. Housing prices have already begun to slide in many major cities in the UK, the US, and the Nordic countries. High employment and substantial wage increases, however, support housing prices in Iceland and elsewhere. Credit terms are deteriorating, however; thus it appears only a question of time before the housing market trend reverses in Iceland. While a correction is needed, this could take various forms. The large number of units under construction increases the likelihood of housing price deflation. US developments, however, indicate that the correction will be most pronounced in new construction. In the forecast housing prices fall in nominal terms in 2008, although somewhat less during the forecast period than was projected in July. The change in the forecast draws from experience from abroad. In recent years there has been a close correlation between private consumption and housing prices, which is expected to continue (see Chart IV-4).

Business investment apart from power-intensive industry has picked up ...

Reduced investment in the aluminium and power sectors has a large impact on business investment and national expenditure. The resulting drop in imports of investment goods causes a contraction in total imports in 2007. Business investment has contracted more slowly than anticipated, however, as other investment than aluminium investment appears to have picked up steam. Large-scale retail and commercial construction, for instance, appears to have gained momentum and is likely to continue to have an impact into next year. The results of sentiment surveys point in the same direction.

Capacent Gallup surveyed the assessment of the current situation and future outlook at Iceland's largest companies from 24 August to 16 September 2007. Sentiment was in general somewhat less buoyant than previously, but it should be pointed out that the survey was conducted when media coverage of financial market turmoil was at its peak. Views differ somewhat depending upon the sector. More than half of respondents in the construction industry were of the view, for example, that the situation would be less favourable in one year's time, and one-third of financial companies expressed the same opinion. Despite some lowering of expectations concerning the economic situation in general, only 11% of managers expected

Box IV-2

Further investment in aluminium and power plants?

The baseline forecast published in this issue of *Monetary Bulletin* is not based on the assumption that further investment in aluminium smelter and power plant construction will take place over the forecast horizon, which extends until 2010. In general, the Central Bank has not included such development plans in the baseline forecast until they are virtually a certainty and the scope and time frame have been decided. The awareness that such plans are in existence can affect the risk profile for the inflation forecast, however. It is therefore appropriate at this point in time to discuss briefly the aluminium smelter and power plant construction projects that could begin in coming years and could make an impact during the forecast horizon.

There are plans or ideas to build three aluminium smelters in the next few years. The preparation for the Century Aluminum smelter (Norðurál-Helguvík sf.) at Helguvík, near Keflavík, is farthest along. New ideas concerning an expansion of the Alcan smelter in Straumsvík or the construction of a new Alcan facility are under scrutiny in the wake of the narrow defeat of the expansion proposal in the referendum held recently in Hafnarfjörður, and the future of the project is uncertain. Preparatory work on a new smelter at Bakki, near Húsavík, is also in the early stages, and it appears unlikely that construction will begin during the next few years. If that project goes ahead, it will fall outside the forecast horizon for this issue of *Monetary Bulletin*. The same applies to Alcan's plans for expansion or new construction.

In the first week of October, the National Planning Agency published its opinion on the environmental impact assessment for the Helguvík aluminium smelter. In that opinion, the NPA states that the proposed aluminium smelter will not have any significantly negative externalities or cause irrevocable damage to environment or society. However, the Agency expresses reservations concerning the environmental impact of related construction, such as that stemming from energy procurement, transmission lines, and harbour construction. The publication of this generally positive opinion has considerably enhanced the likelihood that the project will go forward, despite the stated reservations. The municipalities involved have yet to issue the required development and construction permits, however, and the proposed operations are dependent upon the granting of greenhouse gas emissions allocations. Energy procurement is guaranteed, at least in part, as Norðurál-Helguvík sf. has concluded a binding energy sales agreement with Suðurnes Regional Heating (Hitaveita Suðurnesja) and Reykjavík Energy (Orkuveita Reykjavíkur) for the delivery of sufficient energy to start up the first phase of the smelter. It is therefore likely that the Helguvík aluminium smelter will indeed be built. The project proposal allows for the construction, in two phases, of a smelter with annual production capacity of 250,000 mtpy. Construction of the first phase, 150,000 mtpy, is scheduled for mid-2008. Construction related to energy procurement could begin at roughly the same time. The estimated construction time for the first phase is approximately three years, but production could begin in mid-2010. The cost of smelter construction and energy procurement is roughly estimated at around 70-75 b.kr. While most of the cost of the first phase will be incurred in 2009 and 2010, it is expected that most or all of phase two construction will fall outside the forecast horizon.

The July 2007 issue of *Monetary Bulletin* presented an alternative scenario that takes into account the effects of the Helguvík smelter. The premises presented in that scenario have changed little since that time; thus the conclusions drawn there should give a fair indication of the possible impact of the Helguvík smelter on monetary policy in the event that the project proceeds.

domestic demand for their own products or services to drop in the next six months; half of them expected it to increase. Around 35% of respondents expected to step up investment this year.

… residential investment growth has exceeded estimates …

As discussed in Box IV-3, the growth of residential investment in 2007 is forecast to be stronger than in previous forecasts, around 10%. Residential investment growth is forecast to continue next year, followed by a decline in 2009 and 2010. The contraction, however, will be less pronounced than forecast earlier, as housing prices have been more buoyant than anticipated and the adjustment in domestic demand slower in coming.

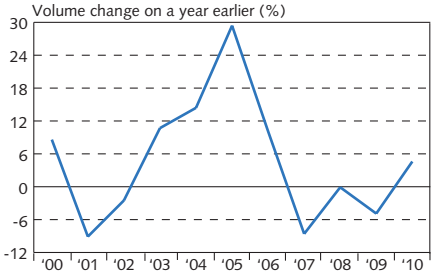
… and large-scale near-term increases in public investment have been announced following 22% growth last year

In 2006 the national government postponed public works and investments to restrain economic overexpansion and make its contribution to combating inflation. Preliminary estimates by Statistics Iceland in March 2007 indicated that public investment had been restrained last year and had grown by just under 1%. According to the revised preliminary figures, however, public investment increased by one-fifth in 2006, when special restraint was supposed to have been practiced. The growth was driven by municipal investment in an election year. Public consumption growth in 2006 was also revised upwards by one percentage point, due to considerably higher municipal consumption. Much higher public investment is planned for the next two years, in part as mitigating measures to offset cod TAC cuts and contraction of investment in the aluminium and energy sectors.

Low GDP growth in 2008 and contraction in 2009, followed by renewed growth in 2010

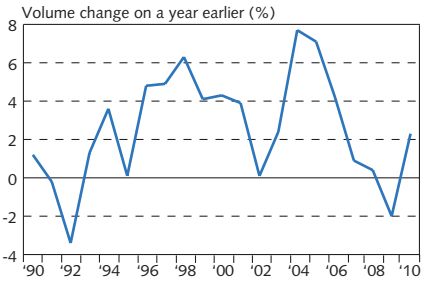
Despite a drop in domestic demand, GDP growth of close to 1% is forecast this year. If this forecast proves correct, 2007 will be the fifteenth year in a row with positive GDP growth in Iceland (according to the latest figures from Statistics Iceland, GDP growth in 2002 was unchanged rather than contracting from the previous year). As a result of the less positive outlook for exports this year (as discussed in detail in Box IV-3 and Chapter II), the GDP forecast for 2007 is this low despite a smaller contraction in domestic demand than predicted in the July forecast. GDP growth of 0.5% is forecast for 2008, when aluminium exports finally come on line in full force, followed by a 2% contraction in GDP in 2009. Although this is a sizeable contraction, it should be viewed in the context of almost two decades of continuous GDP growth. A rapid decrease in the policy rate to below equilibrium levels will enable monetary policy to boost the economy. GDP growth is forecast at over 2% in 2010.

Chart IV-9
Import 2000-2010[1]



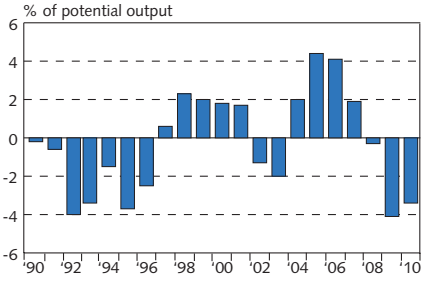
1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-10
Economic growth 2000-2010[1]



1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-11
Output gap 1990-2010[1]



1. Central Bank baseline forecast 2007-2010.
Source: Central Bank of Iceland.

Box IV-3

Changes in the macroeconomic forecast since *Monetary Bulletin* 2007/2

The success of monetary policy depends to a large extent on the general public's perceiving its objectives as clear and its inplementation as systematic, transparent and credible. The macroeconomic and inflation forecasts published in *Monetary Bulletin* play an important role in this context. Analyses of economic developments and outlook are modified as new data become available. Assessment of the appropriate policy rate path is therefore subject to change. Ensuring transparent implementation of monetary policy requires clear explanation of the impact of new data on probable economic and monetary developments. This Box provides an account of the principal changes made to the macroeconomic forecast since the publication of *Monetary Bulletin* 2007/2. The changes to the forecast for inflation and its driving forces are discussed in Box IX-1.

Slower adjustment to sustainable economic equilibrium and more costly disinflation than in the previous forecast

Revised national accounts figures, together with other indicators that have appeared since July, confirm suggestions made in the last *Monetary Bulletin* that the economy was operating at a higher pace than preliminary GDP estimates implied. Indications of growing private consumption in Q2 and Q3/2007, after a brief dip prior to that, have proved correct. Investment has also been above the July forecast. The adjustment of the economy to a sustainable level is therefore not as imminent as previously anticipated. The outlook is for inflation to remain higher than forecast in July until Q3/2008 (see Box IX-1 for details). Given an unchanged policy rate path, real interest rates would therefore be lower than anticipated in July. As a result, the policy rate path in the baseline forecast in *Monetary Bulletin* 2007/2 does not appear to lead to a sufficiently rapid economic adjustment to reach the inflation target within an acceptable time horizon. The baseline forecast presented here includes two further policy rate hikes, and an additional quarter's delay until rate cuts commence. Disinflation will nonetheless be slower and more costly than in the previous baseline forecast.

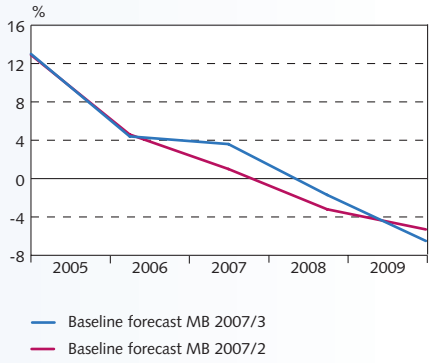
Higher private consumption growth until mid-2008 than previously forecast

According to the revised baseline forecast, private consumption growth this year will be substantially higher than forecast in July. Statistics Iceland estimated Q2 growth to be double that projected in July, and grocery and payment card turnover suggests Q3 growth was even higher. Revised estimates for disposable income growth and the strength of the real estate market upswing suggest considerably greater private consumption until mid-2008 than previously forecast. After that, however, private consumption is expected to fall as in the previous baseline scenario.

Aluminium and power sector investment is dropping in line with the previous forecast, while other business investment this year will be stronger than projected

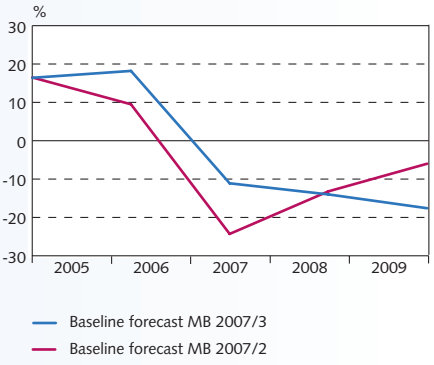
The sharp drop in investment in aluminium and power plants this year has left its mark on business investment and domestic demand, which has contracted rapidly. Gross fixed capital formation could also be expected to fall sharply, but in fact this has occurred more slowly than anticipated, as other investment has picked up at the same time as investment in aluminium and power plants has fallen. National accounts have indicated that the contraction is less than previously forecast, and a survey carried out in September among managers in Iceland's largest companies indicates substantial planned investment for the near term. Anecdotal evidence confirms these indications that investment has been more buoyant than previously forecast.

Chart 1
Private consumption growth 2005-2009



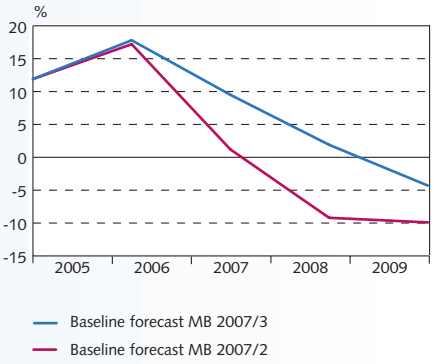
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 2
Business investment growth excluding the aluminium sector 2005-2009



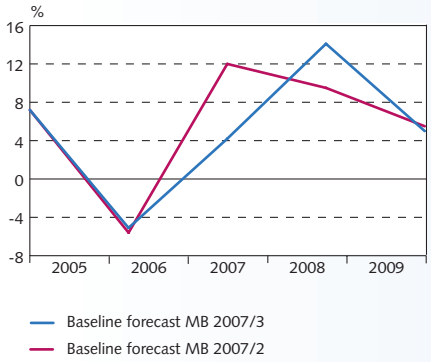
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 3
Residential investment growth 2005-2009



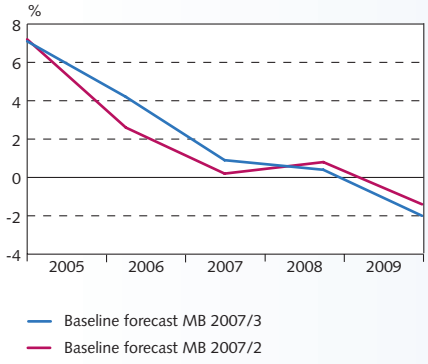
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 4
Export growth 2005-2009



Sources: Statistics Iceland, Central Bank of Iceland.

Chart 5
Economic growth 2005-2009



Sources: Statistics Iceland, Central Bank of Iceland.

Construction of commercial and office space, for instance, appears to be at a high. Accordingly, the baseline forecast has been revised upwards, with general business investment – i.e. excluding aluminium and power plant construction – retaining significant momentum, despite rising domestic financing costs.

Markedly stronger residential investment growth than predicted in the last *Monetary Bulletin*

The outlook for residential investment has changed significantly from the baseline scenario presented in the July *Monetary Bulletin*. Statistics Iceland has estimated that residential investment grew 11% in Q2/2007. The outlook is for a 10% growth this year and continuing positive growth until the final quarter of 2008, whereas in July only modest growth was forecast for 2007, followed by a substantial contraction during the remainder of the forecast period. As yet there are no signs that such a sharp reversal is imminent, as the real estate market has actually been gathering momentum since the beginning of this year. This is also reflected in a greater rise in housing prices this year and a more modest deflation of housing prices in the coming years than projected in July.

The outlook for exports in 2007 has deteriorated since July ...

Most factors point in the same direction when it comes to exports: a delay in increased aluminium exports, poorer than expected catches in the last fishing year, and larger TAC cuts for the current fishing year than anticipated in July. As a result, the outlook for exports has deteriorated significantly since July. Rather than expanding at a rate of 12%, the outlook is now for a growth rate of only 4%. Next year, however, aluminium exports are expected to grow substantially.

... but prospects for GDP growth early in the forecast period have nevertheless improved

Stronger than anticipated domestic demand in 2006 and 2007 has boosted GDP growth both years. GDP growth last year was 1½% higher than indicated by Statistics Iceland's preliminary estimates, which were published in March. According to the baseline forecast, GDP growth will also be somewhat higher this year than forecast in July, although offset to some extent by a less favourable trade balance. As imports contract considerably less next year than forecast in July, economic growth will be lower even though national expenditures contract less and aluminium export growth is higher. On the other hand, tighter than previously projected monetary policy early in the forecast period will deepen the contraction in 2009.

Despite rapid growth in recent years, potential output has not managed to keep pace with expansion in domestic demand ...

Potential output has grown rapidly in recent years, according to the Central Bank's estimate.[3] It is determined by productivity and the utilisation of the factors of production. The recent increase in poten-

3. Potential output of the economy is the potential production level given full utilisation of the factors of production under conditions of steady inflation. The output gap is the difference between GDP and potential output, expressed as a ratio to potential output. While various methods of measuring potential output have been developed, there is no consensus as to an optimal method. See, for example, Frederic S. Mishkin (2007). "Estimating potential output", address delivered at a Federal Reserve Bank conference in Dallas; *Price Measurement for Monetary Policy*, 24 May 2007. The Central Bank's estimate of potential output is based on the so-called production function method, where capacity is measured using various applications of the Cobb-Douglas production function with constant returns to scale (for details, see Box IV-3 in *Monetary Bulletin* 2006/1, pp. 29-30.

tial output reflects, for instance, additional production capacity in the power and aluminium sector, the expansion of the financial system, and increased labour productivity. Potential output cannot be measured directly. Its assessment is subject to uncertainty in addition to the uncertainty arising from the measurement of the components upon which it is based. Systematic changes in recent years, together with a major influx of foreign labour, add to the uncertainty of such an assessment. The Central Bank's assessment of the capital stock, magnitude of foreign labour input, total factor productivity and workforce productivity has risen as more reliable data have become available.

... and a positive output gap has emerged but will shrink rapidly and disappear around mid-2008

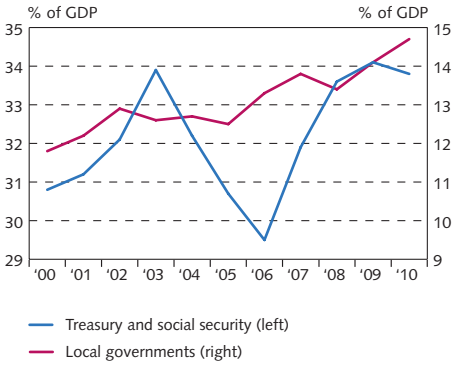
Although potential output has grown rapidly in recent years, domestic demand has grown even more steeply. The positive output gap contributes to inflation. According to staff estimates, a positive output gap first appeared in 2004, following a temporary slack, and peaked the following year at around 4½% of potential output. It has contracted somewhat since then and is estimated at around 2% this year. In the baseline scenario, it is assumed that the output gap will shrink fairly rapidly in coming quarters, disappearing around mid-2008, with excess capacity emerging again thereafter. The slack will reach a peak of over 4% in early 2010, after which it will decline once more.

Due to the high degree of uncertainty clouding any assessment of the output gap, it is important to consider also labour, goods and financial market indicators, which can provide an indication of the balance between supply and demand. In the July issue of *Monetary Bulletin,* it was emphasised that inflation above forecast and strong employment growth suggested that the output gap was perhaps wider than implied by preliminary national accounts data on 2006 GDP growth. A number of indicators suggest that the output gap may yet be underestimated. There are, for example, some indications that domestic demand in 2007 could turn out stronger than suggested by preliminary national accounts estimates. In that case, the output gap could subside more slowly than projected (see further Box IX-1).

V Public sector finance

A record surplus on public sector operations is in sight for the third year in a row due to a large Treasury surplus. This favourable performance is almost entirely due to built-in cyclical effects on government revenues and expenditures. Nevertheless, expenditures have increased rapidly during the cyclical upswing, and much faster than planned.

Chart V-1
Public sector expenditures 2000-2010[1]



1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

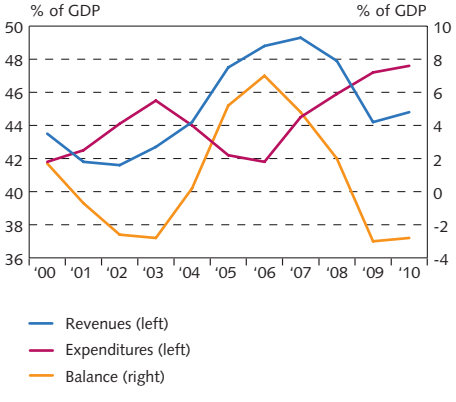
Large increase in expenditures but the cyclical increase in revenues was greater

Despite the tax cuts that are estimated to have cost the Treasury 30-40 b.kr. this year, a major part of the public sector's operational surplus has still accrued to the Treasury. The ratio of the Treasury's tax revenues to GDP has increased markedly since the start of the cyclical upswing in 2004, mainly due to increased revenues from VAT, corporate income tax and a tax on capital income of persons (see Table V-1). On the other hand, the ratio of expenditures has declined, whereas government expenditures excluding interest payments have increased moderately in real terms. Public consumption through the Treasury and the social security system has likewise increased somewhat beyond the government's long-term target, but transfers have remained constant after increasing sharply in 2002 and 2003.

Further increase in expenditures according to supplementary budget bill ...

According to a supplementary budget bill for 2007, Treasury revenues will be about one-fifth higher than was projected in the budget, with the overall fiscal position improving accordingly. Considerable increases over fiscal budget projections are in sight for revenues from individual income tax, personal capital income tax, and VAT. The bill envisages a somewhat larger surplus than reported in *Monetary Bulletin* 2007/2. Additions on the expenditure side are considerably lower, but highest for operational expenditures and transfers. Total expenditures excluding irregular expenditures increase by about 3% from the budget projection. If this revised projection is realised, general budget expenditures would increase by about 8% in real terms between 2006 and 2007.

Chart V-2
Public sector revenues, expenditures and structural balance 2000-2010[1]



1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

...and the budget for 2008

According to the fiscal budget bill for 2008, the regular surplus of the Treasury will decline from close to 5% of GDP to slightly more than 2%. The regular revenues of the Treasury will decline slightly, and regular expenditures will increase by 8% in real terms. More than one-half the increase is due to transportation.

Local governments have benefited from the strong economy and greatly increased their expenditures

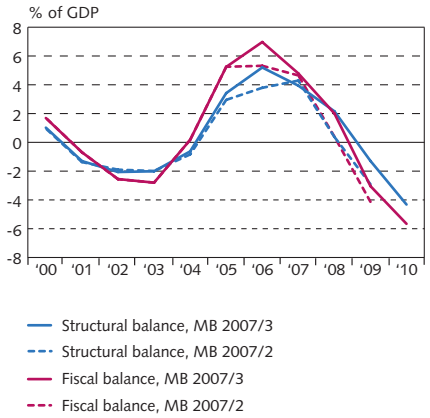
In Ministry of Finance projections, municipal revenues are shown to have peaked last year at more than 14% of GDP. During the 2003-2006 period, they increased by the equivalent of 2% of GDP (see Table V-1). The increase beyond GDP growth may be attributed to

Table V-1 Real growth of revenues and spending 2003-2006[1]

	Amount 2006	*Average rise 2003-6 (%)*	*Rise in 2006 (%)*
Real growth of revenues			
Public sector	567	10.6	7.7
Treasury and social security	414	9.8	4.9
Direct taxes	167	11.8	8.7
Indirect taxes	200	9.3	2.6
Local government	166	12.4	15.5
Income taxes	86	6.3	6.0
Indirect taxes	32	26.0	40.8
Real growth of non-interest expenditures			
Public Sector	461	3.2	3.8
Public consumption	285	3.8	4.2
Fixed investment	46	8.7	32.1
Current transfers	73	-0.4	-1.7
Treasury and social security	362	2.5	2.0
Public consumption	187	3.2	2.4
Fixed investment	16	-8.9	8.6
Current transfers	76	0.3	0.4
Local government	150	8.0	11.7
Public consumption	99	4.4	7.6
Fixed investment	30	26.4	49.8
Current transfers	10	2.6	-1.3

1. Deflated with weighted prices of public expenditure categories.
Sources: Statistics Iceland, Central bank of Iceland.

Chart V-3
Structural balance of the public sector 2000-2010[1]



1. Central Bank baseline forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

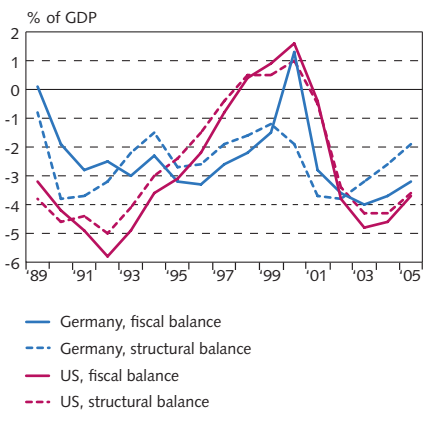
revenues from the sale of building sites and other asset-related operations, which would diminish with any decline in housing investment. Local government expenditures excluding interest payments have increased in real terms by an average of 8% per year since 2003, mostly on account of increased expenditures for road construction, education and sports. The rise in local government expenditures accounts for most of the increase in real public sector expenditures in 2006. The increase in revenues beyond that of expenditures has improved the fiscal balance of local governments from an aggregate deficit of 6 b.kr. in 2003 to a surplus of 11 b.kr. in 2006.

Expenditures likely to increase

According to the baseline forecast published in this issue of *Monetary Bulletin,* the public sector's expenditures will grow by 5½% in 2007 and by 3½% in 2008. This is a rise from 44½% of GDP in 2007 to 47% in 2008. Thereafter the increase in expenditures will decelerate, just when economic growth does.

In recent years public consumption has generally exceeded budget plans. Assuming that this trend continues, a public sector surplus of around 4½% of GDP is in in view for this year. This is about 2 percentage points lower than in 2006, but similar to projections in the previous *Monetary Bulletin*. Now, as then, the prospects are for a worsening of the public sector's performance in 2008 and 2009, with the major part of the setback occurring in 2009, a year later than previously expected. This reflects a new national economic forecast in which the contraction is projected to occur somewhat later than in the July forecast.

Chart V-4
Structural balance for Germany and the US 1989-2005



Source: OECD.

Minor changes in cyclically adjusted surplus

A comparison of the cyclically adjusted performance of the public sector based on the current Central Bank forecast, on the one hand, and the projection that appeared in the July issue of *Monetary Bulletin*, on the other hand, reveals a similar development, even though the peak attained in 2006 has proved to be higher than had been expected (see Chart V-3). Adjustments of this kind are based mainly on estimates of the sensitivity of public sector's tax revenues to changes in the tax base, on the one hand, and the sensitivity of the tax base to the economic cycle as quantified by changes in the output gap, on the other hand. In the case of Iceland, there are strong indications that movements in public sector revenues and expenditures are not readily explained by historical changes in the output gap. This is an international problem, as indicated in Chart V-4, which shows a corresponding cyclical adjustment for Germany and the United States during 1989-2005.[1]

The largest risk looming for Treasury finances in the next few years seems to be greater exchange rate depreciation than is now projected. Such depreciation could significantly reduce revenues from indirect taxes and have relatively prompt effects on tax payments by businesses. For municipalities, on the other hand, the greatest risk of a rapid decline in revenues would be represented by a curtailment of housing investment. However, the pace of such changes is unlikely to be as rapid as that of exchange rate fluctuations.

1. The German peak in the year 2000 is attributable to the sale of cell phone licences.

VI Labour market and wage developments

The labour market appears at least as tight as it was in July. Unemployment has continued to fall. Growing demand for labour has largely been met with imported labour, but most employers still compete for personnel by overbidding. Hence wage drift remains considerable and wages have been above the path projected in July. The outlook is for wage costs to continue to increase at a rate incompatible with the inflation target over the next two years, after which it will converge to a rate broadly consistent with target as unemployment rises.

Unemployment below 1%

Unemployment was virtually non-existent during the summer and is roughly equal to the levels at the peak of the last economic upswing. Seasonally adjusted unemployment has been around 1% over the year to date. The outlook for the early part of the forecast horizon is for unemployment to remain below the path projected in July; however, as economic activity slows down, unemployment will begin to rise, reaching approximately 4% in 2009-2010. This is still somewhat lower than was forecast in July.

Nearly half of businesses eager to recruit

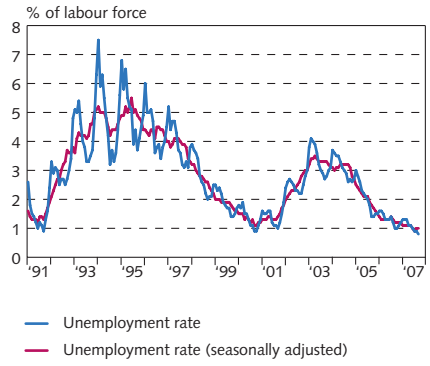
A survey carried out in September 2007 among the 400 largest companies in Iceland reveals that businesses' demand for personnel remains as keen as it was in the May survey.[1] Nearly half of the businesses wanted to recruit over the coming six months, which is broadly in line with the survey taken in May. The companies in the service sector are most eager to take on staff.

On the other hand, the number of companies wishing to reduce staffing levels in the next six months has increased from the May survey, with the exception of the transport and communication sector. However, compared to December 2006 the proportion of companies considering cutbacks was unchanged. The greatest change from the May survey was among companies in manufacturing, the fishing industry, and construction. With the exception of the fishing industry, companies wishing to recruit far outnumbered those wishing to reduce staff. Unemployment is therefore unlikely to rise in the near term.

In contrast with the May survey, there was a marked regional difference in companies' redundancy plans. One-fifth of regional companies intend to reduce their staffing levels, as opposed to a mere tenth in the greater Reykjavík area. In May only a scant 1½% of companies, both in regional Iceland and in the Reykjavík area, wanted to reduce staffing. Cuts in fishing quotas, a high real exchange rate, and the wrapping up of the power plant and aluminium smelter construction in East Iceland are likely explanations of the desire among regional companies to cut back on staff. Unemployment could there-

1. Regular surveys have been conducted since September 2002, commissioned by the Ministry of Finance, the Confederation of Icelandic Employers and the Central Bank of Iceland.

Chart VI-1
Unemployment rate Jan. 1991 - Sept. 2007

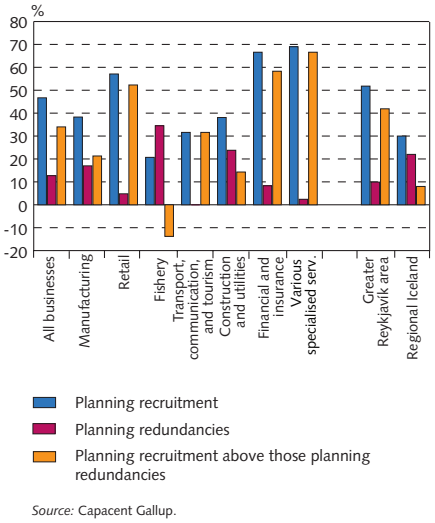


Sources: Directorate of Labour, Central Bank of Iceland.

Chart VI-2
Recruitment and redundancy plans of businesses over the next 6 months

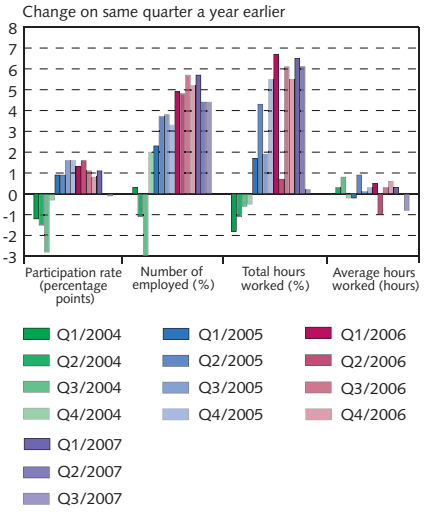
Source: Capacent Gallup.

Chart VI-3
Recruitment and redundancy plans of businesses over the next 6 months



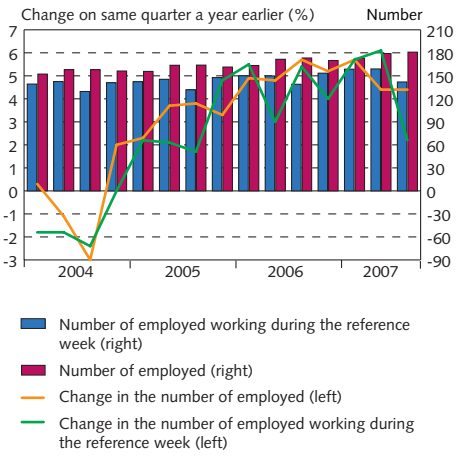
Source: Capacent Gallup.

Chart VI-4
Changes in labour market
2003-2007



Source: Statistics Iceland.

Chart VI-5
Employed
Q1/2004 - Q3/2007



Source: Statistics Iceland.

fore rise in parts of regional Iceland during the winter, despite the fact that one-third of companies there intend to recruit more staff.

Boom times and good weather dampen labour supply in Q3

According to Statistics Iceland's labour market survey, hours worked have increased year-on-year by around 5½-6½% each quarter since Q4/2005, with the exception of Q2/2006. The increase in hours worked was due to both an increase in the average number of hours worked and an increase of the number of people working during the reference week.

This trend changed somewhat in Q3/2007, as hours worked remained constant year-on-year. This could be a sign of waining demand for labour, but it would be inconsistent with businesses' expressed desire to recruit staff in coming months. Closer scrutiny reveals that both the number of employed and the number of persons working during the reference week rose year-on-year in Q3, while the average hours worked dropped by nearly one hour per week. The reduction in working hours was concentrated in the Reykjavík area, while in regional Iceland the number of hours worked rose, especially among men. A comparison of the number of persons working during the reference week and the number of persons employed also shows that people in the capital not only worked fewer hours but were also more often absent from work.[2] As summer vacations fall in the third quarter of the year and the weather in the greater Reykjavík area was unusually good this year, and as there are no other indications of diminishing demand, the most likely explanation of Reykjavík area residents' lesser contribution to work is that people worked less overtime and took more days off to enjoy the weather. The allocation of increased disposable income to travel could also be a factor.

Competition for labour remains strong …

Competition for labour is at least as keen as it was prior to the last issue of *Monetary Bulletin*, even though the influx of migrant labour was greater during the summer months than in the winter. The number of foreign nationals registered with the Directorate of Labour has increased by nearly one thousand per month on average since the spring. The net increase was probably less than the Directorate's figures indicate because of closer monitoring of registration of foreign workers. However, issuance of new ID numbers to foreign nationals also increased during the summer.

It appears that the influx of 7,500 foreign workers over the year to date has not satisfied the demand for labour. Employers must therefore continue to compete amongst themselves by overbidding for available personnel.

… and wage drift substantial

The competition for labour has generated a larger wage drift than forecast in June. In Q3 the wage index for the labour market as a

2. Employed persons are defined as those who worked at least one hour during the reference week or were absent from the work they would otherwise have carried out; for example, due to vacation, childbirth leave, or illness. Persons working during the reference week are defined as those who worked at least one hour during the reference week.

whole rose by 1.4% quarter-on-quarter and 8.1% year-on-year. The more moderate year-on-year increase in the wage index since mid-summer is mainly due to base effects, as the June 2006 review of private sector wage settlements no longer has a direct impact on the wage index.

Large migrant labour force increases uncertainty concerning unemployment …

As stated above, the outlook is for unemployment to rise over the next two years to around 4% in 2009. This is subject to considerable uncertainty, however, due to factors such as the expansion of Iceland's migrant labour force. The extent to which unemployment will increase as the economy slows down will be determined partially by the tendency of foreign nationals to leave the country upon losing their jobs. During the slowdown in 2002, the ratio of foreign nationals to total employed persons remained unchanged. However, that slump was short-lived and was soon followed by labour-intensive construction projects. Improving labour market conditions in Europe – particularly among the EU-8 nations, which are home to a large proportion of Iceland's foreign workers – could curtail their inflow in the near term and induce a greater number to return home when the employment situation in Iceland deteriorates. Also, more EU member states will reduce restrictions in coming years and ultimately open their labour markets to EU accession countries. Foreign workers who lose their jobs in Iceland will therefore have other options than returning to their native countries. If the influx of labour slows down while demand for labour is still high, wage drift could be more than forecast.

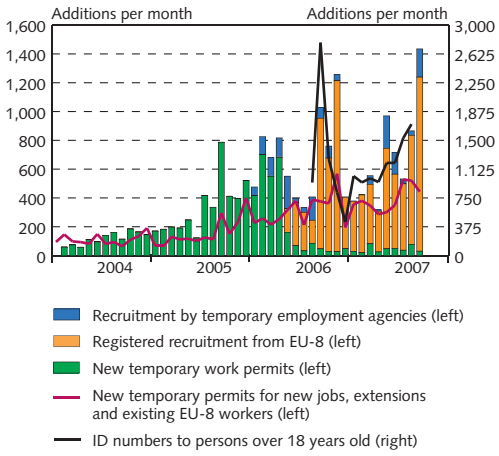
… and wage developments

If foreigners have been employed at minimum wage or lower wages than Icelanders in comparable jobs, this could affect future wage developments. The magnitude or even direction of those effects is uncertain, however. Should employers respond to an economic downturn by laying off workers hired at premium rates or by cutting their overpay in an attempt to reduce wage costs, the wage drift could become minimal or even turn negative. On the other hand, it is also conceivable that wages among foreign workers who settle in Iceland will adjust rapidly to the prevailing wage rate of native workers, and the proportion hired at minimum wage will shrink as the inflow of labour peters out.

Unit labour costs not in line with inflation target until the latter part of the forecast horizon

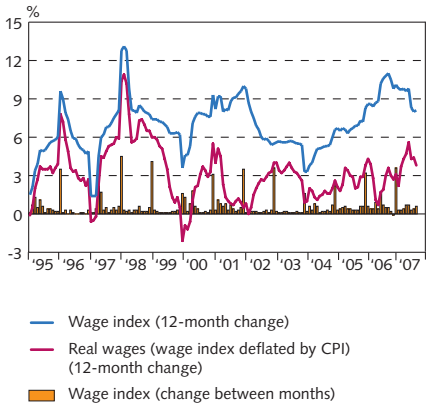
As the labour market was tighter during summer and autumn than previously forecast, the Central Bank has revised its unit labour cost projections for 2007 and 2008 upwards from the July forecast. The measure of cost pressures has been revised in accordance with national accounts data for 2005-2006. It is expected that the coming wage negotiations will conclude with a wage cost increase broadly in line with the 2004 settlement. However, in view of the substantial excess demand for labour, the outlook is for considerable wage drift

Chart VI-6
ID mumber issuance
and foreign labour registration



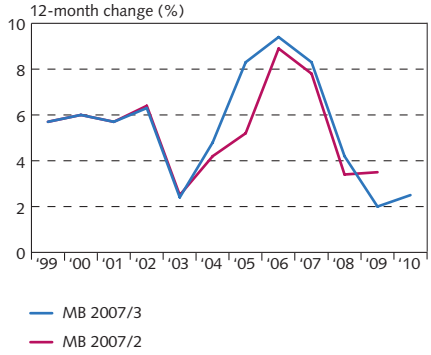
Sources: Directorate of Labour, National Registry.

Chart VI-7
Nominal and real wages
Statistics Iceland wage index



Source: Statistics Iceland.

Chart VI-8
Unit labour costs 1999-2010[1]



1. Central Bank baseline forecast 2007-2010.
Source: Central Bank of Iceland.

well into 2008. Productivity growth is projected to be similar to the July forecast for earlier part of the forecast horizon. This implies a faster increase in unit labour costs in 2007 and 2008 than previously forecast, or 8.3% and 4.2% respectively. The rise in unit labour costs is expected to slow down in 2009, as rising unemployment contains wage drift. In mid-2009, unit labour costs are forecast to converge with the inflation target.

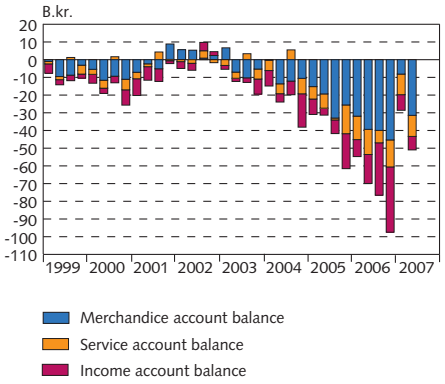
Enhanced risk of underestimated unit labour costs

As before, the risk to the labour cost forecast is on the upside. Because near-term inflation is higher than forecasted in July, the risk of a less than benign outcome of wage settlements for the next few years has risen. The supply of foreign labour could work both ways; it could push wage costs above or below what is forecast. Box IX-2 presents alternative scenarios involving wage increases in excess of the base-line forecast and discusses monetary policy responses to the resulting inflationary pressures.

VII External balance

The current account deficit narrowed considerably during the first half of the year, largely as a result of positive movements in the return on foreign direct and portfolio investment, which more than offset the growth in net interest expense. The trade deficit shrank in the first half of 2007, supported by a drop in imports related to investments in the energy- and aluminium sector and a jump in aluminium exports. However, imports of consumer goods have remained strong, supported by a surge in private consumption. Current account developments are difficult to predict because of unforeseeable fluctuations in the balance on income; however, it is clear that a sustainable current account balance is still a long way off.

Chart VII-1
Current account balance components[1]
Q1/1999 - Q2/2007



1. Net current transfer is included in balance on income.
Sources: Statistics Iceland, Central Bank of Iceland.

Current account deficit narrowed in the first half of 2007

For the first half of the year, the current account deficit totalled 79.6 b.kr., or 13% of GDP. This is a dramatic reduction from the second half of 2006, when the deficit ran at 29% of GDP. Underlying imbalances have changed less than these figures would indicate, however, because the narrowing deficit for the first two quarters is largely explained by irregular items in the merchandise account and the income account. As a percentage of GDP, the service account deficit for January-June 2007 widened marginally in comparison with the second half of 2006 but contracted relative to January-June 2006.

The merchandise account deficit was just under 7% of GDP in the first half of the year, down from over 14% in July-December 2006. If irregular items are excluded – that is, purchases and sales of ships and aircraft – the contraction of the deficit was less. Transactions involving ships and aircraft are responsible for roughly half of the narrowing in the first six months of the year, while the reduction in imports is mostly due to a dip in capital goods imports. However, the import value of consumer durables grew substantially in the first two quarters and the beginning of the third, which is in line with other indicators of private consumption growth.

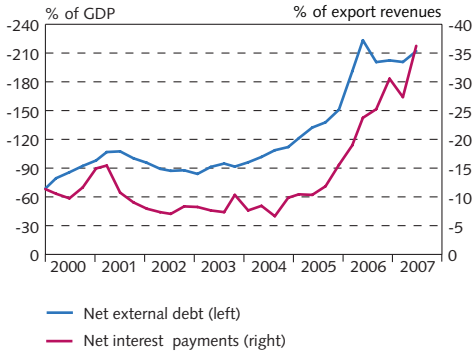
Waning capital goods imports

The value of imported capital goods (exclusive of transport equipment) for the first eight months of 2007 dropped 10% year-on-year, measured at constant exchange rates. For the same period, the import value of industrial supplies was virtually unchanged year-on-year. However, it is interesting to note that, according to calculations from Statistics Iceland, imports of industrial supplies for aluminium production fell by 5% year-on-year, while exports of aluminium products jumped nearly 45%. Such an anomaly could indicate either that commodities imports are underestimated or that inventories have shrunk, which would likely result in increased alumina imports later on.

Hefty growth in yields on outward foreign direct investment

The deficit on the income account totalled just under 2½% of GDP for the first six months of the year, down sharply from the second half of 2006, when it amounted to almost 11% of GDP. This radical change

Chart VII-2
Foreign debt and payments
as a % of GDP and export revenues
Q1/2000 - Q2/2007



Sources: Statistics Iceland, Central Bank of Iceland.

is due to substantial growth in yields on outward foreign direct investment. This item in the income account is highly volatile, however, and can be affected dramatically by the performance of individual investments in any given period.[1] Net interest expense totalled some 28% of export income in Q1 and rose sharply to 37% of total export income in Q2. The increase stems from a deterioration in Iceland's net external position and unfavourable developments in the global financial markets.

Total foreign liabilities increased in Q2/2007

Iceland's net external position worsened by 133 b.kr. in Q2, and total foreign liabilities by even more, or 184 b.kr. This accumulation of debt has occurred at a time of marked deterioration in global capital market conditions. Foreign assets and liabilities have surged in recent years, and the proportion of equity capital in the foreign asset stock (portfolio equities and foreign direct investment) has risen sharply as well. As is discussed in Chapter II, the real exchange rate of the króna is high at present. Should interest rates on foreign debt increase concurrent with a major depreciation of the króna, the impact on the current account balance would be profoundly negative.

Current account outlook bleaker than in the previous forecast

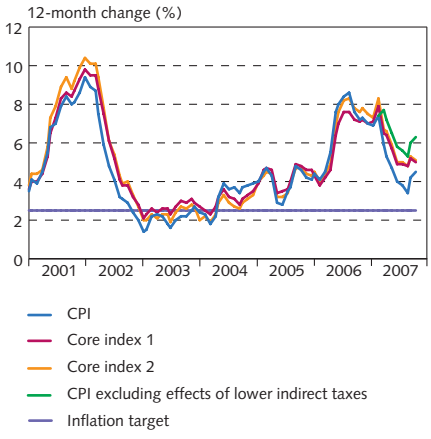
The Central Bank's baseline forecast assumes a considerably wider current account deficit than was predicted in the July issue of *Monetary Bulletin*. The deficit is forecast at 18% of GDP in 2007, then narrowing to 14½% of GDP in 2008. At the end of the forecast horizon, in 2010, the merchandise account is forecast to be broadly in balance. However, because of the substantial deficit in the income account, the current account is expected to be in deficit amounting to 10% of GDP. This forecast, however, is prone to enormous uncertainty due to volatile returns on equity investments, which makes it increasingly difficult to forecast developments in the income account. Proportionally small changes in returns on individual asset items could greatly influence the balance on income.

1. A detailed discussion of developments in and composition of the balance on income can be found in Daníel Svavarsson and Pétur Örn Sigurdsson (2007), "Iceland's international investment position and balance on income," in *Monetary Bulletin* 2007/2, pp. 53-73.

VIII Price developments

Strong inflationary pressures are still present. Twelve-month inflation has risen since the last issue of *Monetary Bulletin*, but underlying inflation is similar to what it was at the beginning of the year. An upswing in the housing market has been a key factor in driving inflation, reflecting rapid growth of real disposable income over the past 1½ years. An increase in mortgage rates has proved insufficient to cool down the market. The upswing has entailed rapidly rising house prices, which are reflected in the CPI housing component. Goods prices have also risen somewhat in recent months despite the strong króna. The króna's depreciation in August was subsequently reversed, and its impact may therefore have been only temporary. Higher world commodity prices and increased domestic costs have offset the effects of a strong króna. Import prices have fluctuated within a relatively narrow range for over a year. Inflation expectations have developed in various ways in recent months, but most measures are considerably above the Central Bank's inflation target.

Chart VIII-1
Inflation January 2001 - October 2007[1]



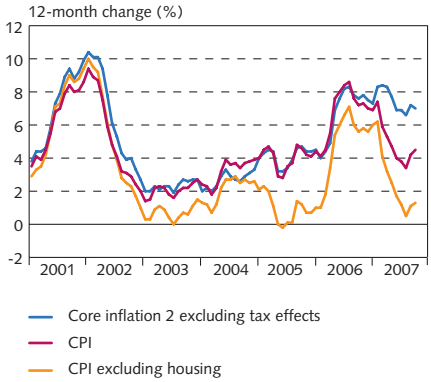
1. The core indices are compiled on the same basis as the CPI, with Core index 1 excluding prices of agricultural products and petrol, and Core index 2 also excluding prices of public services.
Source: Statistics Iceland.

Inflation back on the rise

Inflation slowed down during the summer, approximately in line with the Central Bank's July forecast. Inflation was down to 3.9% in Q3/2007, or 0.2 percentage points above the July forecast. After moving briefly below the upper "tolerance limit" of the Central Bank's inflation target in July and August, reaching a two-year low, inflation rose in September and October. Annual inflation is heading for 4.8% in Q4/2007, which is somewhat higher than projected in the last forecast.

Underlying inflationary pressures may be brought into sharper focus if short-lived volatile items are not taken into account.[1] Excluding volatile items, prices of public services, and changes in mortgage costs and indirect taxes, twelve-month inflation was 6.4% in October. Thus inflation is considerably more persistent than appears at first sight, especially considering that exchange rate developments have been relatively favourable.

Chart VIII-2
Various inflation measurements
January 2001 - October 2007

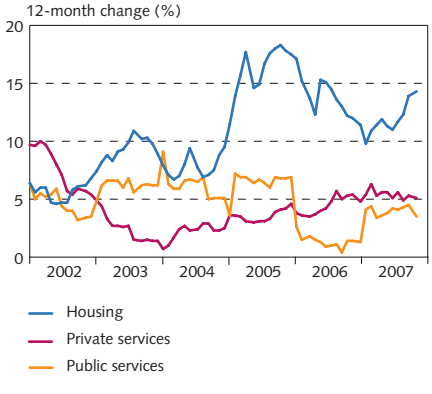


Source: Statistics Iceland.

Rapid increase in housing prices last summer

One of the main reasons inflation was higher in the second half of the year than forecast in the last *Monetary Bulletin* is a more rapid increase in house prices than expected. Hence, CPI measurements including and excluding the housing component have diverged in recent months. Twelve-month inflation excluding housing measured 1.3% at the beginning of October. Excluding the effects of changes in consumption taxes as well, inflation by this measurement was 3.7%. Over the year to date, seasonally adjusted housing prices have risen by 11% in and around Reykjavík and considerably more in other parts of the country.

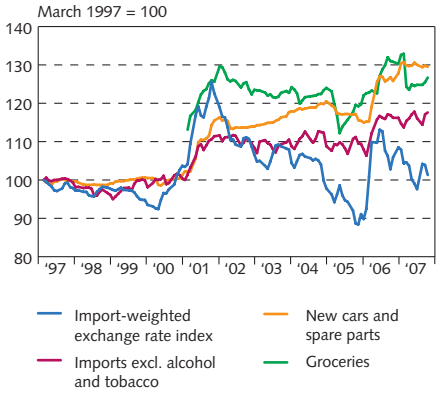
Chart VIII-3
Prices of housing and services
January 2002 - October 2007



Source: Statistics Iceland.

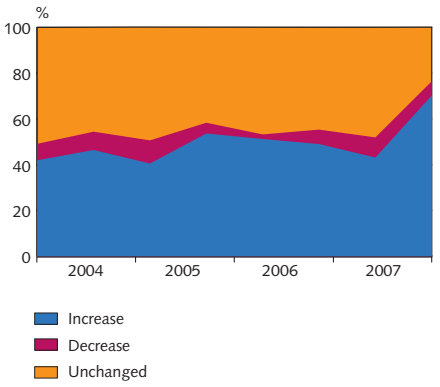
1. For further discussion of this subject, see Box VIII-1 in *Monetary Bulletin* 2007/2, p. 32-33.

Chart VIII-4
Import-weighted exchange rate and import prices March 1997 - October 2007



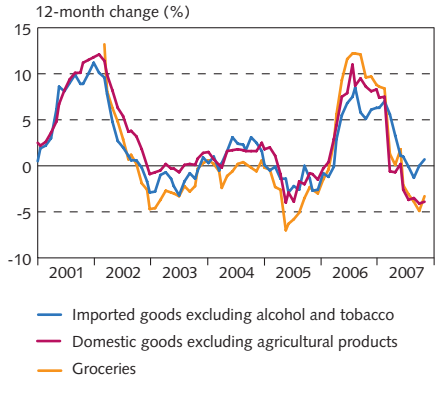
Source: Statistics Iceland.

Chart VIII-5
Firms' opinion of their price changes during the next six months



Source: Capacent Gallup.

Chart VIII-6
Goods prices January 2001 - October 2007



Source: Statistics Iceland.

The upswing in the housing market primarily reflects the very rapid growth of real disposable income over the past 1½ years, as discussed in Chapter IV. Wages rose sharply over the past year because of increases negotiated in the summer of 2006 and general wage drift. Concurrently, the labor force has grown at a fast pace and hours worked even more so (see Chapter VI). Cuts in both income and consumption taxes in recent years have then served to increase real disposable income still further. The rapid growth of disposable income has outweighed somewhat poorer household financial conditions. The commercial banks have raised mortgage rates significantly but the Housing Financing Fund (HFF) considerably less (see further in Chapter III). Higher interest rates should moderate real estate price increases in the period ahead, but thus far there is little evidence of this. Households have increasingly taken low-interest foreign currency-denominated loans, thus reducing the effects of higher lending rates on CPI-indexed loans.

Higher domestic costs and strong demand increase inflationary pressures in the services sector

Prices of most private sector services have increased somewhat since the last edition of *Monetary Bulletin*. However, the twelve-month price increase in the services component has not changed much, whereas the effect of the cut in indirect taxes on services is still included. Higher domestic costs – for example, wage increases – and strong growth in domestic demand have possibly given rise to higher inflation, but on the other hand, exchange rate developments have been favourable. Therefore, a weakening of the króna could trigger higher services prices.

The results of a survey conducted last September among the 400 largest firms in Iceland reveal increasing inflationary pressures, especially in the services sector. Executives of a growing majority of firms, or 80% compared to 68% in February, expect input prices to rise over the next six months. On average, the expected increase is more than 4%.

A large majority of firms plan to raise prices in the next six months

The survey also reveals that firms expect to pass on increased costs to higher prices. Roughly 70% of their executives believed that prices of their goods and services would increase over the next six months. On average, they expected prices to rise by 3.3%. The proportion of firms expecting prices to rise was higher in the services sector than in other sectors. These results accord with data on turnover based on VAT returns, which show that turnover in the services sector rose substantially over the past year. In a comparable survey conducted last February, 43% of firms expected prices to rise.

Goods prices have increased somewhat due to higher commodity prices and a weaker króna last summer

Strengthening of the króna throughout the year eased inflationary pressures but did not lead to much reduction in prices of imported goods. Import prices have only increased by a scant 1% over the past year, mainly reflecting the cut in indirect taxes last March. Higher

commodity prices in world markets (see Box II-1) have partially offset the effect of a strong króna. Prices of imported food and beverages adjusted quickly to the weakening of the króna this summer, increasing by almost 2% over the past two months. However, part of the increase reflected higher commodity prices. The exchange rate depreciation last summer was soon reversed, and in the past few weeks the exchange rate of the króna has been high in historical comparison. Other things equal, this will serve to moderate imported inflation.

Domestic goods prices have increased somewhat during the past few months, reflecting higher domestic cost factors and commodity prices. In many cases, domestic output is dependent on imported commodities whose prices have increased. Domestic goods prices have fallen by more than 3% over the past twelve months; however, excluding the effects of lower consumption taxes, they have increased by roughly 3%.

Expectations about short-term inflation have either increased or are unchanged

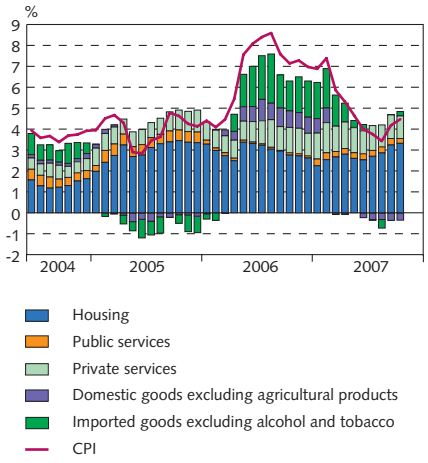
The breakeven inflation rate in the bond market rose considerably last fall in the wake of the króna's depreciation and disturbances in global financial markets, but it declined again after the depreciation had been reversed and the tremors subsided. The breakeven inflation rate is currently slightly lower than in July. It averaged 2.8% between July 3 and October 30. It must be kept in mind, however, that the breakeven rate comprises both inflation expectations and an inflation risk premium. Therefore, the increase last fall is probably not only due to higher inflation expectations but also due to a rising risk premium on non-indexed bonds.

In a September 2007 survey among Iceland's largest firms, executives forecast 3.8% inflation on average over the next twelve months, which is a slight increase from the previous survey in May. Twelve-month inflation expectations among households averaged 4.8% in a survey in October, unchanged from the previous one in August. Household expectations continue to exceed those of business executives.

According to a survey of financial market analysts' projections last October (see Appendix 2), analysts expect higher inflation in 2007 and 2008 than in a comparable survey in June. On average, analysts forecast almost 5% year-on-year inflation this year, or ½ percentage point higher than in the previous survey. Their average year-on-year inflation forecast for 2008 is 4.2%, compared with 3.6% earlier. Their forecast for 2009 has not changed significantly. Analysts forecast inflation to average close to 3% in 2010.

Chart VIII-7
Components of the CPI
June 2004 - October 2007

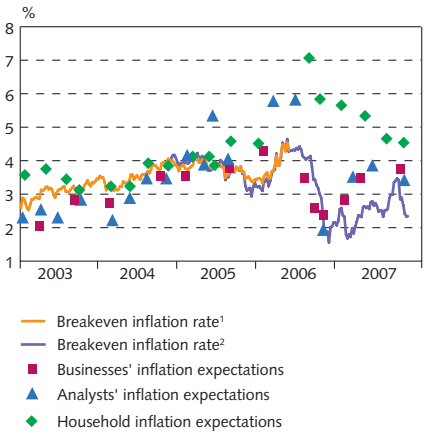
Contribution to CPI inflation in past 12 months



Source: Statistics Iceland.

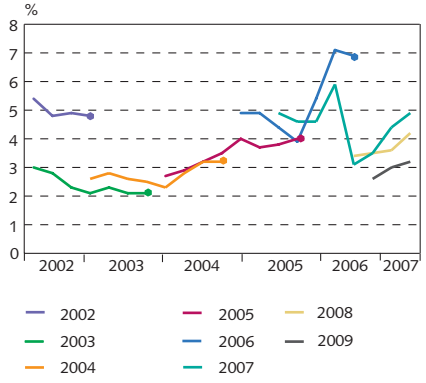
Chart VIII-8
Inflation expectations

Weekly data January 7, 2003 - October 30, 2007



1. Breakeven inflation rate is the spread between RIKB 13 0517 and RIKS 15 1001. 2. Breakeven inflation rate is the spread between RIKB 13 0517 and HFF150914. Household, business and analysts' inflation expectations are based on inflation one year ahead.
Sources: Capacent Gallup, Central Bank of Iceland.

Chart VIII-9
Financial market analysts' forecasts for average year-on-year inflation[1]

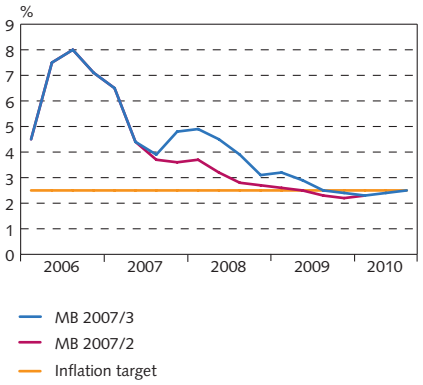


1. Points show actual rate of inflation for each year.
Source: Central Bank of Iceland.

IX Inflation forecast

The inflation outlook has worsened since the publication of the July forecast. According to the forecast, the inflation target could be attained before mid-2009 provided that the policy rate remained unchanged until early 2008. Currently, however, it appears as though the policy rate path published in July will not be sufficient to bring inflation to target before mid-2010. In order to reach the target sooner, i.e. in Q3/2009, the policy rate must rise, and the easing cycle must begin later than previously expected. This section presents the Central Bank's revised inflation forecast. Alternative scenarios are described in Box IX-2.

Chart IX-1
Inflation - comparison with MB 2007/2



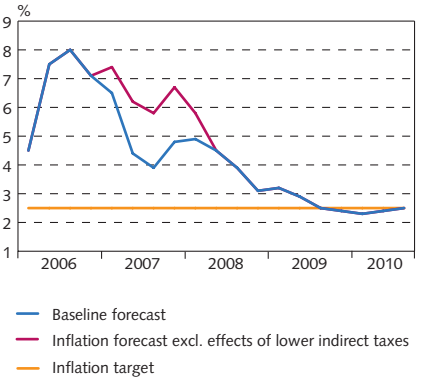
Sourc: Central Bank of Iceland.

Inflation outlook worsens

As is described in Section VIII, inflation for Q3/2007 turned out as forecast in the July issue of *Monetary Bulletin*. The outlook, however, is for inflation to reach 4.8% in Q4, which is more than a percentage point higher than was forecast in July. It also appears as though inflation will be around 5% in the first quarter of 2008 and remain in the 4-4½% range during the latter part of the year (see also Table 2 in Appendix 1 on p. 62). The inflation outlook until Q3/2008 has therefore deteriorated markedly, in part because the starting point for the current inflation forecast is much less favourable than in July. Beginning in the latter half of 2008, inflation is projected to decline rather quickly and be at target from Q3/2009 (see Chart IX-1).

Inflation is even higher if the first-round effects of cuts in consumption taxes are excluded. Inflation excluding the tax cut effects measured nearly 6% in the third quarter and looks set to approach 7% in Q4. It is projected to fall to just below 6% in Q1/2008, but after that the tax effects on price levels disappear (see Chart IX-2).

Chart IX-2
Inflation including and excluding effects of lower indirect taxes



Sources: Statistics Iceland, Central Bank of Iceland.

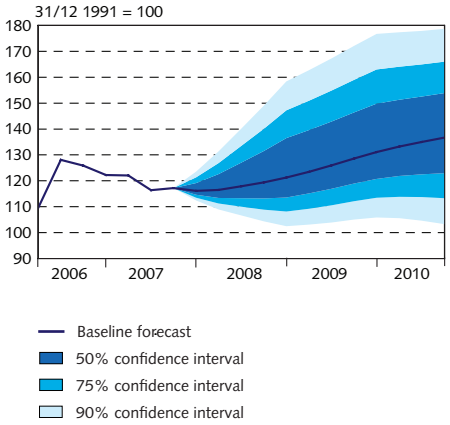
Output gap and underlying cost pressures greater than previously thought

As discussed in previous chapters and described in Box IX-1, the output gap in 2006 was underestimated, as output growth far outstripped earlier estimates. Greater output growth last year and the expectation of more robust demand growth this year, together with stronger growth in wage costs over the last two years and a less favourable starting point for the inflation forecast, are the chief reasons that the inflation outlook for the next twelve months has deteriorated considerably since July. Strong demand growth has clearly been reflected in the real estate market and pushed housing prices much higher than previously projected. Higher housing costs are the primary reason for higher than forecast inflation since July, directly through their effect on the housing component of the CPI and indirectly through supporting private consumption.

The outlook is for a wider output gap than in the July forecast until the end of 2008, with the gap remaining positive until the middle of that year. Unit labour costs are forecast to increase in excess of the level compatible with the inflation target until mid-2009, and housing prices are expected to continue rising until mid-2008. They

are assumed to start declining from late 2008, later and more slowly than forecast in July, reflecting stronger growth in disposable income and output than assumed in the July forecast.

Chart IX-3
Effective exchange rate
Forecasting period Q4/2007 - Q3/2010



Source: Central Bank of Iceland.

Króna to remain strong through 2008 and then begin to depreciate

Exchange rate developments have been broadly in line with the Central Bank's July forecast, despite considerable short-term exchange rate volatility. The exchange rate projections have in fact changed very little. As was the case in July, the króna is expected to remain strong until the end of 2008, when the exchange rate index will be slightly above 120. Subsequently, the króna is forecast to depreciate at a faster rate, propelled by declining interest rates as economic activity slows down, with the exchange rate index reaching 130 at year-end 2008 and 136 at the end of the forecast horizon, thus depreciating by about 15% over the whole horizon.

Rising wages and falling exchange rate slow down the disinflation process

The positive output gap will have virtually disappeared by mid-2008 and will be followed by an output slack that is projected to widen over the course of the forecast horizon. In spite of this, the disinflation process will be slow, primarily because of increased wage costs and a rather sharp depreciation in the exchange rate later in the forecast horizon. Furthermore, inflation expectations are expected to approach the inflation target only slowly, reflecting insufficiently anchored inflation expectations.

Great uncertainty about economic developments

The economic outlook for the next three years is evaluated with the assistance of economic models, as well as the Central Bank staff's assessment of various factors that could affect future developments. Both are fraught with uncertainties. Models are imperfect descriptions of reality, and in many instances one must make important assumptions that can have a substantial impact on the outlook. Therefore, deviations from forecasts can be considerable, especially when imbalances are large and historical precedents or comparable circumstances from other countries are scarce.

As Table IX-1 shows, the main uncertainties are broadly unchanged from July. The weight of individual factors, however, has changed somewhat. Two of these are considered more important than the others and are therefore described in greater detail in Box IX-2. Both could exacerbate inflation and delay the disinflationary process even further. First is the risk that the króna will depreciate more than is assumed in the baseline forecast. This risk is considered to be largely unchanged since July, chiefly due to the high real exchange rate of the króna and the likelihood of rising country-specific risk premia, which could make it more difficult to finance a wide current account deficit. The second risk is that wage rises following the forthcoming wage settlements will be greater than assumed in the baseline forecast. In both scenarios, inflation will be more persistent and the policy rate

Table IX-1 Main asymmetric uncertainties in the baseline forecast

Elements of uncertainty	*Explanation*
Exchange rate developments	High real exchange rate, wide current account deficit, and reassessment of risk by foreign investors could exert additional downward pressure on the króna.
Wage costs	Wage increases following the upcoming wage settlements could be underestimated.
Private consumption	Falling asset prices and growing debt service could curtail private consumption growth beyond what is forecast.
Public sector finances	The fiscal stance could prove laxer than is assumed, e.g. due to forthcoming wage settlements.
Planned investments in aluminium and power sectors	Decisions on investments in aluminium-related projects could spur confidence and bolster both the króna and domestic demand, ultimately generating inflationary pressures when the initial impact on the exchange rate unwinds.
Asset prices	Asset prices could drop beyond what is forecast, and lower housing prices could have a greater effect on inflation.
Transmission of monetary policy	If the transmission of monetary policy is stronger than assumed in the forecast, disinflation could be faster.

will have to rise more than in the baseline forecast if inflation is to be brought to target within the forecast horizon. These uncertainties are interdependent, and the interaction between a depreciating exchange rate and price indexation clauses in contractual wage agreements could trigger substantial deviations from the inflation path in the baseline forecast.

Several other uncertainties also make a noticeable impact on the inflation risk profile. As is discussed above, growth in public expenditure has generally exceeded official government targets, even at times when a particularly tight stance was aimed at. Therefore, expenditure growth in the baseline forecast is somewhat higher than projected by the Ministry of Finance. Given that new wage settlements are coming up and there is a considerable risk that wages will rise more than assumed in the baseline forecast, public expenditure may yet be underestimated, as wage costs are the government's largest expenditure item. If the output gap narrows more slowly as a result, inflation could rise even higher. The same is true if further aluminium smelters and power plants are built, although the inflationary effects of aluminium-related investments would not emerge in full until near the end of the forecast horizon (see Box IX-2 in *Monetary Bulletin* 2007/2).

Further ahead, the uncertainties that could help to contain inflation will begin to weigh heavier. Though the baseline forecast assumes that housing prices will unwind somewhat, the enormous price increases of the past few years and the historical relationship between housing prices and the fundamentals of housing demand could suggest more pronounced price decreases. It is also possible that the contractionary effects of falling housing prices and the direct impact on inflation are underestimated in the baseline forecast. Furthermore, it is conceivable that the transmission of monetary policy will be quicker

Box IX-1

Changes to the inflation forecast from *Monetary Bulletin* 2007/2

New data call for a reassessment of current economic conditions and outlook. This Box describes in some detail the main changes in the inflation outlook and its key determinates since *Monetary Bulletin* 2007/2 was published. It also compares the current baseline forecast with the probability distribution of the previous one.

Inflation has recently been higher than forecast by the Central Bank in July. Revised national accounts suggest that the deviation can be traced to greater output gap and stronger underlying cost pressures than previously estimated. The inflation outlook has therefore worsened since July. This implies that the policy rate path in the last issue of *Monetary Bulletin* will not be sufficient to bring inflation down to target within an acceptable time frame. The revised policy rate path is therefore higher, and policy easing is delayed by one quarter. With this interest rate path, inflation is at target in Q3/2009 and remains there for the remainder of the forecast horizon.

Exchange rate developments broadly in line with the July forecast

Despite turbulence in global financial markets and substantial short-term exchange rate volatility, since July the króna has followed a path broadly in line with the forecast in *Monetary Bulletin* 2007/2. It is only slightly weaker than was forecast then, but as Chart 1 illustrates, over the next three years it is projected to follow a course very similar to the one in the July forecast. The króna therefore remains fairly strong through 2008, whereupon it will begin to depreciate as the interest rate differential with abroad narrows and the economy cools down. At the end of the forecast horizon, the exchange rate index will be at a level similar to that forecast in July.

Wider output gap despite faster potential output growth

As was discussed in the last issue of *Monetary Bulletin*, various indicators suggested that the output gap was wider in 2006 than preliminary data from Statistics Iceland implied, particularly with regard to labour market developments. Another possible sign of a larger output gap is the fact that inflation in the first half of 2007 was higher than previously forecast. According to the revised national accounts, output growth in 2006 was 1½ percentage points higher than estimated by Statistics Iceland in March (see also Box IV-3). As a result, last year's output gap is estimated to be nearly a percentage point higher than was estimated in July. Moreover, the outlook is for output to grow faster this year. The output gap for 2007 is therefore estimated to be 1½ percentage points wider than in the July forecast. As Chart 2 shows, this much deviation from the July forecast was considered rather unlikely at that time.

As in the last forecast, total factor productivity and labour productivity have been revised upwards. Potential output growth is therefore greater than previously projected across the entire forecast horizon. This, together with declining output growth, will cause a gradual narrowing of the output gap over the course of the forecast horizon. Around mid-2008 the gap will have closed, roughly one quarter later than previously forecast. At the end of the forecast period, the slack will be somewhat greater than was projected in July, and beginning in mid-2010 it will begin to decline once again, as output growth starts to pick up. From mid-2008, however, the current output gap estimate remains within the 50% confidence interval of the July forecast.

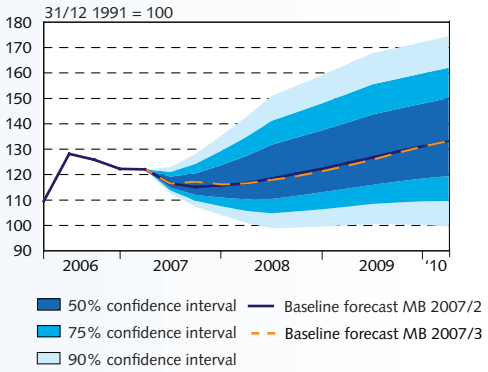
The inflation outlook has worsened since the last *Monetary Bulletin*

Inflation for the third quarter of 2007 proved virtually identical to the July forecast. However, it appears as though it will approach 5% in Q4, over a percentage point higher than was projected in July,

Chart 1

Effective exchange rate

Baseline forecast and confidence intervals MB 2007/2 and baseline forecast MB 2007/3

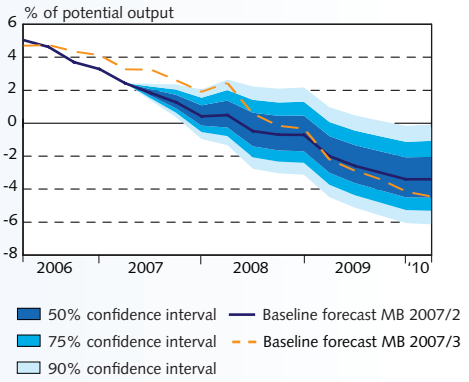


Source: Central Bank of Iceland.

Chart 2

Output gap

Baseline forecast and confidence intervals MB 2007/2 and baseline forecast MB 2007/3

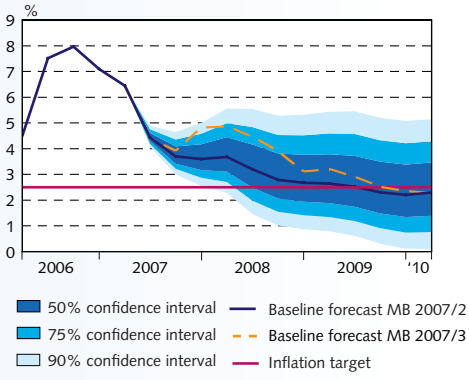


Sources: Statistics Iceland, Central Bank of Iceland.

Chart 3

Inflation

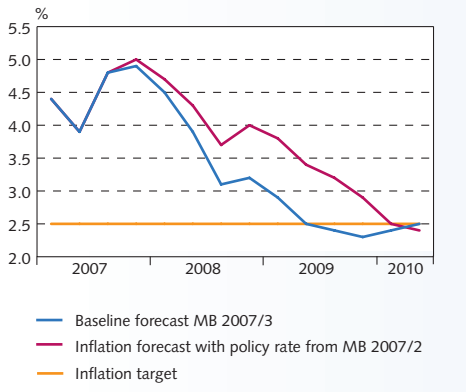
Baseline forecast and confidence intervals MB 2007/2 and baseline forecast MB 2007/3



Sources: Statistics Iceland, Central Bank of Iceland.

Chart 4
Inflation

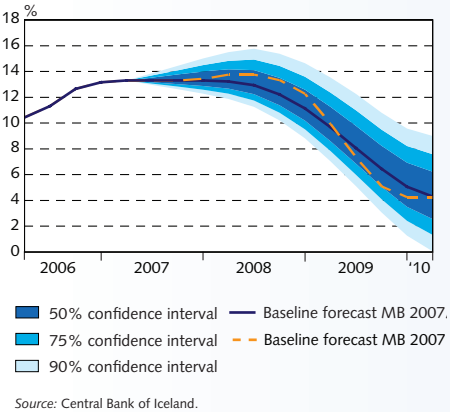
Baseline forecast and forecast with policy rate from MB 2007/2



Sources: Statistics Iceland, Central Bank of Iceland.

Chart 5
Policy rate

Baseline forecast and confidence interval MB 2007/2
and baseline forecast MB 2007/3



Source: Central Bank of Iceland.

and remain around that rate in Q1/2008. According to the probability distribution of the July inflation forecast, this was considered an unlikely development (see Chart 3). Inflation will remain higher than in the July forecast until mid-2009, with the inflation target attained in Q3/2009, roughly six months later than projected in July. Thus inflation will not move into the 50% confidence interval of the July forecast until the latter half of 2008.

The main cause of the deterioration of the inflation outlook is the higher capacity utilisation described above. This emerges in various ways; for example, private wage costs seem to have risen much faster over the past two years than originally thought, and house prices have remained unexpectedly robust. Both of these factors stimulate private consumption, as well as directly affecting headline inflation.

Impact on the policy rate path in the baseline forecast

The fact that the outlook for inflation and inflation expectations has deteriorated since July implies that the monetary stance has eased, as reflected in a declining real policy rate. The króna is projected to begin depreciating towards the end of the forecast horizon, and unit labour costs are expected to rise faster than is consistent with the inflation target until mid-2009. The resulting cost pressures will prevent inflation from moving towards the target quickly enough, assuming the policy rate path in the July issue of *Monetary Bulletin*, despite the slack developing from the middle of 2008. As Chart 4 shows, disinflation would proceed much more slowly with the policy rate path presented in July. Inflation would remain above 3% throughout 2009 and would not reach the target until the very end of the forecast horizon.

With the króna depreciating in the latter half of the forecast horizon, the policy rate path needs to be higher than forecast in July so as to anchor inflation expectations firmly enough to attain the inflation target within an acceptable time period. As Chart 5 illustrates, the revised policy rate path brings inflation to target nearly one year earlier than would be possible if the policy rate followed the path envisaged in July. This is nonetheless later than projected in July, as was discussed previously. The policy rate will begin to ease around mid-2008, approximately one quarter later than forecast in the last issue of *Monetary Bulletin*. It will remain higher than in the last forecast until year-end 2008 and then fall more rapidly than assumed in July. The policy rate will be close to the level in the July forecast in the first half of 2009 and below it throughout the remainder of the forecast horizon, with a rate close to 4½% at the end of the forecast in both cases. It is always within the 50% confidence band of the July forecast, however. A relatively low policy rate at the end of the forecast horizon will underpin the recovery from 2010.

than currently assumed, in which case a lower policy rate could suffice to achieve the objectives in the baseline forecast, or a policy rate hike could allow them to be achieved sooner. If global interest rates rise more than assumed in the baseline forecast, this would work together with a tighter monetary policy to offset the impact on the króna toward the end of the forecast horizon.

Risk profile still tilted to the upside ...

In assessing the economic outlook and in monetary policy decision-making, it is important to consider not only the baseline forecast but also the risk profile. Alternative scenarios are used to shed clearer light on the two most important risks in the forecast.

Chart IX-3 shows the confidence interval for the exchange rate forecast. There is enormous uncertainty surrounding exchange rate developments, and this is reflected in a wide confidence interval. Combining the risk factors listed in Table IX-1 suggests an upward skewness in the probability distribution of the forecast, especially early in the forecast period. Similarly, these factors suggest that the risk of a larger than expected output gap early on is greater than the likelihood of an unexpected narrowing (see Chart IX-4). The probability distribution is likelier to be roughly symmetrical later on, however, when the negative effects of possible lower asset prices on private consumption offset the possible demand-side impact of the Helguvík aluminium smelter project. The probability distribution for the output gap is, not as asymmetric as in July, however, because the baseline forecast partly incorporates the risk of an underestimated output gap in historical data discussed in the July forecast. As before, the risk profile for inflation is tilted to the upside (Chart IX-5), especially because of the risk that the króna will depreciate more than is assumed in the baseline forecast. At the end of the forecast horizon, however, the probability distribution for the inflation forecast is roughly symmetrical, with asymmetric risks reflected in the probability distribution of the policy rate path. As discussed before, inflation is forecast to be at target in Q3/2009, with a 50% probability that it will be in the 1.7-3.7% range. The probability of attaining the target prior to late next year is very small, and the target is within the 50% confidence interval only from early 2009.

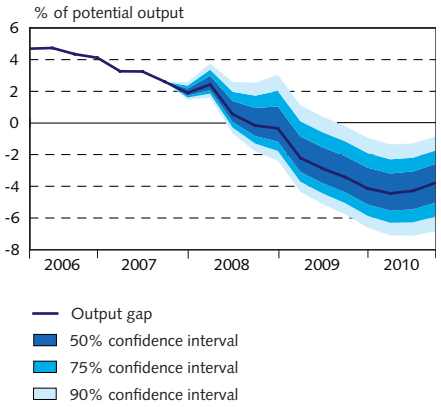
... suggesting a need for a tighter monetary stance than indicated in the baseline forecast

Uncertainties in assessing the macroeconomic and inflation outlook are reflected in corresponding uncertainties regarding the policy path needed to attain the inflation target within an acceptable horizon. Should economic developments or monetary policy transmission differ from what is assumed in the baseline forecast, the policy rate path must reflect those changes.

The policy rate path for the new baseline forecast is somewhat different from that published in July. The policy rate is raised by 0.2 percentage points and again by 0.25 percentage points at the next policy rate decision. According to the forecast, the policy rate will average 13.4% in Q4/2007, peak at 13.75% in the first two quarters of 2008, and then begin to ease a quarter later than assumed in the previous forecast. The overall monetary stance is therefore tighter than forecast in July. The risk profile in Table IX-1 still suggests, however, that inflation is likelier to turn out higher than assumed in the baseline forecast. Therefore, the risk profile for the policy rate forecast remains skewed to the upside; in other words, the likelihood that the Central Bank will need to raise the policy rate more or keep it high for longer than the baseline forecast indicates is greater than the likelihood of an earlier policy easing.

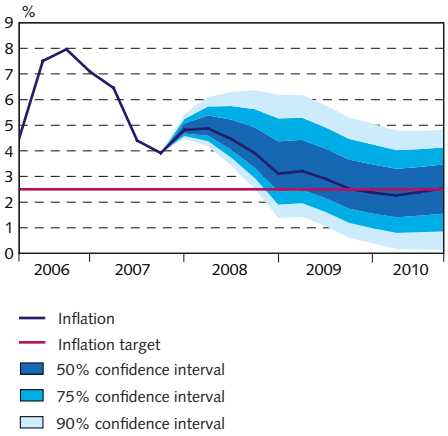
As is stated above, the alternative scenarios in Box IX-2 describe the two major risks to the baseline forecast and outline possible monetary policy responses to these shocks. Both scenarios indicate the need

Chart IX-4
Output gap
Forecasting period Q4/2007 - Q3/2010



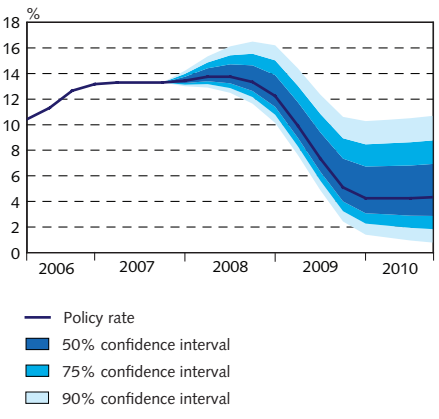
Source: Central Bank of Iceland.

Chart IX-5
Inflation
Forecasting period Q4/2007 - Q3/2010



Souces: Statistics Iceland, Central Bank of Iceland.

Chart IX-6
Policy rate
Forecasting period Q4/2007 - Q3/2010



Source: Central Bank of Iceland.

for an even tighter monetary stance if events unfold as described. Both policy rate paths fall within the 90% confidence interval of the baseline forecast.

Based on the probability distribution of the policy rate path, there is a high probability that the policy rate will average 13-14% in Q4/2007 and range between 13¼-15% in the first quarter of 2008. At the end of the forecast horizon, the policy rate is forecast at 4½%, somewhat below the neutral rate, i.e. the level that neither stimulates nor discourages the economy. The confidence interval is very wide in the latter half of the forecast horizon, however, reflecting the great uncertainty surrounding economic developments so far in the future.

Box IX-2

Alternative scenarios

Unforeseen shocks and changes to important underlying assumptions can cause economic developments to deviate substantially from forecasts. It is therefore useful to analyse how sensitive the baseline forecast is to probable deviations in the development of various key economic variables. The number of possible deviations is obviously unlimited, but an attempt is made to assess the principal risk factors and estimate more thoroughly the effects of the two that are considered most important.

As in the previous forecast, the development of the exchange rate of the króna over the forecast horizon is considered the primary risk to the baseline forecast. The July issue of *Monetary Bulletin* included an assessment of the impact of the Helguvík aluminium smelter project, as new major aluminium and energy projects were not included in the baseline forecast. The same applies to the current baseline forecast, as there has been little change in the fundamental circumstances related to prospective aluminium projects since July (see Box IV-2 for further discussion). The conclusions drawn in the alternative scenario in *Monetary Bulletin* 2007/2 are still generally valid and indicate that monetary policy will have to be somewhat tighter later in the forecast horizon than the baseline forecast suggests (see Box IX-2 in *Monetary Bulletin* 2007/2, pp. 40-42). At present, the uncertainty related to the upcoming wage settlements appears to carry more weight, largely because wage negotiations will apparently take place in a more difficult environment than previously envisaged, as regards both inflation and labour shortage.

A sharp depreciation of the króna before the economy cools down would require a higher policy rate than in the baseline forecast

The real exchange rate is at a record high and the enormous current account deficit requires a constant influx of foreign capital, partially to meet increasing foreign debt service. A declining supply of foreign capital could exert downward pressure on the króna, especially since it seems unlikely that the current account deficit will reach a sustainable level within the current forecast horizon. This situation could persist for some time, though the imbalance will unwind somewhat once the aluminium and power sector construction is complete and aluminium exports have reached their full potential. The timing of a possible depreciation of the króna is difficult to forecast, however. The króna has, for example, remained strong for a prolonged period even under economic conditions that would tend to press it downward, and it has weathered the recent upheavals in the global capital markets relatively well. The wide interest rate differential and the Central Bank's clear signalling of a continuing tight monetary stance have likely played a key role in supporting the króna.

Though the króna withstood the turmoil in August, the danger of sudden downward pressure still remains. The alternative scenario presented here is similar to the one described in July, though the depreciation takes place slightly later. It is assumed that the króna will depreciate by a total of 20% in Q1 and Q2/2008 and that the spread on Icelandic residents' foreign liabilities will increase by 1.5 percentage points at the same time. It should be emphasised that the timing is not a forecast but is merely chosen to allow the impact of the shock and the response to it to be captured within the forecast horizon. Such a sequence of events could conceivably be triggered by a revision of international investor risk appetite and rising global interest rates.

A precipitous depreciation of the króna would cause domestic demand to contract more sharply next year than in the baseline forecast. A more positive contribution from net trade will bolster output growth, however, thus widening the output gap. Mounting inflationary pressures will ensue, calling for a tighter monetary stance. Chart 1 shows the Central Bank's possible monetary policy response to such a shock. The policy rate is raised from 13.3% to over 15% in Q2/2008 and held more or less unchanged until the latter part of the year, whereupon the policy stance starts to unwind. The policy rate is lowered more gradually than in the baseline forecast, however, with the greatest divergence in the policy rate path occurring around mid-2009, when the policy rate is approximately 9% in the alternative scenario, compared to 5% in the baseline forecast. At the end of the forecast horizon, however, the rate is more or less identical in both cases. The increase in the policy rate is not as large as in the alternative scenario in the last issue of the *Monetary Bulletin*, where a policy rate hike of 1½ percentage points above the baseline forecast was assumed. There are two reasons for this: the current baseline forecast already includes some rate hikes, and the depreication occurs at a stage of the business cycle when the output gap has shrunk more than was the case in July, closer to the emergence of a substantial slack.

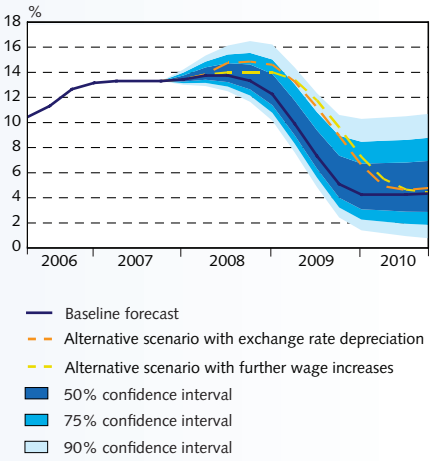
A higher policy rate does not prevent rising inflation in the wake of the depreciation (Chart 2). Inflation peaks at around 6% in Q3/2008, compared to just below 4% in the baseline forecast. It then gradually begins to decline, reaching 3% in Q4/2009, as opposed to 2½% in the baseline forecast, and is projected to reach the inflation target at the end of the forecast horizon, as in the baseline forecast.

The purpose of raising the policy rate following the depreciation of the króna is not to bolster the króna but rather to prevent higher inflation from severely eroding the real policy rate and to create a credible anchor for inflation expectations in spite of the temporary upsurge in inflation. The timing of the depreciation is therefore crucial. If it occurs while the economy is still overheated, there is a greater risk that it will have a persistent effect on inflation than if it happens when the economy is not at full capacity. The source of the exchange rate shock is therefore important as well. If the depreciation is caused by a negative supply shock – for example, deteriorating terms of trade – a weaker monetary policy response is required than if the depreciation is caused by a negative portfolio shock (e.g. if foreign investors reassess the risk attached to domestic assets, as is described in this Box). A negative supply shock would weaken overall demand, thus counteracting the inflationary effects of the exchange rate depreciation. There would then be less need for a policy rate hike, especially if inflation expectations are firmly anchored.

If wages rise faster than in the baseline forecast, a policy rate higher than in the baseline forecast will be needed

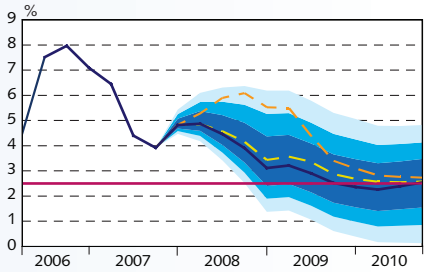
The domestic labour market has been very tight for many years, as is reflected in an unemployment rate well below its natural level and a

Chart 1
Policy rate - alternative scenarios



Source: Central Bank of Iceland.

Chart 2
Inflation - alternative scenarios



Sources: Statistics Iceland, Central Bank of Iceland.

growth rate of unit labour costs far above the level compatible with the inflation target. This unfavourable wage development is a key reason for Iceland's persistent high inflation rates in recent years.

At the end of 2007, a number of contractual wage agreements will expire, which contributes to the uncertainty surrounding wage developments. The baseline forecast allows for wage rises somewhat above the level compatible with the inflation target. It assumes that unit labour costs will rise by more than 8% in 2007, as compared with nearly 10% in 2006. In 2008, unit labour costs are projected to rise by more than 4%, while in 2009 and 2010 the increase is forecast at approximately 2.5%, which is in line with the inflation target (see also Chapter VI).

The alternative scenario assumes that negotiated wage increases will be rather higher and will creep up the pay scale, as often happens in a tight labour market. It assumes that wages will rise by 2-4 percentage points more than in the baseline forecast from early 2008 and throughout 2009. The resulting increase in disposable income will stimulate private consumption and keep it above the level in the baseline forecast from the middle of 2008. Overall demand will therefore be stronger and the output gap larger. Inflationary pressures will mount indirectly through the larger output gap and directly through the transmission of higher wage costs to retail prices. Inflation will therefore increase, assuming the baseline policy rate path. In order to contain inflation, the policy rate is raised by 0.25 percentage points over and above the baseline forecast early in 2008 and then held unchanged until the beginning of 2009, when the easing cycle begins. The policy rate is therefore higher than in the baseline forecast until the end of the forecast horizon, with the divergence peaking in late 2009. At that point the policy rate is 9½% in the alternative scenario, compared to 5% in the baseline forecast (see Chart 1). This will suffice to reduce inflation to target by the beginning of 2010, roughly six months later than in the baseline forecast (see Chart 2). Although the inflation path is similar to that in the baseline forecast, the cost of substantial wage hikes will emerge in the form of a substantially higher policy rate for most of the forecast horizon, which will eventually result in a sharper contraction than in the baseline scenario.

Large depreciation may contribute to excessive wage increases

The current strength of the króna rests on weak foundations. At the same time there is a serious shortage of labour in Iceland. Thus, the possibility that the deviations described above could amplify one another is cause for particular concern. If the króna depreciates considerably in the run-up to wage negotiations, labour unions could demand correspondingly larger wage hikes in order to achieve a targeted increase in real earnings. A sizeable depreciation also makes the inclusion of indexation clauses in wage agreements more likely. Such a development could easily set off a vicious cycle of a depreciating exchange rate and escalating wages, similar to the wage-price spirals of the 1970s and 1980s. A tight monetary stance is needed in order to break the spiral, and it can only be done by raising the policy rate. Excessive wage increases will only delay the inevitable adjustment of the economy towards a more sustainable level and will eventually cause a more severe contraction later on. Tighter monetary policy moves this adjustment forward in time and tends to soften the contraction, while ensuring that inflation remains at or near target.

Credibility of monetary policy determines how strongly it needs to respond

The alternative scenarios above should not be viewed as forecasts but rather as a way to highlight how some major elements of un-

certainty to the baseline forecast could change the inflation outlook and affect monetary policy response. The strength of the response required will be determined to an extent by the credibility of monetary policy. If the Central Bank's ability and willingness to keep inflation at target is questioned, a firmer policy response is needed. The alternative scenarios are therefore fraught with uncertainty in the same way as the baseline forecast. Most important, however, is that monetary policy is shown to respond to shocks in a systematic and predictable manner.

Appendix 1

Baseline macroeconomic and inflation forecast 2007/3

Table 1 Macroeconomic forecast

		Volume change on previous year (%) unless otherwise stated[1]				
	B.kr.		*Forecast*			
GDP and its main components	*2006*	*2006*	*2007*	*2008*	*2009*	*2010*
Private consumption	685.6	4.4 (4.6)	3.6 (1.0)	-1.7 (-3.2)	-6.5 (-5.3)	-1.5
Public consumption	285.4	3.9 (2.9)	3.2 (3.0)	3.4 (3.0)	3.0 (3.0)	3.0
Gross fixed capital formation	388.0	19.8 (13.0)	-19.5 (-25.6)	-15.3 (-15.8)	-11.4 (-8.9)	11.5
Business sector investment	271.0	20.0 (13.8)	-30.7 (-37.7)	-28.3 (-30.2)	-22.7 (-14.1)	24.4
Residential construction	75.2	17.8 (17.2)	9.5 (1.2)	1.9 (-9.2)	-4.3 (-9.9)	-3.0
Public works and buildings	41.9	22.3 (0.8)	2.0 (5.9)	14.0 (37.7)	10.5 (4.5)	4.7
National expenditure	1,372.5	9.2 (7.4)	-3.4 (-6.2)	-3.7 (-4.6)	-5.7 (-4.3)	2.2
Exports of goods and services	374.0	-5.1 (-5.6)	4.2 (12.0)	14.1 (9.5)	5.0 (5.5)	5.2
Imports of goods and services	583.6	10.1 (8.8)	-8.6 (-9.0)	-0.1 (-4.9)	-4.9 (-2.1)	4.6
Gross domestic product	1,162.9	4.2 (2.6)	0.9 (0.2)	0.4 (0.8)	-2.0 (-1.4)	2.3
Other key aggregates						
Current account balance (% of GDP)		-25.5 (-26.9)	-18.0 (-15.4)	-14.4 (-11.5)	-10.5 (-8.8)	-10.0
Output gap (% of potential GDP)		4.1 (3.3)	1.9 (0.4)	-0.3 (-0.7)	-4.1 (-3.4)	-3.4
Unit labour costs (change between annual averages in %)		9.4 (8.9)	8.3 (7.8)	4.2 (3.4)	2.0 (3.5)	2.5
Real disposable income (change between annual averages in %)		6.0 (5.1)	5.6 (5.0)	-2.8 (-2.2)	-2.8 (-1.5)	0.7
Unemployment (% of labour force)		1.3 (1.3)	1.1 (1.5)	2.7 (3.0)	4.2 (4.3)	4.0
Policy rate and exchange rate						
Central Bank policy interest rate (%)		11.9 (11.9)	13.3 (13.3)	13.3 (12.4)	6.7 (7.3)	4.1
Foreign exchange index (Dec. 31. 1991 = 100)		121.4 (121.4)	118.0 (117.4)	118.8 (119.5)	127.3 (127.9)	135.8

1. Figures in parentheses show forecast in Monetary Bulletin 2007/2.

Table 2 Inflation forecast

	Change on same period of previous year (%)		*Annualised quarterly change (%)*
	Forecast MB 2007/3	*Forecast MB 2007/2*	*Forecast MB 2007/3*
Quarter	*Measured value*		
2007:1	6.5	6.5	2.0
2007:2	4.4	4.4	5.8
2007:3	3.9	3.7	5.6
	Forecast value		
2007:4	4.8	3.6	5.9
2008:1	4.9	3.7	2.2
2008:2	4.5	3.2	4.1
2008:3	3.9	2.8	3.4
2008:4	3.1	2.7	2.7
2009:1	3.2	2.6	2.6
2009:2	2.9	2.5	2.9
2009:3	2.5	2.3	1.8
2009:4	2.4	2.2	2.1
2010:1	2.3	2.3	2.2
2010:2	2.4	.	3.4
2010:3	2.5	.	2.4

Change year-on-year	*Forecast MB 2007/3*	*Forecast MB 2007/2*
2007	4.9	4.5
2008	4.1	3.1
2009	2.7	2.4
2010	2.4	.

Appendix 2

Financial market analysts' assessments of the economic outlook

For each issue of *Monetary Bulletin*, the Central Bank surveys financial market analysts' assessments of the economic outlook. The latest survey was conducted in mid-October, and participants were Askar Capital and the research departments of Glitnir, Kaupthing Bank and Landsbanki. The main changes from the previous survey in June are that analysts forecast somewhat higher inflation and a higher policy rate along the forecast horizon. For 2007, they forecast more output growth but slightly less growth in the next two years.

Outlook for higher inflation in the short-term

The inflation outlook across the forecast horizon has deteriorated since last summer. When the year is drawing to a close, the analysts forecast year-on-year inflation in 2007 of almost 5%, ½ percentage point higher than in the previous survey. On average they forecast 4.2% year-on-year inflation in 2008, as in the Central Bank's baseline forecast. In the baseline forecast, the inflation target is attained in 2009, when year-on-year inflation measures 2.7%. The analysts expect on average, 3.2% inflation in 2009 and 2.8% inflation in 2010. Inflation is on target in 2010 in the Central Bank's baseline forecast. It should be noted that the monetary stance in the baseline forecast is considerably tighter in 2008 than the analysts forecast. One analyst, however, expects the inflation target to be attained next year because of a considerable drop in real estate prices.

Increasing output growth along the forecast horizon

Analysts have revised their June forecasts for growth in 2007 upwards to an average of 2.2%. They expect just over 2½% annual growth in the next two years, rising to over 3% in 2010. Interestingly, the projected disinflation along the forecast horizon mentioned above is supposed to occur without any unwinding of imbalances in the economy. The outlook for output growth diverges quite markedly from the Central Bank's baseline forecast, which projects almost 1% growth in 2007 and ½% in 2008. For 2009, a 2% contraction is expected, but output growth picks up in 2010 to almost 2½%. The analysts' forecasts for output growth in 2009 range from 1.5-4%. It should also be noted that, unlike the Central Bank the analysts assume further investments in the aluminium and power sectors.

Analysts forecast a relatively strong króna over the forecast horizon

In recent months the exchange rate of the króna has fluctuated considerably due to turmoil in financial markets. Analysts agree that the króna will weaken somewhat in 2008, and they forecast an average exchange rate index of almost 125 one year ahead. Most analysts ex-

pect the króna to appreciate subsequently and remain relatively strong over the forecast horizon. On average, they forecast an exchange rate index of 123 two years ahead. The exchange rate path in the Central Bank's baseline forecast differs markedly from this scenario. There the króna remains strong throughout next year and weakens in 2009. On average, the exchange rate index in the baseline forecast is almost 119 in 2008 and 127 in 2009.

Analysts expect the policy rate to be lowered in Q2/2008

The Central Bank's policy rate has been unchanged at 13.3% since December 2006. On average, analysts forecast a policy rate of 11½% one year ahead, 8½% two years ahead, and then almost unchanged thereafter throughout the forecast horizon. In the short term, their forecasts are broadly in line with the policy rate path published in *Monetary Bulletin* in July. All analysts expect the policy rate to be lowered in Q2/2008, whereas in the previous survey they projected a policy rate drop at the end of this year.

Diverging views of housing price developments

The analysts have somewhat diverging views of housing price developments. On average they forecast that real estate prices will increase by almost 2% over the next twelve months. However, one analyst projects an almost 9% decline in house prices, while another expects a 10% rise. Analysts' views of long-term developments also vary, but on average they forecast a year-on-year increase of 3% at the end of 2009.

Like the exchange rate of the króna, equity prices have fluctuated considerably in recent months. On average, analysts forecast an OMXI15 index value of almost 9,500 one year ahead and just over 11,000 two years ahead. The forecast is almost unchanged from the previous survey in June.

Overview of forecasts by financial market analysts[1]

	2007			*2008*			*2009*			*2010*		
	Average	*Lowest*	*Highest*	*Average*	*Lowest*	*Highest*	*Average*	*Lowest*	*Highest*	*Average*	*Lowest*	*Highest*
Inflation (year-on-year)	4.9	4.9	5.0	4.2	3.5	4.5	3.2	2.7	3.7	2.8	2.2	3.8
GDP growth	2.2	1.5	2.7	2.6	2.0	3.7	2.7	1.5	4.0	3.3	2.1	4.0

	October 2008			*October 2009*			*October 2010*		
Inflation	3.4	2.0	4.5	3.0	2.7	3.3	2.8	2.5	3.8
Effective exchange rate index of foreign currencies vis-à-vis the króna (Dec. 31, 1991=100)	125	123	126	123	118	127	122	117	130
Central Bank policy rate	11.5	10.8	12.0	8.5	8.0	9.5	8.5	7.0	9.5
Nominal long-term interest rate[2]	8.9	8.7	9.2	8.3	8.0	8.5	8.1	7.6	8.7
Real long-term interest rate[3]	4.3	4.2	4.5	4.0	3.8	4.2	4.1	4.0	4.3
OMXI15 share price index	9,451	7,500	10,600	11,089	9,000	12,700	12,638	10,000	15,000
House prices (12-month change)	1.7	-8.7	10.0	3.1	-0.5	6.0	2.9	0.0	7.0

1. The table shows percentage changes between periods, except for interest rates (percentages), the foreign exchange rate index and OMXI15 index (index points). Participants in the survey were Askar Capital and the research departments of Glitnir, Kaupthing Bank and Landsbanki. 2. Based on yield in market makers' bids on non-indexed T-notes (RIKB 13 0517). 3. Based on yield in market makers' bids on indexed Housing Financing Fund bonds (HFF150644).

Source: Central Bank of Iceland.

Appendix 3

Estimating Iceland's equilibrium real exchange rate

In a recent working paper, Robert Tchaidze, an economist at the International Monetary Fund (IMF) attempts to estimate the equilibrium real exchange rate of the Icelandic króna.[1] In carrying out his assessment, he uses three methods developed by the Fund: the macroeconomic balance approach, the equilibrium real exchange rate approach, and the external sustainability approach. The first two of these are based on regression analysis, wherein an attempt is made to find statistically significant relationships between the equilibrium real exchange rate and the current account norm and other economic factors (fundamentals), respectively using cross-country analysis, excluding Iceland. The last of the three methods is based on a calculation of the trade balance that sustains a given debt position and rate of return on assets and liabilities.

Macroeconomic balance

This method involves the use of statistical methods to explain developments in a country's current account. The following equation is considered most suitable:

$$CA^*/GDP = 0.19\times PB/GDP - 0.14\times F_{65} - 1.22\times DPOP + 0.23\times B_{oil}/GDP + 0.02\times RI + 0.02\times NFA/GDP$$

where CA^* indicates the equilibrium current account, *GDP* is gross domestic product, *PB* is the fiscal balance, F_{65} is ratio of population over 65 to the population aged 30-64, DPOP is population growth, B_{oil} is the oil trade balance, *RI* is relative income corrected for differences in price levels, and *NFA* is net foreign assets.

The equation is used to forecast the current account norm based on IMF's forecast for the year 2012.[2] The outcome is that a current account corresponding to 1-2.2% of GDP is consistent with equilibrium. The IMF projects Iceland's current account deficit at 5.6% of GDP in 2012. In order to reduce the deficit to the equilibrium value, the real exchange rate should be 17-23% lower than the average real exchange rate for 2006.

1. See R. Tchaidze (2007), "Estimating Iceland's real equilibrium exchange rate", IMF Working Papers, forthcoming. Extensive discussions of exchange rate indices and the real exchange rate can be found in the following articles: "What do exchange rate indices measure?", *Monetary Bulletin* 2005/3, pp. 63-66; "The real exchange rate of the króna in a historical and international context", *Monetary Bulletin* 2005/1, pp. 68-71; and in Arnór Sighvatsson, "Real exchange rate of the krona: Does it exist?" (in Icelandic), *Fjármálatíðindi*, 2000, vol. 47, pp. 5-22.
2. These forecasts are published in *World Economic Outlook*. The data in the Working Paper are from the May 2007 issue.

Equilibrium real exchange rate

This method uses statistical methods to explain developments in a country's real exchange rate as a function of fundamental economic variables. The following equation is considered most suitable:

$$\ln(REER^*) = \text{constant} + 0{,}04 \times NFA/[(X + M)/2]$$

$$+ 0.15[\ln(Pr_T) - \ln(Pr_{NT})] + 0.46 \times \ln(ToT) + 2.64 \times G/GDP$$

where ln stands for the natural logarithm, *REER** is the equilibrium real exchange rate, *NFA* is net foreign assets , *X* is exports, *M* is imports, Pr_T is relative productivity in tradables, Pr_{NT} is relative productivity in non-tradables, *ToT* is terms of trade, and *G* is government consumption.

Using this equation to forecast the equilibrium real exchange rate in Iceland, based on IMF projections for the year 2012, reveals that the equilibrium level is 95-98, while the exchange rate index stood at 106.7 for the year 2006. To achieve equilibrium, the real exchange rate would therefore have to decline by 8-11% from its average 2006 level.

External sustainability

An economy whose foreign debt grows faster than its domestic production and income cannot sustain itself. However, it is possible to maintain a given liability ratio indefinitely if certain conditions are met. If net foreign assets at the end of year *t* are assigned the value NFA_t, the nominal rate of return on that variable is called i^N, and TB_t is the difference between exports and imports (the trade balance), then the following applies:

$$NFA_t = TB_t + (1 + i^N)NFA_{t-1}$$

If *GDP* grows at the rate of *n* and *NFA* increases at the same rate, so that the ratio *NFA*/*GDP* remains constant, then: $NFA_{t-1} = NFA_t/(1 + n)$; and it is possible to rewrite the formula above as follows:

$$TB_t = -(i^N - n)NFA_t/(1 + n)$$

In Tchaidze's paper, assets and liabilities are split into direct investments and portfolio equity investment (assets are called E_A and liabilities E_L), and bonds, loans, and reserves (assets are called D_A and liabilities D_L). In this case, the following applies:

$$TB_t = [-(i^{EA} - n)E_{At} - (i^{DA} - n)D_{At} + (i^{EL} - n)E_{Lt} + (i^{DL} - n)D_{Lt}]/(1 + n)$$

where i^{EA}, i^{DA}, i^{EL}, and i^{DL} represent the nominal rates of return for the respective assets and liabilities. The premises for output growth and returns are based on IMF projections for the year 2012. Inserting these numbers into the equation, together with Iceland's foreign assets and liabilities, gives an equilibrium value for the trade balance as a percentage of GDP. According to Tchaidze, Iceland's net assets were -93% of GDP at the end of 2004 and -144% at year-end 2006

(excluding foreign exchange reserves). Based on the former figure, the equilibrium value of *TB/GDP*, the trade balance norm, is -0.8%, while the latter figure gives a trade balance norm of -2.1%. The reason why the equilibrium value falls as net foreign assets decline, which appears to run counter to logic, is that Tchaidze assumes not only that the rate of return on equities is higher than on bonds, but also that the return on Iceland's investments abroad is higher than that of foreign investments in Iceland. It is assumed that $i^{EA} - n = 2.8\%$, $i^{EL} - n = 1.5\%$, and $i^{DA} - n = i^{DL} - n = 0.6\%$, where n is the annual growth in GDP.

The IMF forecasts that the trade balance will be -4.3% of GDP in 2012. To reduce the trade deficit to -0.8% of GDP, the real exchange rate would have to be 18% lower than the 2006 average; and to reduce the deficit to -2.1% of GDP, the real exchange rate would have to be 11% below the 2006 average.

In his paper, Tchaidze points out various limitations and caveats that readers should bear in mind while examining the conclusions in the paper: data may be inexact, the forecasts upon which calculations are based are imprecise, and methodology may be subject to debate. However, the fact that all three of these calculation methods give similar results must be food for thought. The real exchange rate of the Icelandic króna may be too high, and it would need to drop by 8-23% in order to ensure internal and external economic equilibrium.

According to Central Bank calculations, the real exchange rate in August 2007 was 2½% above the 2006 average, which implies that a downward adjustment of 10-25% would be required to achieve the equilibrium estimated in Tchaidze's paper. In order to achieve this reduction in the real exchange rate, the exchange rate index would have to rise from its August 2007 average of 119.9 to somewhere between 134 (assuming a 10% real depreciation) and 160 (assuming a 25% real depreciation). These calculations do not, however, take into consideration the effects of changes in the exchange rate on price levels. If a decline in the nominal exchange rate increases price levels, the nominal exchange rate must depreciate further in order to achieve the same decline in the real exchange rate. If it is assumed that a depreciation will push prices upward with a weight of around 0.4, as econometric estimates indicate, an exchange rate index of 143-187 would be required to achieve equilibrium in accordance with the results in Tchaidze's paper. It is appropriate to reiterate that the conclusions drawn in the paper are quite uncertain. They are intended to shed light on the equilibrium real exchange rate, but the real exchange rate may adjust to its long-term equilibrium level over an extended period, and during the adjustment process it could dip below its long-term equilibrium value.

Financial markets and Central Bank measures[1]

Upheaval in the global markets

The financial markets in Iceland and abroad have been in a state of flux in recent months, primarily due to the tumult in the segment of the US housing loan market known as the sub-prime mortgage market. This has kicked off a reassessment of risk after a long period of low interest rates, low credit spreads, a glut of liquid assets, increased risk-appetite and increased leverage. Central banks in Europe and the United States have taken steps to prevent a financial crisis. The European Central Bank significantly increased its liquidity facility, and the Bank of England did the same, granting one bank an emergency loan as well. The US Federal Reserve also increased its facility, reduced the overnight discount rate and finally resorted to a reduction in its federal funds rate which was beyond market expectations. There was no sign of a liquidity squezze in the króna market, and there was no need for the Central Bank of Iceland to take any special action. In the fall, the Icelandic Treasury's debt management affairs underwent a structural change when the National Debt Management Agency ceased operations and its activities were transferred to the Central Bank of Iceland.

Unease in the global markets …

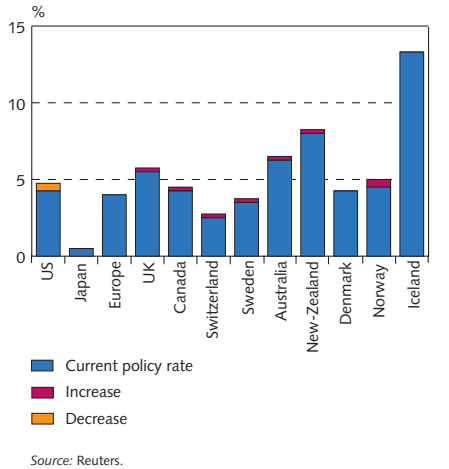
Concerns about the impact that unsecured mortgage lending in the US would have on the solvency of credit institutions led financial institutions to be reluctant to lend to one another or to corporations. The result was a sharp rise in interbank rates, with the spread between interbank rates and base interest rates the largest it has been in years. Investors fled, transferring their assets to short-term government-backed securities, suffering a substantial reduction in returns in the process. The turmoil peaked around mid-August. The European Central Bank, the Bank of England, and the US Federal Reserve responded with a tremendous injection of liquidity into the banking system.

The Federal Reserve reduced its overnight discount rate on 17 August. The premium on the fed funds rate dropped from one percentage point to 50 basis points, bringing the discount rate to 5.75%. On 18 September the Federal Reserve then lowered the fed funds rate from 5.25% to 4.75%, while most market agents had expected a decrease of 25 basis points. What followed was the largest one-day stock market surge in the US in quite a long time, and it is safe to say that the measure somewhat restored investor confidence. Shortly thereafter, the Dow Jones Industrial Average hit a record high but fell again soon afterwards. It appears as though the market's reassessment of risk is, to some degree, a permanent one. Conditions in the financial markets have been unusual in the past few years, with low base interest rates and spreads at a historical low. There has been easy access to capital, and investors with a high tolerance for risk have been amply rewarded. On the other hand, credit spreads are substantially wider now than they were at mid-year, and investors are clearly more risk-adverse than they have been in a long time.

Most central banks have the authority to grant emergency loans to financial institutions experiencing liquidity problems, and they can stretch their rules on collateral in order to provide easier access to such assistance. Central banks can provide a limitless amount of domes-

Chart 1

Changes in selected central banks' policy interest rates since the last *Monetary Bulletin*

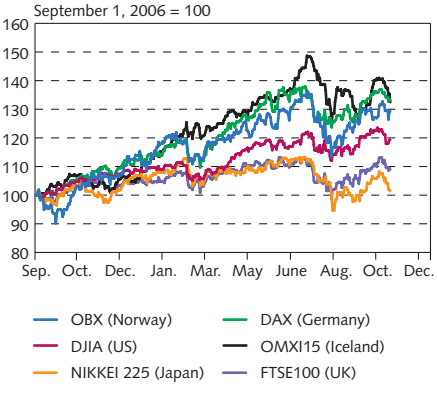


Source: Reuters.

Chart 2

Development of selected share indices

Daily data September 1, 2006 - October 24, 2007

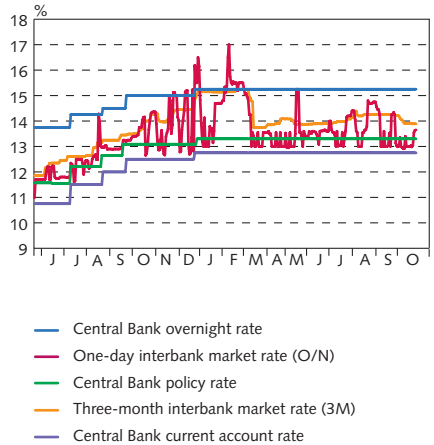


Source: Bloomberg.

1. This article uses data available on 24 October 2007.

Chart 3
Interest rates in the interbank market and Central Bank policy rate

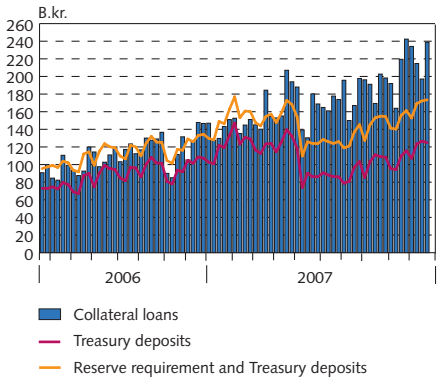
Daily data May 22, 2006 - October 24, 2007



Source: Central Bank of Iceland

Chart 4
Collateral loans, Treasury deposits and reserve requirement

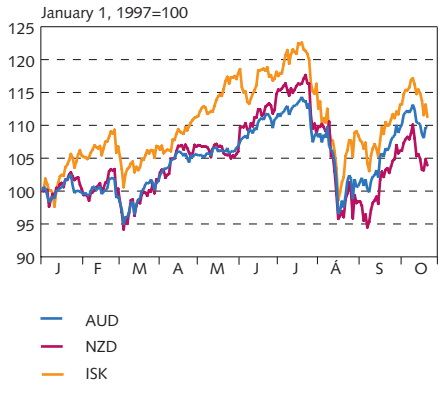
Daily data May 23, 2006 - October 24, 2007



Source: Central Bank of Iceland.

Chart 5
Exchange rate against JPY

Daily data May 22, 2006 - October 24, 2007



Source: Central Bank of Iceland

tic currency provided that the borrower meets the set requirements. The purpose of emergency lending is to prevent short-term liquidity problems from forcing a financial institution with a satisfactory equity position into bankruptcy. On 14 September the Bank of England announced that, following consultation with the UK's Financial Services Authority, it had granted the mortgage lender Northern Rock such a loan. Northern Rock deposit owners reacted quickly to the news and began withdrawing their balances, and for the first time since the mid-19th century, there was a run on a British bank. Thus the intended solution to the problem simply caused another, much graver, problem: lack of faith in the bank's ability to handle its affairs. Finally the British government announced its intention to guarantee all deposits in the bank, stating that the guarantee would remain in effect until the turmoil subsided. The reactions of the bank's customers took everyone by surprise, leaving governmental authorities and financial institutions all over the world to ponder the double-edged nature of intervention by a lender of last resort.

... and in Iceland as well

The unrest in the global capital markets did not make a major impact on the domestic money market, and there were no signs of liquidity problems requiring action by the Central Bank. Iceland's financial institutions seem quite well prepared to meet the challenge of a temporary squeeze in access to credit. The experience of last year was doubtless a valuable lesson.

The króna depreciated sharply while the commotion in the markets was at its peak. Between late July and mid-August it fell by roughly 15%, and position-taking in the króna was subject to wild fluctuation in August. According to the data that the Central Bank compiles on the commercial banks' foreign exchange balances,[2] their holdings in currency forwards totalled 769 b.kr. at the end of August, while the average balance for the month was only 674 b.kr., some 32 b.kr. less than at the end of July. Investors in the króna seem therefore to have closed their positions in the first half of August, when the turbulence was at a high point, and then reopened their positions toward the end of the month. Thus the banks' currency forwards rose substantially in August despite all the furore, whether the balance is measured in krónas or in foreign currency, while the króna depreciated roughly 3.5% over the course of the month. Since that time it has held its own, and exchange rate volatility has lessened. Because of the strong link between the Icelandic króna and the exchange rate of other high-yielding currencies, volatility in the króna is largely expected to be determined by conditions on the global financial markets.

Domestic equities hit a record high on 19 July, when the OMXI-15 index reached 9,080. A month later, however, it had plummeted 17% from its peak level and measured 7,550 on 16 August. Half of the loss corrected itself over the following days. Equity prices fell again, however, in mid-September, and the OMXI-15 dropped once more to 7,550. It began rising again soon afterwards, though and reached

2. Data from Glitnir hf., Kaupthing hf., and Landsbanki Íslands hf.

8,600 by mid-October. Since then prices have been sinking further as earnings reports are published and it begins to emerge that the performance of the banks and investment companies forming the backbone of the OMXI-15 was much less stellar in Q3 than in the first six months of the year.

Glacier bond issuance abates

Glacier bond issuance net of maturities has totalled 109 b.kr. so far this year. The total outstanding glacier bond stock dropped by 16 b.kr. in the third quarter, while in August it was at a record high of 437 b.kr. The nominal value of the outstanding glacier bond stock now stands at 373 b.kr. Only 12 b.kr. will mature during the remainder of the year, as opposed to 68.5 b.kr. in January 2008. Over the past four weeks, glacier bond issuance has totalled a mere 4 b.kr., which indicates limited market interest at present.

Healthy Treasury liquidity and Central Bank collateral loan facilities

So far this year, the Treasury balance has been healthier than previously estimated. The Treasury's balance with the Central Bank has grown in recent months, totalling 133 b.kr. as of 17 October. The balance of Central Bank collateral loan facilities has also risen markedly. The surge just after the large glacier bond maturity date in September may indicate enhanced investor willingness to invest in the króna in the money market. The impact of the maturity date was hardly discernible on the currency market, which supports this conjecture. It could also mean that carry traders have chosen to conclude shorter contracts that can easily be closed at short notice.

The commercial banks also seem to have an ample balance in krónas. Interbank rates have been closer to the Central Bank's base rate than often before. Rates rose somewhat in August, however, when the unrest on the financial markets was at its peak. Most likely the banks cut back on lending temporarily while the storm blew over. However, interest rates never exceeded the Central Bank's overnight lending rate, which under normal circumstances forms a ceiling for short-term interest rates.

Long-term yields rise

Long-term indexed and non-indexed yields are now significantly higher than when the last *Monetary Bulletin* was published. Non-indexed yields have risen steadily throughout the year, partially in response to the Central Bank's message that a tight monetary stance is necessary for a while longer in order to rein inflation in. Indexed yields have also turned upward but moved off course following the tremors in July and August, when investors began hedging against inflation fuelled by a precipitous drop in the króna. Thus monetary restraint is clearly being transmitted to the far end of the yield curve.

Despite substantial increases in housing bond yields, the Housing Financing Fund has not changed the lending rates since 13 September. Yields on the secondary market for the longest maturities are now higher than the HFF's rates for loans without pre-payment fee. Because the Fund is large in comparison with the size of the domestic housing loan

Chart 6
Forward currency position of the commercial banks
At end of month August 2006-September 2007

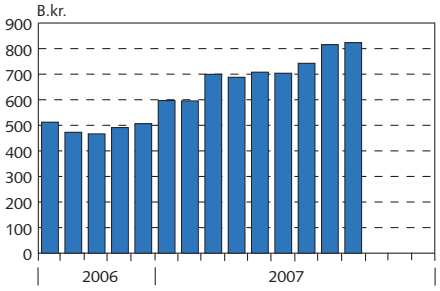
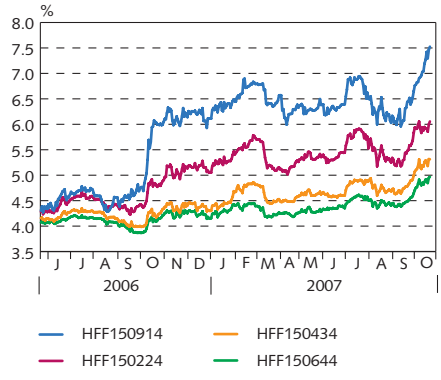


Chart 7
Gross researves and gross central government foreign debt
Q1/2001 - Q3/2007

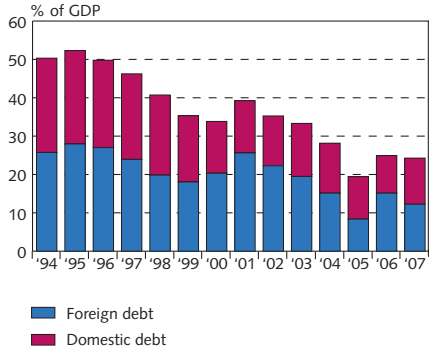
Source: Central Bank of Iceland.

Chart 8
HFF bond real yields
Daily data May 22, 2006 - October 24, 2007



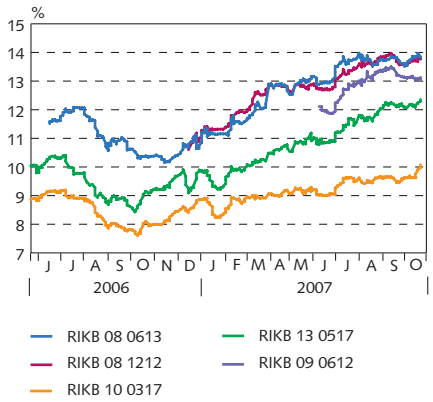
Source: Central Bank of Iceland.

Chart 9
Domestic and foreign Treasury debt[1]



1. Data until October 24, 2007 inclusive.
Source: Central Bank of Iceland.

Chart 10
Treasury note yields
Daily data May 22, 2006 - October 24, 2007



Source: Central Bank of Iceland.

market in Iceland, it is important that its lending rates reflect interest rate developments in the market. The Fund's interest rate policy has clearly obstructed the Central Bank's attempts to cut inflation.

Treasury bond issuance

The Treasury surpluses in recent years have been funnelled toward a substantial reduction of debt, with the result that the net Treasury balance – that is, Treasury claims and cash less liabilities – is in surplus of 63 b.kr. The Treasury's aim with its bond issuance is primarily to guarantee the existence of a secondary market in risk-free government instruments.

In 2001 the Treasury virtually stopped issuing indexed government bonds and turned its attentions to non-indexed T-notes and T-bills instead, with the objective of building up a risk-free non-indexed yield curve alongside the indexed yield curve of HFF bonds. Treasury and HFF issues provide an important foundation for pricing bonds issued by third parties, such as municipalities and corporations. The issuance also supports the development of domestic derivatives markets, and non-indexed Treasury issues support the build-up of a króna-based interest rate swap market. The yield curves are also an important measure of the market's inflation expectations.

In view of the Treasury's limited need for funding, the trend in domestic issuances has been to build up a limited number of non-indexed benchmark bonds. At present there are three T-bill series, the longest with a three-month maturity. In addition, there are five government bond series outstanding, two maturing in 2008 and the others maturing in 2009, 2010, and 2013.

Need for 10-year non-indexed T-notes

In recent years the average duration of the government loan portfolio has become shorter, having dropped from 4.5 years to 2.8 years in just over a year. The main reason is the Treasury's recent focus on the issuance of two-year T-notes. The last series of 10-year Treasury notes was issued in May 2002. Given the refinancing risk and the needs of the market, it would be desirable to lengthen the average lifetime of the portfolio by issuing a new series with a 10-year maturity. This would lessen the weight of indexed instruments in the domestic credit market and would facilitate the issue of long-term non-indexed bonds by other issuers. The issue of a 10-year T-note series would also facilitate price formation for 10-year króna-based interest rate swaps, whereas at present the banks post bilateral offers for interest rate swaps up to 5 years. Such an issue would also provide important additional information on the existing path and would improve monetary policy transmission across the yield curve. A comparison of yields between countries is generally based on 10-year benchmark bonds, and governments usually try to issue these regularly even in the absence of a need for funding. It is necessary to build up a new 10-year benchmark series quickly at first so that normal price formation can be achieved as soon as possible. As two T-note series with a total nominal value of 30 b.kr. will mature in 2008, this should pave the way for the issuance of a new 10-year series of Treasury notes.

Box 1

Changes in Treasury debt management administration

On 1 October 2007, the Central Bank of Iceland took over the administration of the Treasury's domestic debt management activities. An agreement to this effect was concluded on the basis of the Act on the National Debt Management Agency, no. 43/1990, which authorises the negotiation of an agreement with the Central Bank concerning the administration of foreign debt affairs, government guarantees, and relending, as well as other tasks assigned to the NDMA, as appropriate. Heretofore, the Bank has handled the Treasury's foreign debt management, while the NDMA has handled the domestic side.

The Treasury's credit market activities have dwindled in recent years. Total Treasury debt is projected at roughly 25% of GDP by year-end 2007, and it appears that the Treasury's funding requirements will be scant in the next few years. Roughly half of the Treasury's debt is in foreign currency. Since 1994 the proportion of foreign debt to total debt has ranged between 40% and 65%, most often hovering near 50%.

The Central Bank has handled foreign debt administration and communications with foreign ratings companies. A newly concluded agreement on domestic debt management assigns the Central Bank the task of administering and overseeing auctions, buybacks, and redemption of government securities, as well as agreements with primary dealers and administration of securities loans to primary dealers. The Bank will also handle regular information disclosure to the market and the Ministry of Finance and will maintain the website www.bonds.is. The transfer of the Treasury's debt management affairs to the Bank should not make any significant impact on the market.

According to the agreement, the Central Bank will also take over the NDMA's projects related to government guarantees and relending. The Bank will handle the administration of government guarantees and will assess the Treasury's risk due to such guarantees. It will also submit statements on government guarantees to the Ministry of Finance, as well as handling the processing and fee collection for such guarantees. The Central Bank will also handle the issuance of bonds for relending.

The agreement sets forth a clear division of tasks between the parties, assigning the management of debt policy affairs to the Ministry of Finance and authorising the Central Bank to execute day-to-day operations as the representative of the Ministry of Finance. The aim is to prevent a conflict of interest between the Central Bank's monetary policy objectives and the Treasury's debt management policy.

Lethargic T-bill market

The issuance of Treasury bills has unfortunately not yielded the expected results. Three-month T-bills are now sold on monthly auctions, with the size of each series roughly 4-5 b.kr. Thus there are usually some 12-15 b.kr. in T-bills outstanding, and the purchasers are mainly money market funds that hold them to maturity. The current trading volume in Treasury bills at the OMXI exchange is miniscule: while annual trading volume totalled around 80-90 b.kr. in 2003-2005, it has been below 10 b.kr. over the past two years. T-bills therefore make an insignificant contribution to price formation at the short end of the yield curve, as the interbank króna market has more or less taken on that role. The trend has been similar in other markets, including those

in the Nordic countries. Lending fees for T-bill issues are high, as are short-term yields. The average yield on accepted bids in 2007 has been between 13.5% and 15%. Because the yield curve tilts downward, lending fees (at least for the short term) would be lower. Lengthening the non-indexed yield curve by issuing Treasury notes with longer maturities is important for the market, for monetary policy transmission, and for the de-emphasis of indexation at the longer end of the yield curve. Therefore it seems a logical move to terminate issuance of Treasury bills and focus on longer-term bond issuance.

Thórarinn G. Pétursson[1]

The role of monetary policy

Recent weeks have seen considerable criticism of the Central Bank of Iceland's monetary policy. Some of the comments seem dramatically at odds with the views that have prevailed among economists and central bankers around the world over the past three decades. It is therefore appropriate to take another glance at the basic ideas that "are now accepted by monetary authorities and governments in almost all countries of the world" as being the key to a successful monetary policy strategy, as Frederic Mishkin, a governor of the Federal Reserve Bank of the United States, argues in a recent paper (Mishkin, 2006, pg. 1).

The costs of inflation

The economic and social costs of high inflation are now almost universally accepted. The runaway inflation that plagued many parts of Europe during the 1920s, the persistent inflation problems experienced by a number of South American countries in the late 20th century and, most recently, the soaring inflation in Zimbabwe – with inflation reaching several thousand percent – have all highlighted the detrimental effects of hyperinflation. In fact, there is no need to look at such extreme episodes to understand the high costs of inflation: the double-digit inflation in the industrial world in the 1970s and 80s, with inflation around 10%, made the costs very apparent.[2]

The detrimental effects of inflation are wide-ranging. The inevitable fluctuations in inflation make it difficult for households and firms to discern between changes in relative prices and general inflation. The sense of relative price that is the foundation for effective competition becomes dulled. The future price level becomes less predictable, leading to inefficient investment decisions and allocation of funds. This uncertainty reduces the informational content of price changes and hampers the market economy's ability to allocate limited resources efficiently. The interaction of inflation and the tax system exacerbates the situation. The tax system, for example, has a tendency to give preference to current consumption over future consumption (i.e. savings), and to favour investment in residential housing over other types of investment. These effects of the tax system increase with rising inflation. High inflation also exaggerates social inequality and erodes social solidarity. Income is transferred from small savers to professional investors, who are more able to protect themselves against inflation; from low-income groups to high-income groups; and from renters to

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2. The findings of Khan and Senhadji (2000) indicate, for example, that persistent inflation over 1-3% in industrial countries and over 7-11% in developing countries is detrimental to long-term economic growth.

homeowners, to give just a few examples. This transfer of income generates social tension and conflict among various income groups.

High and volatile inflation therefore has detrimental economic and social effects, which intensify as inflation rises and becomes more entrenched. Historical experience also shows that the cost of disinflation can be substantial in terms of lost output and income. This temporary cost is small, however, in comparison with the permanent cost of chronic inflation. For these reasons, low and stable inflation has become the overriding goal of monetary policy.

What can monetary policy attain?

Until the mid-1970s, the general consensus was that there existed a long-term trade-off between inflation and employment. An expansionary monetary policy could attain a low rate of unemployment at the long-term cost of modest inflation, while tighter monetary policy would suppress inflation but allow unemployment to rise. Economic research and the bitter experience from that era have led to an almost complete rejection of this notion.[3] On the contrary, the economy tends to move towards its natural level of output growth and unemployment, irrespective of the level of inflation. Monetary policy that attempts to hold unemployment systematically below its natural rate or to maintain output growth in excess of the growth in potential output ultimately leads only to escalating inflation without generating more jobs or increasing output growth. In fact, the above arguments concerning the high costs of inflation suggest that a more likely result would be fewer jobs and less output growth in the long run. Furthermore, research has shown that the harder monetary policy tries to maintain employment and output growth above their natural values, the less the short-term benefits become – and ultimately, they disappear entirely. The reason is that private agents gradually adjust to the behaviour of the central bank, and inflation expectations adapt ever more readily to higher inflation.

Because prices and wages tend to be sticky, the role of monetary policy basically centres on maintaining a low and stable rate of inflation and to reducing temporary deviations of employment and output from their natural levels, provided that inflation expectations have been successfully anchored. In periods of overheating, all the above targets become consistent with one another: output exceeds capacity, unemployment falls below its natural rate, and inflation is high. The role of monetary policy in such circumstances is to suppress economic activity temporarily by raising the policy interest rate, thus reducing inflationary pressures and bringing the economy back to a sustainable level. However, this process can take time and lead to temporary economic hardship for companies and households. It is therefore essential not to lose sight of the long-term benefits of getting inflation under control.

The more credible monetary policy is, the less costly the disinflation process will be. Greater credibility makes it easier for the central bank to affect market expectations, thereby reducing fluctuations in inflation and output. A successful monetary policy that provides a

3. See, for example, the Nobel Prize Committee's discussion of the research of last year's prize-winner, Edmund S. Phelps (translation forthcoming in *Financial Bulletin* 2006(2)).

credible nominal anchor for the economy is therefore critical for successfully stabilising fluctuations in employment and output growth.

Price stability as the overriding goal of monetary policy

The general consensus today is that the most effective way to ensure the credibility of monetary policy is to give the central bank a clear mandate with price stability as the overriding goal. This does not imply, however, that other goals, such as high employment, strong output growth, and economic equality are of lesser importance. What this simply reflects is the importance of containing inflation and the fact that monetary policy can only affect long-term inflation, not employment or output growth.

Recent research clearly shows that the credibility of monetary policy is best guaranteed if the central bank follows a systematic and predictable pattern of behaviour. This reduces the temptation for policymakers to exploit the short-term trade-off between inflation and employment at the cost of higher inflation later on.[4] An effective way to reduce this so-called time-inconsistency problem is to give central banks the primary goal of maintaining price stability and ensuring the independence of the central bank to achieve the target without government interference. Such an institutional commitment to price stability can therefore enhance the credibility of monetary policy and improve its performance.[5]

It is therefore no coincidence that the trend for the last few decades has been in this direction. A study by Fry et al. (2000) shows that 78 of 94 central banks surveyed defined price stability as the primary goal of monetary policy. Where other goals were stated, they were almost always hierarchical, with price stability having priority. The Central Bank of Iceland Act is therefore more or less identical to the mandate of the Bank of England, the European Central Bank, Norges Bank, the Swiss National Bank, and Sweden's Rikisbank, to name only a few.[6] The legislation of the US Federal Reserve is older, however, and stipulates that it should achieve price stability and maximum employment. Yet over the past two decades, the statements and the actions of the Federal Reserve have indicated clearly that price stability takes precedence in the event of a conflict between the two (see, for example, Mishkin, 2006). In the study by Fry et al., 66 of the 94 central banks surveyed had full statutory independence (see also Thórarinn G. Pétursson, 2000). Since that survey was conducted, the number of countries that define price stability as the primary objective of their monetary policy has increased still further, as has the number of countries that have granted their central banks full statutory independence.

4. See, for example, the Nobel Prize Committee's discussion of the research of the 2004 prize-winners, Finn Kydland and Edward Prescott (translation in *Financial Bulletin* 2005(1), pp. 40-64).

5. See, for example, the findings of Alesina and Summers (1993), which show that independent central banks have been more successful in maintaining low inflation than less independent central banks.

6. It therefore meets the so-called Maastricht requirements for a hierarchical mandate for monetary policy and the statutory independence of central banks in countries seeking to join the European Union.

Price stability is not a clearly defined concept, however, and therefore needs to be defined more explicitly. An increasing number of countries have introduced a numerical inflation target for their central banks. This ensures that everyone interprets price stability in the same way and reduces the scope for the central bank or the government to avoid making difficult decisions when trying to attain price stability. A formal numerical target provides a clear nominal anchor for the economy and increases the transparency and credibility of the monetary policy framework. The experience of inflation targeting has generally been good, although disinflation has not been without costs and it has usually taken a fair amount of time to achieve visible success.[7]

One instrument – one goal

The Central Bank of Iceland has been criticised for, among other things, not attempting to stabilise the exchange rate of the króna. However, it should be kept in mind that monetary policy has only one instrument at its disposal, i.e. the policy rate. The economic effects of other measures, such as foreign exchange interventions and changes in reserve requirements, are more or less identical to the effects of using the policy rate. These measures do not therefore represent independent policy instruments. For example, an increase in reserve requirements would reduce liquidity in the market and push up market interest rates roughly in the same way as a policy rate hike would. The reason that central banks prefer to use the interest rate instrument rather than foreign exchange interventions and reserve requirements is that, in modern financial markets, the policy rate offers a more transparent and effective means of influencing market interest rates, although financial market globalisation has somewhat reduced its effectiveness and complicated its deployment.[8]

In view of the fact that central banks only have one instrument, they can only work toward one long-term goal. The discussion above should make it clear why that goal should be price stability. Any attempt to achieve other targets will inevitably come at the expense of this overriding goal. Fluctuations in the real exchange rate, for example, play an important stabilising role over the business cycle, in addition to being an important transmission channel for monetary policy. The real exchange rate has a tendency to appreciate during expansionary periods, which, all other things being equal, weakens the competitive position of tradable goods sector and thereby reduces domestic income and employment. This in turn reduces the output gap and ultimately eases inflationary pressures. If monetary policy is used to counteract this real appreciation, it will ultimately lead only to increased volatility of other economic variables such as interest rates, employment, output growth, and inflation.[9]

7. See, for example, the summary of the implementation and results of this policy in Thórarinn G. Pétursson (2005).
8. Further discussion of the impact of globalisation on monetary policy can be found in Box III-1 in this issue of *Monetary Bulletin*.
9. West (2003), for example, finds that reducing real exchange rate volatility in New Zealand by 25 per cent could increase output volatility by about 10-15 per cent, inflation volatility by about 0-15 per cent, and interest rate volatility by about 15-40 per cent.

Conclusion

The predominant goal of monetary policy – and in fact, its principal contribution to economic welfare – is the promotion of price stability. Clear institutional support for this goal will increase the credibility of the policy framework, thus improving the effectiveness of monetary policy and reduce the costs of bringing inflation back to target when it has drifted away from it. Credibility is therefore the key for successfully anchoring inflation expectations and stabilising the real economy in Iceland. It is also conducive to dampening the undesirable effects of exchange rate fluctuations on the domestic economy. All ideas aiming to blur the mandate of the Central Bank or limit its monetary policy independence are likely to undermine this credibility and damage both monetary policy and the Icelandic economy.

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Monetary policy and instruments

The objective and implementation of monetary policy

The objective of monetary policy is price stability. On March 27, 2001, a formal inflation target was adopted, as follows:

- The Central Bank aims for an annual rate of inflation, measured as the twelve-month increase in the CPI, which in general will be as close as possible to 2½%.
- If inflation deviates by more than 1½% from the target, the Central Bank shall be obliged to submit a report to the government explaining the reason for the deviation, how it intends to respond, and when it expects the inflation target to be reached again. This report shall be made public.
- The Central Bank shall publish inflation forecasts, projecting inflation at least two years into the future. Forecasts shall be published in the Bank's *Monetary Bulletin*. This shall also contain the Bank's assessment of the main uncertainties pertaining to the inflation forecast. The Bank shall also publish its assessment of the current economic situation and outlook.

Since monetary policy aims at maintaining price stability, it will not be applied in order to achieve other economic targets, such as a balance on the current account or a high level of employment, except insofar as this is consistent with the Bank's inflation target.

Macroeconomic and inflation forecasts perform an important function in monetary policy conduct. As of *Monetary Bulletin* 2007/1, the Bank's forecasts are based on the policy rate path that its staff consider as appropriate for attaining the inflation target. The policy rate path is chosen with the aim of bringing inflation to 2½% within an acceptable horizon and stabilising it close to that target afterwards. Confidence limits are presented for the policy rate to underline the uncertainties surrounding the forecast, emphasising that the policy rate path is liable to change over time as new data become available.

The Central Bank announces interest rate decisions on scheduled,

Overview of Central Bank interest rates October 18, 2007

Traditional instruments	*Current rate (%)*	*Last change*		*Rate one year ago (%)*
		Date	*Percentage points*	
Current accounts	12.75	Dec. 21, 2006	0.25	12.50
Overnight loans	15.25	Dec. 21, 2006	0.25	15.00
Required reserves	13.00	Dec. 21, 2006	0.25	12.75
Collateral loans – policy rate	13.30	Dec. 27, 2006	0.25	13.09
Certificates of deposit, 7 days	13.20	Dec. 27, 2006	0.25	13.85

1. Joint declaration of the Government of Iceland and the Central Bank of Iceland. Published on the Central Bank of Iceland website, sedlabanki.is.

prearranged dates. Before an interest rate decision is made, the Board of Governors convenes monetary policy meetings, as detailed in the Bank's Internal rules on the preparation, rationale and presentation of monetary policy decisions, which are set pursuant to the provisions of the Central Bank Act. The Internal rules are published on the Central Bank website, www.sedlabanki.is.

Main monetary policy instruments

In particular, the Central Bank implements its monetary policy by managing money market interest rates, primarily through interest rate decisions for its collateral loan agreements with credit institutions. Yields in the money market have a strong impact on currency flows and thereby on the exchange rate, and in the long run on domestic demand. Broadly speaking, transactions with credit institutions can be classified into fixed trading instruments and market actions.

Fixed trading instruments:

- Current accounts are deposits of the credit institutions' undisposed assets. These are settlement accounts for netting between deposit institutions and for interbank market trading, including transactions with the Central Bank. Interest rates on these accounts set the floor for overnight interest rates in the interbank market.
- Overnight loans are provided at the request of credit institutions and secured with the same securities that are eligible for collateral loan transactions (see below). Overnight interest rates form the ceiling for overnight interest rates in the interbank market.
- Certificates of deposit are issued with a maturity of 90 days, at the request of credit institutions. Although they are unlisted, they are eligible for collateral loan transactions. Their role is to establish the floor for three-month yields in the money market.
- Required reserves apply to credit institutions that are not dependent on Treasury budget allocations for their operations. The required reserve base comprises deposits, issued securities and money market instruments. The required reserve ratio is 2% for the part of the required reserve base, which is tied for two years or less. The maintenance period is based on the 21st day of each month until the 20th of the following month, and the two-month average reserve is required to reach the stipulated ratio during the period.

Market operations:

- Collateral loans are the Central Bank's main instrument. Auctions of 7-day agreements are held every week. Credit institutions need to put up securities that are eligible as collateral, as specified in the Central Bank's Rules No. 541 of June 18, 2007. Auctions can be fixed-price or auctions where total amount is announced. Fixed-price auctions have been used so far. The interest rate on collateral loans constitutes the Central Bank's policy rate.
- Certificates of deposit with a maturity of 7 days are auctioned weekly. Their function is to counteract temporary surplus liquidity in the banking system. The auction format is fixed-price.
- Securities market trading is limited to Treasury-guaranteed paper.

Central Bank of Iceland interest rate decisions

Date Policy rate interest decision dates in 2007	Interest on collateral loans (%) Nominal rate[1] (policy rate)	Yield	Change
November 1, 2007	13.75		0.45
September 6, 2007	13.30		0
July 5, 2007	13.30		0
May 17, 2007	(13.30)	14.25	0
Previous decisions			
March 29, 2007	(13.30)	14.25	0
February 8, 2007	(13.30)	14.25	0
December 21, 2006	(13.30)	14.25	0.25
November 2, 2006	(13.09)	14.00	0
September 14, 2006	(13.09)	14.00	0.50
August 16, 2006	(12.65)	13.50	0.50
July 6, 2006	(12.21)	13.00	0.75
May 18, 2006	(11.54)	12.25	0.75
March 30, 2006	(10.87)	11.50	0.75
January 26, 2006	(10.20)	10.75	0.25
December 2, 2005	(9.97)	10.50	0.25
September 29, 2005	(9.75)	10.25	0.75
June 3, 2005	(9.07)	9.50	0.50
March 22, 2005	(8.61)	9.00	0.25
February 18. 2005	(8.38)	8.75	0.50
December 2, 2004	(7.92)	8.25	1.00
October 29, 2004	(6.99)	7.25	0.50
September 17, 2004	(6.53)	6.75	0.50
July 1, 2004	(6.06)	6.25	0.50
June 1, 2004	(5.59)	5.75	0.25
May 6, 2004	(5.35)	5.50	0.20
February 10, 2003	(5.16)	5.30	-0.50
December 12, 2002	(5.63)	5.80	-0.50
November 6, 2002	(6.10)	6.30	-0.50
October 15, 2002	(6.57)	6.80	-0.50
September 18, 2002	(6.85)	7.10	-0.50
August 30, 2002	(7.31)	7.60	-0.30
August 1, 2002	(7.59)	7.90	-0.60
June 18, 2002	(8.15)	8.50	-0.30
May 16, 2002	(8.42)	8.80	-0.50
April 30, 2002	(8.88)	9.30	-0.30
March 26, 2002	(9.15)	9.60	-0.50
November 8, 2001	(9.60)	10.10	-0.80
March 27, 2001	(10.33)	10.90	-0.50

1. The policy rate as quoted until May 2007, is presented as a nominal discounted rate.

- Foreign exchange market intervention, in keeping with the declaration on the inflation target from 2001, is employed only if the Central Bank considers this necessary in order to promote its inflation target or sees exchange rate fluctuations as a potential threat to financial stability.

Economic and monetary chronicle

June 2007

On June 26, Kaupthing Bank announced the issue of subordinated bonds in the amount of EUR 250 million or approximately 21 b.kr. The bonds are classified as Tier 1 capital.

July 2007

On July 5, the Board of Governors of the Central Bank of Iceland announced its decision to leave the Bank's policy interest rate unchanged.

On July 5, the Financial Supervisory Authority (FME) approved the merger of VBS Investment Bank Inc. and Fjárfestingarfélag sparisjóðanna (FSP) under the name VBS Investment Bank Inc.

On July 6, the government announced a one-third cut in the cod quota allocation for the coming fishing year and plans for offsetting policy actions. The actions are primarily designed to moderate the initial impact of the income reduction associated with a cut in the cod catch, to support the fishing communities and to bolster marine research. The government's offsetting policy actions call for approximately 6.5 b.kr. to be spent over the next three years on new projects designed to support economic activity in the country, strengthen education, and provide alternative options for individuals who will suffer loss of income. In addition, expenditure of more than 4 b.kr. will be disbursed on an expedited basis for previously planned projects in the transportation and communications sector. Work on the projects involved is scheduled to be undertaken in 2008-2010.

On July 30, the National Debt Management Agency solicited tenders for Treasury Bills RIKV 07 1101. Bids were requested for the issue and the total amount was estimated to be in the 2,500-5,000 m.kr. range. The nominal value of all bids received was 8,500 m.kr. Bids were accepted for a nominal amount of 5,000 m.kr. at an average yield of 13.82%. The highest yield of bids accepted was 13.90% and the lowest was 13.58%.

On July 31, the Board of Directors of Landsbanki Íslands exercised its authorization to raise the share capital of Landsbanki Íslands by a nominal amount of 172,076,284 kr. in accordance with a resolution approved by its Annual General Meeting, held on February 9, 2007. The new shares will be used as payment for 90% of the total price payable for the takeover of the UK broker and investment bank Bridgewell Group plc. New shares in Landsbanki were issued on August 8 and registered in the OMX Nordic Stock Exchange Iceland on August 9. Bridgewell became part of the consolidated accounts of Landsbanki as of August 10, 2007. The operations of Bridgewell and Teather & Greenwood will be merged under the name of Landsbanki Securities UK.

August 2007

On August 15, Kaupthing Bank announced the signing of a purchase agreement for all the shares of the Dutch bank NIBC Holding BV for

approximately EUR 3 billion or 270 b.kr. Kaupthing will pay the seller part of the purchase price with an issue of 110 million new shares, worth a total of EUR 1,360 million. EUR 1,625 million is to be paid in cash from disposable funds from a subordinated bond issue and the proceeds of 40 million new shares to be offered to pre-emptive right shareholders.

On August 29, the FME granted Straumur-Burdaras Investment Bank an operating licence as a commercial bank.

On August 30, the National Debt Management Agency solicited tenders for Treasury Bills RIKV 07 1203. Bids were requested for the issue and the total amount was estimated to be in the 2,500-5,000 m.kr. range. The nominal value of all bids received was 7,900 m.kr. Bids were accepted for a nominal amount of 4,450 m.kr. at an average yield of 14.13%. The highest yield of bids accepted was 14.31% and the lowest was 13.95%.

September 2007

On September 3, the Board of Directors of Straumur-Burdaras Investment Bank, acting under the company's resolution and the decision of a meeting of shareholders held on March 8, 2007, decided to record the Bank's share capital in euros instead of Icelandic krónas. Straumur's share capital will be EUR 109,493,129 instead of ISK 10,359,144,971. The conversion will not change shareholders' ownership proportions within the company and, as such, will not affect the value of each individual's holdings.

On September 4, it was announced that the Minister of Finance had decided to entrust the Central Bank of Iceland with the issue of government's domestic market securities, which had previously been handled by the National Debt Management Agency. This places the supervision of all Treasury's loan operations within a single agency.

On September 6, the Board of Governors of the Central Bank of Iceland announced its decision to leave the Bank's policy interest rate unchanged.

On September 19, tenders were solicited for the issue of 2-year Treasury Bills RIKB 09 0612. The nominal value of all bids received was 8,000 m.kr. and bids were accepted in the amount of 4,300 m.kr. The average required rate of return was 13.46%. In the non-competitive average price part of the tender conducted over the next two days, 430 m.kr. were on offer, all of which was taken up by Primary Dealers. At the end of September the outstanding amount under the issue was 15,505 m.kr. Under the program for the year 2007, it was planned to issue Treasury Bills in the nominal amount of 25 b.kr., and that target was achieved with this tender.

On September 20, the FME authorized the conversion of Sparisjóður Reykjavíkur og nágrennis (SPRON) to a limited liability company. SPRON is considered a limited liability company as of April 1, 2007. Shares of SPRON were accepted for trading on the main market of the OMX Nordic Stock Exchange Iceland on Tuesday, October 23. The number of SPRON shares issued is 5,004,000,000 and the nominal value of each share is one króna.

On September 27, the National Debt Management Agency solicited tenders for Treasury Bills RIKV 08 0103. Bids were requested for the issue and the total amount was estimated to be in the 2,500-5,000 m.kr. range. The nominal value of all bids received was 8,250 m.kr. Bids were accepted for a nominal amount of 3,550 m.kr. at an average yield of 14.06%. The highest yield of bids accepted was 14.12% and the lowest was 13.95%.

October 2007

On October 1, the operations of the National Debt Management Agency were transferred to the Central Bank of Iceland. The unit's name is "Lánamál ríkisins" in Icelandic and Government Debt Management in English.

On October 11, Kaupthing Bank announced the issue of subordinated bonds in the amount of 400 million US dollars or approximately 24 b.kr. The bonds are classified as Tier 1 capital.

On October 12, Landsbanki Íslands issued subordinated bonds in the amount of 400 million US dollars or approximately 24 b.kr. The bonds are classified as Tier 1 capital.

Featured statistics

Icelandic pension funds' foreign portfolio investment returns in 2006

Each year the Central Bank of Iceland surveys the return on pension funds' foreign securities portfolios. The pension funds were asked about the market value of foreign portfolio securities at the beginning and end of 2006. They were also asked about new portfolio investment and sales of foreign securities during the year, as well as dividend and interest payments received. In the survey for 2005, the sample was the 18 largest pension funds, which owned 92% of total pension fund foreign portfolios. The 2006 sample comprised 11 large pension funds, which owned 83% of total pension fund foreign portfolios.

Returns on pension funds' foreign securities portfolios remain high

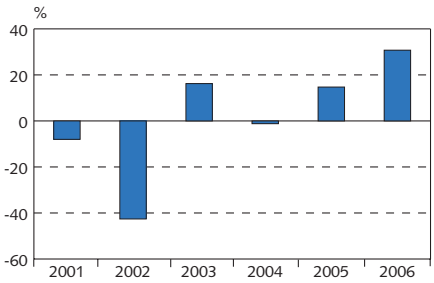
Total return on securities is measured as the increase in their market value plus dividend and interest earnings. In balance of payments statistics, only net return is regarded as earnings on foreign portfolio investments. Changes in the market value of the securities and movements in the exchange rate of the króna are left out. The survey findings are used to estimate returns on Icelandic residents' foreign portfolios in the balance of payments and to identify increases in market value relative to international equity indices.

In estimating returns on Icelandic residents' foreign portfolios, the most natural approach is to measure returns on the largest pension funds, which account for the largest share of foreign securities portfolios of all pension funds in Iceland. These pension funds are usually parties to the major part of transactions in foreign securities each year. Returns on the 11 largest pension funds' foreign portfolio investments in 2006 amounted to 30.7%, a considerably higher figure than for 2005, when it was about 14.7% (see Chart 1) by the 18 largest pension funds. The highest return was on mutual fund units, at 31.3%. Of this figure, 0.16 percentage points was explained by dividend payments and 31.1 percentage points by increases in market value and exchange rate movements. Returns on equity portfolios also ran high, at 30.8%, of which 30.1 percentage points was due to increased market value and exchange rate changes. The average return on bonds was 20%, of which 16.8 percentage points were due to increased market value and exchange rate changes and 2.9 percentage points where explained by interest income.

The main purpose of the survey on returns on the largest pension funds' portfolio securities is to measure dividend payments. It is noteworthy how low the dividend payments are: for the 11 large pension funds in the survey, they were in the range of 0-1.6% in 2006. The explanation is that corporations and mutual funds rarely pay high dividends to investors, who stand to gain through possible increases in the market value of their securities holdings. Corporations that pay dividends base their calculations on the stocks' nominal value, which is a low percentage of their market value.

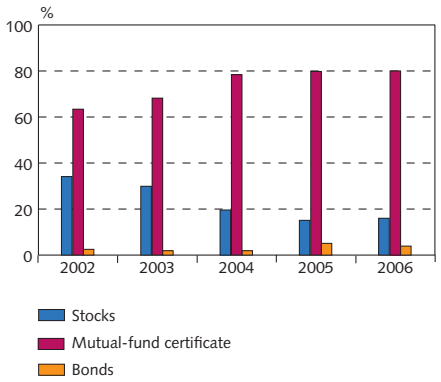
On the other hand, the pension funds claim a return of 10-20% on their foreign securities. In their calculations the majority of the re-

Chart 1
Average return on foreign portfolios of the pension funds
In icelandic krónas



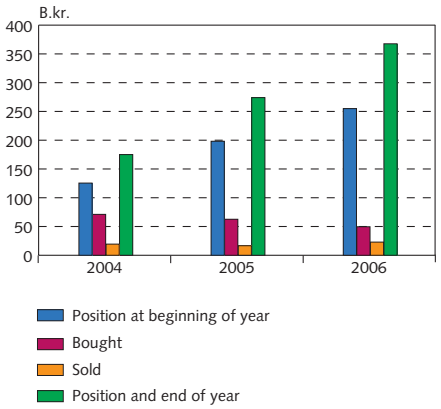
Source: Central Bank of Iceland.

Chart 2
Breakdown of the pension funds' portfolios
At end of year



Source: Central Bank of Iceland.

Chart 3
Main pension funds' trading
in foreign securities markets



Source: Central Bank of Iceland.

turn is due to higher market value, measured in krónas, rather than in dividend payments.

The composition of holdings of foreign securities showed little change

The amount in corporate equities, mutual fund units, and bonds did not change much between years (see Chart 2). Corporate equities and mutual fund units rose slightly, but the amount in bonds declined. The amounts held in mutual fund units are high, which is normal, as the risk associated with investments in mutual fund units of foreign securities is low compared to that accompanying purchases of foreign corporate equities.

Good returns in foreign currency and even better in krónas

The rise in international equity yielded satisfactory returns for investors in 2006. The MSCI index went up 14.6% year-on-year in dollar terms, S&P500 index rose by 13.6%, and the FTSE-100 index by 10.7%. Sizeable gains were also recorded on the CAC-40 index in France (17.5%) and Japan's Nikkei index (6.9%). The exchange rate index of the króna went up by 23.2% in 2006, thus, the exchange rate of the króna depreciated with respect to foreign currencies by 18.8% over the year. Accordingly, the return on foreign securities was good when measured in foreign currency and even better when measured in króna. The króna depreciated by 21% against the euro, by 22.8% against sterling, by 12.1% against the dollar, and by 11% against the yen. These exchange rate movements increased the return on holdings of foreign securities measured in krónas and added to the increase in the market value of the securities.

Pension funds' foreign portfolios increased in 2006

Foreign portfolio holdings of pension funds amounted to 29.6% of the net assets of the funds at the end of 2006. During 2006, the foreign portfolio holdings of pension funds increased by 144.1 b.kr. It is interesting to compare this figure with the results of the survey of the 11 large pension funds. The position at the beginning of the year was about 254.9 b.kr. Purchases during the year were 49.6 b.kr., sales amounted to 22.9 b.kr., and the position at the end of 2006 was 367.6 b.kr. Accordingly, net purchases during the year were about 26.7 b.kr. while the increase in the market value of the securities was 86 b.kr. (see Chart 3).

Conclusion

Returns on the 11 large pension funds' foreign portfolio investments in 2006 where much higher than in the previous year despite low dividend payments. The increase in the market value of the foreign securities ensured a high return for the pension funds.

The composition of the holdings of foreign securities by the pension funds was similar year-on-year. As noted before, holdings of foreign securities in the form of mutual fund units where by far the largest part of the holdings of foreign securities by the pension funds, representing about 80% of the total at the end of 2006. The return on foreign securities measured in foreign currency was good in 2006, and even better when measured in Icelandic krónas.

Tables and charts

Tables and charts are generally based on statistical information available on October 11, 2007, apart from financial market data, which are from September 30, 2007. A list of symbols is on p. 2.

A Tables

B Charts

Table 1 Main monthly indicators

	Consumer prices		Exchange rate		Yields (end of period, %)						Money and credit (end of period)[5]			
	% change in CPI[1] over the previous		% ch. in effective exchange rate [1,2]		Short-term			Long-term[4]			12-month % change			
	1 month	12 months	1 month	12 months	Central Bank collateral loans	3-month REIBOR[3]	RIKB 10 0317	RIKB 13 0517	RIKS 15 1001	HFF 150644	Base money	M3	DMB lending[6]	DMB foreign liabilities
2002	.	4.8	.	3.0	5.80	6.2	.	7.6	4.9	.	17.2	15.3	0.9	-2.8
2003	.	2.2	.	6.4	5.30	5.1	.	7.9	4.3	.	-33.5	17.5	16.0	67.3
2004	.	3.2	.	2.1	8.25	8.6	7.8	7.4	3.6	3.5	77.7	15.0	39.5	59.2
2005	.	4.0	.	11.4	10.50	10.2	7.9	7.8	4.1	4.1	23.1	23.2	51.5	96.4
2006		6.8	.	-10.5	14.25	15.2	9.8	8.9	4.9	4.2	25.4	19.4	41.4	73.5
2006														
January	0.3	4.4	1.7	8.0	10.20	10.3	8.3	8.3	4.5	4.4	-3.9	17.8	51.1	95.7
February	-0.1	4.1	-3.1	3.1	10.20	10.4	8.0	7.9	4.0	4.1	40.8	20.6	51.7	113.4
March	1.1	4.5	-8.2	-7.4	10.87	11.3	9.1	8.6	4.4	4.2	85.2	26.2	56.9	126.1
April	1.1	5.5	-8.0	-12.8	10.87	11.7	10.4	9.1	4.3	4.2	27.8	23.3	57.7	121.3
May	1.4	7.6	0.4	-10.1	11.54	11.9	9.9	8.9	4.0	4.1	44.9	22.2	52.1	94.0
June	1.2	8.0	-3.1	-14.9	11.54	12.5	10.3	9.1	4.4	4.2	8.5	20.0	53.7	96.4
July	0.5	8.4	0.4	-15.7	12.21	12.6	9.8	8.9	4.5	4.2	36.8	21.0	52.1	78.7
August	0.3	8.6	4.7	-12.2	12.65	13.3	8.8	8.0	4.3	4.1	50.4	17.9	47.2	80.0
September	0.6	7.6	1.0	-13.5	13.09	13.5	8.6	7.8	4.1	3.9	30.7	17.9	42.2	81.2
October	0.2	7.2	3.2	-13.8	13.1	14.3	9.2	8.0	4.6	4.2	60.2	19.3	39.5	75.1
November	0.0	7.3	-2.7	-16.2	13.1	14.5	9.7	8.4	4.8	4.3	37.3	9.4	36.8	75.4
December	0.0	7.0	-2.1	-15.4	13.3	15.2	9.8	8.9	4.9	4.2	25.4	19.4	41.4	73.5
2007														
January	0.3	6.9	0.3	-16.6	13.3	15.1	9.3	8.3	5.1	4.4	33.1	15.4	37.3	68.6
February	0.4	7.4	3.5	-10.9	13.3	15.3	9.9	8.8	5.5	4.4	44.4	17.9	32.1	55.8
March	-0.3	5.9	-0.2	-3.1	13.3	13.8	10.5	9.1	5.0	4.3	-8.4	14.9	27.8	40.1
April	0.6	5.3	1.0	6.4	13.3	14.1	10.8	9.2	.	4.3	102.7	26.1	26.6	31.7
May	0.9	4.7	3.6	9.7	13.3	13.9	10.8	9.1	.	4.3	28.2	28.3	24.8	34.1
June	0.5	4.0	1.0	14.3	13.3	13.9	10.9	9.1	.	4.4	46.0	32.1	22.1	33.1
July	0.2	3.8	1.7	15.8	13.3	14.1	11.4	9.5	.	4.6	48.5	38.6	25.5	47.1
August	0.0	3.4	-6.3	3.6	13.3	14.3	11.9	9.6	.	4.5	61.7	44.9	34.5	56.9
September	1.3	4.2	0.5	3.2	13.3	14.2	12.2	9.5	.	4.6	...	...	...	...
October	0.5	4.5	...	...	13.3	...	...	...	.	...	...	...	...	...

1. Percentage changes between period averages. 2. Based on the official effective exchange rate basket (trade-weighted). Positive sign indicates appreciation of the Icelandic króna. 3. Average yield on the interbank market in Icelandic króna. 4. For Treasury bonds and HFF bonds, the quoted yield is in excess of changes in the CPI. Trading with HFF bonds began in July 2004; prior figures are for housing bonds. 5. Annual figures are changes over year. Latest figures are preliminary. Domestic credit only from January 2002. 6. DMBs = deposit money banks = commercial and savings banks and other institutions permitted to accept deposits from the public. Since July 2007, derivatives have been counted to foreign liabilities and the presentation of Central Banks' short-term position has been changed.

Table 1 (continued) Main monthly indicators

	Foreign exchange market and reserves				Foreign trade and external conditions					Labour market		Public finance	Asset prices 12-mo. % changes	
	Gross foreign currency reserves:			CB net purchases (b.kr.)	Trade balance (b.kr.)	Merchandise exports (b.kr.)	Merchandise imports (b.kr.)	Marine product prices 12-mo.% ch.[9]	Real exchange rate of króna[10]	Unemployment	Wages, 12-mo. % change[11]	Treasury financial balance, % of revenues, from Jan.[12]	Equity prices[13]	Housing prices[14]
	B.kr.	as ratio of: Merch. imports[7]	as ratio of: For. short-term liabil.[8]											
2002	37.2	2.5	0.20	4.5	13.1	204.3	191.2	3.4	91.7	2.5	7.2	-7.4	16.7	7.5
2003	58.1	3.5	0.25	43.2	-16.9	182.6	199.5	0.4	96.0	3.4	5.6	-8.1	56.4	9.1
2004	65.6	3.6	0.24	27.2	-37.8	202.4	240.2	0.6	98.1	3.1	4.7	0.0	58.9	23.3
2005	67.3	2.9	0.16	24.6	-94.5	194.4	288.9	8.9	111.4	2.1	6.8	8.5	64.7	31.0
2006	68.5	2.8	0.20	18.0	-158.5	242.7	401.2	8.5	104.2	1.3	9.5	17.3	15.8	5.0
2006														
January	68.5	2.8	0.17	1.4	-8.4	17.1	25.5	6.0	117.5	1.6	8.3	38.0	69.6	25.3
February	72.1	2.9	0.12	1.3	-7.8	14.7	22.4	4.5	114.1	1.6	8.6	30.8	74.8	21.7
March	79.9	2.8	0.10	1.6	-16.1	19.9	36.1	4.2	105.6	1.5	8.6	25.4	50.5	20.9
April	66.2	2.1	0.08	1.5	-10.8	19.1	29.9	4.9	97.6	1.3	8.4	19.4	35.7	17.7
May	70.4	2.3	0.1	1.8	-13.7	23.9	37.7	6.8	98.7	1.3	8.7	18.5	41.3	13.2
June	76.8	2.3	0.1	1.5	-15.4	26.4	41.8	8.3	96.4	1.3	8.8	16.1	32.4	13.1
July	74.3	2.3	0.1	1.7	-18.6	19.4	38.0	10.7	97.2	1.4	10.2	17.2	22.4	7.5
August	72.6	2.3	0.1	1.6	-14.4	16.6	31.0	10.7	101.9	1.2	10.6	14.6	28.6	10.8
September	71.3	2.3	0.1	1.4	-7.4	25.4	32.7	10.2	103.4	1.0	10.8	15.6	35.8	10.5
October	70.9	2.3	0.1	1.5	-9.1	20.0	29.1	11.1	106.8	1.0	11.0	15.8	35.1	7.2
November	92.4	2.9	0.1	1.6	-15.9	20.2	36.0	11.7	103.7	1.1	10.5	15.6	21.0	4.8
December	167.9	4.8	0.2	1.2	-20.9	20.1	41.0	11.2	101.1	1.1	9.8	17.3	15.8	5.0
2007														
January	160.4	4.9	0.2	1.9	-0.3	25.9	26.2	30.6	102.3	1.3	10.1	45.5	12.3	6.9
February	160.1	4.9	0.2	1.6	-5.0	23.9	28.9	22.5	105.6	1.3	9.8	34.8	10.8	5.0
March	154.6	4.8	0.1	1.6	-3.3	30.6	33.9	12.9	104.8	1.3	9.7	28.7	27.1	5.8
April	151.1	4.8	0.1	1.8	-11.3	19.0	30.3	1.5	105.9	1.1	9.8	23.2	39.1	5.0
May	144.5	4.8	0.1	1.5	-10.7	20.5	31.2	-3.0	109.9	1.1	9.6	19.5	43.1	5.8
June	143.7	4.8	0.1	1.5	-9.9	20.1	30.1	-7.0	111.5	1.0	9.8	16.9	51.6	5.3
July	145.0	4.9	0.1	1.6	-14.0	18.6	32.6	-6.8	113.6	0.9	8.3	16.9	63.7	9.3
August	151.9	4.9	0.1	1.4	-12.0	17.8	29.8	2.2	106.4	0.9	8.0	14.3	37.8	9.2
September	154.9	…	…	…	…	…	…	…	…	0.8	…	…	26.9	…
October	…	…	…	…	…	…	…	…	…	…	…	…	…	

7. Gross foreign exchange reserves at end of period as a ratio of the average monthly value of merchandise imports. Calculated at fixed exchange rates. 8. The denominator is foreign short-term liabilities of credit institutions and investment banks. 9. Prices in SDR. Annual figures are % changes between annual averages. Since January 2007 the 12-month percentage change in marine product prices denominated in the króna. 10. Real effective exchange rate of the Icelandic króna based on relative consumer prices (a trade-weighted average of 17 trading partner countries' consumer prices is used). 1980 = 100. Average over periods. 11. Annual figures show change in annual averages. 12. Cash basis. Without privatisation revenues. Adjusted for changed timing of expenditure charges in Jan.-Nov. 2004. 13. OMI15 index. Annual figures are % changes over year. 14. Residential housing in the Greater Reykjavík Area. Annual figures are % changes over year.

Sources: Directorate of Labour, Iceland Stock Exchange (OMX Iceland), Land Registry of Iceland, State Accounting Office, Statistics Iceland, Central Bank of Iceland.

Table 2 Historical economic indicators

	Consumer prices [1]		Króna effective exchange rate			Interest rates (%)			Money and credit			Ratio of gr. reserves to merch. imports[5]	External debt, % of GDP[6]	Growth of real GDP (%)
				Real exchange rate[3]			Banks' secured lending (real yield)		% change over year					
	Consumer price index[1]	CPI inflation (%)	Nominal exchange rate[2]	Relative CPI	Relative ULC	Gov. bonds average yield[4]	Non-indexed	Indexed	M3	DMBs' lending	Credit system lending			
1978	3.5	44.0	13.9	107.1	117.7	3.3	-13.4	.	48.7	47.3	62.8	2.6	39.2	6.0
1979	5.0	44.5	18.7	101.7	111.2	3.5	-15.4	.	55.9	58.1	46.4	2.5	39.7	4.9
1980	8.1	61.8	25.9	101.8	110.4	3.5	-8.3	2.3	65.4	66.4	71.1	2.4	35.9	5.8
1981	12.2	50.8	34.7	106.2	115.5	3.2	-1.7	2.5	70.5	72.2	54.1	3.0	36.5	4.3
1982	18.4	51.0	54.5	97.7	113.2	3.5	-9.4	2.9	58.0	92.0	100.2	2.1	46.4	2.1
1983	33.9	84.2	100.0	91.8	94.5	3.8	-14.2	3.0	78.7	85.6	82.9	2.5	57.2	-2.2
1984	43.7	29.2	116.3	96.3	91.6	7.0	3.4	5.5	33.4	43.0	40.2	2.1	60.2	4.1
1985	57.9	32.4	148.7	94.8	91.5	6.9	-2.3	5.0	47.6	29.7	35.2	2.8	63.6	3.3
1986	70.2	21.3	171.0	97.1	92.4	8.5	4.3	5.2	35.0	19.1	20.1	3.6	56.5	6.3
1987	83.4	18.8	177.3	106.0	117.6	8.7	4.7	7.7	35.2	42.1	31.4	2.4	49.4	8.5
1988	104.6	25.4	202.6	111.4	127.1	8.7	11.8	9.2	24.0	37.2	34.0	2.4	51.3	-0.1
1989	126.7	21.1	254.7	102.4	110.7	7.4	6.5	7.8	27.2	25.2	33.8	3.0	56.8	0.3
1990	145.5	14.8	283.7	99.1	98.8	7.0	9.3	8.0	14.9	11.0	12.5	3.3	55.2	1.2
1991	155.4	6.8	283.6	101.7	100.7	8.1	10.0	9.2	14.4	11.6	15.4	3.2	56.0	-0.2
1992	161.2	3.7	285.0	101.7	102.0	7.4	11.8	9.3	3.8	5.3	11.8	4.0	58.8	-3.4
1993	167.8	4.1	308.8	96.2	94.0	6.7	11.5	9.1	6.5	5.0	11.1	4.3	66.7	1.3
1994	170.3	1.5	324.8	91.0	82.6	5.0	9.5	7.9	2.3	-1.3	4.5	2.6	63.4	3.6
1995	173.2	1.7	322.3	91.1	87.4	5.6	10.1	8.7	2.2	0.0	5.9	2.4	63.4	0.1
1996	177.1	2.3	322.9	91.3	88.2	5.5	10.5	8.9	6.8	11.8	9.3	3.0	62.5	4.8
1997	180.3	1.8	318.7	92.2	89.6	5.3	11.1	9.0	8.7	12.7	11.8	2.6	64.5	4.9
1998	183.3	1.7	313.6	93.8	92.2	4.7	11.8	8.8	15.1	30.3	15.1	2.2	69.5	6.3
1999	189.6	3.4	313.1	96.3	96.7	4.4	8.0	8.6	17.1	22.8	17.3	2.6	82.0	4.1
2000	199.1	5.0	313.3	100.0	100.0	5.1	12.7	9.5	11.2	26.2	17.2	2.1	101.5	4.3
2001	212.4	6.7	376.3	87.3	86.9	5.1	9.4	10.2	14.9	13.4	19.2	2.1	121.6	3.9
2002	222.5	4.8	365.2	91.7	91.2	5.2	13.7	10.1	15.3	0.9	3.2	2.5	110.4	0.1
2003	227.3	2.2	343.3	96.0	96.5	4.4	9.4	9.1	17.5	16.0	11.8	3.5	136.0	2.4
2004	234.6	3.2	336.3	98.1	94.1	3.9	8.3	8.0	15.0	39.5	19.7	3.6	175.5	7.7
2005	244.1	4.0	301.8	111.4	105.8	3.7	10.7	7.2	23.2	51.5	30.8	2.9	280.4	7.1
2006	260.6	6.8	337.2	104.2	104.9	4.6	10.9	6.9	19.4	41.4	12.5	2.8	440.8	4.2

1. Annual averages (May 1988=100) and changes between years. 2. Annual averages. Exchange rate of the króna against a trade-weighted average of foreign currencies. 1983=100. 3. 2000=100. ULC=unit labour cost. 4. Annual average yield of indexed Treasury bonds of all maturities. Yields on Iceland Stock Exchange (OMX Iceland) from 1987. Before that primary market yields. 5. Gross foreign exchange reserves at end of period as a ratio of the average monthly value of merchandise imports. Calculated at fixed exchange rates, based on average total merchandise exports over the last 12 months. 6. Gross debt. Equity capital excluded.

Table 2 (continued) Historical economic indicators

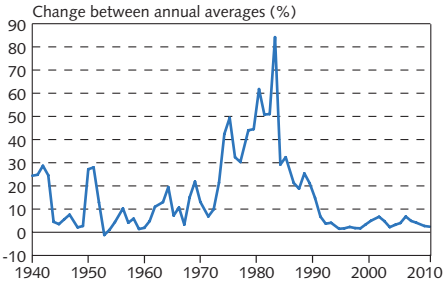
	Components of GDP (% change from previous year)			External trade (% change from previous year)							Labour market (% of labour force)		Wages (% change from previous year)	
				Goods & services (volume changes)				General government (% of GDP)[7]						
	Private consump-tion	Gross fixed cap. formation	National expendi-ture	Exports	Imports	Terms of trade	Curr. acc. balance (% of GDP)	Financial balance	Revenues	Expend-itures	Unem-ployment	Labour particip.[8]	Real wages[9]	Real disp. income per capita
1978	9.0	-5.5	2.1	15.2	3.7	0.2	1.2	0.1	31.0	30.9	0.3	73.6	.	8.5
1979	2.8	-1.8	3.4	6.3	2.5	-8.6	-0.7	0.9	32.4	31.4	0.4	73.0	.	2.0
1980	3.4	13.9	5.9	2.7	3.0	-2.8	-1.9	1.4	35.4	34.1	0.3	74.1	.	1.1
1981	6.2	1.2	5.6	3.2	7.1	-0.4	-4.0	1.3	36.8	35.5	0.4	76.8	0.7	5.4
1982	4.9	0.1	5.0	-8.9	-0.6	-0.7	-7.9	1.7	37.9	36.2	0.8	77.6	1.7	2.2
1983	-5.6	-12.7	-8.6	11.0	-9.7	-1.4	-1.9	-2.0	35.8	37.8	1.0	77.4	-16.7	-12.5
1984	3.7	9.4	6.4	2.4	9.2	0.7	-4.6	2.2	36.9	34.7	1.3	77.6	-3.1	-2.5
1985	4.2	1.0	2.7	11.1	9.4	-0.9	-3.9	-1.6	35.4	37.0	0.9	79.3	1.2	10.8
1986	6.9	-1.6	4.5	5.9	1.0	5.4	0.5	-4.0	35.4	39.4	0.7	80.9	5.7	9.5
1987	16.2	18.8	15.7	3.3	23.3	4.3	-3.4	-0.8	35.6	36.5	0.4	84.1	9.0	25.8
1988	-3.8	-0.2	-0.6	-3.6	-4.6	-0.8	-3.5	-2.0	39.5	41.5	0.6	80.1	2.2	-2.7
1989	-4.2	-7.9	-4.4	2.9	-10.3	-3.9	-1.3	-4.4	38.5	43.0	1.7	78.7	-9.1	-9.4
1990	0.5	3.0	1.5	0.0	1.0	-2.0	-2.1	-3.3	38.1	41.4	1.8	77.5	-4.9	-4.6
1991	3.0	2.6	3.5	-5.9	5.3	3.4	-4.0	-2.9	39.8	42.7	1.5	81.0	1.4	2.1
1992	-3.2	-10.3	-4.6	-2.0	-6.0	-0.5	-2.4	-2.8	40.8	43.6	3.1	81.8	-0.8	-2.7
1993	-4.6	-9.8	-2.9	6.5	-7.5	-3.6	0.7	-4.5	39.0	43.4	4.4	81.1	-2.6	-7.6
1994	2.9	-0.2	1.8	9.3	3.8	0.3	1.9	-4.7	38.6	43.2	4.8	81.3	-0.3	0.0
1995	2.2	-1.7	2.2	-2.3	3.6	1.0	0.7	-3.0	39.6	42.5	5.0	82.9	2.8	3.8
1996	5.7	25.0	6.8	9.9	16.5	-3.2	-1.8	-1.6	40.5	42.0	4.4	81.6	4.0	3.8
1997	6.3	9.3	5.8	5.6	8.0	2.0	-1.8	0.0	40.5	40.5	3.9	81.0	3.6	6.3
1998	10.2	34.4	13.8	2.5	23.4	5.2	-6.8	-0.4	40.8	41.2	2.8	82.3	7.6	7.3
1999	7.9	-4.1	4.2	4.0	4.4	-0.7	-6.8	1.1	43.1	41.9	1.9	83.2	3.3	4.5
2000	4.2	11.8	5.9	4.2	8.6	-2.4	-10.2	1.7	43.5	41.8	1.3	83.5	1.6	5.5
2001	-2.9	-4.3	-2.1	7.4	-9.1	0.3	-4.3	-0.7	41.8	42.5	1.4	83.6	2.0	-1.2
2002	-1.5	-14.0	-2.3	3.8	-2.5	0.6	1.5	-2.6	41.6	44.1	2.5	82.8	2.3	0.3
2003	6.2	11.1	5.8	1.6	10.8	-4.1	-4.8	-2.8	42.7	45.5	3.4	82.1	3.4	3.6
2004	6.9	28.5	9.9	8.4	14.4	-1.3	-9.8	0.2	44.2	44.0	3.1	80.7	1.4	5.6
2005	13.0	33.9	15.4	7.2	29.4	1.0	-16.0	5.2	47.5	42.3	2.1	81.9	2.6	6.2
2006	4.4	19.8	9.2	-5.1	10.1	3.5	-25.5	7.0	48.8	41.8	1.3	83.1	2.6	5.9

7. Central and local governments and the social security system. 8. Participation rate as per National Economic Institute definition until 1990, but based on Statistics Iceland labour market survey from 1991. 9. Statistics Iceland wage index. Deflated by consumer prices. Since January 2007, the 12-month percentage change in marine product prices denominated in the króna.

Sources: Directorate of Labour, Iceland Stock Exchange (OMX Iceland), Ministry of Finance, Statistics Iceland, Central Bank of Iceland.

Chart 1

Consumer price inflation 1940-2010[1]

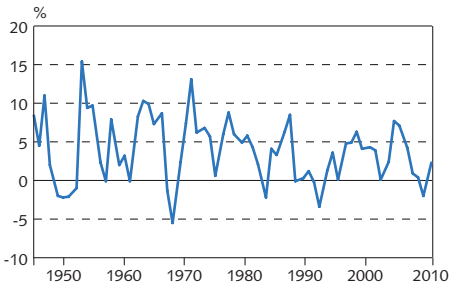


1. Central Bank forecast for 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 2

Economic growth 1945-2010[1]

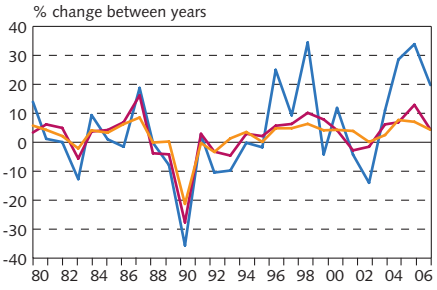
Change in real GDP between years



1. Preliminary 2006. Forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 3

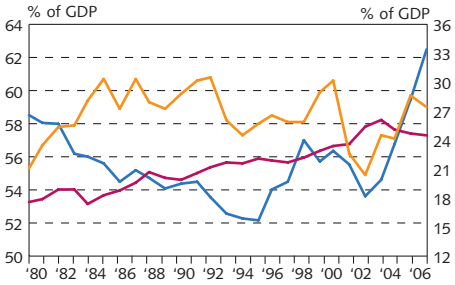
Growth of GDP, private consumption and gross fixed capital formation 1980-2006[1]



1. Preliminary 2006.
Source: Statistics Iceland.

Chart 4

Private consumption, public consumption and gross fixed capital formation 1980-2006[1]

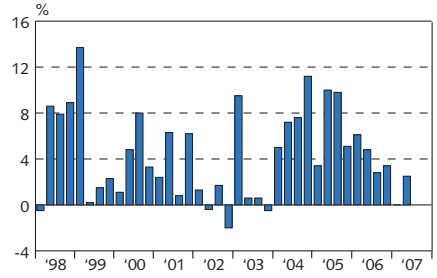


1. Preliminary 2006.
Source: Statistics Iceland.

Chart 5

Quarterly economic growth Q1/1998 - Q2/2007[1]

Volume change in GDP over four quarters (%)

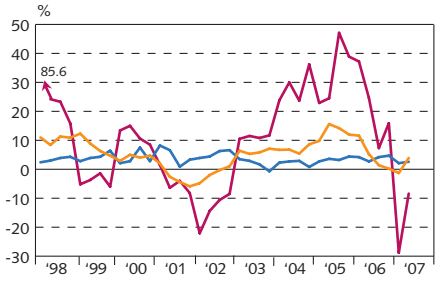


1. Latest data are preliminary.
Source: Statistics Iceland.

Chart 6

Components of economic growth Q1/1998 - Q2/2007[1]

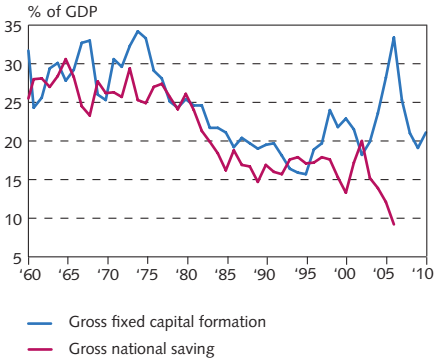
Volume change over four quarters (%)



1. Latest data are preliminary.
Source: Statistics Iceland.

Chart 7

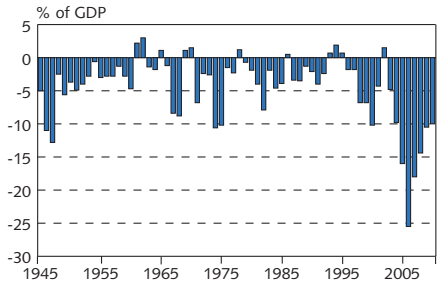
Gross national savings and fixed capital formation 1960-2010[1]



1. Preliminary 2006. Forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 8

Current account balance 1945-2010[1]

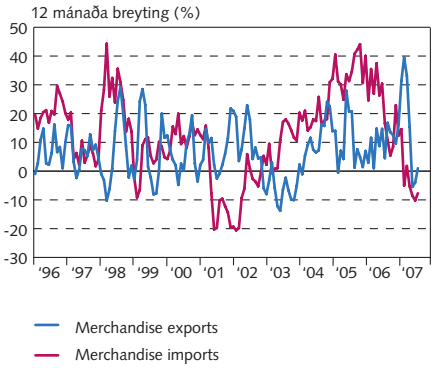


1. Preliminary 2006. Forecast 2007-2010.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 9

Merchandise trade January 1996 - August 2007[1]

3-month moving averages at fixed exchange rates

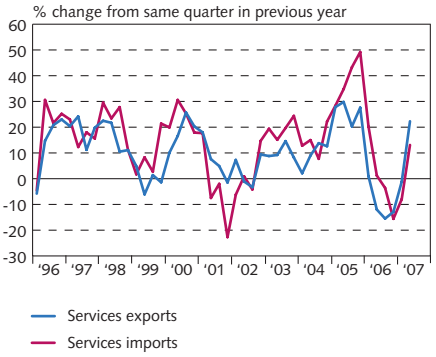


1. Latest data are preliminary.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 10

Exports and imports of services Q1/1996 - Q2/2007[1]

At constant exchange rate

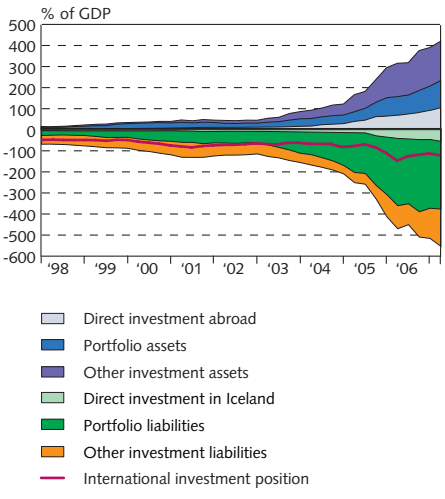


1. Latest data are preliminary.
Source: Central Bank of Iceland.

Chart 11

External debt and assets Q1/1998 - Q2/2007[1]

At current prices

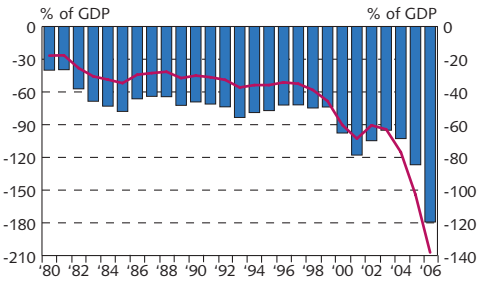


1. Latest data are preliminary.
Source: Central Bank of Iceland.

Chart 12

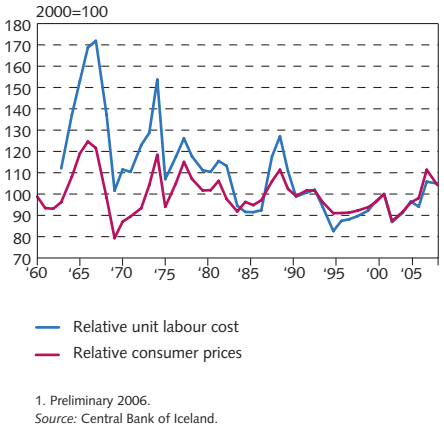
External debt position 1980-2006[1]

At end of year and latest quarter



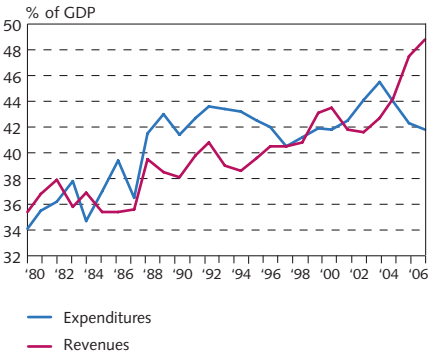
1. Latest data are preliminary.
Source: Central Bank of Iceland.

Chart 13
Growth of credit system lending 1994-2007[1]



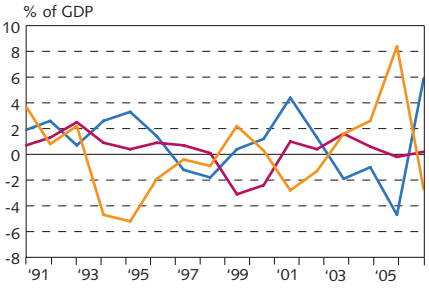
1. Preliminary 2006.
Source: Central Bank of Iceland.

Chart 14
General government revenues and expenditures 1980-2006



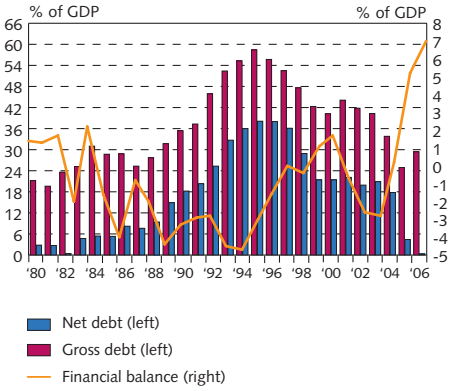
Source: Statistics Iceland.

Chart 15
Treasury borrowing 1991-2006



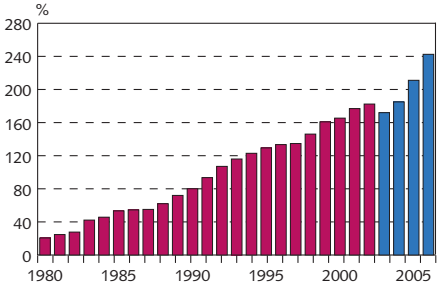
1. Including reduction in pension fund commitments and outstanding long-term interest.
Source: Treasury accounts.

Chart 16
General government balance and debt 1980-2006



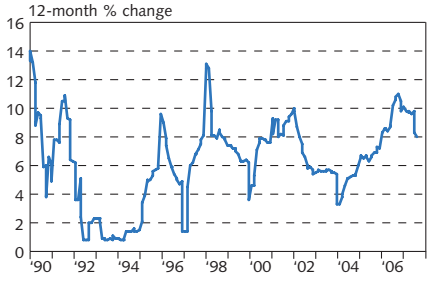
Sources: Statistics Iceland, Central Bank projections.

Mynd 17
Household debt as percentage of disposable income 1980-2006



1. New classification from 2003 (blue columns). Estimate for 2006.
Source: Central Bank of Iceland.

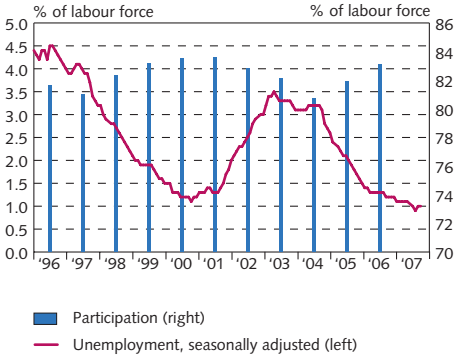
Chart 18
Real wages January 1990 - August 2007



Source: Statistics Iceland.

Chart 19

Unemployment and labour participation[1]
January 1996 - September 2007

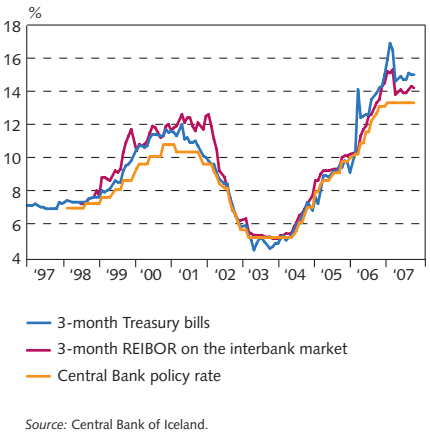


1. Statistics Iceland's labour market survey 1996-2006.
Sources: Directorate of Labour, Statistics Iceland, Central Bank of Iceland.

Chart 20

Short-term interest rates
January 1997 - September 2007

At end of month

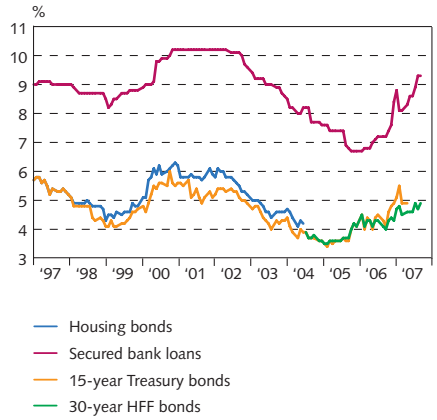


Source: Central Bank of Iceland.

Chart 21

Long-term interest rates
January 1997 - September 2007

At end of month

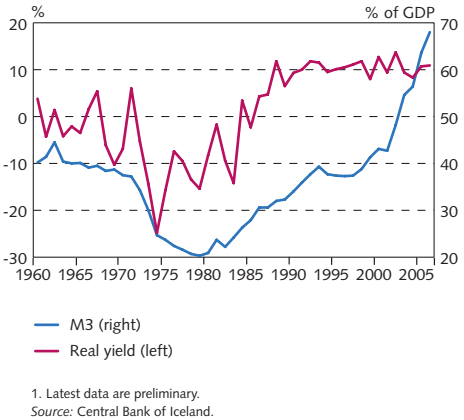


Source: Central Bank of Iceland.

Chart 22

Real yield and broad money 1960-2006[1]

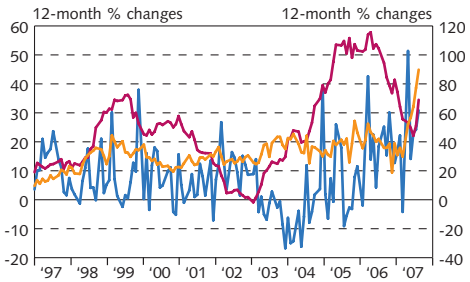
Real yield on non-indexed bank loans and
M3 as percent of GDP



1. Latest data are preliminary.
Source: Central Bank of Iceland.

Chart 23

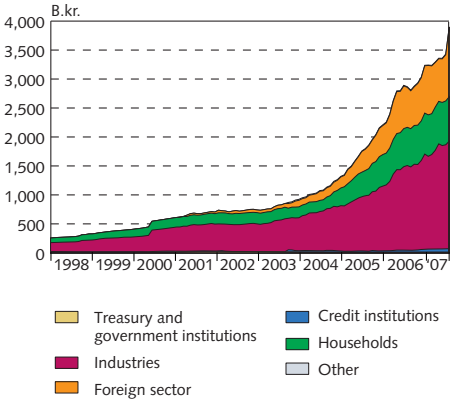
M3, DMB lending and base money
January 1997 - August 2007[1]



1. Latest figures are preliminary.
Source: Central Bank of Iceland.

Chart 24

Deposit money bank lending by sector
January 1992 - July 2007[1]

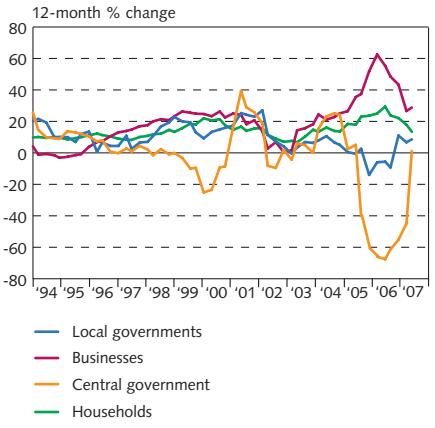


1. Reclassification of lending in September 2003 based on the ÍSAT-95 standard led to a reduction in household debt figures and an increase in business and municipalities' debt figures. Latest figures are preliminary.
Source: Central Bank of Iceland.

Mynd 25

Growth of credit system lending 1994-2007

Lending by sectors[1]

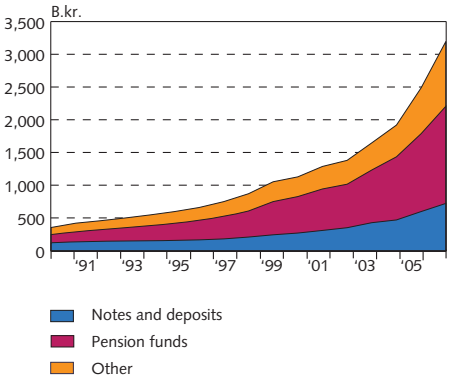


1. Reclassification of lending in September 2003 based on the ÍSAT-95 standard led to a reduction in household debt figures and an increase in business and municipalities' debt figures. Latest figures are preliminary.
Source: Central Bank of Iceland.

Chart 26

Credit system liabilities at end of year 1990-2006[1]

At current prices

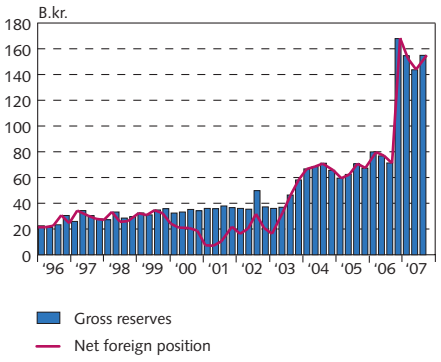


1. Latest figures are preliminary.
Source: Central Bank of Iceland.

Chart 27

Reserve assets and Central Bank net foreign position, Q1/1996- Q3/2007[1]

Quarterly, at current exchange rates



1. Latest data are preliminary.
Source: Central Bank of Iceland.