Economic and monetary developments and prospects[1]

Outlook for gradual recovery beginning in late 2010

The króna has appreciated since the January Monetary Bulletin. *During the same period, the Central Bank has cut interest rates by one percentage point. Real short-term rates have fallen as well, but the risk-adjusted interest rate differential with abroad has risen slightly and has, together with the capital controls, supported the exchange rate. The global economic recovery is continuing as was envisaged in January, although international trade has proven stronger than was projected then. The domestic economy has also proven more resilient than was forecast in January. The contraction in 2009 was less pronounced than previously assumed, and indicators suggest that private consumption will be stronger throughout the forecast horizon. Investment will be weaker in 2010, however, because of delays in aluminium and power sector development and a more marked contraction in other business investment. Consequently, recovery will be delayed by one quarter, to Q3/2010. Accordingly, the recession in Iceland will last for ten quarters, which is longer than in other industrialised countries. Even though recovery will come later than was projected in January, stronger private consumption will cause GDP to contract less sharply in 2010 than was anticipated then. Furthermore, the outlook is for gradual GDP growth in the next two years. The flexibility of the labour market has been much greater than previously assumed, with employment contracting more in 2009, and wage costs rising much less, than was estimated in January. That flexibility has probably played a leading role in counteracting inflationary pressures stemming from the depreciation of the króna and has prevented unemployment from rising higher than it has. The króna is expected to remain somewhat stronger during the forecast horizon than was forecast in January. A relatively stable exchange rate and spare capacity will contribute to continuing disinflation. Underlying inflation is forecast to align with the Central Bank inflation target early in 2011, and headline inflation to reach the target later in the year. As before, the economic outlook is extremely uncertain; however, uncertainty concerning the progress of the economic programme of the Icelandic Government and the International Monetary Fund (IMF) has subsided with the approval of the Second Review of the programme.*

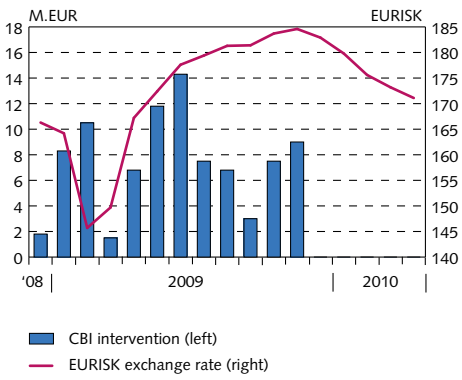
I Inflation outlook and monetary policy

Króna appreciates …

Since the last *Monetary Bulletin* was published on 27 January, the exchange rate of the króna has risen by about 3½% in trade-weighted terms and just under 6% against the euro. On average, the króna was trading at just below 176 against the euro in Q1/2010, having appreciated by 4% quarter-on-quarter, while the last forecast assumed that the EURISK exchange rate would remain virtually unchanged at just over 183 against the euro. This strengthening occurred without any intervention by the Central Bank, which has not entered the foreign exchange market since early November 2009.

This appreciation of the króna reflects in part the depreciation of the euro and the pound sterling against other currencies. Terms of trade have also improved, the trade surplus has increased, and the capital controls appear to be more effective than they were at first. It is likely that the capital controls prevented the recent temporary rise in risk premia on domestic financial assets from weakening the króna.

Chart I-1
EURISK exchange rate and CBI intervention in the FX market
December 2008 - April 2010



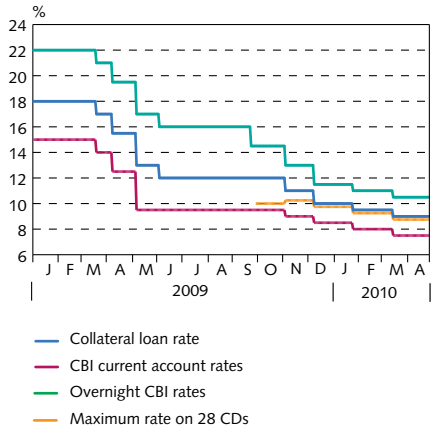
Source: Central Bank of Iceland.

… and has provided scope for further monetary easing

The recent appreciation of the króna and the continuing decline in 12-month inflation during Q1/2010 have enabled the Central Bank Monetary Policy Committee (MPC) to continue lowering Central

1. This section is based on data available at the end of April.

Chart I-2
Central Bank interest rates
Daily data January 1, 2009 - April 30, 2010



Source: Central Bank of Iceland.

Bank interest rates. Since *Monetary Bulletin* appeared in January, the Committee has met twice, cutting interest rates by half a percentage point on each occasion.

Central Bank real rate continues to fall

As can be seen in Table I-1, the level of monetary restraint varies according to which measures of inflation and inflation expectations are examined. The Bank's key real interest rate ranges from just below zero, in terms of current inflation or household inflation expectations, to about 4%, in terms of corporate inflation expectations or the breakeven inflation rate in the bond market. By most criteria, however, the restraint exerted by the real interest rate has diminished since the last *Monetary Bulletin* was published, and is much less than it was a year ago.[2] The risk-adjusted short-term interest rate differential with abroad has increased slightly, however, as risk premia on Icelandic financial assets have declined somewhat more than the short-term interest rate differential.

Table I-1 Monetary policy stance (%)

	Policy Policy stance	*Changes from MB 2010/1*	*Changes from MB 2009/1*
Real interest rate according to:[1]			
Year-on-year inflation	-0.2	-2.5	-0.7
3-month seasonally adjusted inflation rate	0.9	-2.1	-10.9
Central Bank inflation forecast[2]	2.1	-0.1	-2.1
Household inflation expectations[3]	0.1	0.9	-0.3
Corporate inflation expectations[3]	4.0	1.0	-8.5
Bond market inflation expectations[4]	4.2	-0.2	-2.8
Risk-adjusted 3-month interest rate differential vis-à-vis euro area according to:[5]			
CDS spread on government bonds	3.0	1.0	0.8
Historical exchange rate fluctuations[6]	1.9	0.4	1.1

1. To measure the Bank's key nominal rate, the current account rate is used from April 2009 to September 2009, but from September 2009, the average of the current account rate and the maximum 28-day CDs rate is used. 2. Central Bank forecast for year-on-year inflation two quarters ahead. 3. According to median responses of households and corporate for expected inflation one year ahead. 4. Breakeven inflation expectations one year ahead from the difference between nominal and indexed yield curves (5-day moving averages). 5. Interest rate differential between short-term interest rates in Iceland and its main trading partners. 6. The ratio of 3-month interest rate differential and 3-month standard deviation of the EURISK rate.

The restraint exerted by domestic interest rates has therefore diminished considerably in the last year, while the slack in the economy has grown. Cuts in domestic interest rates appear not to have undermined the exchange rate, however, as the risk-adjusted interest rate differential has not narrowed. Furthermore, it is clear that the capital controls have been an important source of shelter for the króna. Without them, it would hardly have been possible to reduce domestic interest rates. On the contrary: it is likely that, without capital controls, interest rates would have to have been much higher than they in fact were (see Box I-1).

It is clear as well that, due to significant slack in the economy and high unemployment rates, it would be desirable to cut interest rates still further. However, the need to guarantee a risk-adjusted

2. In international discussion and cross-country comparison, it is common to use inflation figures according to the Harmonised Index of Consumer Prices (HICP) to calculate real interest rates. According to the HICP, the level of restraint at current inflation levels is considerably lower than is shown in Table I-1. At present, inflation according to the HICP is 11.6% and real interest rates therefore -3.1% instead of -0.2%.

interest rate differential with abroad sufficient to support the króna during the private sector restructuring phase reduces the MPC's scope to take larger steps in reducing interest rates. High inflation and relatively high inflation expectations have also limited the scope to lower rates. If inflation continues to subside, as is forecast, and if inflation expectations can be contained, the MPC will be able to continue lowering interest rates. Further discussion of domestic interest rate developments and money supply can be found in Section III.

Continuing global recovery

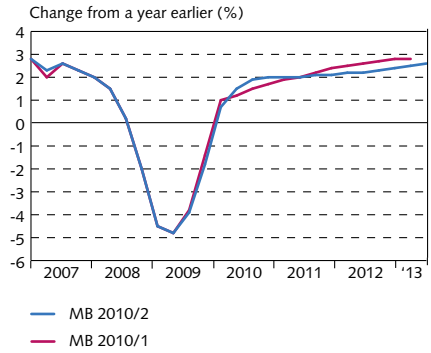
The global recovery began in Asia early in 2009 and then spread to other regions as the year progressed. Growth was driven by increased manufacturing production, which had contracted sharply in the wake of the global financial crisis in late 2008. GDP began growing again in Q3 among all of Iceland's main trading partners, and continued growing in Q4. The outlook for 2010 has improved somewhat, but on the whole, the global growth outlook is broadly unchanged from the January forecast. The global economic recovery is also reflected in more optimistic prospects for international trade. It is now thought that global trade turned upwards beginning in Q3/2009 and that recovery will be stronger than was forecast in January.

Iceland's exports have withstood the global recession quite successfully, with export volumes contracting less than in countries that are more heavily reliant on exportation of manufacturing goods (see, for example, Table 2 in Box IV-1). The decline in the real exchange rate has improved the competitive position of the tradable sector but has also cut a swath in the balance sheets of export companies deeply indebted in foreign currency. Exports of goods and services are now estimated to have increased by 6.2% in 2009 and are projected to continue growing by about ½% in 2010. It is assumed that export growth will gain momentum in coming years, particularly from 2012 onwards, due to increased exports of aluminium products. Further discussion of the global economic outlook, exports, the external balance, and the external conditions of the Icelandic economy can be found in Sections II and VII.

Outlook for somewhat stronger króna over the forecast horizon

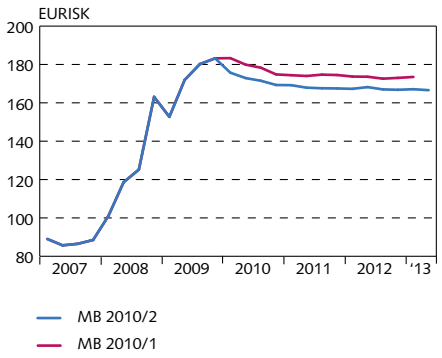
The króna has strengthened somewhat since the last *Monetary Bulletin*, and the outlook is for improving terms of trade in 2010 and 2011. A considerable surplus has already emerged in the trade account and the current account balance, excluding accrued interest expense related to the settlement of banks in winding-up proceedings. For the longer term, it therefore appears that the economic preconditions for a slow, gradual appreciation of the króna are in place. The current forecast projects exchange rate developments similar to those in the January forecast, although the króna is expected to be somewhat stronger than was envisaged then. The current forecast assumes that the króna will trade at just over 167 against the euro in 2012, a full 3% higher than was anticipated in January. Further discussion of developments in the foreign exchange market can be found in Section III.

Chart I-3
Output growth in Iceland's main trading partners - comparison wit MB 2010/1



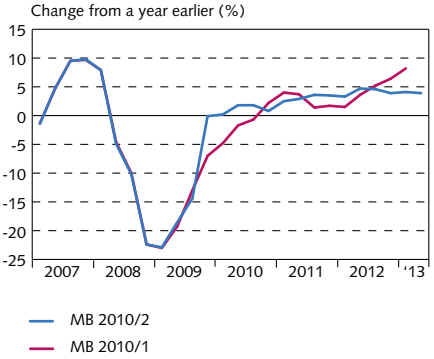
Sources: Global Insight, Reuters EcoWin, Central Bank of Iceland.

Chart I-4
The ISK exchange rate against the euro - comparison with MB 2010/1



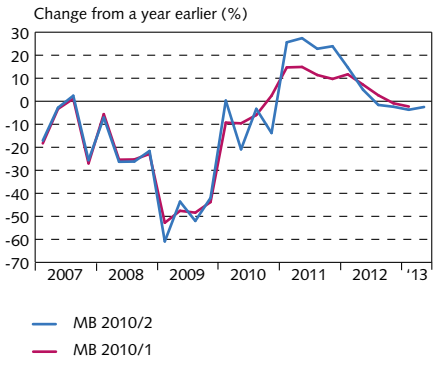
Source: Central Bank of Iceland.

Chart I-5
Private consumption - comparison with MB 2010/1



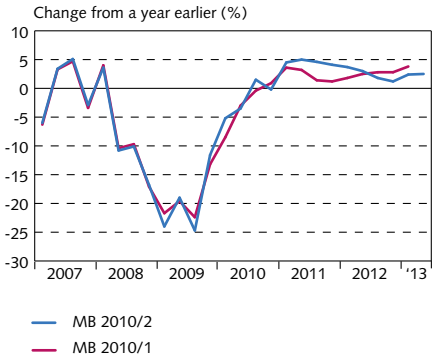
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-6
Investment - comparison with MB 2010/1



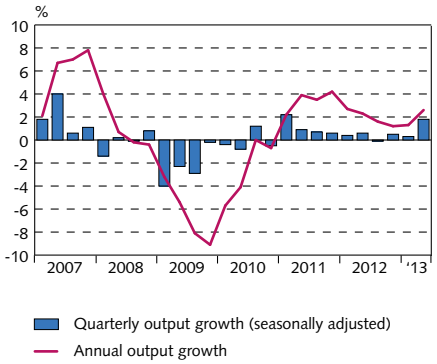
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-7
Domestic demand - comparison with MB 2010/1



Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-8
Output growth



Sources: Statistics Iceland, Central Bank of Iceland.

Outlook for smaller contraction in domestic demand …

According to preliminary figures from Statistics Iceland, seasonally adjusted private consumption started growing in Q3/2009 and continued in Q4. As a result, the contraction in private consumption in 2009 was somewhat less than was assumed in the Central Bank's January forecast. The outlook for private consumption in 2010 has also improved since January. It is now estimated that private consumption will grow by just over 1% this year instead of contracting by that amount, as was projected then. The outlook for private consumption in 2011 and 2012 is broadly in line with the January forecast, although growth is likely to be more robust for the majority of the forecast period.

Developments in public consumption are projected to be similar to the last forecast. However, new figures from Statistics Iceland suggest that the contraction was considerably more pronounced in 2009 than was indicated by previous figures, and more closely in line with the Central Bank's forecast early in the year, before Statistics Iceland's preliminary figures for Q1 were published. Fiscal consolidation measures therefore appear to have been more successful than appeared at first. As a result, there is a good chance that measures planned for 2010 will prove successful as well. Hence there is slightly less need for fiscal tightening this year than was previously thought, due to more positive fiscal performance, and the resulting room for manoeuvre can be used to support economic recovery.

Developments in gross capital formation in 2009 were largely in line with the January forecast. The year-on-year contraction was just under 50%, while a contraction of just over 48% was forecast. On the other hand, it appears that this year's contraction will be somewhat more pronounced than was forecast in January, due primarily to further delays in aluminium and power sector projects, although other business investment will also contract more than was assumed in January. Total investment is projected to contract by just over 10% this year, while the January forecast allowed for a contraction of slightly less than 6%. Because of delays in the aluminium and power sector projects, same of those investments are expected to take place next year. As a result, growth in total investment will approach 25% in 2011. The forecast for 2012, however, is broadly unchanged.

On the whole, the outlook is for domestic demand to contract somewhat less in 2010, or by just under 2% rather than the nearly 3% forecast in January. Domestic demand growth is also estimated to be somewhat more in 2011. More robust domestic demand will lead to stronger recovery in imports in 2010 and 2011. A stronger króna and accumulation of inventories following destocking by importers will make an impact as well. Further discussion of the financial conditions of the private sector can be found in Section III, and a discussion of general public and private sector demand can be found in Sections IV and V.

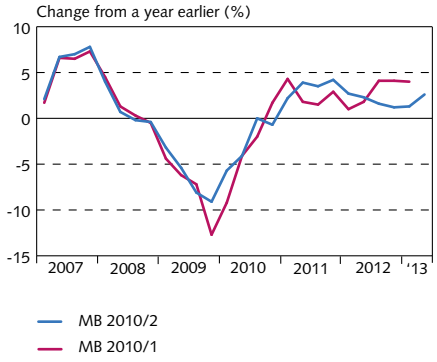
… but recovery is delayed still further

According to preliminary figures from Statistics Iceland, the contraction in GDP in 2009 was less pronounced than the Central Bank's January forecast indicated. The Central Bank had anticipated a con-

traction of 7.7%, while the preliminary figures from Statistics Iceland suggest 6.5%.[3] The most recent indicators also suggest that the contraction in Q1/2010 was somewhat smaller than was projected in January.[4] Those figures imply that the year-on-year contraction in GDP was 5½% in Q1, after having peaked at 9.1% in Q4/2009.

At present, it appears that the contraction in GDP in 2010 will be smaller than previously forecast – about 2½% instead of 3½% – due primarily to more robust growth in private consumption and slightly stronger initial conditions. On the other hand, the outlook is for recovery to be delayed beyond what was forecast in January. Consequently, GDP is now projected to contract in Q2/2010, while the January forecast assumed that it would begin to grow during that quarter. It is now expected that recovery will not begin until Q3, one quarter later than was forecast in January and three quarters later than expected in November. The delay is due in large part to weaker investment than was assumed in the Bank's previous forecasts. The growth outlook for 2011-12 is similar to that in the January forecast, however: GDP growth is projected at 3½% in 2011 and 2% in 2012. Section IV discusses GDP growth and outlook in greater detail.

Chart I-9
Output growth - comparison with MB 2010/1



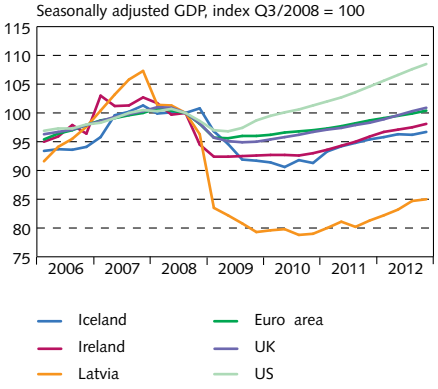
Sources: Statistics Iceland, Central Bank of Iceland.

A long recession in international comparison

As has been discussed previously, renewed growth has taken root in many countries. However, growth is generally modest, and after the strong contraction following the global financial crisis, most countries are seeing GDP figures far below pre-crisis levels. The United States appears to fare best among major industrial nations, as GDP began growing once again in Q3/2009, after a recession lasting a full year. In Q4, GDP in the US was only 2% below its pre-crisis peak in Q2/2008. The contraction in the euro area also came to an end in Q3/2009, but it had begun one quarter earlier than in the US. The output loss was even larger, or nearly 5%. Recovery did not begin in the UK, however, until Q4, after a contraction of six quarters, with GDP 6% below its pre-crisis peak.

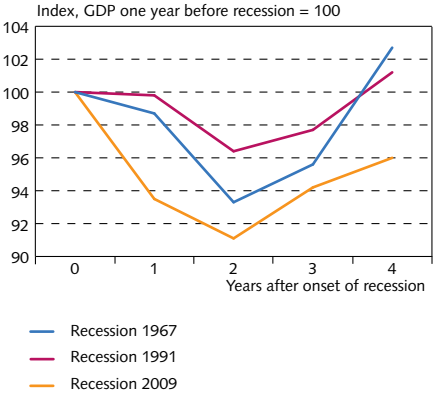
Many smaller European countries were hit much harder by the crisis, particularly those that experienced a systemic banking crisis, such as Ireland, Latvia, and Iceland. Recovery took hold in Ireland rather early – in Q1/2009 – but based on the most recent figures, GDP is still about 10% below the pre-crisis peak. In Latvia and Iceland, the contraction has persisted considerably longer, and the most recent forecasts indicate that GDP began to grow again in Q1/2010 in Latvia, while in Iceland it will not begin to turn upwards

Chart I-10
Economic recovery in various countries



Sources: Global Insight, Central Bank of Iceland.

Chart I-11
Economic recovery in previous recessions

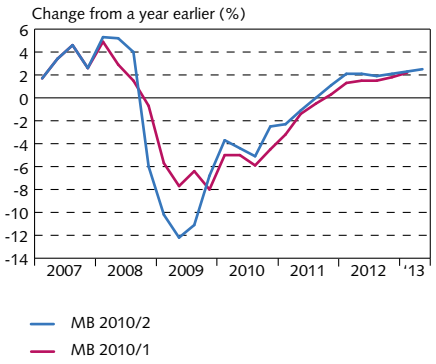


Sources: Statistics Iceland, Central Bank of Iceland.

3. The difference is largely due to the fact that, until now, the Bank's forecasts for national expenditure and GDP growth have ignored the effects of the chain-volume approach in the national accounts, with the forecasts simply based on the national account identity. Until now, these effects have been negligible, but last year the difference was considerable due to substantial changes in the relative price of main macroeconomic variables. The Bank's forecasting methodology has now been reviewed in light of this and will henceforth take account of the chain-volume property. Further discussion of developments in GDP growth in 2009 in comparison with Central Bank forecasts can be found in Appendix 2.

4. Based on the Central Bank's seasonal adjustment, which is different from the method used by Statistics Iceland (published on 5 March 2010). The Bank's approach is to seasonally adjust GDP data directly, while Statistics Iceland makes seasonal adjustments to individual expenditure components and measures the seasonally adjusted GDP figure from the national accounts identity. The problem with this approach is that the adjusted GDP data remain extremely volatile, as is pointed out in the Statistics Iceland *Statistical Series* 2010:3.

Chart I-12
Employment - comparison with MB 2010/1

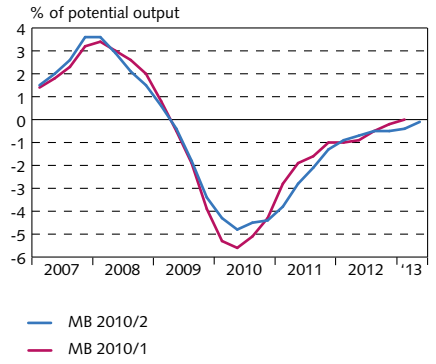


Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-13
Unemployment - comparison with MB 2010/1

Sources: Directorate of Labour, Central Bank of Iceland.

Chart I-14
Output gap - comparison with MB 2010/1



Source: Central Bank of Iceland.

until Q3. The recession has therefore lasted for eight quarters in Latvia and ten quarters in Iceland, with GDP contracting from pre-crisis peak levels by nearly 10% in Iceland and almost 26% in Latvia.

As Chart I-10 shows, it is projected that GDP in the United States will return quickly to pre-crisis levels.[5] In other countries, however, the recovery is expected to take a longer time, and in Iceland, GDP will probably still be nearly 5% below pre-crisis levels at year-end 2012. Hence, although it is clear that, to date, the downturn in Iceland has been less pronounced than was feared at first, it appears to be sharper than in most other industrial countries.[6] Iceland's recession is also longer and its recovery slower. As can be seen in Chart I-11, this recession is also deeper and longer than previous recessions in Iceland since the end of WWII. This is due to the combined effect of the global financial crisis and the ensuing contraction in global production, the domestic banking and currency crisis, and the inevitable adjustment of domestic demand after many years of overheating.

Sharp contraction in hours worked and smaller rises in wage costs facilitate economic adjustment following the crisis

Employment has contracted steeply as a result of the financial crisis and is forecast to continue declining until mid-2011, when it will begin rising again. It is now clear that employment shrank much more in 2009 than was assumed in the January forecast. New figures for the year as a whole, together with indicators from the Statistics Iceland labour market survey, suggest a strong contraction in hours worked and an increase in part-time work (see Box VI-1). Emigration from Iceland has also been more pronounced than previously assumed. It is now thought that employment declined by about 10% year-on-year in 2009, whereas the January forecast projected a contraction of 7%. This means that, by Q4/2009, nearly 28,000 jobs in terms of man-years were lost – a total of 16½% of the total labour force – from the time labour use peaked in Q2/2008, during the run-up to the crisis. The reduction in employment projected in the January forecast was due for the most part to a lower labour participation rate.

From the above, it can be discerned that labour productivity has increased somewhat in the last year, as employment contracted more than GDP. As a result, wage costs on a national accounts basis rose by just under 1% in 2009, as opposed to the 5% envisaged in the last forecast. Unit labour costs therefore contracted slightly instead of rising by nearly 7%. Consequently, the labour market proved much more flexible in the wake of the crisis than previous estimates had indicated. This explains in part why inflation did not rise more than it actually did after the currency collapsed, and why unemployment has not risen more sharply after the crisis. It is expected that unemployment will be broadly in line with the January forecast. Further discussion of the labour market can be found in Section VI.

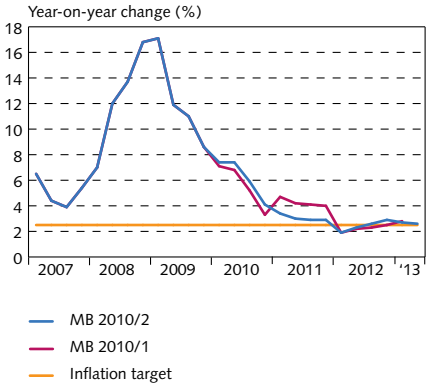
5. It is assumed that the global financial crisis began in Q3/2008; therefore, seasonally adjusted GDP for each country is set at 100 in that quarter.
6. The contraction in Iceland is even greater in comparison with most other countries in terms of private consumption or domestic demand. As is discussed in Section IV, permanent loss of production capacity is also greater in Iceland than in other OECD countries.

Reduction in potential output eases post-crisis slack

The financial crisis has not only affected general demand in the Icelandic economy; it has also affected the production capacity of the economy, which has contracted markedly. A part of the capital stock has been lost due to corporate liquidation, and the transfer of resources from the finance, construction and service sectors to the tradable sector entails some adjustment costs; for example, the cost of retraining labour in new skills. Human capital can even be lost permanently if unemployment remains high for a protracted period of time.

The loss of production capacity in the wake of the financial crisis means that the spare capacity that has developed following the sharp contraction in demand is less than it would otherwise be. It is now thought that the slack will peak in mid-2010 at just under 5% of production capacity, which is rather less than was projected in January, due to the offsetting effects of a larger contraction in employment and a smaller contraction in business activity and capital stock. As before, the slack is projected to diminish gradually and disappear by the end of the forecast horizon. Further discussion of production capacity and output slack can be found in Section IV.

Chart I-15
Inflation - comparison with MB 2010/1

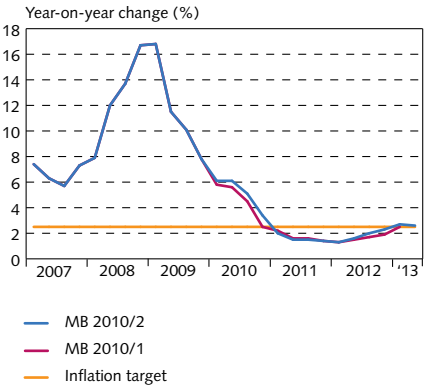


Sources: Statistics Iceland, Central Bank of Iceland.

Continuing disinflation expected

So far in 2010, inflation has been higher than the Bank anticipated in January, measuring 7.4% in Q1/2010, as opposed to 7.1% in the January forecast. The outlook is for inflation to be somewhat higher in Q2 also, or 7.4% instead of 6.8%. This persistence is attributable mainly to larger increases in oil and commodity prices, more modest declines in house prices, and a lesser output slack than had been forecast. On the other hand, inflation expectations have subsided, although they remain somewhat above the inflation target by some measures. Moreover, the current forecast assumes a stronger króna and lower unit labour costs throughout 2010. In addition, it is now expected that indirect tax increases will be more modest over the next two years, as public sector finances are more robust than was projected in January and the tax base is expected to be stronger during the forecast period. The rise in headline inflation as a result of consumption tax hikes in the next two years will therefore be less than previously expected. On the whole, it is still considered likely that significant spare capacity and the relative stability of the króna will ensure that inflation falls back towards the inflation target towards the end of the forecast horizon. Inflation is estimated at 6.2% for 2010, while the January forecast projected 5.6%. It is expected to be about 3% in 2011 and at target in 2012. Further discussion of global price level developments can be found in Section II, and developments in domestic inflation and inflation expectations are discussed in Section VIII.

Chart I-16
Inflation excluding tax effects - comparison with MB 2010/1



Sources: Statistics Iceland, Central Bank of Iceland.

Key uncertainties

The baseline forecast reflects the Bank's assessment of the most likely economic developments over the next three years. It is based on forecasts and assumptions concerning developments in Iceland's external environment, and the effects of those developments on the Icelandic economy. The forecast is also based on an assessment of how indi-

vidual markets function and how monetary policy is transmitted to the economy. All of these factors are quite uncertain, however, partly because of the unprecedented scope of the current financial crisis. The economic outlook, domestic or global, could easily diverge from the assumptions in the baseline forecast. The following discussion sets forth five important uncertainties in the baseline forecast, but the number of possible uncertainties is obviously far greater. The subsection following that discussion explores two more key uncertainties in greater detail through alternative scenarios.

The baseline forecast assumes a relatively strong global economic recovery, in line with international forecasts. Recovery could prove slower, however, and there could even be setbacks. Until now, recovery has been driven largely by broad-based government policy actions on the monetary and fiscal fronts. It is likely that these policy actions will come to an end in the near future, particularly because continuation of them could generate the risk of asset bubbles, inflation, and unsustainable fiscal debt for the long term. The heavily indebted private sector in many major industrial countries could respond by cutling expenditures, thus jeopardising global recovery. Were this to happen, terms of trade and Iceland's exports could prove weaker, and the exchange rate lower, than in the baseline forecast, due to less favourable external trade, reduced risk appetite, and more restricted access to external financing, all of which would probably result from such caution. Iceland's economic recovery would therefore be slower than is assumed in the baseline forecast.

The baseline forecast assumes some delay in the construction of the Helguvík aluminium smelter and the associated power plant due to difficulties in financing the project, according to information from the developers. Because the Second Review of the IMF economic programme has taken place, however, it is assumed that access to external financing will be restored and the development projects will not be subject to further delays. But it is not a given that this will be the case. For example, the IMF programme could suffer a setback if the Third Review does not take place as planned this summer. It is also possible that conditions in the global capital markets could deteriorate once again. In that case, the turnaround and the recovery of investment would be delayed beyond the timetable set forth in the baseline forecast, and economic recovery could be delayed as a result.

The baseline forecast assumes continuing growth in exports in 2010, although annual growth will be limited due to a contraction in marine product exports this year, as well as adverse base effects owing to a sharp but transitory rise in exports of aircraft, ships, and motor vehicles in 2009. The tourism industry and exports of goods other than manufacturing and marine products will benefit, however, from the unusually advantageous competitive conditions stemming from a low real exchange rate. The volcanic eruption at Fimmvörðuháls appeared likely to stimulate tourism, but the Eyjafjallajökull eruption could turn the situation around and cause a steep decline in tourism while it lasts. Travellers have begun cancelling trips to Iceland, and commercial air transport has been severely disrupted in most of Europe, complicating the transport of export products to foreign

markets. If these effects are prolonged, a substantial contraction in tourism revenues could compromise economic recovery and weaken the króna more than is assumed in the baseline forecast.

The baseline forecast assumes that wages will develop broadly in line with current wage agreements, although it is now thought likely that wage drift will be more pronsunced. As a result, the forecast assumes that pay hikes in the months to come will be less than those in recent years, as unemployment is high and the slack in the labour market is expected to persist throughout the forecast horizon. Labour market indicators could imply, however, that wage pressures will be greater over the coming months than in the baseline forecast. Real wages have declined sharply in the wake of the financial crisis, and the wage share has fallen as well. Similarly, the real exchange rate is very low, and the competitive position of the tradable sector has improved greatly. As a result, there is some pressure to pass a share of the improvement in competitive position in those sectors on to wage-earners. The danger is that those pay increases might spread to other sectors that do not have comparable scope to absorb rising wage costs and will therefore respond by laying off staff and passing cost increases through to prices. Recovery in employment and production could therefore prove weaker than in the baseline forecast, and inflationary and exchange rate pressures could prove stronger.

Finally, the baseline forecast assumes that the real exchange rate of the króna will remain low throughout the forecast horizon, in line with other countries' experience of financial crises. The competitive position of the tradable sector has improved greatly, which has supported exports, even though the global recession has cut into world trade. According to the forecast, exports will continue to grow, especially as the forecast horizon progresses and increased aluminium exports come into play. However, it is not impossible that the export sector will take even better advantage of the low real exchange rate than is assumed in the baseline forecast, especially if it uses it to reduce prices and increase marketing efforts. The low real exchange rate could also stimulate foreign direct investment in Iceland. Export growth and GDP growth could therefore exceed the assumptions in the baseline forecast, and recovery could be stronger as well.

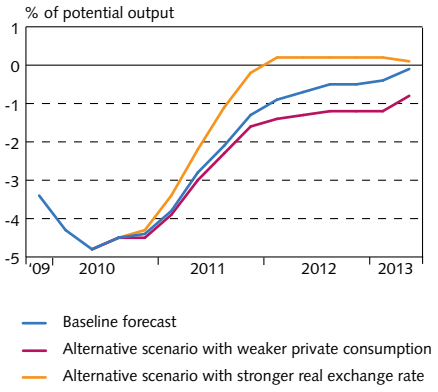
Alternative scenarios

Alternative scenarios can provide useful indications of the effects of important assumptions in the baseline forecast on the economic outlook, and of the interplay between deviations and monetary policy. Two alternative scenarios are described below. In the former, household indebtedness provides stronger headwinds for private consumption than in the baseline forecast, while the latter scenario assumes that the króna will appreciate towards its long-term equilibrium value faster than in the baseline forecast.

Slower recovery of private consumption due to heavy debt burden

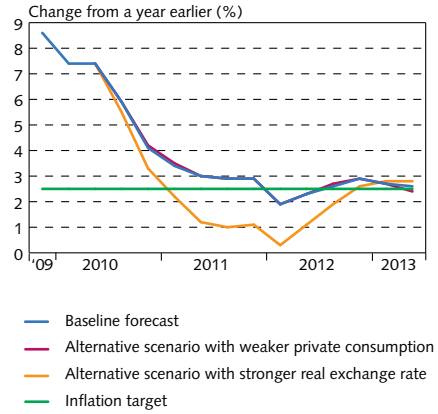
The baseline scenario assumes that private consumption will continue to recover slowly in 2010, after an abrupt contraction in 2008-9. That assumption, however, is subject to significant uncertainty owing to

Chart I-17
Output gap - alternative scenarios



Source: Central Bank of Iceland.

Chart I-18
Inflation - alternative scenarios



Sources: Statistics Iceland, Central Bank of Iceland.

the scale of Icelanders' household debt. It is possible that households will need more time to strengthen their balance sheets by stepping up savings, deleveraging, and restructuring their debt. The financial system itself is damaged as well, and it could choose to strengthen its own position and reduce its balance sheet before resuming lending to any significant degree. Private consumption has also been sustained in part by numerous measures, many of which are temporary; for example, large increases in mortgage interest allowances, a variety of options to ease borrowers' debt service burden, and payouts from third-pillar pension savings. The danger is that the recovery will suffer a setback when these measures are no longer available, or that it will be held back if the heavy debt burden should cut more deeply into private consumption than the baseline forecast assumes. Under such circumstances, domestic demand would be weaker than in the baseline scenario, the slack in the economy would be greater, and the recession more protracted.

In real terms, private consumption as a percentage of GDP bottomed out at just under 47% in Q4/2008, the lowest level since measurements began. Private consumption as a share of GDP has averaged about 57% over the past 30 years. It has inched upwards since the end of 2008 and measured 51% at year-end 2009. According to the baseline forecast, it will continue rising to nearly 53% by the end of the forecast horizon. The forecast for private consumption is therefore cautious, as households are heavily indebted and disposable income has declined markedly. The alternative scenario assumes, however, that recovery will be still slower, and that private consumption as a share of GDP will remain more or less unchanged at just over 50% throughout the forecast period. This means that growth in private consumption will be just under 1% this year and approximately 1% for the following two years, significantly below the assumptions in the baseline forecast. The outlook for output growth according to this alternative scenario is therefore bleaker, with GDP contracting by nearly 4% in 2010. Other things being equal, a more pronounced slack in the economy calls for lower interest rates, which leads to a weaker króna over the forecast period. Lower interest rates and a weaker currency support investment and exports. This, together with a reduction in imports, brings GDP growth for the next two years back to a level more or less in line with the baseline forecast. As can be seen in Chart I-17, the output slack is greater than in the baseline forecast throughout the forecast horizon. Lower interest rates and a lower exchange rate then counterbalance a more pronounced slack, with the result that inflation will be very similar to the levels in the baseline example (Chart I-18).

More rapid adjustment of real exchange rate towards its long-term equilibrium

The baseline forecast assumes that the real exchange rate is now below its long-term equilibrium value and will remain there for some time, owing to the country's sizeable external debt and the high risk premia on Icelandic financial assets, which reflects, among other things, limited confidence in the currency and the poor credit ratings

of Icelandic entities. The developments in the real exchange rate in the baseline forecast therefore resemble, for example, developments in Finland following the financial crisis of the early 1990s. This implies that the real exchange rate will be roughly 10% below its long-term value by the end of the forecast horizon.[7] This exchange rate forecast is subject to considerable uncertainty, however, as forecasting currency exchange rate is notoriously difficult. As a result, the possibility cannot be excluded that a sharp turnaround in external trade, enhanced confidence in the Government's economic policy, advantageous developments in external debt (e.g., due to better recovery ratios on foreign assets), and improved credit ratings for Icelandic entities could prompt the real exchange rate to rise sooner and to higher levels than in the baseline forecast.

This alternative scenario therefore assumes that the real exchange rate will rise more rapidly than in the baseline example, developing more or less in line with the experience of South Korea and Thailand after the financial crisis of the late 1990s, and approach equilibrium by the latter part of the forecast horizon. Although a higher real exchange rate will cut into export growth somewhat, heavy foreign currency indebtedness among Icelandic export companies should tend to mitigate the negative effects of a higher exchange rate. A higher real exchange rate would also ease the debt service burden of many indebted households and, other things being equal, should go hand-in-hand with stronger private consumption and imports. Furthermore, a stronger domestic currency would reduce inflationary pressures, both through import prices and through a reduction in wage pressures, as is explained above in the discussion of the main uncertainties in the baseline forecast. Inflation will therefore fall more and real wages will rise, further supporting the recovery of private consumption. Relatively stronger domestic activity is also reflected in lower unemployment, especially as the forecast horizon progresses. More rapid disinflation will provide scope for further interest rate cuts, which will also support recovery. In this alternative scenario, the contraction in GDP in 2010 is similar to that assumed in the baseline forecast, while GDP growth is estimated at 4½% in 2011, approximately one percentage point more than in the baseline scenario. The output slack will therefore disappear more rapidly than in the baseline forecast (Chart I-17). A more decisive appreciation of the króna also provides scope for more rapid disinflation. At the end of the forecast horizon, however, inflation is close to the levels assumed in the baseline forecast, owing to the offsetting effects of a stronger currency and more robust economic activity (Chart I-18).

7. This long-term equilibrium is somewhat lower than historical averages indicate. See, for example, Ásgeir Daníelsson (2009), "QMM: A steady state version", *Central Bank of Iceland Working Papers*, and Robert Tchaidze (2007), "Estimating Iceland's real equilibrium exchange rate", *IMF Working Papers* no. 07/276.

Box I-1

Capital controls and their role in the economic recovery

When Iceland suddenly lost access to foreign liquidity to finance its current account deficit early in 2008, the value of the Icelandic króna plummeted. This abrupt decline turned from bad to worse as the global financial crisis escalated, culminating in the collapse of Iceland's banking system. By the end of October 2008, the exchange rate of the króna had fallen by over 50% since the beginning of the year.

The plunge in the exchange rate wreaked havoc on indebted Icelandic households and businesses and drove inflation to nearly 20% at the end of 2008. The central goal of the economic programme drafted by the Icelandic Government and the International Monetary Fund (IMF) in the early days of the crisis was therefore to prevent further depreciation of the currency in an attempt to provide some shelter while households and businesses restructured and rebuilt their balance sheets. Panic among domestic and foreign investors alike was considered highly likely and threatened widespread flight from króna-denominated assets, further undermining the currency and thus amplifying the blow sustained by domestic balance sheets.

Supporting the currency through conventional measures – interest rates and foreign exchange market intervention – would have required steep interest rate hikes and a dramatic expansion of the Central Bank's foreign exchange reserves.[1] Because of the negative side effects of such actions and the persistent doubt that they alone would suffice, it was deemed necessary to impose temporary restrictions on movement of capital to and from Iceland. Such capital controls would provide private entities the shelter to restructure their finances while giving the authorities the scope to revive the financial system and regain control over public sector finances. The capital controls have also given monetary policy the scope to lower interest rates significantly without undermining exchange rate stability. It is therefore clear that the capital controls have played a key role in revitalising the economy in the wake of the currency and banking crisis.

Without capital controls, the króna would have fallen still further …

Although it appears clear that the króna would have depreciated still further without the imposition of capital controls, it is extremely difficult to estimate exactly how much the exchange rate could have fallen. A rough estimate using the Central Bank's macroeconomic model indicates, however, that the EURISK exchange rate could easily have dropped to 260-300, and even farther, under certain circumstances, which is close to the offshore exchange rate at its lowest (see Chart III-10). The results of such simulations are highly dependent on how quickly monetary policy is assumed to respond by raising interest rates, and how long investors expect high interest to persist into the future. Furthermore, it is possible to argue that the exchange rate could have fallen even more than these model-generated simulations indicate, as they do not take sufficiently into account the possible effects of Iceland's small foreign exchange market, nor do they take into account the possible development of a spiral of falling exchange rate and rising risk premia on Icelandic financial assets. Such a vicious cycle can easily develop, as a large currency depreciation could lead to a wave of domestic bankruptcy, social and political instability, elevated inflation, and rising risk premia, which can trigger further depreciation of the currency.

1. This is line, for example, with experience from the currency crises in South Korea and Thailand in the late 1990s, when short-term market interest rates soared to well over 20%, even though the currency depreciation in those instances was considerably more modest than the depreciation of the Icelandic króna in 2008.

… but the controls are costly in the long run

The capital controls have played an important role in establishing exchange rate stability, particularly after they began to hold as intended towards the end of 2009. They are controversial, however, and are not without their drawbacks.

Among the disadvantages associated with the capital controls are the economic costs that accompany any type of barrier on trade, not to mention the economic waste that results when individuals and firms devote their resources to finding ways to circumvent them and the authorities dedicate their efforts towards preventing violations of them. All of these resources could be far better used elsewhere, for far greater benefit to society and the economy. Furthermore, domestic parties are faced with great difficulty in hedging against foreign exchange risk via swap agreements. The hope of profiting by circumventing the capital controls also tends to undermine business ethics and compliance with the law and, other things being equal, could undermine the economy's long-term growth potential. The competitive position of those who violate the controls is distorted vis-à-vis those who abide by the law. Finally, it is likely that the existence of capital controls somewhat deters international investors from bringing capital into Iceland, for fear that new rules may be adopted, preventing them from moving their investments back out of the country. Fear that the króna will collapse once the capital controls are relaxed could also discourage foreign investors.

This cost of the controls is not as visible as the shelter that they provide the króna, but it is every bit as real. On the other hand, it is probable that the cost hitherto has been less than it could have been, as other factors have hindered foreign capital inflows to the country. Yet the cost of the capital controls will grow as time passes, and enforcing them will become ever more difficult as individuals and firms find loopholes in their quest for quick profits. As a result, it is important that the capital controls be lifted as soon as possible, but liberalisation efforts may not be allowed to undermine the exchange rate and jeopardise economic recovery.

Temporary restrictions due to a currency and balance of payments crisis are allowed

The international agreements to which Iceland is a party – for example, the EEA Agreement, Organisation for Economic Co-operation and Development (OECD) membership, and Article 8 of the Treaty establishing the European Union – authorise temporary, limited restrictions on movement of capital in currency and balance of payments crises. The international community has therefore not commented on the restrictions placed on capital movement in Iceland, and their implementation has been approved by the Executive Board of the IMF. However, it will clearly be difficult to maintain such broad-based controls without their eventually being considered a violation of these international agreements once the crisis is over.

Capital controls are widely known in some form

Capital controls as comprehensive as those imposed in Iceland after the crisis are not common, at least not among developed countries. But they have been adopted in a number of emerging and developing economies, such as China and India, which have long maintained comprehensive restrictions on foreign exchange transactions and movement of capital.

As Table 1 shows, however, restrictions on movement of capital are widely known in some form, even among developed industrial countries. In industrial countries, such controls usually involve restrictions on foreign direct investment. Restrictions on inflows of capital are often used to stem the tide of excessive inflows result-

ing from a positive interest rate differential with abroad. Recent examples include Brazil and Taiwan, as well as Chile in the 1990s, Thailand (2006-2008) and Colombia (2007-2008). These countries implemented market-based controls; that is, taxes on foreign exchange transactions (Brazil) or unremunerated reserve requirements (Chile, Thailand and Colombia).[2] Restrictions on outflows, however, are typically used to prevent capital flight. Examples of such controls following financial crises in recent decades include Spain (1992), Rumania (1996), and Russia and Malaysia (1998).[3]

Table I Capital controls in IMF member countries 2008[1]

	Share of capital transactions that are controlled (%)		
Countries	*Capital controls*	*Outflow controls*	*Inflow controls*
Emerging and developing countries	45	47	42
Advanced economies	15	19	10
OECD countries	20	24	14
All reporting economies	39	42	36
Iceland[2]	75	74	82

1. Simple average of controlled transactions as a share of all capital transactions. 2. Does not include the liberalisation of inward capital transactions as of November 2009.

Source: International Monetary Fund (2009), *Annual Report on Exchange Arrangements and Exchange Restrictions.*

2. In this instance, non-residents are required to deposit, for a fixed period, a portion of the inflow (in domestic or foreign currency) to an interest-free account with the central bank. This measure works as a tax on capital inflows, where the tax rate is determined by the length of time the capital remains in the country: the longer the investment, the lower the actual tax rate.

3. See, for example, International Monetary Fund (2010), Global Financial Stability Report, April 2010; N. Magud and C. M. Reinhart (2006), "Capital controls: An evaluation", NBER Working Paper Series, no. 11973; and Ariyoshi, A., K. Habermeier, B. Laurens, I. Ötker-Robe, J. I. Canales-Kriljenko and A. Kirilenko, (2000). "Capital controls: Country experiences with their use and liberalization", IMF Occasional Paper no. 190.

II External conditions and exports

The global recovery has gained momentum, but the outlook remains uncertain. Commodities prices have rebounded and share prices have risen considerably over the last year, although they have stagnated in 2010. Disinflation has subsided in most countries, but underlying inflationary pressures are still negligible. It appears that international financial trade is still on the wane, but trading in goods and services seems to be on the upswing. Prices of Iceland's main exports have risen, and it looks as though terms of trade will continue to improve.

Outlook broadly unchanged, but uncertainty remains

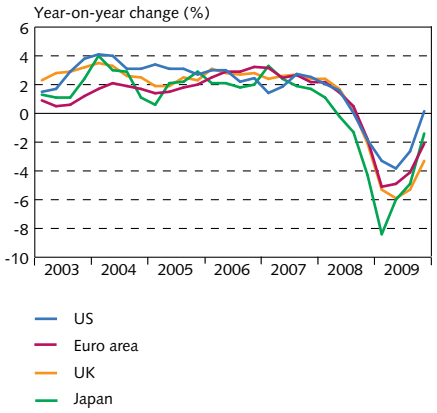
The contraction in Iceland's main trading partner countries bottomed out in mid-2009, and the global outlook is broadly in line with the forecast early in the year, when the last issue of *Monetary Bulletin* was published, or even slightly better. Economic recovery began in Asia but has now extended all over the globe. In most of Iceland's trading partner countries, seasonally adjusted GDP in Q4/2009 was up from the previous quarter. On average, Iceland's trading partners saw GDP rise by 0.6% quarter-on-quarter in Q4/2009, after 0.4% growth in the previous quarter. Growth is still negative year-on-year, but the contraction has lost pace in the UK and the euro area, where GDP shrank by 3.3% and 2.2% year-on-year, respectively, in Q4/2009. In the Nordic countries and Japan, the contraction between years was much smaller, between 0.2% and 1.5%. While the US economy saw only a marginal year-on-year rise in GDP in Q4/2009, growth from Q3 was 1.4%, the largest quarter-on-quarter increase in several years. The upturn was due in large part to the positive effects of inventory accumulation and the surge in exports. The weak link in the US recovery is private consumption, which is still sluggish. Financial markets have also been slow to normalise. There is the risk of a setback later this year, however, as various indicators suggest that output growth may slow down as the year progresses. In the euro area, positive export-driven growth is expected in 2010, but indicators suggest that growth will be negligible, as unemployment acts as a deterrent to private consumption and investment is still contracting.

Most of the revised forecasts for 2010 indicate that recovery will be somewhat stronger than was assumed in the last *Monetary Bulletin*. The March projections from Consensus Forecasts are generally higher than those in December for both the US and Japan, while the outlook for the UK is relatively unchanged. The forecast for the euro area, however, is rather poorer than the end-2009 forecast, presumably because of weaker growth than expected in Q4. The outlook remains uncertain, and there is some risk of a setback, both in the US, as is mentioned above, and in the euro area, where Greece is one of several countries facing high debt levels.

Equity prices have risen more slowly so far in 2010 ...

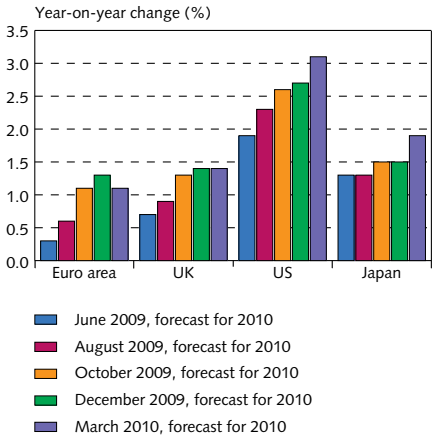
Global equity prices rose notably in 2009, ending the year some 24% higher than at the end of 2008. So far in 2010, however, the rise in share prices has slowed down in most markets. Nonetheless, the

Chart II-1
International growth
Real GDP growth Q1/2003 - Q4/2009



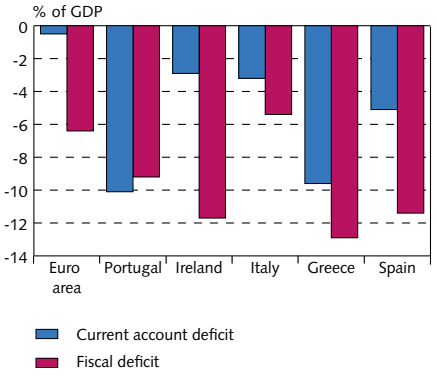
Source: Reuters EcoWin.

Chart II-2
Output growth forecasts for 2010
The columns shows month of forecast



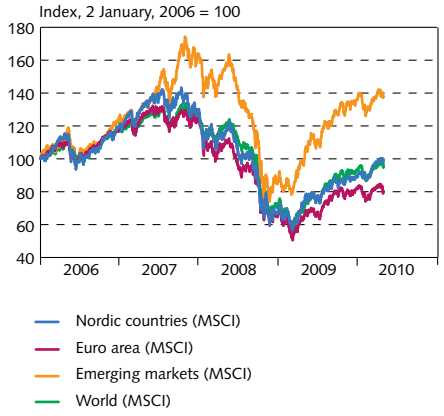
Source: Consensus Forecasts.

Chart II-3
Fiscal and current account deficit in various countries in the euro area



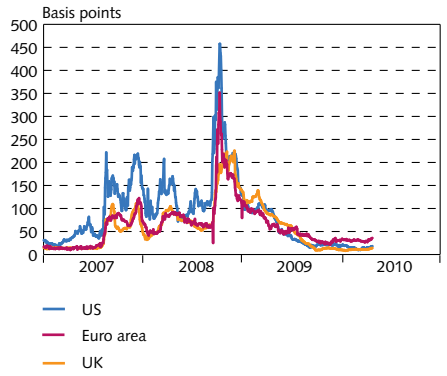
Source: Global Insight.

Chart II-4
Equity prices
Daily data 2 January, 2006 - 30 April, 2010



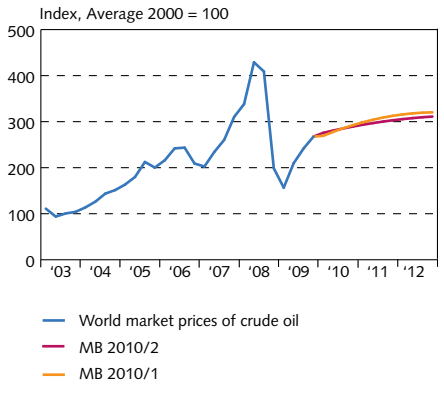
Source: Reuters EcoWin.

Chart II-5
Difference between interbank rates and government bond rate[1]
Daily data 2 January, 2007 - 30 April, 2010



1. The differential is calculated as difference between the three-month interbank rate and three-month treasury rate.
Source: Reuters EcoWin.

Chart II-6
Oil prices
Q1/2003 - Q4/2012



Sources: Bloomberg, Central Bank of Iceland.

Nordic countries have seen significant appreciation in equity prices so far in 2010.

The financial markets have begun to recover faster than generally expected, but they remain weaker than before the crash and look set to remain weaker for a while yet. Most money markets have normalised for the most part, and banks have eased lending requirements. Risk premia have dropped sharply since the peak of the financial crisis and have broadly returned to pre-crisis levels. In most countries, central banks' and governments' policy actions to rescue financial institutions are more or less complete; nonetheless, new bank lending remains limited. Risk is still considered substantial in most markets, and it is possible that large loan write-offs have yet to emerge. On the other hand, bond markets have recovered quite satisfactorily, although they have not managed to offset the contraction in general lending. As a result, credit is still in very short supply. International financial trading is still subdued, and access to credit is tight in countries that depend on access to global capital markets.

...as have commodity prices

The last issue of *Monetary Bulletin* assumed that oil prices would rise by 30% in 2010. That forecast remains broadly unchanged, although the price increase year-to-date is rather larger than previously projected. Oil prices rose only slightly during the first three months of the year, but quite substantially year-on-year. The Central Bank forecast takes account of pricing of futures contracts, on the one hand, and major international analysts' projections, on the other. Accordingly, crude oil is assumed to rise some 5% between 2010 and 2011. For 2012, the outlook is for continued price rises in response to growing global demand.

Commodity prices rose steeply towards the end of 2009 and are now higher than was forecast in January. While economic recovery in emerging Asian markets and developing countries in 2009 pressed prices upwards, normalcy seems to have returned by now. Food prices rose until mid-year, then slid for a time, and turned upwards again for the balance of the year. So far in 2010, however, they have tended to weaken.

Negligible inflationary pressure

Inflation has risen considerably in recent months in most of Iceland's major trading partner countries, after having hit bottom in mid-2009. The period of relatively widespread deflation is more or less over. Inflation rose at the beginning of 2010, due primarily to adverse base effects owing to sharp declines in oil prices early in 2009 and recent increases in commodity and oil prices. As a result, it is generally expected that inflation will lose momentum as the year progresses. Underlying inflationary pressures are limited, and the outlook is for low inflation during the year, which can be seen in widespread declines in core inflation rates in spite of increases in headline inflation.

The deflationary period in the US came to an end in November 2009, and inflation has risen somewhat, primarily due to base effects, as core inflation declined month-on-month in January for the first time in 27 years. It is assumed that inflation will be just over 2% in 2010, most of it concentrated in the early part of the year. The euro area

also saw the end of its deflationary episode in November, and inflation reached 1.4% in March, the highest in over a year. Core inflation is very low, however. As is the case elsewhere, underlying inflationary pressures are limited, and headline inflation in March stemmed largely from base effects. As a result, projections for the year as a whole assume, roughly 1% inflation. Deflation persists in Japan, although it has lost momentum, and is expected to continue throughout the year. In the UK, however, inflation is rising quickly and had exceeded the Bank of England's threshold by January, when it measured 3.5%. A major reason for the inflation spurt, apart from base effects, is the hike in value-added tax and the jump in commodity and oil prices. Underlying inflationary pressures are limited, however, and it is therefore assumed that inflation will subside as the year passes and average 2.6% for the year. The Nordic countries have had a similar experience: inflation shot up early in the year, but underlying pressures are limited, and inflation is expected to be low for the year as a whole.

Although inflation has turned upwards, underlying inflationary pressures are negligible in most markets, and the level of monetary restraint has changed little in most countries since the last *Monetary Bulletin*, with the exception of Australia, which raised its key interest rate by 0.25 percentage points on two occasions in March and April, to the current 4.25%. Other central banks, however, including those in Rumania, Russia, and Hungary, have continued to cut interest rates.

Global trade remains the main driver of output growth

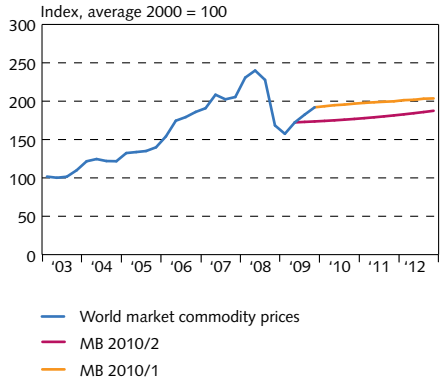
Global trade turned decisively upwards near the end of 2009 and remains the single most potent driver of world output growth. Many countries that are dependent on exports have felt the effects of an increase in demand in the recent term, and they could experience a swift recovery once global trade returns to normal. The IMF expects that, after a 12% decline in 2009, global trade will rise by 5.8% this year. Both the OECD and the IMF have adjusted their global trade forecasts for 2010 by a substantial margin. Projections assume a 4% increase in 2010 imports among Iceland's main trading partners, which is positive news for Iceland's exporters.

Export prices on the rise

In 2009, aluminium accounted for 37% of total exports in Iceland, and marine products 42%. As a result, changes in the prices of these two export products have a significant impact on the price of Icelandic exports overall. Aluminium prices have continued to climb in recent months and have not been higher in over a year. The aluminium prices assumed in the current forecast are similar to those in the January forecast. It is assumed that, on average, 2010 aluminium prices will be more than 27% above the average for 2009. Aluminium is expected to continue appreciating in coming years, by 6.5% in 2011 and more than 2% in 2012.

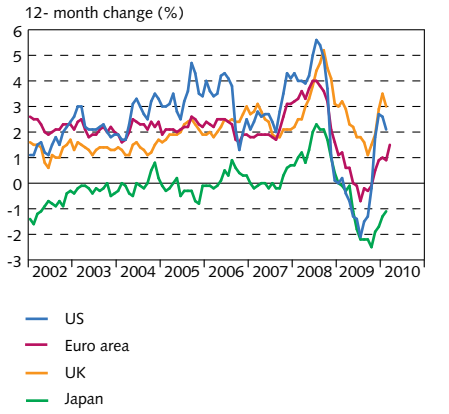
The assumptions concerning aluminium production volumes are virtually unchanged from the last *Monetary Bulletin*, as Iceland's three aluminium smelters have produced at peak capacity, or just under 820,000 tonnes per year, in the recent term. A modest increase in aluminium production is expected in 2010, but a significant increase

Chart II-7
Commodity prices[1]
Q1/2003 - Q4/2012



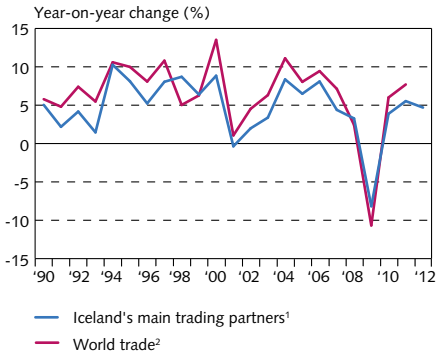
1. Non-oil commodity prices in USD.
Sources: Bloomberg, Central Bank of Iceland.

Chart II-8
Inflation in the USA, UK, Japan and euro area
January 2004 - March 2010



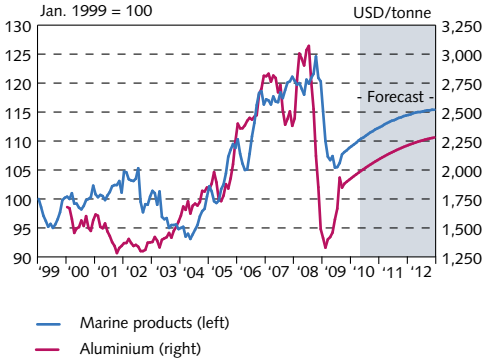
Source: Reuters EcoWin.

Chart II-9
World trade



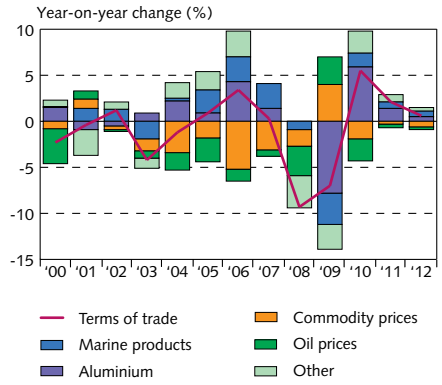
1. Imports of goods in services in Iceland's main trading partners.
2. Arithmetic average of merchandise import and export volumes in OECD countries and the largest non-OECD countries.
Sources: OECD, Central Bank of Iceland.

Chart II-10
Prices of marine exports and aluminium
In foreign currency



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

Chart II-11
Terms of trade and its main components
2000-2012[1]



1. Central Bank baseline forecast 2010 - 2012. The contribution of the main sub-indices to year-on-year changes in terms of trade is determined by weighting the annual change in the sub-index concerned together with its weight in the import or export of goods and services. The item "other" is a residual.
Sources: Statistics Iceland, Central Bank of Iceland.

is expected in the production of ferrosilicon, which means that total production from energy-intensive industry will rise by 2% during the year. While no increase in production is expected next year, a 5% rise is expected in 2012. The rise in production is expected to derive from the expansion of the ÍSAL factory in Straumsvík and the commencement of aluminium production at the smelter in Helguvík.

Prices of most marine products have rebounded after a sudden drop in late 2008 and early 2009. It is assumed that average marine products prices will rise by just under 6% during the year, a much more substantial price increase than the 2% projected in January. It is also assumed that prices will rise by about 2.5% in 2011 and by just over 2% in 2012. These positive price developments are attributable primarily to improved market conditions and systematic sales efforts.

The export value of marine products proved to be somewhat higher in 2009 than had been forecast. The cod quota was raised as well, and the volume increase in marine exports was just over 3%. Even though the unfished proportion of the total allowable catch was smaller at the beginning of the year than at the beginning of 2009, it is now assumed that the decrease in marine product production will be just over 2%, while the January forecast projected a 5% contraction.

The outlook for other industrial exports is positive, and somewhat better than in the last forecast. Among other manufacturing sectors, pharmaceuticals, medical supplies, and food production supplies have been strong in recent years. A significant increase in export volumes is expected among these products. In 2010, electrolytic capacitors from a new plant in Akureyri will be added to the mix of export products. It is difficult to estimate developments in other industrial exports in 2010 and beyond, but the historically low real exchange rate can be expected to create opportunities for increased exports in most areas.

Outlook for improvements in terms of trade in 2010

Rising export prices will have a positive effect on terms of trade. The improvement will be driven largely by rising prices for aluminium, which accounts for nearly 40% of Iceland's exports. Although the rise in marine product prices is smaller than the rise in aluminium prices, its positive effect on terms of trade is significant, as fishery products weigh as heavily as aluminium in total exports. Increased export prices will be offset by rises in import prices. Chief among imports are commodities for the aluminium industry, industrial supplies, and fuel. The price of alumina tends to vary in line with the price of aluminium itself, but global prices of petroleum products also make an impact. The share of general industrial products, consumer products, and investment products is also large. The rise in those items is expected to be smaller, however; it is expected to fall in line with general price level increases in Iceland's trading partner countries, or about 2%.

While it is more difficult to estimate terms of trade for services, they should move broadly in line with relative prices of tourism. When these factors are weighted together, it appears as though terms of trade for goods will improve markedly in 2010, while terms of trade for services will stand still or deteriorate slightly year-on-year. On the whole, terms of trade can therefore be expected to improve by 5.5%

this year, mostly due to the rise in aluminium prices. The improvement is expected to continue in 2011 and 2012, with 2% and ½%, respectively, projected for the two years.

Real exchange rate at a historical low

The real exchange rate of the króna bottomed out in August 2009 and has risen by just over 6% since. It remains about 25% below its average for the past 10-20 years, however, and is expected to rise by just under 4% year-on-year in 2010. The low real exchange rate has bolstered the competitive position of exports and other tradable sectors, but it poses balance sheet problems for businesses that are heavily indebted in foreign currency. The real exchange rate has a tendency to develop more or less in line with terms of trade (see Box II-1). Improvements in terms of trade should therefore support a gradual appreciation of the real exchange rate towards long-term equilibrium. On the other hand, it is likely that the real exchange rate will remain rather low in the next few years, further supporting export-driven growth and ensuring a trade surplus sufficient to allow the Icelandic economy to sustain substantial foreign indebtedness.

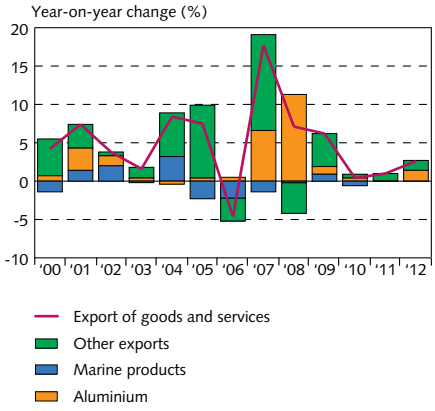
Continued growth expected for Icelandic exports

As is stated above, the economic outlook in Iceland's main trading partners is similar, or perhaps somewhat better, than was assumed in the last *Monetary Bulletin*. The outlook for prices of Iceland's principal export products has improved, and it is now assumed that the value of exported goods and services will be considerably greater in 2010 than in 2009, while total volume will only increase by about ½%, owing to a contraction in marine product exports. Export volumes of other goods, apart from industrial and marine products, will also rise marginally, due to sizeable exports of irregular items such as aircraft, ships, and automobiles in 2009, which are not expected this year. The low real exchange rate and the continuing improvement in international trade should stimulate further export growth in 2011 and 2012. The forecast is for 1% growth in exports in 2011, and about 2½% in 2012, when increased aluminium exports are expected to come into play.

Chart II-12
Real exchange rate
Q1/2000 - Q1/2010

Source: Central Bank of Iceland.

Chart II-13
Export development and its main components 2000-2012[1]



1. Central Bank of Iceland baseline forecast 2010-2012.
Sources: Statistic Iceland, Central Bank of Iceland.

Table II-1 Exports and main assumptions for developments in external conditions

	Change from previous year (%) unless otherwise stated[1]			
	2009	*2010*	*2011*	*2012*
Exports of goods and services	6.2 (1.6)	0.4 (1.5)	1.0 (1.7)	2.6 (5.2)
Marine production for export	3.4 (4.0)	-2.2 (-5.1)	0.0 (0.0)	0.0 (0.0)
Metals production for export	3.8 (6.0)	1.7 (2.4)	0.0 (0.0)	5.0 (9.7)
Export prices of marine products	-12.8 (-10.4)	5.8 (2.4)	2.5 (2.0)	2.4 (2.1)
Aluminium prices in USD[2]	-35.8 (-35.4)	27.2 (26.9)	6.5 (7.8)	2.2 (5.1)
Fuel prices in USD[3]	-36.3 (-37.2)	29.6 (30.3)	4.9 (9.7)	3.6 (2.4)
Terms of trade for goods and services	-7.0 (-7.0)	5.5 (4.7)	2.1 (0.5)	0.6 (0.3)
Main trading partners' inflation[4]	0.3 (0.3)	1.4 (1.3)	1.5 (1.7)	1.7 (1.9)
Main trading partners' output growth[5]	-3.7 (-3.6)	1.4 (1.3)	2.1 (2.2)	2.3 (2.6)
Main trading partners' short-term interest rates (%)[6]	1.1 (1.2)	0.7 (0.5)	1.7 (1.0)	2.9 (2.5)

1. Figures in parentheses from forecast in *Monetary Bulletin* 2010/1. 2. Forecast based on aluminium futures and analysts' forecasts. 3. Forecast based on fuel futures and analysts' forecasts. 4. Forecast from Consensus Forecasts and Global Insight. 5. Based on weighted average forward interest rates of Iceland's main trading partner countries.

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

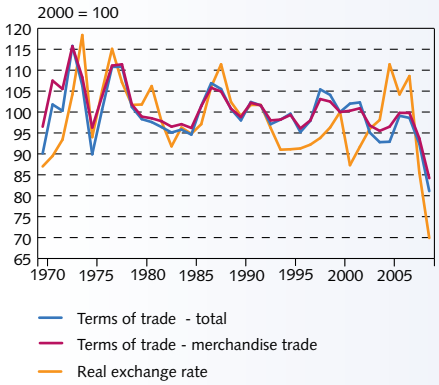
Box II-1

Terms of trade and real exchange rate

Terms of trade are the ratio of export prices to import prices, and they measure how much can be obtained in imports per unit of exports. Terms of trade are generally presented as an index based on a given base year and therefore show the proportional change in the price of exports and imports. The real exchange rate, on the other hand, measures domestic costs as a proportion of foreign costs in the same currency. It is most common to measure the real exchange rate based on consumer goods prices. If exported goods prices were the same as the price of consumer goods, and if the price of imports were the same prices of consumer goods in Iceland's main trading partner countries, measured in krónur, developments in terms of trade would be exactly the same as developments in the real exchange rate. To some extent, there is a tendency for these two variables to move together, but there are also forces that pull them in different directions. The composition of exports is very unlike the composition of consumer products in Iceland. The difference in the composition of imports to Iceland and the composition of consumption in Iceland's main trading partners is less pronounced, but nonetheless considerable.

Chart 1

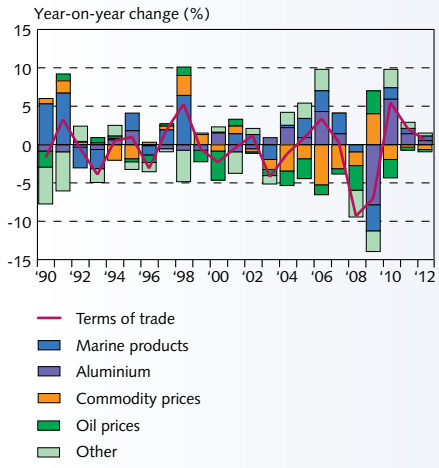
Terms of trade and real exchange rate
1970-2009



Sources: Statistics Iceland, Central Bank of Iceland.

Chart 2

Terms of trade and their main components
1990-2012[1]



1. Central Bank baseline forecast 2009 - 2012. The contribution of the main sub-indices to year-on-year changes in terms of trade is determined by weighting the annual change in the sub-index concerned together with its weight in the import or export of goods and services. The item "other" is a residual.

Sources: Statistics Iceland, Central Bank of Iceland.

Developments in terms of trade and real exchange rate

Chart 1 illustrates developments in terms of trade and the real exchange rate from 1970 to 2009. The chart shows that, in the first part of that period, there was a close relationship between terms of trade for goods and the real exchange rate. During the period 1971-1989, the correlation between changes in these variables was measured at 0.66, while the correlation during the period 1971-2009 measured 0.55. From 1990-2009, however, the correlation is much less, or 0.34. The significant decrease in both variables in one year, 2009, has a marked effect on the measured correlation. During the period 1990-2008, the correlation is practically non-existent. If changes in Iceland's terms of trade for both goods and services are examined, the correlation with changes in the real exchange rate still exists but is not as strong. To some degree, this reflects the fact that services are priced more in accordance with domestic cost conditions than most exported products are.

The correlation between changes in terms of trade and changes in real exchange rate in the first half of the period reflects, on the one hand, the importance of the fishing industry in the export of goods at that time, and on the other, the then-current Government's policy of lowering the real exchange rate when terms of trade in the fishing industry deteriorated and then allowing increases in marine products prices to raise the general domestic price level, thereby raising the real exchange rate as well. From 1990 onwards, this relationship became much weaker than it had been before that time. It can also be assumed that increased exchange rate volatility after the króna was floated early this century reflects, to some degree, increased real exchange rate volatility without a corresponding increase in volatility in terms of trade. Chart 1 shows that, if the marked decline in terms of trade in 2009 is excluded, fluctuations in terms of trade were less pronounced after 1980 than in the 1970s. In 2009, global prices of aluminium and marine products fell sharply, and domestic prices fell at the same time due to a decline in the domestic cost level. The decline in the domestic cost level led to a sharp drop in the price of services and other exports where pricing is based on the domestic cost level and therefore the real exchange rate. The price of aluminium and marine products, however, is determined by conditions on foreign markets, and normal changes in domestic costs have a negligible effect on production.

As Chart 2 shows, changes in the price of marine products strongly influenced terms of trade, particularly early on. It can also be seen clearly that changes in marine product prices were in line with changes in commodity prices for most of the period, while

for the past 6-7 years, marine products prices have changed in line with changes in the composition of marine exports. In recent years, fluctuations in terms of trade have been determined more by fluctuations in the price of aluminium and commodities.

Dissimilar fluctuations in the price of major product categories

Chart 3 shows developments in the price of Iceland's main exports and in global oil prices. Oil and aluminium prices are in US dollars, while the price of marine products and other exports (mainly services) are in foreign currency at the average exchange rate. The chart shows that the prices of various products move very differently from one another. The price of petroleum products fluctuates most by far, and aluminium prices fluctuate somewhat less, although more than the price of marine products. The price of exports other than aluminium and marine products – mostly services – fluctuates the least by far. As in Chart 2, it can be seen that the significant deterioration in terms of trade in 2009 was caused by an unusually marked decline in the price of aluminium and marine products. This decline began to reverse near the end of 2009, when aluminium and marine product prices began to recover. That trend has continued in 2010.

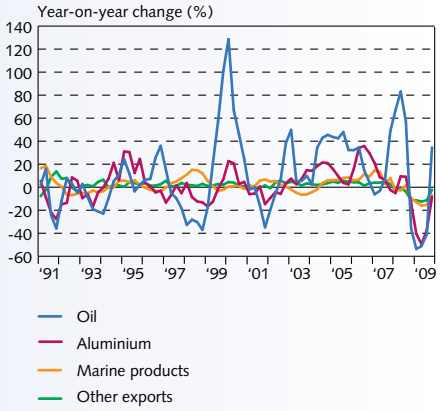
The impact on overall terms of trade

The effect of price volatility in individual product categories on fluctuations in terms of trade is determined by the weight of the product category concerned in exports and imports, the correlation between price volatility in that category and other product categories, and the size of the price fluctuations in the category in question. A stronger correlation between price changes in individual product categories tends to magnify fluctuations in the price of total exports. The correlation between year-on-year changes in the price of aluminium and marine products measured 0.34 during the period 1991-2009, but slightly less than 0.1 if the measurement extends only through 2008.[1]

In addition to the correlation, the weight of individual product categories is an important factor. Other things being equal, increased weight in sectors with more pronounced price volatility will mean that export prices will be more volatile overall. Chart 4 shows the weight of individual product categories in total exports. It can be seen there that the fishing industry's share has diminished gradually from nearly 60% of total exports around 1990 to the current level of just below 30%. Over the same period, the share of energy-intensive industry – primarily aluminium, but ferrosilicon as well – grew from 10% of total exports to nearly 30% in 2008, before pulling back to just over 23% in 2009. Although the value of aluminium exports is now similar to that of marine products, there is still a substantial difference in the net contribution from the two sectors; i.e., their contribution after deducting input costs from export revenues. This contribution is measured in terms of the output of the sectors or their gross factor income. Chart 5 shows developments in gross factor income in the fishing industry, on the one hand, and in energy-intensive industry, on the other. The chart shows that, by this criterion, the weight of the fishing industry was nearly three times that of the energy-intensive industry sector in 2008. This explains in part why terms of trade have not fluctuated more than they actually have in spite of the rising importance of aluminium as an export product. Imports of alumina and other inputs for aluminium production have also risen considerably, and price changes for these products closely follow changes in aluminium prices. The effect of these fluctuations on terms of trade is therefore determined more by the weight of aluminium in gross factor income than its weight in exports.

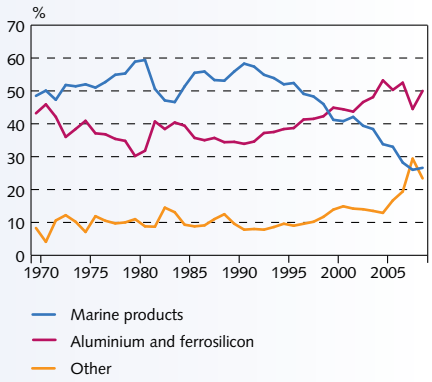
1. Magnús F. Gudmundsson discussed the macroeconomic risk of increased weight of aluminium in exports in "The aluminium industry and export revenue volatility," in *Monetary Bulletin* 2003/3.

Chart 3
Prices in foreign currency
Q1/1991 - Q4/2009



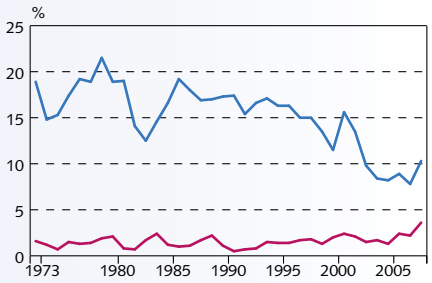
Sources: IMF, Statistics Iceland.

Chart 4
Proportion of exports 1970-2009



Source: Statistics Iceland.

Chart 5
Share of gross factor income 1973-2008

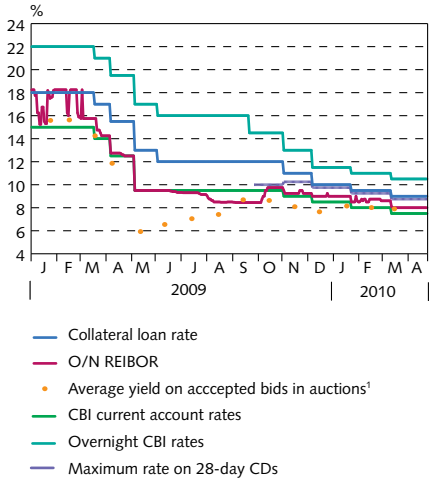


Source: Statistics Iceland.

III Financial conditions

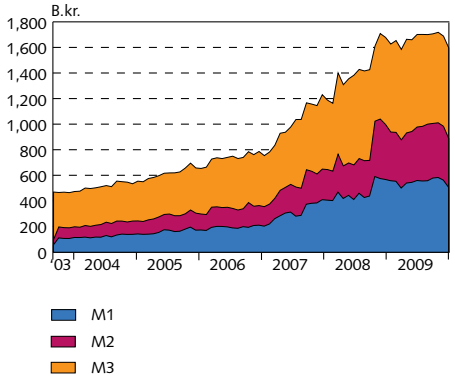
In general, interest rates have declined in tandem with reductions in Central Bank interest rates, yet the króna has appreciated somewhat so far in 2010. At the same time, money growth has declined considerably. Financial conditions of households and businesses remain difficult, although they have improved through the debt restructuring and debt service mitigation measures introduced by the Government and the banking system.

Chart III-1
Central Bank and short-term market interest rates
Daily data 1 January 2009 - 30 April 2010



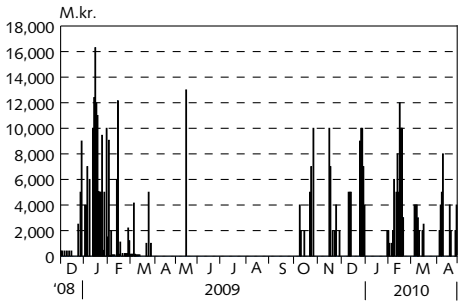
1. Because turnover on the secondary market for Treasury bills is limited, only yields in Treasury bill auctions are included.
Source: Central Bank of Iceland.

Chart III-2
Money holdings
September 2003 - December 2009



Source: Central Bank of Iceland.

Chart III-3
Turnover on interbank market for Icelandic krónur
Daily data 1 December 2008 - 30 April 2010



Source: Central Bank of Iceland.

Central Bank interest rates cut twice in 2010

At present, the outstanding balance of 28-day Central Bank certificates of deposit (CD's) is approximately 77.2 b.kr. The maximum CD rate has been lowered twice since the January *Monetary Bulletin*, from 9.75% to 8.75%. Interest rates on financial institutions' current accounts with the Bank have been lowered as well, from 8.5% to 7.5%. The Central Bank's lending rates were cut correspondingly, the 7-day collateral lending rate to 9% and the overnight lending rate to 10.5%. These rate reductions were broadly in line with market expectations.

Central Bank reduced excess liquidity through CD issuance

Liquidity in the financial system grew dramatically after the banks collapsed, and it accumulated in the banking system, due to limited risk appetite among investors, capital controls, limited investment options, and State deposit guarantees. This excess liquidity caused short-term market rates to fall temporarily below the Central Bank's interest rate corridor; as a result, they did not reflect the intended monetary restraint level and could have undermined exchange rate stability. In order to counteract this, the Bank began issuing 28-day CDs, thereby reducing the amount of liquidity in the system. Market rates are now within the Central Bank's interest rate corridor; that is, the difference between the overnight and current account rates.

Private sector money holdings decline

After the collapse of the banks and the ensuing changes in available savings and investment options, deposits in the banking system grew dramatically. Deposit institutions' deposits with the Central Bank also increased, which showed up as an increase in the monetary base. However, as the banks transferred liquidity from their current accounts with the Central Bank and into 28-day CDs, the monetary base began to contract again.

It can also be seen that, towards the end of 2009, private sector money holdings began to contract year-on-year after increasing markedly in previous years (see Box III-2 for a more detailed discussion of developments in the Central Bank's balance sheet and the money supply). The contraction is attributable primarily to changes in the shortest-term deposits. While a full set of detailed data on developments in banking system lending is not yet available, this contraction in money supply indicates that the banks' lending activity is still limited. As is discussed in greater depth below, this reflects the difficult conditions faced by households and businesses, as well as the fact that the restructuring of the banks' balance sheets is not fully complete.

Real Central Bank interest rate declines, but risk-adjusted interest rate differential with abroad rises slightly

Real monetary policy restraint is determined by the Central Bank's real interest rate. As can be seen in Table III-1, the level of restraint varies according to which measures of inflation and inflation expectations are examined. The Bank's real interest rate ranges from just below zero (in terms of current inflation or household inflation expectations) to around 4% (in terms of inflation expectations of businesses or the breakeven inflation rate in the bond market). By most criteria, however, the real interest rate has declined somewhat since the last *Monetary Bulletin*, and by a considerable margin over the past year.

The temporary objective of monetary policy is to support the króna and reduce exchange rate volatility in the wake of the financial crisis. In assessing the overall level of monetary policy restraint, it is therefore appropriate to estimate the potential impact on the exchange rate of the króna. In this context, it is useful to consider the risk-adjusted short-term interest rate differential with abroad. As Table III-1 illustrates, the interest rate differential has increased, both since the last *Monetary Bulletin* and over the past year. Domestic short-term rates have therefore fallen somewhat more slowly than the decline in risk premia on Icelandic financial assets. The reduction in domestic real interest rates is not reflected in a decline in the risk-adjusted interest rate differential with abroad and has therefore not undermined the currency.

Table III-1 Monetary policy stance (%)

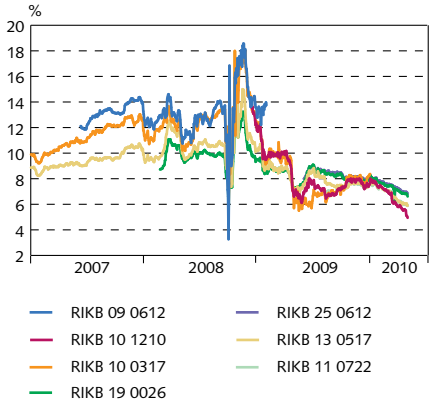
	Policy *Policy stance*	*Changes from* *MB 2010/1*	*Changes from* *MB 2009/1*
Real interest rate according to:[1]			
Year-on-year inflation	-0.2	-2.5	-0.7
3-month seasonally adjusted inflation rate	0.9	-2.1	-10.9
Central Bank inflation forecast[2]	2.1	-0.1	-2.1
Household inflation expectations[3]	0.1	0.9	-0.3
Corporate inflation expectations[3]	4.0	1.0	-8.5
Bond market inflation expectations[4]	4.2	-0.2	-2.8
Risk-adjusted 3-month interest rate differential vis-à-vis euro area according to:[5]			
CDS spread on government bonds	3.0	1.0	0.8
Historical exchange rate fluctuations[6]	1.9	0.4	1.1

1. To measure the Bank's key nominal rate, the current account rate is used from April 2009 to September 2009, but from September 2009, the average of the current account rate and the maximum 28-day CDs rate is used. 2. Central Bank forecast for year-on-year inflation two quarters ahead. 3. According to median responses of households and corporations for expected inflation one year ahead. 4. Breakeven inflation expectations one year ahead from the difference between nominal and indexed yield curves (5-day moving averages). 5. Interest rate differential between short-term interest rates in Iceland and its main trading partners. 6. The ratio of 3- month interest rate differential and 3 month standard deviation of the EURISK exchange rate.

Market interest rates have fallen …

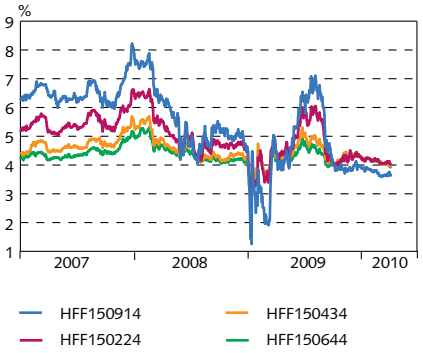
As is stated above, short-term money market rates are now within the Central Bank interest rate corridor. Over the past year, however, they have fallen less than Central Bank rates because CD issuance pushed money market rates upwards at first. Turnover has been low, though, and has been limited to overnight loans. As a result, interest rate formation on short-term instruments is extremely inefficient. Consequently, it is impossible to assess financial market risk premia based on interbank interest rate spreads.

Chart III-4
Nominal Treasury bond yields
Daily data 3 January 2007 - 30 April 2010



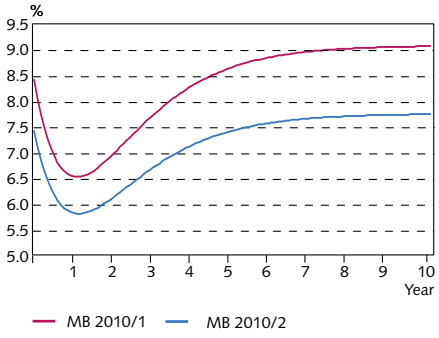
Source: Central Bank of Iceland.

Chart III-5
Yields on indexed HFF bonds
Daily data 3 January 2007 - 30 April 2010



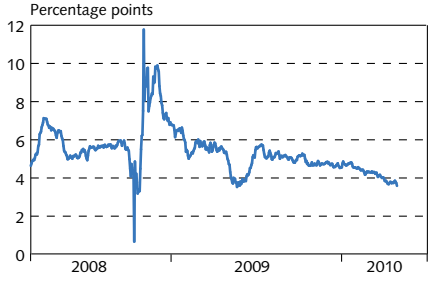
Source: Central Bank of Iceland.

Chart III-6
Forward interest rates on Treasury bond market



Source: Central Bank of Iceland.

Chart III-7
Long term interest rate differential[1]
Daily data 27 February 2008 - 30 April 2010



1. Differential between yield on RIKB 19 and 10 year Treasury bonds in Germany.
Sources: Reuters EcoWin, Central Bank of Iceland.

Yields on longer Treasury bonds have also fallen concurrent with reductions in Central Bank interest rates. Treasury bond yields have ranged between 5.5% and 7% in the recent term. The decline indicates that the Treasury has been successful in its financing efforts in spite of a dramatically increased supply of Treasury bonds and bills, as well as Central Bank CDs.

Housing Financing Fund (HFF) bond yields have also declined in recent months and now lie in the 3.1%-3.7% range. Demand for index-linked and nominal Treasury bonds appears robust. Furthermore, it is likely that uncertainty about factors such as capital account liberalisation and the progress of the IMF economic programme will prompt investors to choose index-linked bonds over nominal bonds to some extent. Moreover, the HFF scaled back its planned issuance in February, and a smaller supply should result in lower yields. Offsetting this, however, is the Treasury's recent issuance of index-linked bonds maturing in 2021. In the first auction of that series, which took place in April, the yield was 3.8%, with accepted bids totalling 5.9 b.kr.

... and the yield curve shifts downwards

Since *Monetary Bulletin* was published in January, the nominal yield curve has shifted downwards. The movement at the short end of the yield curve corresponds to the reductions in Central Bank interest rates, while the reduction at the longer end is somewhat larger, or roughly 1 percentage point for approximately 10-year Treasury bonds. The Bank's interest rate cuts therefore appear to have been transmitted successfully throughout the yield curve.

The shape of the yield curve is broadly unchanged, however, and continues to suggest pricing of a rather steep reduction in interest rates in the next year. Farther along, however, the yield curve becomes relatively flat

Risk-adjusted long-term interest rate differential consistent with the inflation target

Long-term yields on Icelandic Treasury bonds are now about 7% after having fallen by nearly 2 percentage points in the past year. The spread over long-term nominal rates abroad has fallen as well. The spread over German long-term Treasury bonds, which are often used for international comparison, is now just under 4 percentage points. Broadly speaking, this differential should reflect the difference in long-term inflation expectations, on the one hand, and the difference in risk premia on Icelandic and German Treasury bonds, on the other. As is discussed in greater detail below, the CDS spread on Icelandic Treasury bonds is now about 3.8 percentage points, while the spread on German bonds is only about 0.3 percentage points. The long-term differential adjusted for differences in risk premia is therefore just under half a percentage point, which corresponds to the difference between the inflation targets of the Central Bank of Iceland and the European Central Bank. This indicates that long-term inflation expectations are now in line with the Central Bank inflation target (see Section VIII). It can be expected that the long-term interest rate differential will continue to drop if risk premia on domestic obligations keep falling.

Króna exchange rate has risen

In trade-weighted terms, the exchange rate of the króna has risen by 3½% since *Monetary Bulletin* appeared in January. This reflects just under 6% appreciation against the euro and the pound sterling but is unchanged against the US dollar. This strengthening occurred without any intervention by the Central Bank, which has not entered the foreign exchange market since early November 2009. More stringent enforcement of the capital controls is largely responsible for this development; however, other factors may also have supported the króna. Terms of trade have improved during the year, and the trade surplus has grown (see Sections II and VII).

Balances on foreign exchange accounts in the banking system appear to have remained rather stable over the past few months, which indicates that companies are not accumulating foreign currency. Improvements in external trade should therefore support the exchange rate. Trading on the foreign exchange market, however, has been extremely limited since the beginning of the year, which could mean that the gradual appreciation of the króna in recent weeks will prove a fragile development. In the first quarter of 2010, foreign exchange market turnover totalled 3.5 b.kr., as opposed to 16 b.kr. in Q4/2009 and 11.4 b.kr. n Q1/2009.

The offshore exchange rate has fallen since the January *Monetary Bulletin,* with trades taking place at 260-290 kr. per euro, largely due to more stringent enforcement of the capital controls. Developments in the offshore market should be interpreted with caution, however, because trades are infrequent and appear to be on the decline in recent months.

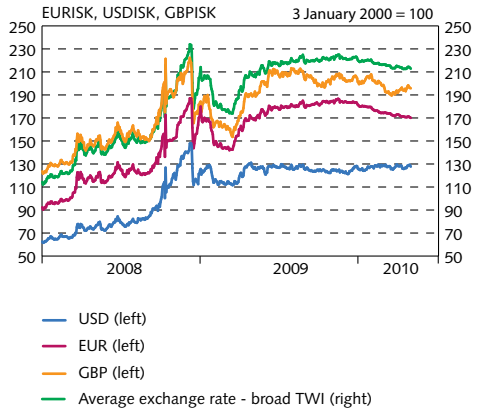
Risk premia on Treasury bonds remain high

As is stated above, the CDS spread on five-year Treasury debt has hovered around 3.8 percentage points. In some respects, developments in the spread have been in line with developments in the premia on the sovereigns that have been hardest hit by the financial crisis or are heavily indebted (see Chart III-12). Iceland's CDS spread began to fall late in 2009 and approached 3.5 percentage points before the Icesave legislation was referred to a national referendum by the president of Iceland. Thereafter, Fitch Ratings downgraded Iceland to speculative grade, and other rating agencies changed their ratings outlook to negative. These decisions reflect the agencies' assessment of the impact on delays in the IMF economic programme. Iceland's CDS spread rose to 6.75 percentage points afterwards, but since then it has tapered off in spite of the rise in recent days, and is currently around 3.8 percentage points. To an extent, these developments also reflect global trends, such as rising optimism in world financial markets late in 2009, and the past few weeks' increased concern about default by debt-ridden sovereigns (such as Greece). So far, the impact of this turmoil on the Iceland's sovereign CDS spread has been limited.

Other asset prices

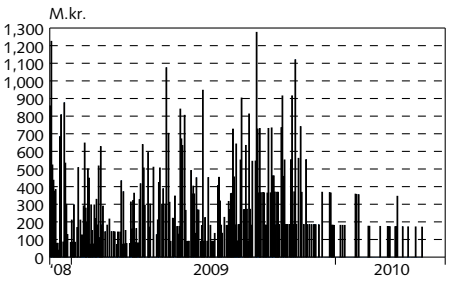
Since the banks collapsed, the domestic equities market has played a much smaller role than it did previously, as banks and other financial

Chart III-8
Exchange rate of the króna
Daily data 3 January 2008 - 30 April 2010



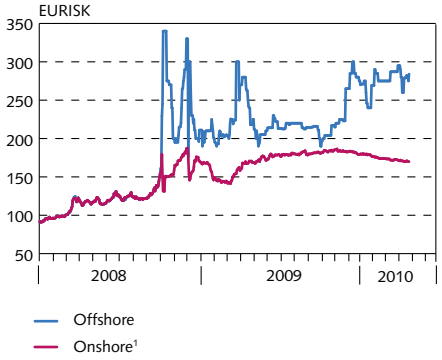
Source: Central Bank of Iceland.

Chart III-9
FX market turnover
Daily data 4 December 2008 - 30 April 2010



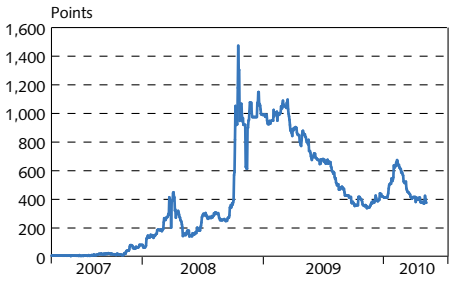
Source: Central Bank of Iceland.

Chart III-10
The ISK exchange rate against the euro
Daily data 1 January 2008 - 30 April 2010



1. The onshore rate is the daily closing rate.
Source: Reuters.

Chart III-11
CDS spread for Iceland
Daily data 28 March 2007 - 30 April 2010



Source: Bloomberg.

companies dominated the Icelandic stock market before the collapse. The Main List index (OMXI6) stood at 962 points prior to this issue of *Monetary Bulletin*, some 19% higher than at the beginning of the year and 46% higher than it was a year ago. But because the companies that comprise the index are very few and a large number of them operate abroad, it would be incorrect to interpret this development as a sign of a general turnaround in the domestic business environment.[1]

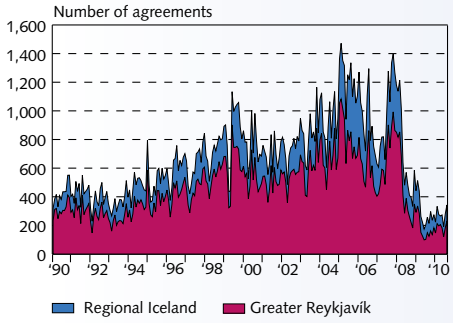
House prices in the greater Reykjavík area, as measured by the Iceland Property Registry housing price index, have continued to decline in recent months in spite of isolated monthly rises. Since house prices in the greater Reykjavík area peaked in nominal terms in January 2008, they had dropped 15% in March 2010 and have fallen by nearly 35% in real terms since October 2007. Real house prices, deflated by the consumer price index, are now lower than they were before the commercial banks commenced mortgage lending in the autumn of 2004 (see also Box III-1).

1. OMXI6 index companies are Marel Food Systems hf., Össur hf., Bakkavör Group hf., BankNordik p/f (previously Føroya Banki p/f), p/f Atlantic Airways, and Atlantic Petroleum p/f.

Box III-1

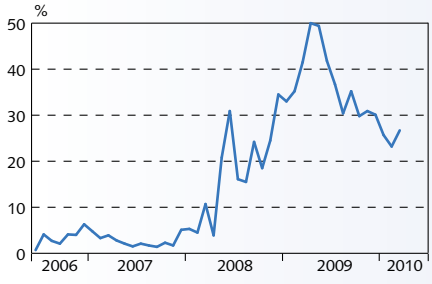
Real estate market developments

Chart 1
Turnover in the housing market
Relative to purchase day



Source: Icelandic Property Registry.

Chart 2
Housing swaps as a portion of total turnover
Residential housing in greater Reykjavík



Source: Icelandic Property Registry.

Real estate prices have fallen substantially since the beginning of 2008. Turnover has been at its lowest point for years, and housing swaps agreements account for a large share of total turnover. According to the Iceland Property Registry (IPR) index, house prices in the greater Reykjavík area have declined by over 15% from their January 2008 peak. In real terms, prices have declined by nearly 35% since peaking in October 2007. In March 2010, the number of registered purchase agreements was 80% lower than in October 2004, when they peaked just after the commercial banks entered the mortgage lending market. As was discussed in the November 2009 *Monetary Bulletin*, measuring house prices is more uncertain than usual due to the small number of purchase agreements. As a result, it is likely that the indices used as a basis for real estate price measurements do not give an accurate view of actual price developments.

The Central Bank's baseline forecast assumes that house prices will continue to fall through 2011. A part of this decline has probably emerged already, although for a variety of reasons, house price indices do not yet show this. The price of real estate is still high in swap agreements, where the actual transfer payment agreed upon by the parties appears to matter more than the price of the property involved. Because of the small number of purchase agreements concluded, the IPR has had to use agreements that are several months old for some categories of housing, delaying the emergence of the actual price decrease in the index. While turnover is still very low in historical terms, it has recovered slightly in the recent term. Over the past three months, 38% more purchase agreements were registered in the greater Reykjavík area than during the same period a year ago. Price indices will probably reflect market price decreases more accurately as turnover rises

Real estate market turnover will probably not increase to any marked degree until households become more certain about their financial position, and until labour market conditions and income prospects improve. Government policy actions and measures adopted by the banks to assist households have somewhat lessened the prevailing uncertainty.

Developments in commercial and industrial housing prices in the greater Reykjavík area show the signs of heavy investment in such housing in recent years, in addition to the fact that demand has shrunk considerably since the banks fell. Both the number of registered purchase agreements and turnover in commercial housing have contracted sharply, and commercial housing prices have dropped by nearly 52% in real terms after peaking in Q1/2008. Based on the currently available supply of commercial housing, it can be assumed that normalcy in this market will be fairly long in coming. On the other hand, the number of rental agreements has not contracted to the same degree as the number of purchase agreements. The increased weight of rental agreements could be due in part to reduced value of corporate collateral after the collapse of the banks.

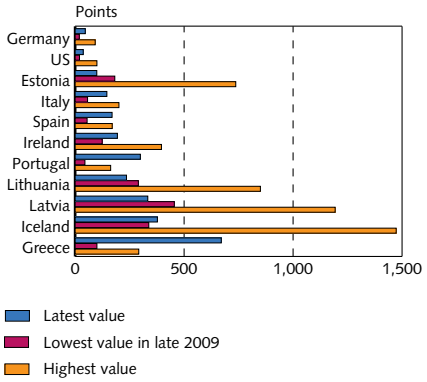
Financial conditions in the private sector remain difficult

The lending rates of the commercial banks, the HFF, and the pension funds have broadly declined in line with reductions in Central Bank interest rates. With the exception of HFF and pension fund mortgages, complete data on lending trends are not available; however, based on the available information, new lending is limited. This is in line with the limited activity in the real estate market, which is revealed by low turnover and a small number of registered purchase agreements.

Households' financial conditions remain difficult, and developments in housing equity and limitations on maximum loan-to-value ratios have considerably limited households' access to credit. In spite of this, several factors have improved households' financial conditions. Short-term interest rates and mortgage lending rates have fallen, and a number of policy actions have been taken to improve the position of indebted households, including payment smoothing and write-down of loan principal. In addition, mortgage interest allowances have been raised significantly, and the premium on Central Bank interest rates that determines penalty interest has been reduced by statutory amendment.

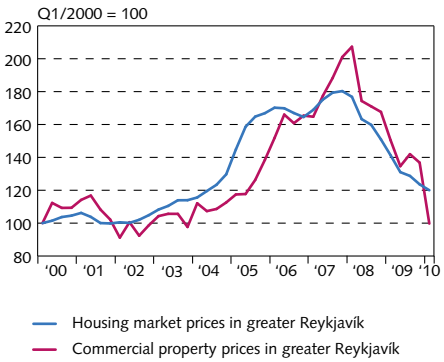
Financial conditions of companies are also difficult, although one of the commercial banks has recently offered its corporate customers a reduction in foreign loan principal as a part of its debt restructuring package, upon fulfilment of certain conditions. High nominal interest rates raise the price of working capital, although the real interest rate is considerably lower because of the inflation that remains and is expected to persist in coming months. The support that the interest rate level provides the króna gives companies that are deeply indebted in foreign currency some shelter while they restructure their balance sheets, thus offsetting the constraining effects of high interest. Domestic access to credit is difficult as well. The recession and the general uncertainty about loan quality and the general outlook tend to discourage banks from extending loans. Poorer-quality collateral only exacerbates to the problem. In addition, the restructuring and recapitalisation of the new banks and their balance sheets has been a lengthy process that has further delayed the restoration of lending activity to normal levels. Companies also have limited ability and will to seek out new loans for further investments and commercial activities. To some extent, these are normal reactions to an economic crisis featuring substantial uncertainty about the outlook. Moreover, over-investment in some sectors

Chart III-12
CDS development for selected countries[1]



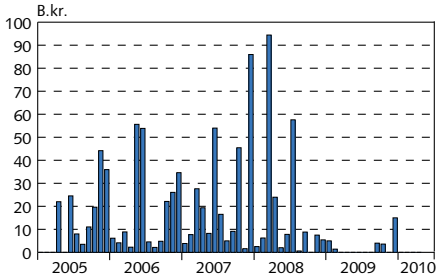
1. The CDS for Iceland peaked in October 2008, whereas other countries peaked in February-March 2009.
Source: Bloomberg.

Chart III-13
Housing prices in greater Reykjavík in real terms
Q1/2000 - Q1/2010



Sources: Icelandic Property Registry, Central Bank of Iceland.

Chart III-14
Issued corporate bonds[1]
January 2005 - April 2010



1. Monthly nominal value of issued bonds.
Source: Nasdaq OMX Iceland.

in the prelude to the crisis has generated considerable spare production capacity, which holds back new investment. This is consistent with the experience of other countries that have experienced financial crises and seen a sharp reduction in lending growth.

Access to market financing has also been extremely limited for Icelandic firms. Investors have had a strong tendency to seek the security of Government-guaranteed deposits and Treasury bonds, and companies have had limited scope to issue marketable securities. This is even more the case for the large number of companies whose position and operational foundations are uncertain, and risk premia on corporate bonds can be expected to rise sharply as a result. Limited bond issuance by entities other than the Treasury and the HFF is evidence of this, as can be seen in Chart III-14, which shows that such bonds have been in short supply since the banks failed.

Box III-2

Central bank balance sheet expansion in the financial crisis

The size and composition of central bank balance sheets throughout the world have changed significantly during the global financial crisis. This development can also be seen in Iceland, with the expansion occurring even earlier and more dramatically than in most other countries. This Box discusses briefly the reasons for such radical changes to central bank balance sheets, both in a global context and domestically. It also looks at the possible increased inflation risk as a result of these changes both at home and abroad. One of the factors reducing such risk in the Icelandic context is the fact that assets that the Central Bank of Iceland seized in the wake of the financial crisis are expected to be sold, thereby reducing the Bank's balance sheet.

Why did central bank balance sheets expand during the crisis?
Under normal conditions, central banks set their interest rates and conduct their market operations so that liquidity in the system ensures that market interest rates accord with the central bank's rates. These market operations affect the assets and liabilities on the central bank's balance sheet. In challenging circumstances, such as those prevailing during the global financial crisis, central banks had to take more wide-reaching action to respond to financial institutions' liquidity shortage and looming threats to the financial system. Such measures often result in substantially expanding the banks' balance sheet, as both central bank lending and bond purchasing increase. While central bank balance sheet expansion following a financial crisis is not a new phenomenon, the measures taken during the recent crisis are, in general, more extensive than previously witnessed. They were also more international in scope than before (see, for example, Alessandri and Haldane, 2009).

To a large extent, central banks' response to the financial crisis involved altering the composition of their assets and liabilities to prevent a collapse in asset prices and to ease the terms of financing to financial institutions and the private and public sectors. By so doing, they prevented important markets from closing entirely and impeded a sharp spike in risk premia. To an increasing extent, central banks served the important purpose of ensuring access to credit when traditional channels through capital markets and credit institutions were disrupted (see, for example, Borio and Disyata, 2009).

Central banks have various means of achieving this. First, they can direct their actions at the banking system and offer financial institutions more favourable terms than are available on normal credit markets; e.g., interbank, money or bond markets. This in-

volves more than simply the interest rate, as loan duration, required collateral, valuation of collateral, and currency composition are also very important. If the credit provided is insufficient, capital injections from the government may be needed, as the crisis provides examples of. In the second place, actions can be directed at other financial institutions and the private sector. Central banks can, loan directly to the private sector, for instance, or widen the set of financial institutions that have access to central bank facilities. Third, their actions can be aimed at the functioning of important credit markets, involving, for example, the purchase of illiquid bonds or the provision of guarantees to key market agents. Fourth, central bank actions can be directed at the government, e.g. through purchases of sovereign debt to lower the interest rate and interest premium, which in turn affects asset prices and financial conditions for the private sector (see, for example, the ECB article of 2009 and Cross, 2010).

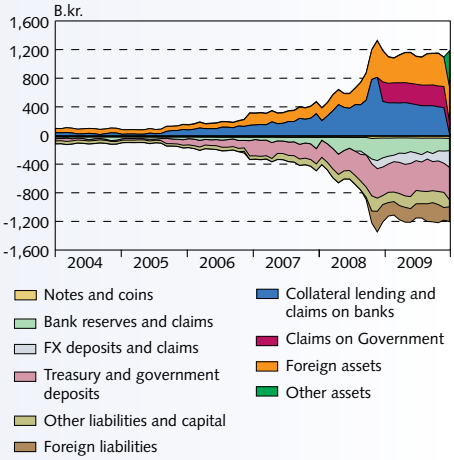
There is nothing to prevent governments from taking the above supportive measures, which makes it appropriate to examine the consolidated balance sheet of the government and central bank when looking at actions of this type. This is due to the fact that financing these actions can either take the form of increased central bank debt – e.g. through higher reserves – or increased issuance of government bonds. In essence, all of these supportive actions involve exchanging assets that differ as to their liquidity and credit risk. In so doing, governments and central banks are reducing risk in the financial system or among the private sector by shifting part of this risk onto their balance sheet with the aim of facilitating financing conditions and enhancing the functioning of the financial system. As a result, the central banks' balance sheets expand, and a substantial increase in bank reserves with the central banks is one consequence of this expansion. Transferring risk to central banks and the state in this manner is not without risk, as Iceland's experience clearly testifies, and it is therefore important to arrange this so as to minimise the financial risk involved in the actions as far as possible and to keep it manageable (see Borio and Disyata, 2009, and Sections 4.5.5 and 7.6.1 in the report of the Special Investigation Commission of the Icelandic Parliament). In addition, it can create considerable moral hazard problems if the government can always be expected to intervene to save key financial institutions, making it important to seek ways to reduce this risk (see Tarullo, 2009, and Tucker, 2010).

Expansion of the Central Bank of Iceland balance sheet during the run-up the financial crisis

The balance sheet of the Central Bank of Iceland grew rapidly, coinciding with the expansion of the Icelandic banking system (see chart 1). At the end of 2004, rules on securities accepted as collateral for Central Bank facilities were amended and financial institutions were allowed, for instance, to provide non-indexed bonds issued by domestic financial institutions as collateral in such transactions.[1] This resulted in increased issuance of the banks' non-indexed bonds and in turn boosted collateralised lending by the Central Bank.

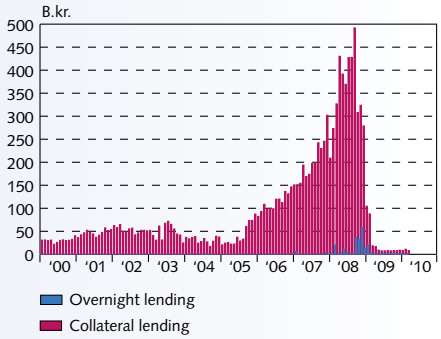
1. The Rules on Central Bank of Iceland Facilities for Financial Institutions state:
The following securities are eligible as collateral for Central Bank facilities: certificates of deposit issued by the Bank, electronically registered Treasury savings bonds, Treasury notes, Treasury bills, HFF bonds and Housing Authority bonds, as well as bonds issued in Icelandic krónur which fulfil the following conditions: a) the market value of the series is over 3 b.kr. and it is confirmed that this amount has been sold; b) the issuer has a rating from one of the three rating agencies Standard & Poor's, Moody's or Fitch of A- or higher, in the rating system used by Standard & Poor's and Fitch, and A3 or higher from Moody's; c) the securities have a market maker on the Nasdaq OMX Icealnd or a similar exchange.

Chart 1
Central Bank of Iceland balance sheet
January 2004 - December 2009



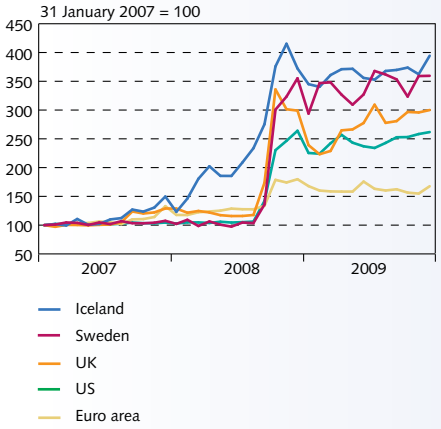
Source: Central Bank of Iceland.

Chart 2
Central Bank of Iceland overnight and collateral lending
January 2000 - March 2010



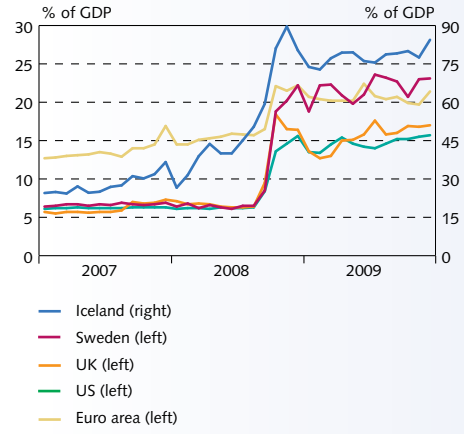
Source: Central Bank of Iceland.

Chart 3
Central banks balance sheets
January 2007 - December 2009



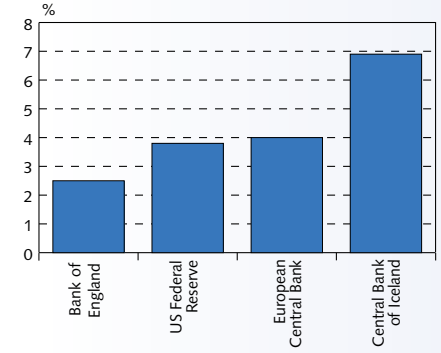
Source: Reuters EcoWin.

Chart 4
Central banks total assets as a share of GDP
January 2007 - December 2009



Source: Reuters EcoWin.

Chart 5
Maximum size of central bank as a percentage of financial system size in the financial crisis [1]



1. Maximum scope of total central bank assets in 2008-2009, as a percentage of financial system size in 2008. Based on estimated size of Icelandic financial system in mid-2008.
Sources: Bank of England, European Central Bank, IMF, Central Bank of Iceland.

After conditions for financing on international markets grew more difficult from mid-2007 onwards, the rules on collateralised lending were amended three times in order to increase access to liquidity by domestic financial institutions. The scope of the Bank's collateralised lending grew rapidly and peaked at almost 500 b.kr. in the autumn months of 2008. The expansion of the Central Bank's balance sheet during the period preceding the banks' collapse can therefore be attributed largely to increased credit provided in response to liquidity problems of domestic financial undertakings. As Chart 3 indicates, the balance sheet of the Central Bank began to expand somewhat ahead of that of other central banks, as the liquidity problem began earlier here than in most other countries. The scale of the expansion is scarcely equalled in other industrialised countries, however. The Bank's assets swelled from around 30% of GDP at the beginning of 2008 to around 80% of GDP by the end of that year (Chart 4). Even considering the size of the financial system preceding its collapse, it is evident that the Bank's balance sheet was proportionally larger than those of the US Federal Reserve, the Bank of England and the European Central Bank at their peak (Chart 5).

Expansion of the Central Bank of Iceland balance sheet in the wake of the banks' collapse

Following the banks' collapse, the Central Bank of Iceland became a major creditor of domestic financial institutions, holding claims secured by various types of collateral. Loans backed by the banks' own securities were lost, and to cover some of the Central Bank's losses, the Treasury agreed to purchase part of the Bank's collateralised lending positions in return for an indexed debt instrument. As a result, the Central Bank's balance sheet has remained very large following the banks' collapse, even though its traditional collateralised lending has practically ceased, as Chart 2 shows. These assets have recently been transferred to a subsidiary of the Central Bank. Efforts will be made to maximise the value of these assets and sell them off once market conditions make it feasible. The balance sheet of this subsidiary was equivalent to around 42% of the Central Bank's total balance sheet at year-end 2009, when its assets totalled 491 b.kr. Boosting the Bank's foreign exchange reserves, which is part of the IMF economic programme, has also enlarged the Bank's balance sheet.

Bank reserves increased substantially, in line with the Central Bank balance sheet expansion, creating temporary excess liquidity in the banking system after the commercial banks' collapse, which depressed market interest rates below the desired level of monetary restraint. Issuance of certificates of deposit, however, ensured more consistency between market interest rates and Bank rates, as central banks can manage the size of their balance sheet without hindering the implementation of their interest rate policy (see Borio and Disyata, 2009).

Expansion of the Central Bank's balance sheet has brought a strong increase in money holdings

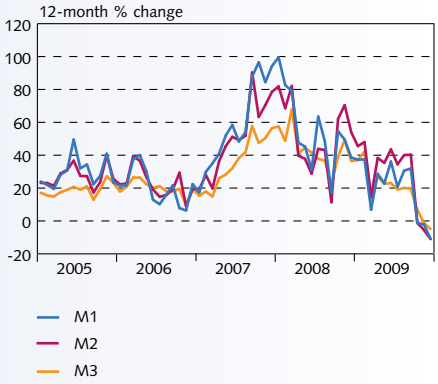
In simple terms, when a central bank supplies loans to a commercial bank, it deposits this amount into the latter's account with the central bank. The commercial bank can then use this money to loan to the public and lower its lending rates to encourage borrowers to take out new loans. This increases the amount of private sector money holdings and should boost economic activity, other things being equal, and create additional inflationary pressure.

Therefore, the question naturally arises as to whether the significant increase in bank reserves following the global financial crisis will result in substantially increased lending, eventually creating in-

flationary pressures. Furthermore, the surging public debt in many countries after the crisis could even lead to increased pressure on central banks to monetise the debt. On the other hand, however, the swelling of central bank balance sheets reflects to a large extent the previously mentioned unconventional central bank responses to the financial crisis and the uncertainty following in its wake, which has resulted, for instance, in a sharp rise in demand for bank reserves (see, for example, Keister and McAndrews, 2009). Money holdings have therefore not increased to the extent that the expansion of central banks' balance sheets might suggest. In addition, most central banks pay interest on reserves and can therefore influence the motivation the banks have to lend part of these reserves to their customers. As a result, price stability is not necessarily as threatened by increased bank reserves as might be concluded from simple economic models.

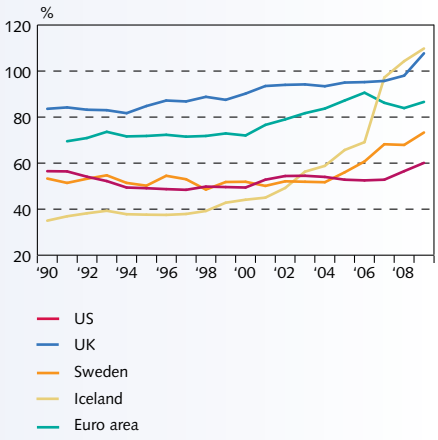
As Chart 6 shows, the increase in money holdings in Iceland was sizeable long before the financial crisis, and it was repeatedly identified as a cause of concern in previous issues of *Monetary Bulletin*. Following actions by the Central Bank to bolster liquidity in the financial system, however, money holdings grew enormously. This was also reinforced by a major shift by investors from various types of investments, such as equities, to government-guaranteed bank deposits. Since the banks' collapse, however, the growth rate of money holdings has slowed gradually, and in recent months money holdings have begun contracting.

Chart 6
Money supply growth
January 2005 - December 2009



Source: Central Bank of Iceland.

Chart 7
Monetary aggregates as a share of GDP
1990-2009[1]



1. Refers to M3 where applicable, otherwise M2.
Source: Reuters EcoWin.

Central banks need to unwind their balance sheet expansion

Even if price stability is not yet necessarily threatened by the strong expansion of central bank balance sheets, there is a risk that it will create additional inflationary pressures in the longer term. Consequently, central banks throughout the world face the task of winding down their supportive actions in phase with economic recovery, while at the same time ensuring price stability. Their balance sheets will therefore shrink once more even if they remain for some time larger than they were prior to the crisis, e.g. due to the desire of financial institutions to maintain a stronger liquidity position.

In Iceland, the size of foreign currency reserves is likely to keep the Central Bank's balance sheet sizeable in coming years. In the future, however, asset sales will serve to reduce the Bank's balance sheet and facilitate its liquidity management in support of the inflation target.

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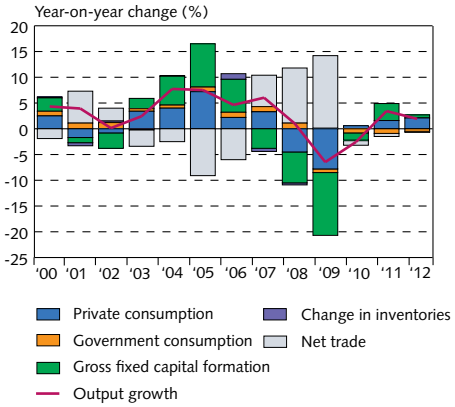
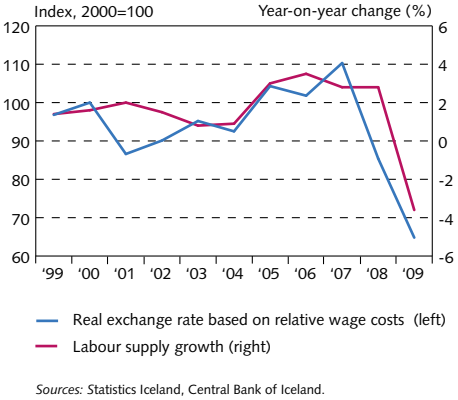
IV Domestic demand and production

Chart IV-1
Output growth and contribution of components 2000-2012[1]



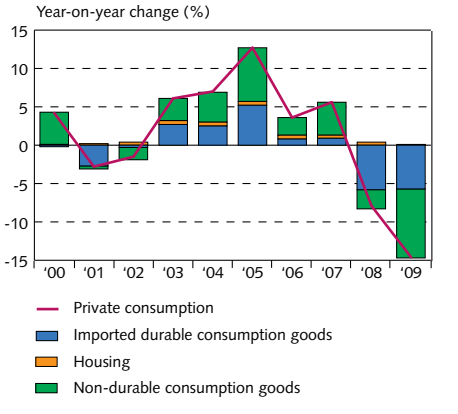
1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-2
Real exchange rate based on relative wage costs and developments in labour supply 1999-2009



Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-3
Private consumption development and main components 2000-2009



Sources: Statistics Iceland, Central Bank of Iceland.

The end of the deepest contraction Iceland has faced since it became an independent republic is in sight. It is assumed that recovery will begin in the latter half of the year, after a contraction lasting approximately 2½ years. The recovery is expected to be gradual, and the outlook is uncertain. The flexibility of Iceland's economy has protected it against further repercussions from the collapse of the banking system and the currency, although the private and public sectors alike have sustained severe blows, and the scope for official support measures has been limited. The adjustment of demand to lower income levels has been abrupt, but private consumption seems to have gained some sort of footing, while a turnaround in investment appears farther off than previously hoped. When GDP growth in Iceland is compared with that in other countries, it can be seen that the contraction here is both deeper and more protracted than in most other industrialised nations, as the scope for public sector stimulus measures has been less than it has elsewhere. It is extremely difficult to estimate potential output and project future developments at this point. Any such assessment is heavily dependent on the success of domestic balance sheet restructuring and attempts to forestall further loss of human capital; e.g., preventing widespread long-term unemployment from becoming entrenched. According to the baseline forecast, potential output will continue to contract until mid-2011. It is assumed that about 5% of potential output has been lost permanently in the wake of the financial collapse.[1]

Abrupt and difficult economic adjustment …

During the upswing before the banks failed, a number of factors tested the resilience of the Icelandic economy. In spite of considerable flexibility in the economy – manifested, for example, in a rise in the real exchange rate of the króna, (channelling demand out of the country) and surging growth in labour supply (supported by mass migration of foreign workers to Iceland), which temporarily boosted potential output – in the end, the financial system and the economy could not withstand the pressure. The balance sheets of banks and companies were larger than the economy could sustain in tighter financing conditions than had prevailed in the years before. A sudden and painful adjustment of demand, output capacity, domestic cost levels, and balance sheet size was thus necessary. Private consumption and investment, the main drivers of output growth during the upswing, have contracted steeply, and unemployment is at an historical peak. A large number of financial firms and other companies have become insolvent or been forced to undertake massive restructuring of their balance sheets and operations, and upwards of one-fourth of Icelandic households are likely to be in financial distress.[2]

1. More detailed statistical information concerning the macroeconomic forecast can be found in Appendix 1 on p. 69.
2. See, for example, Karen Á. Vignisdóttir and Thorvardur Tjörvi Ólafsson, (2010), "How has households' ability to support debt service and living costs developed, and what can various measures achieve?", a presentation given at a Central Bank of Iceland symposium on 12 April 2010 (http://www.sedlabanki.is/lisalib/getfile.aspx?itemid=7737).

… but the flexibility of the economy has been pivotal under trying circumstances

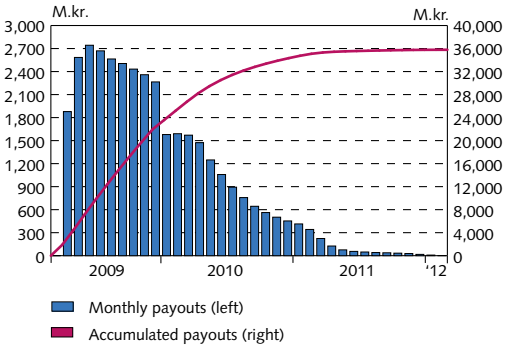
The flexibility of Iceland's economy has played a key role in mitigating the adjustment. First of all, the contraction in investment and private consumption has been directed to a large extent towards imports, which have shrunk by approximately 38% over the past two years. For example, the impact of the downturn in private consumption can be felt more keenly outside Iceland than is the case in the many countries where a larger proportion of household consumption consists of domestic products. A comparable contraction in private consumption would thus have generated a much larger spike in unemployment under those conditions.

Second, the depreciation of the króna bolstered the competitive position of domestic firms in the export sector as well as in the import-competing sector and played a part in sustaining greater demand for Icelandic products and services than was expected in late 2009, during one of the deepest contractions in global trade since World War II (see Section II). Due to the nature of Iceland's main exports, however, it is difficult to step up production when terms of trade are advantageous. Current aluminium production capacity is more or less fully utilised, and increasing it is a lengthy process, and in the fishing industry, the total allowable catch is constrained by the state of the fish stocks. Nonetheless, exporters have sought a variety of ways to maximise export revenues, and tourism has grown strongly in the recent term, although the forces of nature have been a deterrent in the past several weeks.

Third, the build-up of third-pillar pension savings and amendments to legislation on payouts have enabled many households to fill the gap caused by a contraction in disposable income with temporary withdrawals from those savings. Some 40,000 individuals have received third-pillar pension disbursements amounting to 36 b.kr. before taxes in the past year. The payouts amount to 2½% of year-2009 GDP, which is comparable in scale to the stimulative measures many governments adopted in response to the global financial crisis. Implementing measures such as third-pillar pension fund payouts is important, as the Icelandic Government's scope for supportive policy action is limited, although fiscal consolidation measures were postponed for the most part until 2010. The Icelandic Government does not fund measures of this type, but tax revenues rise as a result. The cushion thus provided was used, among other things, to raise mortgage interest allowances in order to help indebted households meet the cost of increased debt service. As is discussed in Section III, households' financial conditions have improved, both because short-term interest rates have fallen in line with reductions in Central Bank rates and because the premium on Central Bank rates that determines penalty interest was recently lowered by statutory amendment.

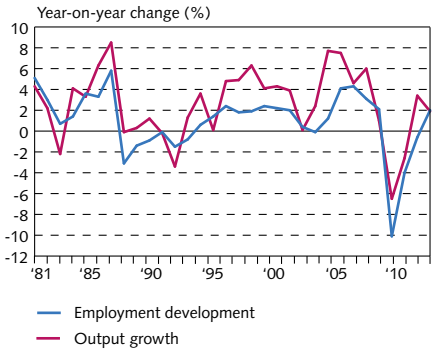
Fourth, the flexibility of the labour market has proven greater than previously assumed. It was clear that a sharp contraction in demand and production would trigger a steep rise in unemployment. However, the flexibility of the labour market has enabled employment to contract by just over 16% since mid-2008 without causing a corresponding rise in unemployment. Emigration and repatriation of workers, a shift from

Chart IV-4
Third-pillar pension fund payouts[1]



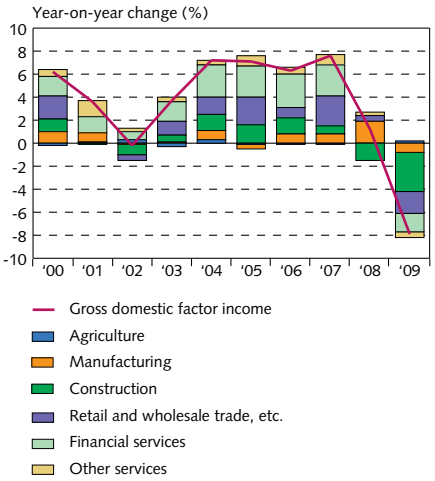
1. The chart shows monthly payouts and accumulated payouts from third-pillar pension funds according to applications filed by end-March 2010.
Sources: Directorate of Internal Revenue, Central Bank of Iceland.

Chart IV-5
Employment and output developments 1981-2012[1]



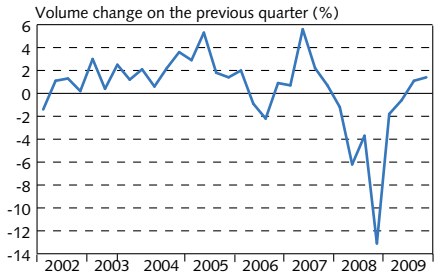
1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-6
Gross domestic factor income developments and contribution of each sector 2000-2009[1]



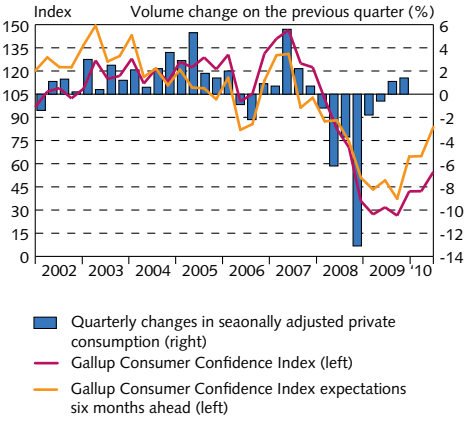
1. Gross domestic factor income is equal to gross domestic product minus indirect taxes and plus production subsidies. Gross domestic factor income is estimated on each sector's production.
Sources: Statistic Iceland, Central Bank of Iceland.

Chart IV-7
Quarterly changes in seaonally adjusted private consumption
Q1/2002 - Q4/2009



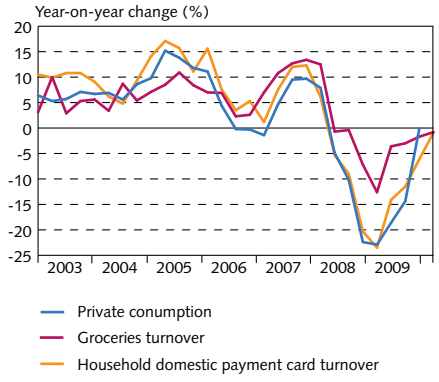
Source: Statistics Iceland.

Chart IV-8
Private consumption and consumer confidence
Q1/2002 - Q2/2010[1]



1. Three-month average of Gallup Consumer Confidence Index. Value for Q2/2010 is for April.
Sources: Capacent Gallup, Statistics Iceland.

Chart IV-9
Private consumption, groceries and payment card turnover
Q1/2003 - Q1/2010



Sources: Federation of Trade and Services, Statistics Iceland, Central Bank of Iceland.

employment to school, reduced overtime, and an increase in part-time employment play an important role in this development. Cuts in real wages also tend to reduce firms' need to lay off workers, thereby facilitating the economy's adjustment to recent shocks (see Section VI).

Finally, the small size of the domestic economy makes it possible for a few large-scale investment projects to catalyse a significant turnaround, as previous experience has shown. The Central Bank's last forecast assumed that investment in aluminium smelters and related power plants would offset the contraction in other investment. Last year, the Bank projected that total investment would grow in 2010 as a result. However, adverse financial conditions have forced delays in development projects, and further delays are expected, so the outlook is uncertain.

The contraction in GDP was smaller in 2009 than previously assumed

On 5 March, Statistics Iceland published its first national accounts estimates for the full year 2009. According to those estimates, GDP fell by 6.5% last year. While this is a larger contraction than in most industrial economies, it is smaller than that in some European countries, such as Finland, Ireland, Slovenia, Rumania and the Baltics.

The contraction proved to be 1.2 percentage points less than the Central Bank projected in January. The bulk of the difference is due to the fact that, until now, the Bank has not taken into account the effects of the so-called chain-volume approach in the national accounts on forecasts of GDP growth and national expenditure.[3] In the Bank's forecasts, these variables have been obtained by adding expenditure components together, in line with the national account identity. In most instances, this method gives a result very similar to that obtained with the chain-volume approach; however, there can be some difference if the national accounts figures contain large relative price changes. As a result, the Central Bank has revised its methodology in order to avoid such discrepancies.

As Chart IV-6 illustrates, there was a contraction in nearly all sectors, particularly construction, retail, and financial services. Manufacturing appears to have held up much better than in many other countries where its contribution to the contraction in factor income is much greater.[4]

Slow recovery of private consumption expected to continue

Private consumption stabilised in mid-2009 after declining for a year and a half. As is stated above, the contraction affected imported consumer goods, travel abroad, and transport to a large degree.

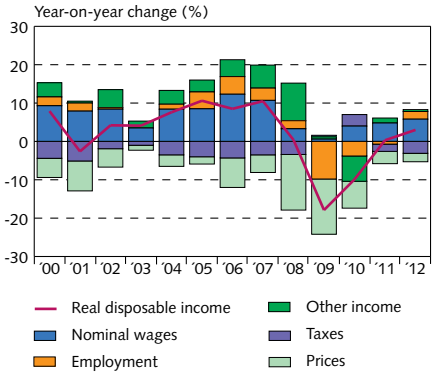
3. With the annual chain-volume approach, amounts at the price level of each year are restated to the price level of the previous year, and the change in volume is then calculated as the change, at constant price levels, of the previous year. This yields the volume change between each pair of years, and these changes are then linked together in order to derive continuous volume indices. Statistics Iceland adopted the chain-volume approach in September 2005, in accordance with UN and EU standards, but until that time, the assessment of volume changes was based on a specified base year, and relative prices in that year determined the internal weighting of the amounts (see Statistics Iceland, (2005). *Statistical Series* 2005:3, 13 September 2005).

4. Gross factor income is equivalent to GDP less indirect taxes, and plus manufacturing subsidies.

Preliminary figures from Statistics Iceland indicate 1-1½% growth in seasonally adjusted private consumption between quarters in the second half of 2009. Private consumption therefore proved more resilient during this period than was implied by various indicators that the Central Bank considered in its assessment of the short-term outlook. Measures to ease debt service burdens appear to have affected private consumption more strongly than the Bank assumed, as the contraction in disposable income in 2009 was slightly more than in the January forecast. Various indicators suggest that private consumption has stabilised at the current level. Seasonally adjusted payment card turnover has remained broadly unchanged domestically, but card use abroad rose quarter-on-quarter in Q1/2010, retail sales increased somewhat over the same period, and consumer expectations turned upwards in April after a protracted slump.

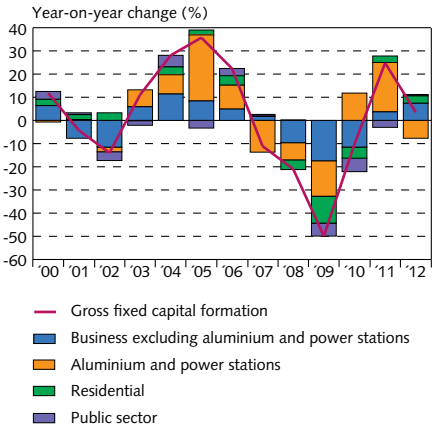
The forecast assumes that the rise in private consumption measured in the latter half of 2009 will retreat to some extent in the first half of 2010. Nonetheless, private consumption is expected to grow by 1% year-on-year in 2010, instead of contracting by 1%, as was forecast in January. The difference lies largely in a more advantageous initial position, as private consumption was stronger in Q4/2009 than was estimated in January. The outlook farther ahead is similar to that in earlier forecasts and assumes that private consumption will grow by 3-4% per year.

Chart IV-10
Developments in real disposable income and its main components 2000-2012[1]



1. Central Bank baseline forecast 2010-2012. The contribution of the main underlying factors in the yearly changes in real disposable income is calculated based on each factor's weight in disposable income. The combined contribution of underlying factors does not add up to the total change due to rounding and incomplete income accounts for households from Statistics Iceland.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-11
Gross fixed capital formation and contributions of its main components 2000-2012[1]



1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Contraction in public consumption in 2009 greater than previously thought, but outlook for this year broadly unchanged

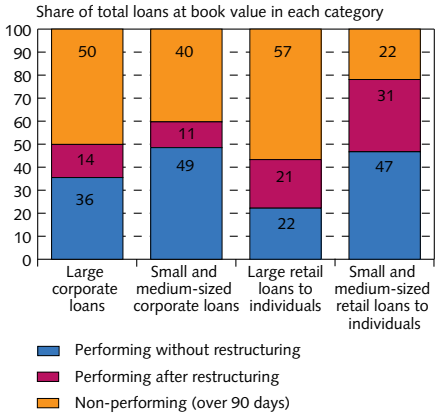
Public consumption contracted more in 2009 than preliminary figures for the first quarters of the year indicated, but the outlook for 2010 is broadly unchanged.

Public consumption contracted by 2.7% in 2009. Statistics Iceland figures on the contraction in public consumption in the first half of 2009 showed a major revision of previous figures. In the January *Monetary Bulletin*, it was stated that fiscal consolidation measures appeared to have been implemented later than the Bank had previously projected. The Statistics Iceland revision shows that last year's contraction in public consumption was in line with the Government's fiscal adjustment strategy and the Central Bank forecast early in the year. As is discussed in greater detail in Section V, the review of the public sector debt situation has revealed somewhat less need for consolidation measures; therefore, public consumption and investment can be expected to exceed prior estimates and provide better support for economic recovery. The Central Bank therefore assumes a 3% contraction in public consumption this year, instead of the 3.2% allowed for in the January forecast. Furthermore, public consumption is expected to contract less over the next few years than was assumed in January.

Bleaker outlook for recovery of investment due to delays in major development projects

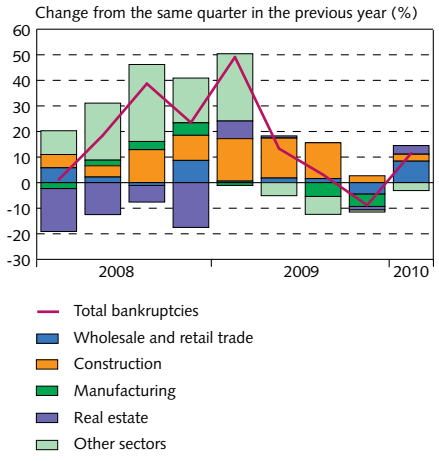
According to the preliminary estimate from Statistics Iceland, investment contracted by some 50% in 2009, which is consistent with the Central Bank's January forecast. That contraction followed a 21%

Chart IV-12
Loan status at the three large commercial banks[1]



1. Chart shows loan status in the three commercial banks at the end of February 2010. Loans with an outstanding balance exceeding ISK 100 million are defined as large loans.
Sources: Financial Supervisory Authority - Iceland, Central Bank of Iceland.

Chart IV-13
Corporate bankruptcies and contributions from sectors
Q1/2008-Q1/2010



Sources: Statistics Iceland, Central Bank of Iceland.

downturn in 2008. Investment is still expected to shrink in 2010 – by approximately 10%, according to the baseline forecast – driven largely by a one-third contraction in residential investment, public investment, and business investment outside the aluminium and power sectors. As is discussed above, delays are still expected, both in the smelter construction projects at Helguvík and Straumsvík and in energy company projects. Investment in the aluminium and power sectors is projected to grow by 45% this year, while the January forecast assumed 82% growth. The Central Bank projects that, if these assumptions are borne out, business investment can be expected to grow by 8½% year-on-year, which is a somewhat poorer outlook than in January. Further delays in planned investment projects cannot be ruled out, nor can the possibility that some proposed projects will not materialise at all. However, the approval of the Second Review of the Government economic programme should help pave the way for domestic entities' access to foreign capital markets, which is an important precondition for the proposed projects.

Continued corporate sector distress and slow progress in debt restructuring

Uncertainty is not limited to the power and aluminium sectors. Many companies are in financial distress. Major restructuring of their balance sheets and operations is currently underway. Of the three commercial banks' loans to firms, about half of large loans and about 40% of small and medium-sized loans were in arrears at the end of February 2010. The proportion of corporate loans that are not in arrears following debt restructuring is still low. Successful corporate sector debt restructuring could have a significant impact on developments in investment and unemployment. It is possible that delays in restructuring forestalled a further increase in unemployment and business bankruptcies, only to slow down the recovery later on. Experience such as that from Japan in the 1990s indicates that delays in corporate sector debt restructuring after a systemic financial crisis can delay recovery. The baseline forecast assumes that restructuring will proceed more smoothly because the reconstruction of the banking system is now nearing completion, and that general investment will gain momentum early in 2011.

The results of the Capacent Gallup survey conducted in February/March among executives from Iceland's 400 largest firms, do not give cause to expect a more rapid recovery in investment; on the contrary, they indicate that this year's contraction in general business investment may be as much as one-third.

Residential investment in 2010: one-fifth of the 2007 peak

The glut of residential housing is obvious to anyone who travels around the greater Reykjavík area and surrounding communities. According to information from the Icelandic Property Registry (IPR), the number of homes in greater Reykjavík, the Suðurnes peninsula, Akranes, Árborg, and Hverageröi rose by over 18% between 2003 and 2008. Excluding Reykjavík, the increase was a full one-third. In addition, construction has been started on a number of residential

buildings, and thousands of lots stand empty. According to a report from VSO Consulting, over 1,900 flats in greater Reykjavík and more than 500 in the Suðurnes peninsula, Akranes, Árborg, and Hveragerði were weather-proof or farther along in the construction process at the end of 2009. A further 1,100 flats in greater Reykjavík and about 200 in the other communities mentioned above were in earlier stages of development, and another 6,500 lots stand empty.[5] Flats under construction and vacant lots therefore account for nearly 11% of total residential housing in these areas, and just over 17% excluding Reykjavík. Individuals, contractors, and financial institutions own a large number of undeveloped lots and flats under construction, for which demand is limited. In some instances, however, construction will probably continue in spite of limited demand, so as to avoid property damage to unfinished homes. Credit is in very short supply, and a poor employment outlook, reduced disposable income, rising debt service, and falling house prices have cut into households' plans for investment. According to the Central Bank's analysis of household position, it is likely that some 40% of households have negative housing equity.

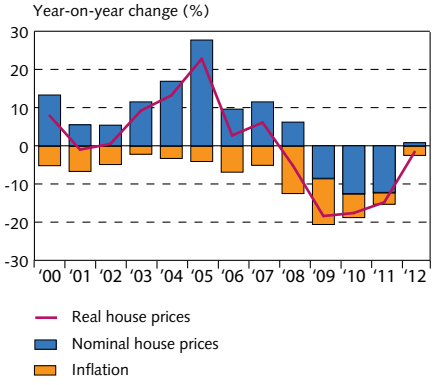
The contraction in residential investment was nearly 56% last year, and the Central Bank expects this trend to continue. If the Bank's forecast is borne out, year-2010 residential investment in real terms will be only one-fifth of the 2007 peak. Residential investment as a percentage of GDP is well below historical averages at present and is expected to remain low for some time to come. However, the contraction must also be examined in view of the burgeoning investment during the upswing, when house prices soared and residential investment as a share of GDP far exceeded historical averages.

Domestic demand and imports as share of GDP approach historical averages, reflecting ecomonic adjustment

During the upswing, private consumption and investment as a share of GDP were far above historical averages. Investment as a percentage of GDP peaked at just over one-third in 2006, the height of power plant and aluminium smelter construction activity in East Iceland. Domestic demand was 117% of GDP that year, giving rise to a large current account deficit. The surge in demand during the upswing was unsustainable, and an adjustment would clearly have been necessary, even if the banking system had been smaller and its funding solid enough to withstand the global financial crisis. Domestic demand shrank by one-fifth in 2009, following a 9% contraction in 2008. The Central Bank assumes that the adjustment of demand to lower income levels is well underway and that the contraction in national expenditure will be about 2% this year. Modest growth is expected in the years to follow, as private consumption and investment combine to stimulate output.

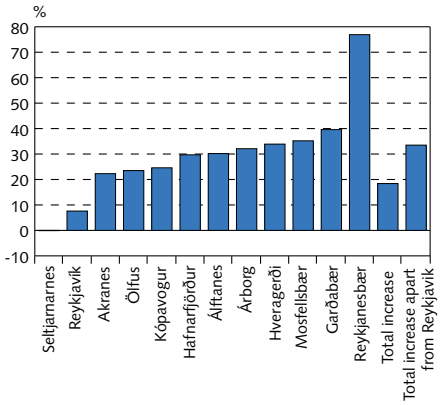
5. See VSO Consulting (2009), "Byggingavaktin. Revised and expanded edition: Residential housing construction in municipalities in Southwest Iceland and the greater Reykjavík area," December 2009 (In Icelandic).

Chart IV-14
Real house price developments and main components 2000-2012[1]



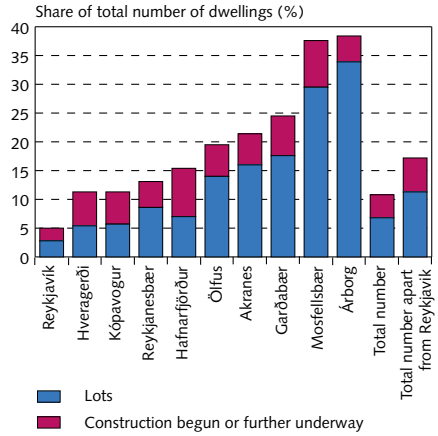
1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-15
Increase in the number of dwellings by municipalities between 2003 and 2008[1]



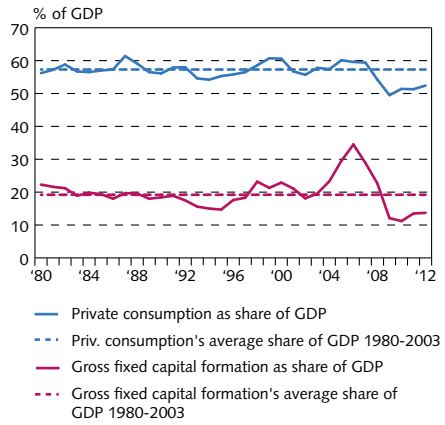
1. The figure shows the increase in the number of dwellings with a construction year in 2008 or earlier.
Sources: Icelandic Property Registry, Central Bank of Iceland.

Chart IV-16
Vacant lots and number of dwellings at various construction stages as a share of total number of dwellings by municipalities



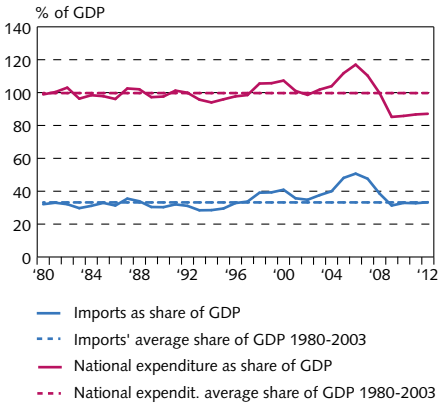
Sources: Icelandic Property Registry, VSO Consulting, Central Bank of Iceland.

Chart IV-17
Private consumption and gross fixed capital formation as share of GDP at fixed prices 1980-2012[1]



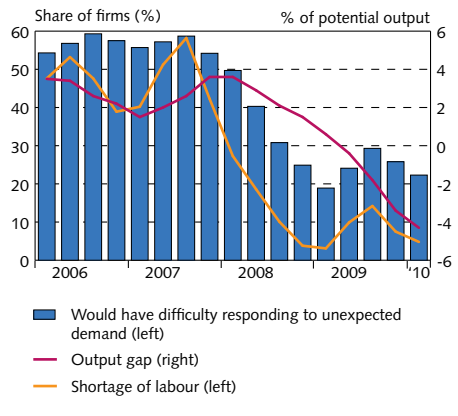
1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-18
Imports and national expenditure as share of GDP at fixed prices 1980-2012[1]



1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart IV-19
Indicators of use of production factors and output gap[1]
Q1/2006 - Q1/2010



1. According to Capacent Gallup Sentiment Survey among Iceland's 400 largest firms. Output gap is Central Bank's estimation.
Sources: Capacent Gallup, Central Bank of Iceland.

The decline in demand and the depreciation of the króna have been accompanied by a decided drop in imports. Immediately after the banks collapsed, a surplus developed in the trade account, and the services account showed a surplus somewhat later. As is discussed above, the large share of imported goods in Icelandic households' consumption basket plays a part in channelling the contractionary effect out of the domestic economy. The sustainability of this trade surplus will be determined in part by whether the share of imports can be considered abnormally low at present. If imports as a share of GDP are far below long-term averages, import growth could outpace GDP growth in the next few years. In that instance, there would be cause to question the lasting trade surplus assumed in the Central Bank's forecast. Historical data show clearly, however, that imports as a share of GDP rose far above historical averages during the upswing. The current share is therefore much closer to the long-term average, in spite of the past two years' steep contraction. Given the magnitude of the decline in disposable income and the depreciation of the króna, it could be equally likely that imports as a share of GDP will contract even more than the forecast assumes. On the other hand, it should be borne in mind that the share of imports in GDP may have shifted slightly upwards on a long-term basis due to increased aluminium production. Charts IV-17 and IV-18 shed further light on how the economic adjustment is reflected in changed expenditure ratios.

Recovery delayed further

Based on the Central Bank's assessment of seasonality in GDP, it is estimated that GDP contracted by 0.2% in Q4/2009 and will contract by 0.4% and 0.8%, respectively, in the first two quarters of 2010. From Q3 onwards, however, GDP is expected to grow by 1.2% quarter-on-quarter. According to the baseline forecast, recovery will be delayed by one quarter in comparison with the January forecast. GDP is nonetheless forecast to decline year-on-year, with the contraction estimated at 2½% for 2010. The January forecast assumed the contraction would be almost a percentage point more, and the difference is due primarily to a smaller contraction in domestic demand, as the contribution from net trade is more strongly negative than in January. A pick-up in GDP is forecast for the next few years, particularly in 2011, when aluminium and power sector investment is expected to grow by some 61%. Output growth is more sluggish, however, than is customary after such a large contraction.

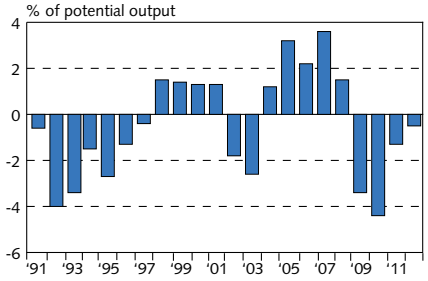
Future output capacity is threatened by growing long-term unemployment

It is clear that potential output was severely affected by the collapse of the banks and the currency. The financial institutions' strong build-up of capital and labour force proved to be of little value when put to the test. A number of firms have either gone bankrupt or are faced with serious operational difficulties, which will ultimately result in a permanent loss of capital. What is needed is a massive shift of labour from companies that benefited from the upswing – such as financial institutions, sellers of imported consumer durables, and various service

and construction companies – to the tradable sector, where business conditions are more favourable and opportunities more abundant. In addition, a part of the labour force can be expected to emigrate. The fiscal deficit threatens to crowd out a large portion of new savings, and credit institutions are hesitant to lend money for commercial activities. Access to working capital and credit is therefore tight, prompting firms to cut back on their activities. Firms are also forced to finance their operations internally, which reduces their capacity to invest. All of these factors eventually emerge in lower potential output. The baseline forecast assumes that potential output contracted after the financial crisis but will return to pre-crisis levels by the end of the forecast horizon. Based on long-term trend growth in potential output, however, it can be assumed that about 5% of potential output has been lost permanently as a result of the crisis.[6]

Estimating potential output is always a difficult task, but seldom as difficult as in the aftermath of such a large financial crisis. The above-mentioned Capacent Gallup survey indicates the presence of substantial spare capacity. Only a small fraction of firms are experiencing a shortage of labour, and most say they could respond quite easily to an unexpected increase in demand. The forecast assumes that the slack will reach a peak in mid-2010 and then gradually subside, with the negative output gap closing in the latter half of 2013. Future output capacity will be somewhat threatened by loss of human capital, however, if widespread long-term unemployment becomes entrenched or if debt restructuring measures prove insufficiently successful.

Chart IV-20
Output gap 1991-2012[1]



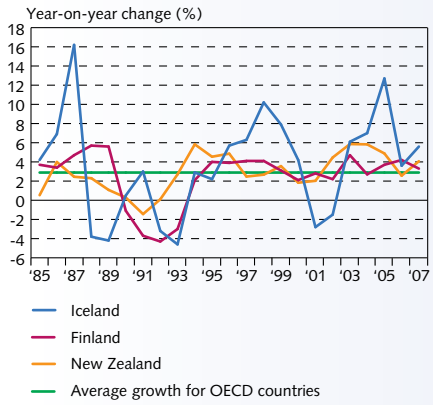
1. Central Bank baseline forecast 2010-2012.
Source: Central Bank of Iceland.

6. This is obtained by assuming that potential output grew in line with approximately 3% trend growth from 2005, and comparing the resulting potential level to the projected potential output seven years after the collapse, which is in accordance with conventional methodology for estimating such a loss. This is somewhat greater than the OECD's estimate of 3-3½% potential output loss for the OECD as a whole. The higher estimate for Iceland is consistent both with the fact that the collapse in Iceland was larger in scale and with the findings from international studies indicating that the size of the loss goes hand–in-hand with the level of macroeconomic imbalance before the crisis (see OECD, *Economic Outlook*, November 2009, and International Monetary Fund, *World Economic Outlook*, October 2009).

Box IV-1

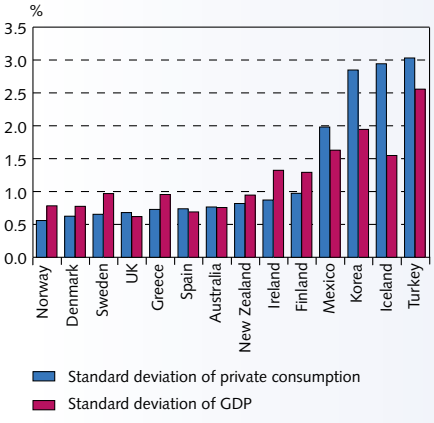
Fluctuations in private consumption[1]

Chart 1
Private consumption growth 1985 - 2007



Sources: Statistics Iceland, OECD.

Chart 2
Standard deviation of private consumption and GDP for various OECD countries
Q1/1987 - Q2/2007[1]



1. Data are seasonally adjusted and filted with the Baxter-King bandpass filter.
Sources: Eurostat, Reuters EcoWin, Statistics Iceland, Eurostat.

The Icelandic economy is relatively volatile in comparison with other OECD countries. The standard deviation of changes in GDP is quite large, but not much larger than in several other OECD countries. It is possible to identify several reasonable explanations for this. What is more difficult to explain is why private consumption is much more volatile than GDP and income in Iceland.

The economic literature generally assumes that households attempt to smooth their consumption over time, and that wide fluctuations in private consumption are detrimental to economic well-being. That being the case, it could be expected that private consumption should fluctuate less than output and income. Iceland is not the only country in the OECD where private consumption fluctuates more than GDP, although it is the most extreme example. The ratio of the standard deviation of changes in private consumption and the standard deviation of changes in GDP is thus much higher in Iceland than anywhere else in the OECD. This Box attempts to shed light on the main reasons for this pronounced volatility in private consumption in Iceland.[2]

Private consumption fluctuates more in Iceland than in most other countries

As Chart 1 shows, fluctuations in private consumption are considerably greater in Iceland than, for example, in Finland, which has the second-highest standard deviation of private consumption in the Nordic countries, and New Zealand, which is a small, open economy that resembles Iceland in many ways.[3]

In comparison with the OECD as a whole, Iceland has the second-largest fluctuation in private consumption and the fourth-highest fluctuation in GDP (see Chart 2). Only in Turkey does private consumption fluctuate more, and Turkey experienced a serious financial crisis during the middle of the period analysed. As can be seen in Chart 3, which shows the standard deviation of private consumption as a ratio to the standard deviation of GDP for the same countries as are shown in Chart 2, Iceland stands out, with a standard deviation of private consumption nearly twice as large as the standard deviation of GDP.

Sharp fluctuations in spending on consumer durables

Private consumption can be divided into four categories: durables, non-durables, semi-durables, and services. Expenses for the purchase of automobiles, furniture, and large home appliances are classified as durables, and it is likely that these expenses fluctuate more than other consumption expenditures. Volatility in this category could therefore explain the dramatic swings in private consumption in Iceland.

Table 1 shows fluctuation in total private consumption, as well as in several sub-categories, for different time periods. As can be seen, consumption of durables is the most volatile. The standard deviation of service-related private consumption (such as healthcare services) is much lower. As could be expected, the standard deviation of inelastic consumer goods such as food, beverages, alcoholic

1. This Box is based on the paper by Sveinsdóttir, Haraldsdóttir, and Pétursson (2010), "Business cycle fluctuations in Iceland", Central Bank of Iceland, *Working Papers*, forthcoming.
2. Daníelsson (2008) discusses developments in the Icelandic business cycle in the context of global developments.
3. The comparison extends to all OECD countries during the period 1985 to 2007, with the exception of six countries for which data were only available for a shorter period. The data cover the period until the global financial crisis in 2008. Data on the composition of foreign trade are taken from the United Nations database (www.unctad.org).

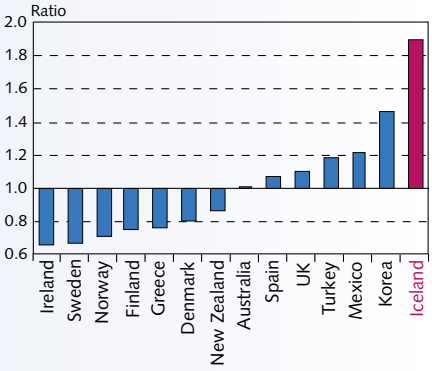
beverages and pharmaceuticals is rather low. The same applies to fluctuations in spending on non-durables, such as clothing, books, compact discs, and sporting goods.

Table 1 Fluctuation in private consumption and its components[1]

	Period		
Standard deviation of changes (%)	*1992-2000*	*2001-2007*	*1992-2007*
Private consumption	2.0	3.2	2.5
Private consumption excluding durables	1.7	2.5	2.1
Durables	6.1	15.4	11.0
Vehicles	8.6	27.7	19.0
Durables excluding vehicles	4.6	9.0	6.8
Non-durables	1.2	1.2	1.2
Semi-durables	1.1	1.3	1.2
Services	2.6	3.5	3.0
GDP	1.3	1.4	2.5
Exchange rate of the króna	2.8	7.2	5.1
Disposable income	1.8	2.1	1.9

1. Data are seasonally adjusted and filted with the Baxter-King bandpass filter.

Chart 3
Standard deviation of private consumption as a share of standard deviation of GDP
Q1/1987 - Q2/2007[1]

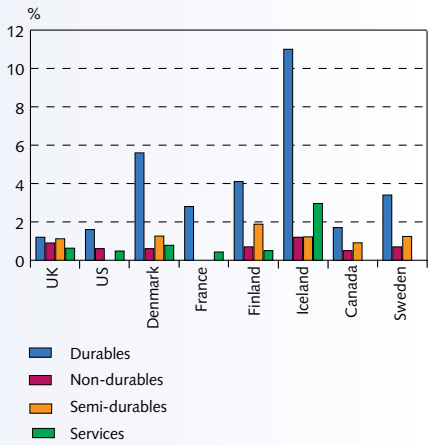


1. Data are seasonally adjusted and filted with the Baxter-King bandpass filter.
Sources: Eurostat, Reuters EcoWin, Statistics Iceland.

The standard deviation of changes in total private consumption is 2.5%. If private consumption excluding durables is examined, the standard deviation falls from 2.5% to 2.1%, even though spending on durables only accounts for about 9.5% of total consumption expenditure during the period.[4]

Comparing the sub-categories of private consumption in Iceland with those in the United States, United Kingdom, Denmark, France, Finland, Canada, and Sweden between 1992 and 2007, reveals that all sub-categories except semi-durables fluctuate most in Iceland.[5] Volatility is second-highest in Denmark. It is interesting to note that consumption tends to be more volatile in the Nordic region than in other countries in the comparison.

Chart 4
Standard deviation of private consumption components for various countries[1]



1. Data are seasonally adjusted and filted with the Baxter-King bandpass filter.
Sources: Reuters Ecowin, Statistics Iceland.

Economic theories on household consumption decisions

According to the permanent income hypothesis, private consumption is determined by permanent income, defined as the expected present value of lifetime income. When current income is higher than permanent income, households step up their savings while keeping private consumption more or less constant. In the same manner, households must spend their savings or increase their borrowings in order to maintain their consumption patterns if their current income is lower than permanent income. In this way, households use savings and borrowing to smooth consumption over time. This behaviour is known as the consumption smoothing hypothesis, and it is the main idea behind the permanent income hypothesis of Modigliani and Brumberg (1954) and Friedman (1957), as well as the basis of all modern economic theory on household consumption decisions. This suggests that private consumption should fluctuate less than income and GDP.

4. Data on the division of private consumption into sub-categories are obtained from Statistics Iceland and extend back to 1990. The share of durables in private consumption fluctuates widely, as the standard deviation is large. It peaks at 17% in Q2/2005 and is lowest at 3% in Q1/2009.

5. Information was not available on all sub-components of private consumption for all countries; for example, information was unavailable on service expense in Canada and Sweden, semi-durables in the US, and non-durables and semi-durables in France. Data begin in 1997 for the US and in 1995 for Sweden. Information on sub-components of private consumption was not available for other countries.

Reasons for wider fluctuations in private consumption in Iceland

There could be a variety of reasons for the volatility in private consumption in Iceland. Fluctuations in consumption could reflect the overall volatility of the economy, which could stem from the small size and the structure of Iceland's economy (see, for example, Pétursson, 2010). Small countries tend to have a less diversified industrial base, with relatively few industries that can have a disproportionately large effect on overall economic performance. The small size also makes it more difficult to undertake large scale investment projects. Furthermore, it is likely that smaller countries have less developed financial systems with a narrower range of financial products, thus making financial risk diversification more difficult than in larger countries where risk can be spread over a larger group of individuals. As a result, households have more difficulty smoothing fluctuations in consumption.

Table 2 Composition of foreign trade for 2006

	The weight of manufacturing products in exports	*The weight of commodities and food exports*
Australia	18%	75%
Denmark	65%	32%
Finland	81%	18%
Greece	51%	46%
Iceland	19%	80%
Ireland	84%	12%
Korea	89%	11%
Mexico	76%	24%
New Zealand	30%	67%
Norway	16%	81%
Spain	76%	23%
Sweden	77%	17%
Turkey	41%	9%
UK	75%	20%
OECD countries	69%	26%

Source: Database of the Unied Nations.

Because of the structure of its economy, external shocks probably make the Icelandic economy more volatile than other OECD countries. Natural resources and commodities weigh more heavily in Icelandic exports than in most OECD countries. For example, commodities and food products accounted for 80% of Iceland's 2006 product exports, while the OECD average was 27%. Similarly, manufacturing exports were only 19% in Iceland, as opposed to 69% in the OECD, which makes Iceland dependent on imports of such products. The Icelandic economy is therefore vulnerable to changes in commodity prices, which have a tendency to fluctuate widely. This appears in greater volatility in terms of trade, but also in fluctuations that can be attributed to variations in the fish catch.[6]

The volatile environment in which Icelandic firms operate does not tell the whole story, however. In this context, it is also important to consider the effect of economic fluctuations on households' earnings and resilience to such fluctuations (see, for example, Loayza *et al.*, 2007). In Iceland, fluctuations in real wages are the highest in the OECD, while saving has generally been very limited among

6. See, for example, the paper by Gudmundsson, Sighvatsson, and Pétursson (2000), which shows that a large proportion of Iceland's economic volatility can be traced to fluctuations in terms of trade and fish catches.

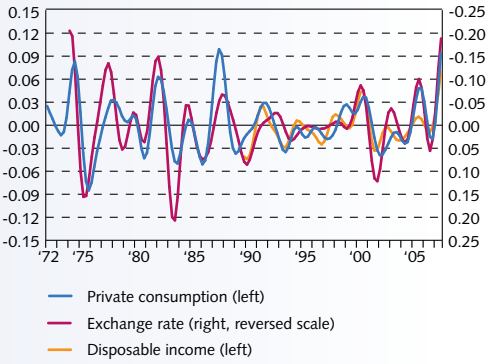
Icelandic households. This is offset by a strong pension fund system that nonetheless is only utilised to a limited extent to smooth consumption, as pension savings are tied for long periods and are more or less inaccessible at any given time.

In addition, Iceland's tax system and social welfare benefits have a tendency to encourage debt accumulation and the allocation of a relatively large share of savings towards housing, which makes it even more difficult to smooth consumption. A relatively undeveloped domestic financial system also reduces Icelandic households' ability to smooth consumption, making it more likely that a rather large share of Icelandic households are limited to their current income when making consumption decisions.

Another important explanation of Iceland's high consumption volatility is probably that domestic economic policy has not been successful in reducing business cycle fluctuations. In that context, fiscal policy has generally been procyclical rather than countercyclical. Neither has domestic monetary policy been successful in anchoring inflation and inflation expectations, and as a result, it has not been able to ensure the price stability that is one of the foundations of long-term economic stability.

Finally, it is worth asking whether volatility in private consumption can be attributed to large and frequent changes in the exchange rate of the króna. As has been stated previously, the domestic manufacturing sector is small; therefore, most manufacturing goods and durable and non-durable consumer goods are imported. Large exchange rate fluctuations can thus have a significant impact on private consumption by changing the relative prices of domestic and imported goods. The effects can also be indirect, through changes in inflation and labour income. These effects can be expected to be even more pronounced the more procyclical the exchange rate is, a tendency more evident for the Icelandic króna than the currencies of most other countries (Pétursson, 2010). This can be seen in Chart 5 and Table 3, which show that cyclical fluctuations in private consumption closely follow the exchange rate of the króna and the purchasing power of disposable income. On the other hand, fluctuations in private consumption do not appear to move closely with fluctuations in private sector wealth due to share price movements, at least not by more than is reflected in households' disposable income. The fluctuations follow movements in real estate prices more closely, in line with the experience in other countries, and it appears that fluctuations in private consumption are led by movements in house prices.

Chart 5
Business cycle fluctuations in private consumption, disposable income and exchange rate[1]



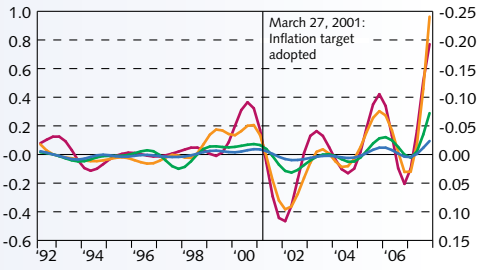
1. Data are seasonally adjusted and filted with the Baxter-King bandpass filter.
Sources: Statistics Iceland, Central Bank of Iceland.

Table 3 Correlation to private consumption lagged by k quarters for the period Q1/1985 - Q3/2007[1]

	k= -2	*k= -1*	*k= 0*	*k= 1*	*k= 2*
Exchange rate index	-0,36	-0,56	-0,69	-0,60	-0,35
Disposable income	0,29	0,55	0,76	0,76	0,61
Housing price	0,65	0,64	0,49	0,23	-0,08
Equity price	0,14	0,28	0,48	0,50	0,48

1. Data are seasonally adjusted and filted with Baxter-King bandpass filter.
Sources: Iceland Stock Exchange, Statistics Iceland, Central Bank of Iceland.

Chart 6
Business cycle fluctuations in the exchange rate, domestic private consumption and its components
Q1/1992 - Q3/2007[1]



1. Data are seasonally adjusted and filted with the Baxter-King bandpass filter.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 6 illustrates this more clearly, as it shows developments in the exchange rate and in the main sub-categories of private consumption. As can be seen, the purchase of durables, such as automobiles, is particularly dependent on exchange rate movements, and volatility in these expense items has increased with increased

exchange rate volatility. This can also be seen in Table 1, which compares Iceland's fixed exchange rate period (until 2001) with the period after 2001, when the króna was floated. As can be seen, fluctuations in spending on durables have increased substantially during this period.

Consequently, it is important to ask how much fluctuations in private consumption can be attributed directly to Iceland's having an independently floating currency. A growing number of studies indicate that exchange rates fluctuate more than can be explained by changes in economic fundamentals, and that exchange rate volatility can be a source of shocks instead of a shock absorber (see, for example, Artis and Ehrmann, 2006). The results in Pétursson (2009) indicate that this "excess" volatility of the Icelandic króna is greater, on average, than in other OECD countries, and that the shock-generating behaviour could therefore be stronger than in other developed countries.

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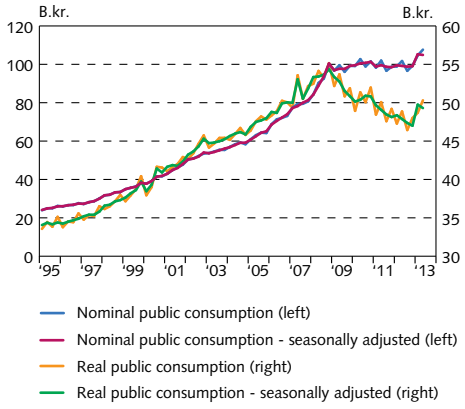
V Public sector finances

Since the last *Monetary Bulletin*, three developments have improved the outlook for public sector finances. First, it appears that interest expense on the Icesave obligations will be lower than previously assumed, although nothing has been finalised in this regard; second, the sale of the banks to creditors lowers interest expense; and third, new figures from Statistics Iceland reveal higher tax revenues than previously expected and a stronger contraction in public consumption in 2009 than was indicated by preliminary numbers. The fiscal outlook is therefore more positive than previously assumed, and will ease the public debt burden and relieve some of the need for further fiscal restraint. Fiscal consolidation remains necessary, however, and measures designed to contain expenditures will continue to be developed as the 2011 National Budget is prepared. The consolidation measures employed to achieve the objectives set forth in the economic programme will deepen the contraction for the short term, as reduced public expenditure will have a correspondingly dampening effect on domestic demand while higher taxes will cut into disposable income, but any improvement in outlook concerning Government finances and debt will be used in part to support economic recovery.

Chart V-1
Nominal and real public consumption growth
Q1/1995 - Q2/2013[1]

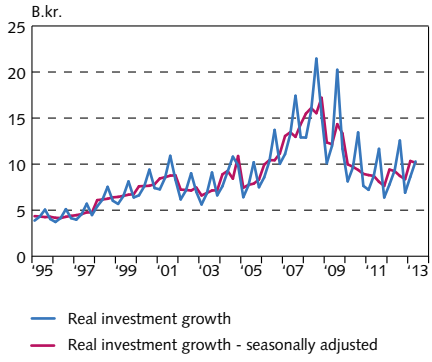


1. Central Bank of Iceland baseline forecast Q2/2010 - Q2/2013.
Sources: Statistics Iceland, Central Bank of Iceland.

Public consumption in line with policy statements …

Public consumption shrank by 3% in volume terms in 2009, a much greater margin than the Central Bank projected in the last *Monetary Bulletin*, which assumed a contraction of 0.4% during the year. That forecast was based on preliminary figures from Statistics Iceland for the first three quarters of 2009. In May 2009, however, the Bank had forecast a 2.7% contraction in public consumption for 2009, based on the policy statement presented by the new Government. Because preliminary Statistics Iceland figures for the first two quarters revealed a much smaller contraction – and even modest growth – the forecasts that came afterwards took account of that information. The contraction in public consumption as it appears in the most recent figures is therefore in line with the policy statement issued in April 2009.

Chart V-2
Real public investment growth
Q1/1995 - Q2/2013[1]



1. Central Bank of Iceland baseline forecast Q2/2010 - Q2/2013.
Sources: Statistics Iceland, Central Bank of Iceland.

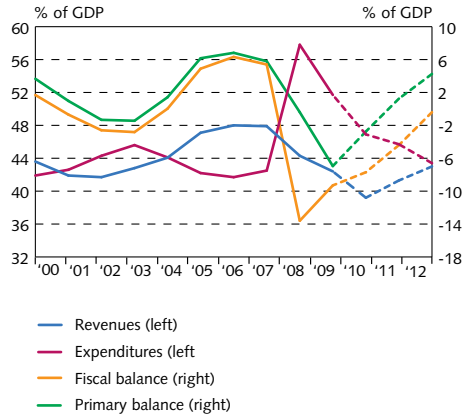
… and outlook suggests further contraction in public consumption

Given that the contraction in public consumption in 2009 was in line with the Government's policy statement, the current forecast assumes that Government plans will materialise to a large extent in 2010. This means that significant cutbacks are in the offing. The forecasted contraction in public consumption is now 3% for 2010 and 3.5% for 2011. If that forecast materialises, the contraction in public consumption will be the largest ever, and will continue for an unprecedented number of successive years. In volume terms, public consumption in 2011 will be the same as in 2006.

Outlook for interest expense extremely uncertain

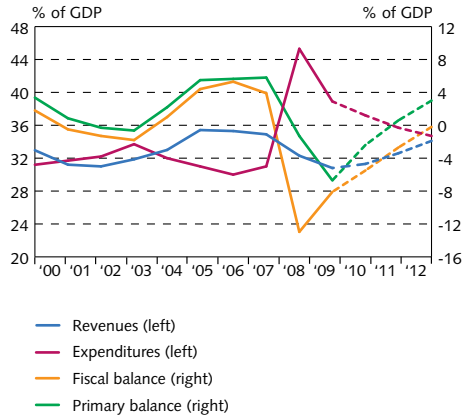
The Government's interest expense due to the Icesave obligations is a source of great uncertainty. An act of law concerning a State guarantee of the contractual agreement providing for fixed 5.5% interest has

Chart V-3
Public sector finances 2000-2012[1]



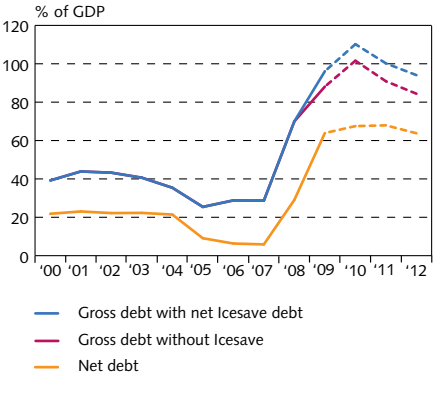
1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-4
Treasury finances 2000-2012[1]



1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart V-5
Public sector debt as a share of GDP 2000-2012[1]



1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

now been rejected in a national referendum, and further negotiations have yet to be concluded. Previous *Monetary Bulletin* forecasts on public finances have assumed that interest expense would be based on the terms mentioned above, and that the obligation would bear interest beginning in January 2009, as the contractual agreement stipulated. If the first years should be interest-free under a new agreement, this would make a significant impact on public sector finances over the forecast horizon.

Public sector finances stronger than expected

The 2009 public sector finance figures newly published by Statistics Iceland do not assume that interest expense due to Icesave will have accrued to the Treasury. As a result, public sector finances proved considerably stronger than in the last forecast, which assumed a deficit amounting to 13.5% of GDP, while the actual deficit was 9.1% of GDP. While large part of the difference is due to the aforementioned interest on the Icesave obligation – about 2 percentage points – revenues from taxes were about 2 percentage points higher than anticipated and expenditures were lower by 0.3 percentage points. This is in line with more robust economic activity in 2009 than previously estimated. It is clear that, if final figures confirm these preliminary numbers from Statistics Iceland, public finances will be well within the interim numerical targets set out in the Government's economic programme. This is particularly true of the overall balance, but it applies to the primary balance as well. How, and to what extent, the authorities will use the resultant room for manoeuvre to ease fiscal restraint has yet to be determined.

Outlook more positive than before

The aim of the economic programme is to achieve a surplus on the primary and overall balances in 2011 and 2013, respectively. If attempts to negotiate more advantageous interest rate terms on the Icesave obligations prove successful, and if the prospects for GDP growth are brighter than previously envisaged, it is more likely that the objective of an overall balance surplus will be achieved. It is still assumed that the primary balance will be positive in 2011 and that the overall balance will be positive in 2013. As regards the primary balance, the outlook is similar to the forecast in the last *Monetary Bulletin*, which projected a primary deficit of 2.5% of GDP in 2010 and a primary surplus of 1.3% of GDP in 2011. As regards the overall balance in 2010, uncertainty still reigns concerning the Icesave interest expense mentioned above, which could change the outcome by 1.7 percentage points. Because it is not expected that interest expense will accrue to the Treasury in 2010 because of these obligations; tthe overall deficit is estimated at 7.7% of GDP. The outlook for Government finances in 2011 and 2012 suggests a 1-2 percentage point improvement due to higher tax revenues and lower interest expense.

Smaller increase in indirect taxes

The Treasury's revenue base proved stronger than previously assumed; therefore, it is likely that the rise in indirect taxes will be smaller than

projected. Given the slack in the economy, taxes are not raised over and above the requirements of the Government's economic programme from 2009, either in terms of numerical targets or as regards timing. Consequently, it is assumed that the direct inflationary effects due to hikes in indirect taxes will be less than previously forecast, or 1.4 percentage points in 2011 instead of the previously assumed 2.4 percentage points.

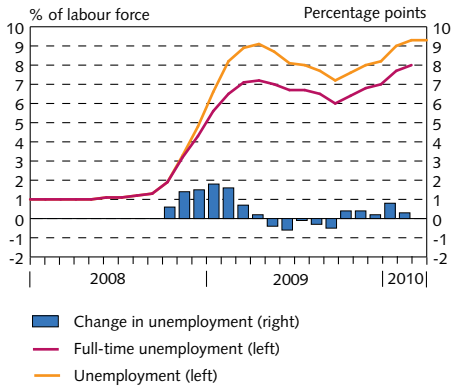
Debt outlook more positive than previously thought

More advantageous agreements concerning the Icesave obligations and a brighter outlook for fiscal performance result in a reduction of the Government's debt ratio. Nevertheless, the debt ratio is expected to peak at just under 68% of GDP in 2010 and 2011 before starting to decline in 2012. It is projected to have fallen to 57% by 2013. Gross debt is expected to peak this year at roughly 110% of GDP, however. The estimation of net debt only accounts for cash equivalent montary assets. If other monetary assets are included as well, with the exception of equity securities, ownership shares, and guarantee capital, the Government's net debt equals 45-50% of GDP.

VI Labour market and wage developments

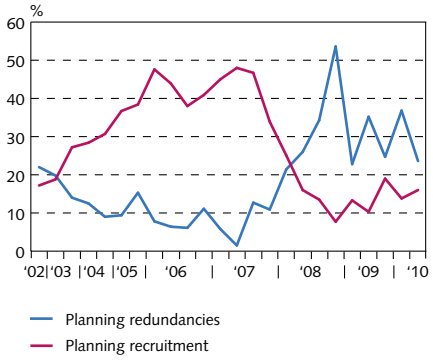
The flexibility of the Icelandic labour market has facilitated the economy's adjustment to the economic crisis. Labour market participation has declined, hours worked have fallen, and emigration from Iceland has been more pronounced than in earlier recessions. This adjustment has been accompanied by an increase in productivity, as total hours worked fell more steeply than output in 2009. The labour market's adjustment to the shocks of 2008 will take several years. The Central Bank forecast assumes that unemployment will remain high throughout 2010 and will not begin to taper off until early next year. The current forecast presumes larger wage rises than the last forecast, owing to the strong competitive position of the export sector.

Chart VI-1
Unemployment January 2008 - March 2010



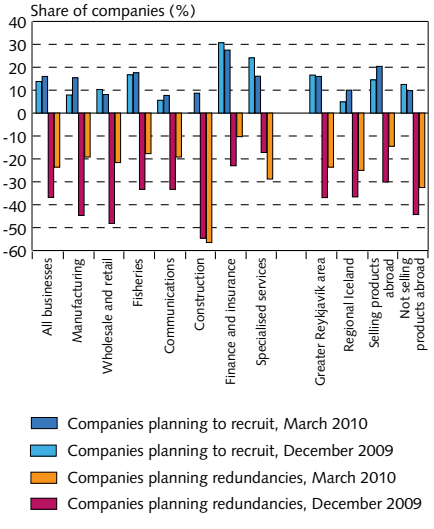
Sources: Directorate of Labour, Central Bank of Iceland.

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



Source: Capacent Gallup.

Chart VI-3
Companies planning to change staffing levels over the next 6 months



Source: Capacent Gallup.

Unemployment in line with forecast

Registered unemployment has risen so far in 2010, measuring 9.2% in Q1, as was forecast in the January *Monetary Bulletin*. Unemployment is now back to the April 2009 peak. The number of persons on the unemployment register is similar to that in April 2009 as well, at 16,500. Since last summer, the number of unemployed has risen in all sectors except the financial sector.

Although the number of unemployed people has risen, changes in methods for calculating unemployment and changes in entitlement to unemployment benefits have complicated comparisons of unemployment figures between years (see Box VI-1). Unemployment will measure ½-1 percentage point lower in 2010 because self-employed persons' eligibility for unemployment benefits to complement part-time employment has been curtailed, and students on leave from studies – for example, while on summer vacation – are no longer entitled to benefits. In spite of some uncertainty, it is clear, however, that unemployment has been climbing since the summer of 2009, and indicators imply that it will rise still further.

Firms considering redundancies outnumber those considering adding staff ...

The general public's expectations concerning the labour situation have remained broadly stable in recent months, according to the Capacent Gallup Consumer Sentiment Index, while expectations among corporate executives have improved according to the Capacent Gallup survey carried out in March among Iceland's 400 largest firms. Fewer firms were considering laying off staff than in a comparable survey carried out in December, and more are considering adding on staff.[1] Given the low real exchange rate, it is no surprise that firms in the tradable sector are more prominent among those planning to add on staff. The results of the survey indicate that the labour market has yet to weaken somewhat, however, as firms planning to shed staff in the next six months outnumber those planning to recruit by

1. Capacent Gallup conducts a quarterly survey of the status and future prospects of Iceland's 400 largest firms. Two of the surveys are rather broad in scope and are carried out in March/April and September each year, while the other two, carried out in May/June and December, are more limited.

about 6%. An April 2010 survey carried out by the Confederation of Icelandic Employers among its members also indicated that companies planning layoffs outnumber those planning new recruitment. It is estimated that the net reduction in staffing could amount to about 1,500 employees during the year, which corresponds to a rise in unemployment of just under one percentage point. New indicators from the Statistics Iceland' labour force survey and emigration data for Q1/2010 show that the labour market has weakened further but that the pace of deterioration has slowed considerably.

Over 50% of unemployed out of work for more than six months

Although there is no official information on why people leave the unemployment register, indicators suggest some movement from unemployment to employment. Long-term unemployment (those unemployed for more than six months) has risen in line with increased unemployment, however, with the proportion of persons unemployed for six months or longer measuring 52% in August 2009. Long-term unemployment always declines temporarily from summer until winter, as many unemployed people find work over the summer months. However the share of long-term unemployed among total unemployed persons had returned to 52% by March. In the last economic downturn, the proportion of long-term unemployed peaked at about one-third. As is shown in Chart VI-5, this rise in long-term unemployment is consistent with previous recessions.[2]

Labour market participation similar to that in the 1990s downturn

Right after the crisis struck, falling demand for labour was manifested first in a rise in the number of unemployed persons, but since Q2/2009, the number of persons who have left the labour market has risen as well. This is a typical response to a severe crisis, and the experience from other financial crises suggests that some of these people may not return to the labour market at all. Labour market participation has declined by 2.3 percentage points from its peak in 2007, measuring 81% in 2009. Even though the current crisis is considerably larger than the crisis in the early 1990s, labour market participation is similar.

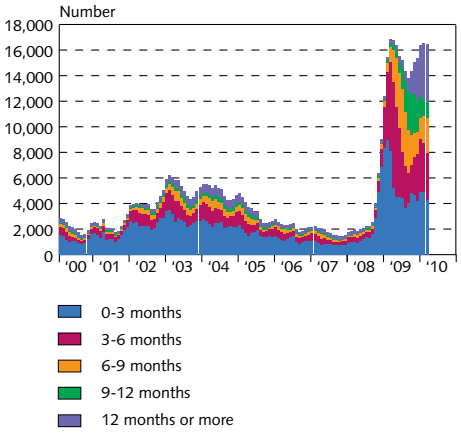
As before, responses to falling demand vary by age group. As usual, the change in labour market participation is most pronounced among the youngest group (age 16-24) (see Chart VI-6). During the upswing, labour market participation in this age group rose from 72% in 2004 to 80% in 2007 but had dropped to 73.5% in 2009. The youngest group's share in the decline in the labour force is much greater (60%) than its share in the labour force itself (16%).

Emigration of foreign nationals greater than previously estimated

In previous business cycles, the Icelandic labour market has demonstrated its flexibility, partly through the migration of Icelandic workers

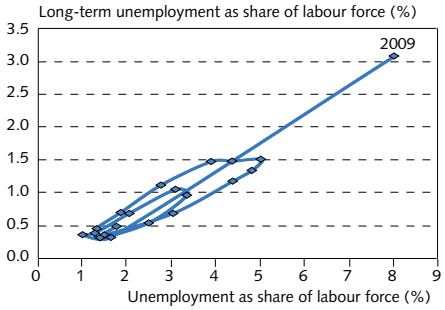
2. As is shown in Chart VI-4, long-term unemployment was relatively high during the upswing, as one-fourth of those who were unemployed a year before the crisis struck had been without work for more than six months, although their number (6.5%) was only a fraction of what was to come after the banks collapsed.

Chart VI-4
Duration of unemployment
February 2000 - March 2010



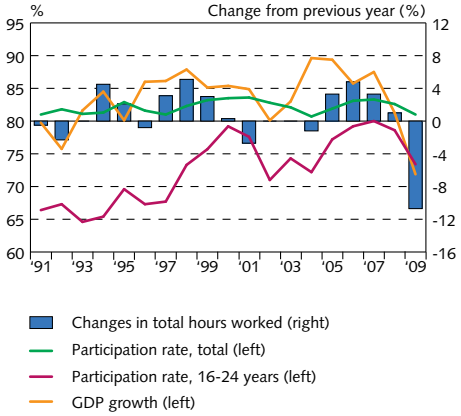
Source: Directorate of Labour.

Chart VI-5
Correlation between unemployment and long-term unemployment 1990-2009



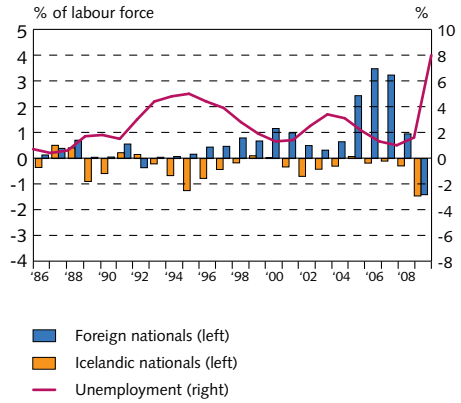
Sources: Directorate of Labour, Statistics Iceland.

Chart VI-6
Participation rate, total hours worked and GDP growth 1991-2009[1]



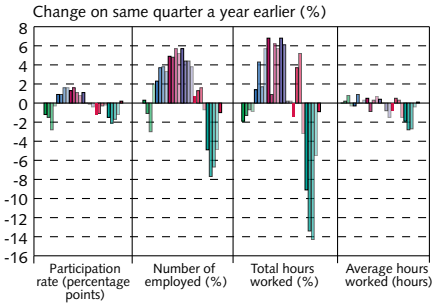
1. Data from the Statistics Iceland labour market survey from January 2003 and thereafter are not entirely comparable with earlier data.
Source: Statistics Iceland.

Chart VI-7
Internal migration, unemployment and GDP growth 1986-2009



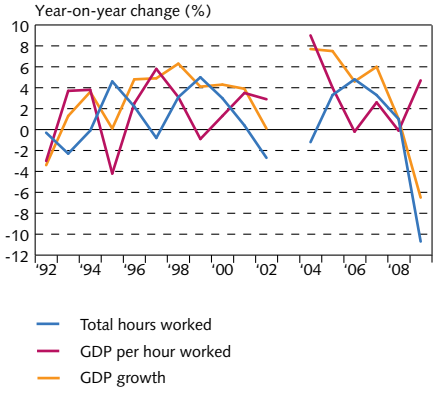
Source: Statistics Iceland.

Chart VI-8
Changes in labour market
Q1/2004 - Q1/2010



Source: Statistics Iceland.

Chart VI-9
GDP growth and total hours worked 1992-2009[1]



1. Data from the Statistics Iceland labour market survey from January 2003 and thereafter are not entirely comparable with earlier data.
Source: Statistics Iceland.

to and from the country in line with the demand for labour. The heavy inflow of foreign workers to Iceland over the past several years has further enhanced that flexibility. In 2005-2008, foreign immigrants to Iceland outnumbered emigrants by over 16,000. Well into 2009, some uncertainty reigned concerning foreign workers' response to the current economic crisis. Until the final figures for 2009 were available, it appeared as though repatriation by foreign nationals was relatively limited;[3] however, final figures for the year as a whole show, that foreign nationals leaving Iceland outnumbered foreign immigrants by 2,400, or about 15% of those who moved to Iceland during the upswing. At present, foreign nationals account for just under 7% of Iceland's population. Net emigration among Icelandic nationals was similar. In all, nearly 5,000 more people left the country than immigrated in 2009. Without this emigration, unemployment would have been 2-2½ percentage points higher. Net emigration from Iceland following the current recession is much more pronounced than in previous economic crises in Iceland, which is not surprising given the severity of the crisis and the previous inflow of foreign workers.

Firms increase part-time work to reduce wage costs

Employers wishing to reduce wage costs have other options than cutting nominal wages. Many companies have increased part-time work in the current recession. Figures from the Statistics Iceland labour market survey indicate that the number of people working part-time increased by over 10% year-on-year, and that hours worked by the full-time employed declined by about 1.5 hours per week. The average number of hours worked has contracted by 2.8 hours per week since 2006, the peak of the last upswing. The contraction in total number of hours worked corresponds to a reduction of approximately 28,000 man-years in Q4/2009 from the time labour use peaked in Q2/2008, which amounts to 16½% of the labour force. Reducing workers' weekly hours and thus keeping more people employed, instead of reducing the total number of employed persons, facilitates the adjustment in demand, as it keeps individuals' income higher than it would otherwise be. It also means a smaller loss of human capital and lower re-training costs once demand begins to pick up. On the other hand, workers can become stuck in possibly redundant sectors and jobs, resulting in higher unemployment once growth picks up. It is also likely that this has somewhat reduced pressure for nominal wage cuts.

Contraction in employment considerably larger than the fall in GDP

The adjustment to the contraction in GDP has increased output per hour, as total hours worked fell more steeply than output in 2009 (see Chart VI-9). Total hours worked fell by nearly 11% in 2009, and man-years worked fell by 10%, while GDP contracted by 6.5%. Output per hour worked therefore rose by nearly 4.7% year-on-year, and underlying productivity in terms of man-years rose by about 2½%. In other words, the productivity of the labour force rose in the wake of the financial collapse.

3. Most had left the country but were not deleted from the National Registry until the end of the year.

A similar pattern can be seen in previous recessions. This general trend can also be seen in the US, where the labour market is very flexible.[4] In the US, both the number of employed persons and the total number of hours worked have fallen enough to raise productivity per hour worked. In many European countries, however, firms have tended to retain staff despite contractions in demand, and productivity has fallen as a result.

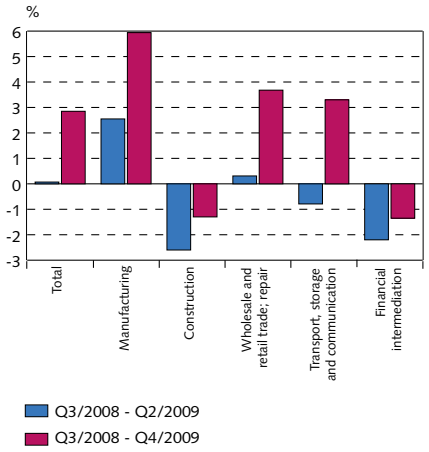
Negotiated rises offset pay cuts

An indirect result of the emphasis on the lowest wages in the 2008 contractual wage settlements is that pay increased significantly in the manufacturing and retail sectors where the proportion of low-wage workers is large. As can be seen in Chart VI-10, contractual wage rises implemented in July and November offset the nominal wage cuts implemented in the first quarters after the banks collapsed. In the transport sector, a 1% wage cut from Q3/2008 until Q2/2009 gave way to a 3% rise in the latter half of the year, but some wage drift may be at play in that case, due to the sector's links with the tourism industry. It is also interesting to note that, in sectors like retail and services, which have been hard hit by the contraction in domestic demand, wages rose by 3.5% in the latter half of the year. This is most likely due to the predominance of low-wage groups and the effect of contractual wage rises rather than to strong earnings of companies in those sectors. As a result, the wage increase could call for further cutbacks and downsizing in the sectors concerned, as they attempt to address rising wage costs.

Does a low wage share call for a correction?

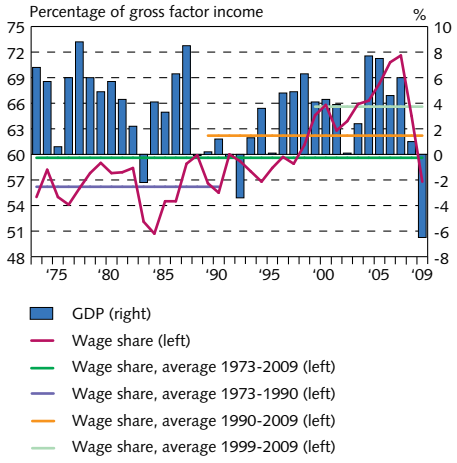
Wage developments have a strong influence on how demand for labour develops in the months to come. Wages as a share of gross factor income rose sharply during the upswing due to substantial pay hikes, peaking at over 70% in 2006 and 2007. The high wage share encouraged firms to curtail operating expenses by reducing labour demand and cutting wages after the contraction began. The wage share dropped as early as 2008 and declined still further in 2009, when it fell to 57%. Although the wage share had become quite high during the boom years, the subsequent decline has been sharp enough that an upward correction can be considered likely. Although last year's wage share certainly approached the low point in the recession at the beginning of the 1990s, it was far below the average in recent decades (see Chart VI-11).[5] It could remain low longer than in previous recessions, however, as the current crisis is much more pro-

Chart VI-10
Change in wages by economic sector
Q3/2008 - Q4/2009



Source: Statistics Iceland.

Chart VI-11
Wage share and GDP growth 1973-2009



Source: Statistics Iceland.

4. Fluctuations in total hours worked are greater during this decade, as the Statistics Iceland labour market survey covers the entire year from 2003 onwards, instead of one week in April and November during the years 1991-2002.

5. The higher wage share at the end of the 1990s reflects more rapid growth in real wages than in productivity over the period. When the entire period since 1973 is examined, it should be borne in mind that own wages of self-employed persons are recorded as profits and not as wages. The trend for the number of self-employed (e.g., fewer farmers and more self-employed skilled tradesmen) therefore affects the wage share. Shifts in the weights of individual sectors (e.g., the increased share of services, including public services, where the wage share is relatively high) has also affected the aggregate wage share. Consequently, it is advisable to be cautious in drawing conclusions about wage share developments over a long period.

Chart VI-12
Unit labour costs and contributions of their components 1996-2012[1]

1. Positive labour productivity growth is shown as a negative contribution for an increase in labour costs. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

nounced than previous ones. The equilibrium unemployment rate has probably risen in the wake of the financial crisis, which is consistent with the experience of other countries.

Two factors could expedite a correction in the wage share: the results of the wage settlements to be negotiated late in 2010, and the development of the exchange rate of the Icelandic króna. Most wage agreements will expire at the end of the year, and there could be pressure to correct the wage share during the upcoming negotiations. If history is any indicator, however, and if unemployment remains as high as is projected in the forecast, it is unlikely that any such attempts will be particularly aggressive. A year before the wage share peaked in the 1990s, the labour unions had agreed to a general nominal wage freeze for the ensuing two years, yet unemployment was just over half the current level. On the other hand, the fishing industry was performing poorly, which is not the case now. It is likely that, in the coming wage negotiations, considerable pressure will develop in companies that have seen profits grow due to the weak currency, and those companies might channel a portion of their profits into higher wages. Strikes in the transport industry are a recent example of increased pressure in export-related firms. If these firms raise wages significantly and the increases are passed on to the domestic sector, it could lead to even further layoffs in order to cover increased wage costs that the companies cannot afford.

More pay hikes expected

Because of the strong performance in the export sector, the assumptions concerning wage drift in 2010 have been adjusted marginally upwards in this forecast. For the same reason, assumptions concerning both pay rises in the coming wage negotiations and wage drift have also been revised upwards, although it is not assumed that these will spread to other sectors. Furthermore, the forecast does not assume that the upcoming wage negotiations will be characterised by significant pressure to correct real wages, which have fallen by 13% since they started to fall in early 2008, as the slack in the labour market will probably counteract such demands.

Box VI-1

Changes in measurement of employment

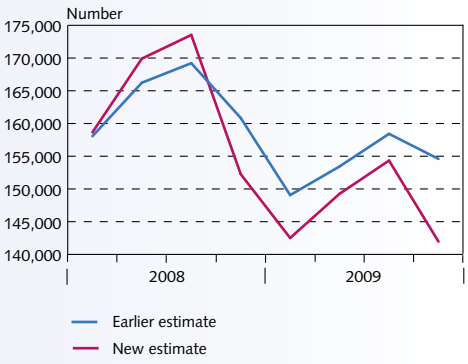
Due to the reorganisation of the executive arm of the Icelandic Government, the Directorate of Labour (DoL) has, as of January 2010, taken over the task formerly carried out by the Ministry of Finance (MoF), of estimating man-years for calculating unemployment as a percentage of the total labour force. According to information from the DoL, it will continue to apply methodology similar to that used by the MoF, although greater consideration will be given to information about labour market developments through the year. Instead of issuing a forecast of man-years for the year as a whole each January, estimates will be adjusted to take into consideration, for example, quarterly results of the labour force survey (LFS) conducted by Statistics Iceland.[1] As a result of this change, it is uncertain how comparable the estimates of man-years will be.

1. In 2006 and 2007, however, previously published forecasts of man-years were adjusted for the latter half of each year in view of major changes in the workforce.

Estimating man-years is of major significance in forecasting labour market developments and productivity, as well as disposable income and private final consumption. As estimates of man-years up until now have not taken into account the major changes in total hours worked through the business cycle, the Central Bank has been examining a possible change in methodology to utilise information on total hours worked from the LFS in forecasting man-years. In view of the recent transfer of responsibility for these estimates, it was decided to make the change as of this forecast.

The change has a significant impact on assessments of productivity and labour costs for 2009, since the contraction in man-years is considerably greater using the new method of calculation than in previous estimates, causing an increase in underlying productivity instead of a contraction. In addition to this change, new figures from national accounts indicate that labour costs rose substantially less last year than previously assumed. The impact of these two changes is therefore a slight reduction in unit labour costs instead of the more than 7% increase in the January forecast.

Chart 1
Number of employed
Q1/2008 - Q4/2009



Source: Statistics Iceland.

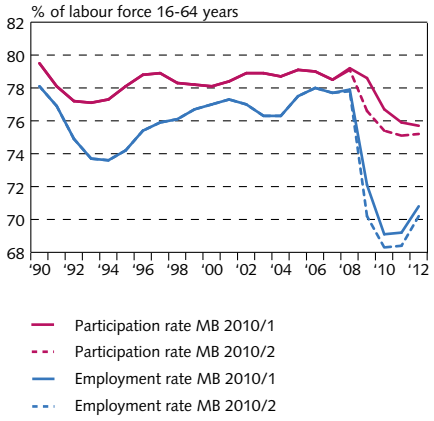
Productivity on the rise throughout the forecast period

As is discussed in Box VI-1, the current forecast uses figures from the Statistics Iceland labour market survey to estimate man-years. Furthermore, estimates of wage costs have changed and are now based on national accounts figures published by Statistics Iceland for the year 2009. The implications of these changes for productivity, wages, and wage costs are considerable in 2009. The fall in total hours worked is now estimated at just over 10% instead of the previously estimated 7%, which, together with smaller contraction in GDP, means that underlying productivity has increased by 2½% instead of falling by 1%. New estimates of wage costs show a nominal year-on-year increase of less than 1% in 2009, as opposed to almost 5% in the last forecast. Unit labour costs are therefore estimated to have fallen by ½% in 2009 instead of rising by over 7%.

Productivity is also projected to rise more in the coming two years than was set forth in the last forecast. As is stated above, it is assumed that nominal wage rises in 2010 will be larger than previously expected, and that pay hikes in the new wage settlements will be somewhat higher as well. Other wage costs will also rise due to this year's payroll tax increase.

As a result of greater productivity growth in 2010, unit labour costs will rise by one percentage point less than was assumed in the last forecast. Larger nominal wage rises in the latter part of the forecast period and a somewhat smaller increase in productivity at the end of the period imply that unit labour costs will rise by 4½% in 2012, which is somewhat higher than previously anticipated.

Chart VI-13
Participation rate and employment rate
1990-2012[1]

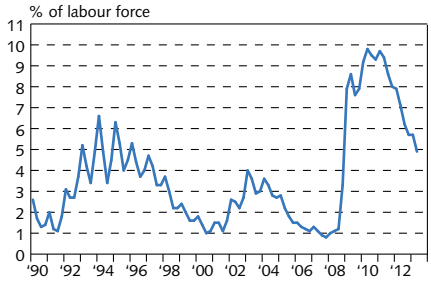


1. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

Employment and labour market participation contract during the forecast horizon

It is projected that both labour market participation and the employment rate (employed persons as a percentage of the population aged 16-64) will fall considerably more than during the recession in the early 1990s. Because of last year's surge in emigration from Iceland, it

Chart VI-14
Unemployment rate
Q1/1990 - Q2/2013[1]



1. Central Bank baseline forecast Q2/2010 - Q2/2013.
Sources: Directorate of Labour, Central Bank of Iceland.

is expected that labour market participation will be lower throughout the forecast period. It is now estimated that the participation rate will be just over 2 percentage points less in 2009 compared to the last forecast, or slightly under 77%, and about one percentage point less in 2010 and 2011. It is assumed that, in 2012, the participation rate will be just under 4 percentage points below 2008 levels.

The change in estimated man-years also means that the employment rate will decline much more throughout the forecast horizon than was previously estimated. For 2010 and 2011, the employment rate is estimated at slightly less than 2 percentage points lower than in 2009, and 9½ percentage points below the peak during the 2006-2008 upswing. It will then begin to rise again in 2012, in line with increased demand for labour and declining unemployment.

Unemployment in line with the January forecast

Labour markets are often slower to recover from recessions than output growth is. It is quite common, even, that employment contracts early in the recovery phase. As in other countries, employment grew slowly after the downturn at the beginning of the century. Labour use continued declining noticeably for a long period after output growth had turned decisively upwards.[6] Unemployment even rose towards the middle of 2004. Similar developments have been seen in countries such as the US, where the labour market is also very flexible.

Studies indicate that the nature of shocks is important in determining labour market developments following a recession.[7] On average, during a conventional downturn, employment levels do not rise until three quarters after GDP growth has begun recovering, and unemployment does not peak until two quarters later. The effects are stronger if a financial crisis and/or a housing bubble is involved. The baseline forecast assumes that employment levels will recover more or less in line with a conventional contraction due to labour market flexibility. According to the forecast, employment will begin to rise quarter-on-quarter in Q3/2011 – that is, a year after GDP starts recovering. Unemployment will begin to decline at about the same time but will remain high by Icelandic standards, or around 9% in 2011 and just under 6% in 2012.

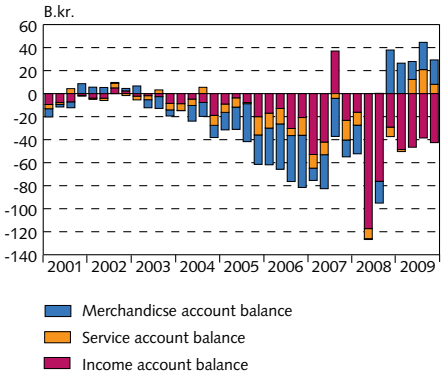
6. See Rannveig Sigurdardóttir, "The enigma of the Icelandic labour market," *Monetary Bulletin* 2005/1

7. See, for example, IMF *World Economic Outlook*, April 2010.

VII External balance

The current account deficit for 2009 amounted to 50 b.kr., or 3.3% of GDP – much less than in 2008. There was a surplus on the trade account, while there was a deficit of 161 b.kr. on the balance on income. This figure includes calculated interest income and accrued interest expense due to deposit money banks in winding-up proceedings. Because this income and expense does not reflect actual currency flows but consists mainly of calculated amounts that will be eliminated when the estates are settled, it is appropriate to ignore them when analysing the external balance. Excluding these items, the current account balance was positive by 3% in 2009.

Chart VII-1
Current account balance components[1]
Q1/1999 - Q4/2009



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

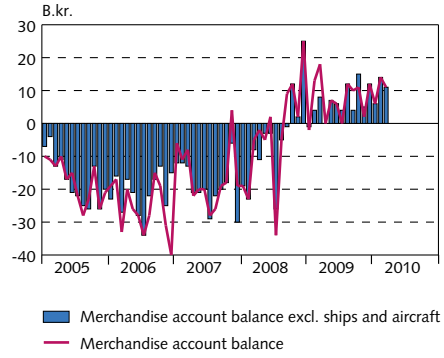
Positive developments in trade account balance ...

The merchandise account balance was positive throughout 2009, with the exception of January, at constant exchange rates. The twelve-month contraction in imports, at constant exchange rates, peaked at mid-year, eased somewhat towards the end of 2009, and turned positive in December. On the whole, import values shrank by 38% in 2009, while volumes fell by 24%. Export values also contracted markedly in 2009, or by 20%, primarily because of sharp drops in the price of aluminium and marine products. Export volumes, on the other hand, rose by over 6%. In Q1 2010, the merchandise account showed a surplus of over 31 b.kr.

The services account balance was also positive in 2009, by 33 b.kr., for the first time since 1997. The first quarter of 2009 saw a slight deficit, but since that time the services balance has been positive. Increased revenues from transport, tourism, and other services are the main drivers of this turnaround.

The outlook is for a continuing surplus on the trade account this year. It is assumed that export prices will rise significantly, the real exchange rate will remain low, and the prospects for external trade will be positive. Payment card statistics have revealed a rather lukewarm beginning in the tourism sector this year, but the outlook is for a strong spring and summer season, provided that the eruption in Eyjafjallajökull does not reduce tourism revenues. As a result, it is assumed that export values of goods and services will be greater than in the last forecast, and that the trade account surplus will be nearly 10% of GDP for the remainder of the forecast horizon.

Chart VII-2
Merchandise account balance
At fixed exchange rate, January 2005 - March 2010



Sources: Statistics Iceland, Central Bank of Iceland.

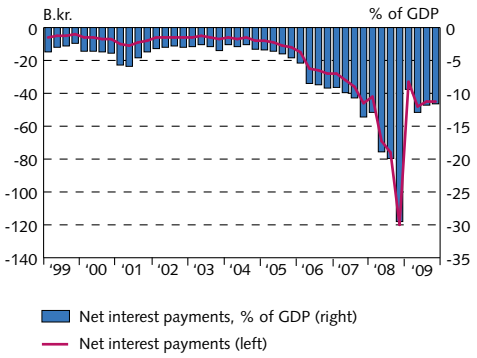
... but the deficit in the balance on income is still sizeable

In spite of a considerable surplus on the trade account in 2009, there was a large income account deficit. Consequently, the current account balance was negative by 3.3% of GDP for the year.

The deficit in the balance on income totalled 161 b.kr. in 2009, due to the large deficit on the interest balance. It was negative by 172 b.kr. but was offset somewhat by dividends and reinvested earnings, which were positive for the year as a whole. Overall, the income account deficit shrank significantly year-on-year, or by 5 percentage points, to 11% of GDP. The contraction in the deficit in the balance on income is due primarily to a much smaller interest deficit, which

shrank from 21% of GDP in 2008 to 11.5% of GDP in 2009, as interest was much lower in 2009 than in 2008.

Chart VII-3
Net foreign interest payments
Q1/1999 - Q4/2009



Sources: Statistics Iceland, Central Bank of Iceland.

Current account deficit proves much smaller than previously estimated

Even though the deficit in the balance on income was significant during the period 2006-2009, it is much smaller now than official figures indicated at the time the last *Monetary Bulletin* appeared, particularly for the year 2008. Since *Monetary Bulletin* was published in January, a major revision of both the 2006-2008 balance on income and the previously published figures for the first three quarters of 2009 has taken place. The new figures for 2006-2008 are based on revised methodology for measuring direct investment (see Box VII-1). As a result, the deficit in the balance on income is smaller in 2006 and 2007 than previously estimated, and considerably smaller in 2008. That being the case, the current account deficit for these years is much smaller than previously thought (see Chart VII-4).

Deviations from previously published figures for the first three quarters of 2009, however, can be attributed to new information on receipts and expenditure under the balance on income during the year. The current account deficit is therefore some 140 b.kr. smaller for the first three quarters of 2009 than was previously assumed. The current account deficit was about 6.8% of GDP in Q1/2009 (previously estimated at 21%), and 5% in Q2 (previously estimated at 18%). In the third quarter, however, there was a 1.6% surplus instead of a 9% deficit, as the substantial trade account surplus outweighs the deficit in the balance on income.

Accrued interest of banks in winding-up proceedings skew the interest balance outlook

As is stated above, the deficit in the balance on income in 2009 is due in large part to a negative interest balance. For unusual reasons, however, the interest balance does not reflect the actual flow of funds during that period. A large share of interest expense derives from unpaid accrued interest related to the deposit money banks in winding-up proceedings. A substantial percentage of this interest will probably never actually be paid and will disappear from official statistics on factor income when the bankruptcy proceedings for these banks are concluded. In order to gain a more accurate view of actual payment flows to and from Iceland during the period, and of future payment obligations, it is useful to examine the balance on income without these deposit institutions. This is referred to as the underlying current account balance.

In the last two issues of *Monetary Bulletin*, the underlying current account balance has been published alongside the official current account balance. In estimating the underlying balance in those publications, however, it was decided to ignore both the banks in winding-up proceedings and the accrued interest income and expense deriving from businesses' foreign loans for which insufficient information was available. The disclosure of information on these items has now been improved, and it is no longer necessary to treat them separately;

Box VII-1

New method for estimating foreign direct investment

The Central Bank recently changed its methodology for measuring revenues from foreign direct investment for its balance of payments calculations. This change involved a review of data extending back to 2006, which had a significant effect on the balance on income in 2006-2008, and therefore on the current account balance during that period.

According to standard international methodology, there are two ways to measure revenues from foreign direct investment: by measuring the operating performance of a company, on the one hand, and by measuring its overall performance, on the other. The former method focuses only on profit or loss related to the operation of the company's regular activities and does not take into account capital gains and losses, such as changes in asset values or exchange rate fluctuations. The latter method takes into account all factors, including revenues and expenses due to value changes or exchange rate movements.

Although the latter method gives a more accurate view of the value of a company on a given day, asset prices can often be difficult to determine. For this reason, current standards for preparing national accounts recommend the former method. In recent years, international organisations such as the IMF and the OECD have recommended the former method of evaluating foreign direct investment for national accounts, and this is the method used by most countries within the OECD.[1]

Until 2009, the Central Bank used the latter method. The Bank had planned for some time to change its methodology, but a number of factors prevented it, including difficulty in obtaining the necessary data from companies. Since the beginning of 2009, however, the Bank has used the new method. This change means that foreign direct investment statistics are now more comparable with those for Iceland's main trading partners than they were previously.

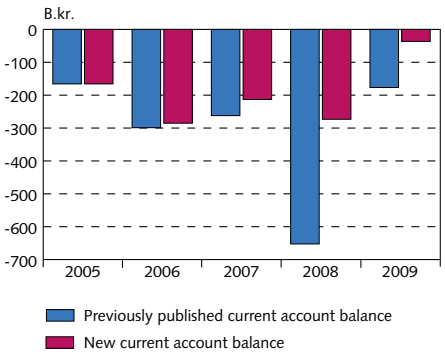
1. For further information, see the manuals published by the IMF and the OECD; for example, *Balance of Payments and International Investment Position Manual,* Paragraphs 11.43-11.46, and the OECD *Benchmark Definition of Foreign Direct Investment*, Annex VI.

therefore, they are no longer excluded from estimates of the underlying current account balance. Consequently, the underlying current account balance excludes only calculated interest income and accrued interest expense due to deposit money banks in winding-up proceedings. When the estates are settled, however, a net debt to foreign entities will presumably be generated, which will mean net interest payments to abroad. It is unclear when this will be, but it could happen towards the end of the forecast horizon.[1]

Current account deficit to decline markedly during the year

The balance on the trade account was positive by 120 b.kr. in 2009, while the deficit on the income account plus current transfers totalled 170 b.kr. The current account balance was therefore negative by 50 b.kr., or 3.3% of GDP, as is stated above. After adjusting for the items

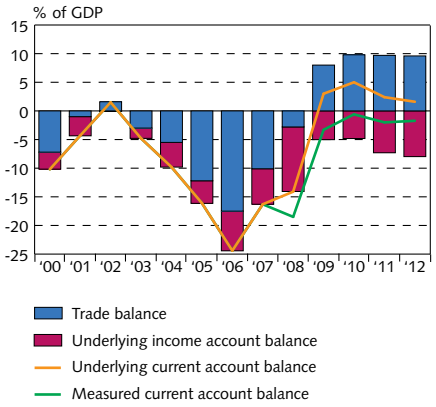
Chart VII-4
Current account balance 2005-2009[1]



1. The year 2009 only includes data for Q1-Q3.
Sources: Statistics Iceland, Central Bank of Iceland.

1. It should also be noted that there is considerable uncertainty about the effect of holding companies in winding-up proceedings on the current account balance; however, this factor has not been specifically considered in this forecast.

Chart VII-5
Current account balance 2000-2012[1]



1. Net current transfers are included in the balance of income. Central Bank baseline forecast 2010-2012.
Sources: Statistics Iceland, Central Bank of Iceland.

mentioned above, however, the current account balance is positive by 45 b.kr., or 3% of GDP.

It is assumed that domestic demand will remain weak, imports will rise modestly, and export values will increase markedly due to higher export prices and increased tourism revenues; therefore, the outlook is for a sizeable trade account surplus in 2010. This will be offset by the negative balance on income. For the year as a whole, it is assumed that the official current account balance will be negative by nearly 12 b.kr., or 0.6% of GDP, while the underlying current account balance will be positive by just over 81 b.kr., or 5% of GDP. As these figures indicate, unpaid accrued interest due to the banks being wound up weighs heavily in official current account balance statistics.

Official current account balance to remain negative in coming years, while an underlying surplus will remain

Interest income and expense are by far the largest items in the balance on income, and their development will be an important determinant of developments in the income account balance over the next few years. Interest on foreign loans has fallen sharply in the recent term, as is reflected in declining interest expense in 2009. All other things being equal, however, interest will rise and the interest balance will deteriorate again once Iceland's trading partner countries return to tighter monetary policy. The Central Bank forecast also estimates accrued interest expense on the Icesave obligations. As a result, the outlook is for a growing deficit in the balance on income over the next several years.

The official current account deficit will therefore begin growing again, to an estimated 2% of GDP in the next two years, because the mounting deficit in the balance on income will outweigh the trade account surplus. Furthermore, the weight of interest expense due to the banks being wound up will subside. However, it is estimated that the underlying current account balance in 2011-12 will be around 2% of GDP. As is discussed further in Box VII-2, this current account balance supports a sustainable balance of payments path and ensures that Iceland's external debt will gradually diminish as the forecast horizon progresses.

Box VII-2

The balance of payments outlook

The Central Bank has assessed potential developments in the balance of payments over the coming years. The assessment is subject to considerable uncertainty because the assumptions underlying the forecast could easily change and could strongly affect developments in the balance of payments.

Table 1 presents the Bank's forecast for the balance of payments until year-end 2012. Numbers are shown as percentages of GDP. It is forecast that the underlying current account balance will be positive throughout the period, although the income account deficit will grow somewhat over time.[1] The capital account, however, will

1. The underlying current account balance is the current account balance less calculated interest revenues and accrued expenses due to banks in winding-up proceedings. Further discussion of the underlying current account balance and the official current account balance can be found in Section VII.

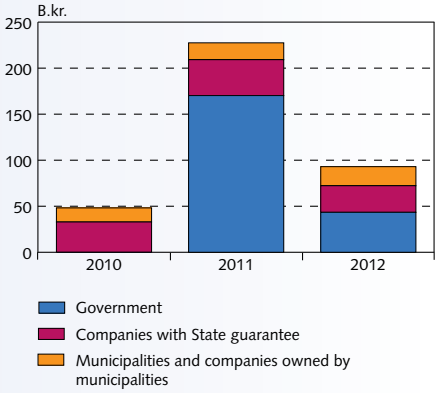
Table 1 Balance of Payments (% of GDP)

	2009	*2010*	*2011*	*2010*
Current Account[1]	3.0	5.0	2.4	1.6
Trade balance	8.0	9.8	9.7	9.6
Balance on income	-4.4	-4.8	-7.3	-8.0
Capital and financial account (excl. reserves)	-8.5	41.4	-6.7	-13.2
Net debt[2]	28	75	68	56
Total debt[2]	234	301	269	235

1. The table shows the underlying balance on income and underlying current account balance. (i.e., calculated interest income and accured interest expence due to banks in winding-up proceedings).
2. Total debt and net debt are underlying debt and underlying net debt (i.e., debts from banks in winding-up proccedings are only included if it is considered likely that they will be covered by assets).

Source: Central Bank of Iceland.

Chart 1
Debt repayments 2010-2012[1]



1. Central Bank of Iceland baseline forecast 2010-2012.
Source: Central Bank of Iceland.

be negative in 2011-2012, and net capital outflows in the latter year are projected to total 13% of GDP.

The capital account fluctuates widely between years. One of the main explanations for this is the estimated inflow and outflow of the assets of banks undergoing winding-up proceedings. The assumptions in the forecast allow for considerable recovery of foreign assets in 2010 and 2011, and that outflows will be greatest in 2011-2012. This estimate is based on the technical assumption that all loan facilities related to the IMF programme will be fully drawn, without stating that this will be the case, and that repayment of the IMF loan facilities will begin in 2012. It is assumed that a portion of foreign debt will be refinanced during the period, including half of the Treasury loans maturing in 2011-2012. It is also assumed that the largest companies enjoying Treasury guarantees will be able to refinance their debt to a large extent in coming years. Developments in foreign direct investment in the forecast are determined mainly by the outlook for investments related to power-intensive industries. It is also assumed that some foreign assets will be sold, which entails inflows of capital. The assumptions concerning the repayment profile for the Icesave debt are based on the most recent estimates and on the offer from the British and Dutch governments that has been discussed publicly.

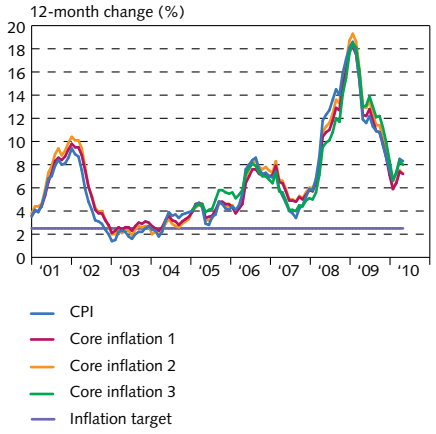
As can be seen in Chart 1, in 2011 there will be sizeable payments due on foreign loans taken by the Treasury, the municipalities, and companies with a Treasury guarantee. The chart shows the combined debt service burden of these parties' loans in 2010-2012. The bulk of the payments will be due in late 2011 and early 2012.

According to this estimate, the net debt position will peak at 75% of GDP in 2010 and then subside steadily during the years thereafter. The decline in the net debt position will be drivenin part by the recovery of the assets of banks in winding-up proceedings and the restructuring of private sector debt. Drawing on the loans that are available means that financing debt in the near term will not be a source of worry. If the loans associated with the Second Review of the IMF programme had not been available, however, there would have been little room for manoeuvre. In this context, it must be borne in mind that large foreign reserves will only be needed for a short period of time, while confidence is being restored, the capital controls are being phased out, and large loan payments are being made. For the longer term, a strong current account surplus will improve Iceland's debt position.

VIII Price developments and inflation outlook

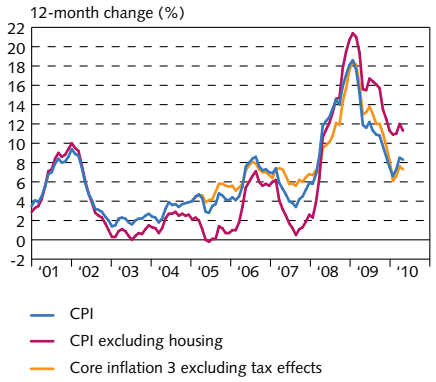
Twelve-month inflation turned upwards again in February, after having fallen rapidly throughout 2009, and measured 8.3% in April. As a result, inflation in Q1/2010 was slightly higher than was forecast in the January *Monetary Bulletin*. This is largely due to more marked increases in global commodities and oil prices, more modest declines in house prices, and a smaller output slack than was assumed in the previous forecast. Adverse base effects played a part as well. The outlook is for a continued decline in house prices, which will weigh heavily in short-term disinflation. The exchange rate pass-through of the past currency depreciation is probably more or less completed. It is projected that inflation will continue to subside in 2010, in spite of a temporary reversal. Inflation expectations are in line with this and have eased off since January. It is expected that sizeable spare capacity in the domestic goods and labour markets, the stability of the króna, and declining inflation expectations will ensure that underlying inflation falls back to the inflation target early in 2011.

Chart VIII-1
Inflation January 2001 - April 2010[1]



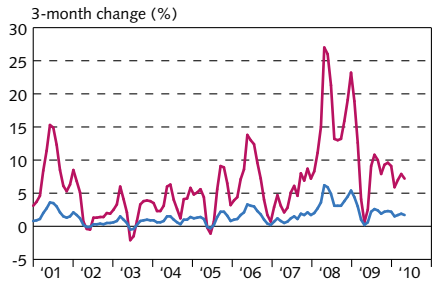
1. The core indices are compiled on the same basis as the CPI, with Core Index 1 excluding prices of agricultural products and petrol, and Core Index 2 excluding prices of public services as well. Core Index 3 also excludes the effect of changes in mortgage rates.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart VIII-2
Various inflation measurements
January 2001 - April 2010



Source: Statistics Iceland.

Chart VIII-3
Three-month seasonally adjusted inflation
January 2001 - April 2010



Sources: Statistics Iceland, Central Bank of Iceland.

Disinflation stalled temporarily

Twelve-month inflation subsided rapidly in 2009, dropping to a two-year low of 6.6% by January 2010. In recent months, however, it has inched upwards once again. In April, the consumer price index (CPI) rose by 0.25%, bringing year-on-year inflation to 8.3%. The inflation spurt of recent months is due primarily to increases in the price of commodities, oil, and various services. Base effects play a significant part as well, as the March 2009 drop in the CPI (0.6%) disappeared from twelve-month measurements, raising year-on-year inflation by a sizeable margin.

In connection with revenue-generating measures implemented by the Government, indirect taxes have been raised in several stages since June 2009. Increases in indirect taxes raise the price level permanently, while inflation increases it only temporarily, until the associated price increase disappears from the inflation measurement. Assuming that medium-term inflation expectations are unaffected, the underlying inflation outlook should not change, and monetary policy should therefore be able to ignore these first-round effects.

Underlying twelve-month inflation – that is, inflation excluding the first-round effects of indirect taxes – was 6.9% in April, just under 1½ percentage points less than headline inflation. If the effects of various irregular items, public services, and mortgage interest expense are ignored as well (Core 3 inflation excluding tax effects), underlying inflation measured 7.3% in April, or one percentage point less than headline inflation. Seasonally adjusted annualised three-month inflation measured 7.2%, however, and has risen somewhat in recent months. This measurement can indicate how inflation will develop in the near term.

Declining house prices weigh heavily in disinflation

The housing component of the CPI has fallen by 2.5% in the past twelve months, with the drop in house prices and the rise in mainte-

nance costs (driven by the depreciation of the króna) offsetting each other. House prices have declined by just over 3% in nominal terms in the past twelve months, and by nearly 15% from the March 2008 peak, according to the Statistics Iceland housing market price index.[1] As is discussed in Box III-1, low housing market turnover and a high percentage of housing swaps and other non-pecuniary transactions can lead to underestimation of the drop in house prices in the index.

The housing component weighs heavily in the calculation of the Icelandic CPI, and the housing slump has played a leading role in the past year's disinflation. According to the CPI excluding the housing component, twelve-month inflation measured 11.3% in April, and according to the EU's Harmonised Index of Consumer Prices (HICP), which also excludes house prices, it measured 11.6% in March.

Exchange rate pass-through effects taper off

In trade-weighted terms, the exchange rate of the króna has risen by 3.5% since *Monetary Bulletin* was published in January. Import prices rose rapidly in 2008 and 2009, when the exchange rate of the króna plunged. Exchange rate pass-through has been less pronounced, however, in recent months. The twelve-month rise in import prices excluding alcoholic beverages and tobacco measured 14.3% in April, after peaking at 30% in January 2009. On the other hand, it should be noted that petrol prices have soared since the beginning of 2010, owing to rising international oil prices, and domestic petrol prices are at an all-time high. Import prices excluding alcoholic beverages, tobacco, and petrol have risen by 11.7% in the past twelve months. Global commodity prices have risen as well, and inflation has therefore been growing in Iceland's chief trading partner countries in recent months (see Section II).

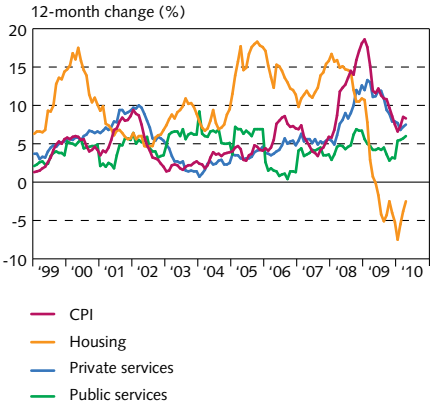
The pass-through of the exchange rate depreciation is probably completed by now, but global inflation could lead to an increase in imported goods prices. It is also possible that delayed exchange rate pass-through could surface as older inventories are depleted and new products imported in their place. When winter sales concluded in February and March, prices rose somewhat more than pure end-of-sale effects could account for, indicating some vestiges of exchange rate pass-through.

Inflation expectations have abated

Inflation expectations one year ahead have subsided by all measures since the January *Monetary Bulletin*, after having risen in the preceding months. According to the median response in the February/March survey carried out by Capacent Gallup among Iceland's 400 largest firms, executives expect inflation twelve months ahead to be about 4%. A comparable survey conducted in December 2009 set twelve-month inflation expectations at 6%. In response to further questions on companies' pricing decisions, nearly 30% of executives indicated that their goods and services prices in the domestic market would rise

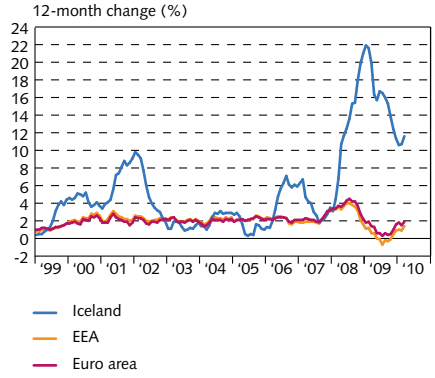
1. See the discussion of various measures of house price developments in Box IV-1, *Monetary Bulletin* 2009/4, pp. 33-34.

Chart VIII-4
Consumer prices
Housing and services



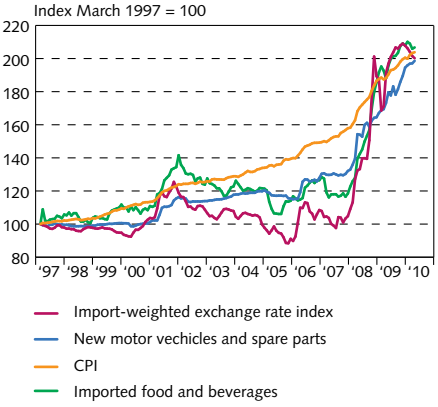
Source: Statistics Iceland.

Chart VIII-5
Inflation in Iceland and Europe
HICP inflation[1]



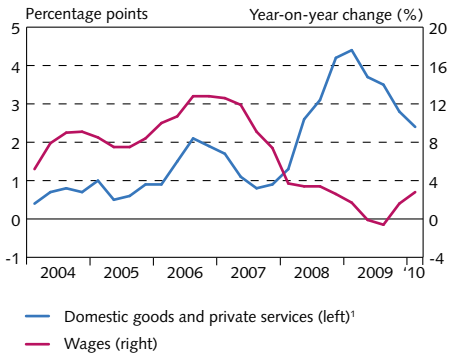
1. National CPI inflation for Switzerland.
Source: Statistics Iceland.

Chart VIII-6
Import-weighted exchange rate and import prices March 1997 - April 2010



Source: Statistics Iceland.

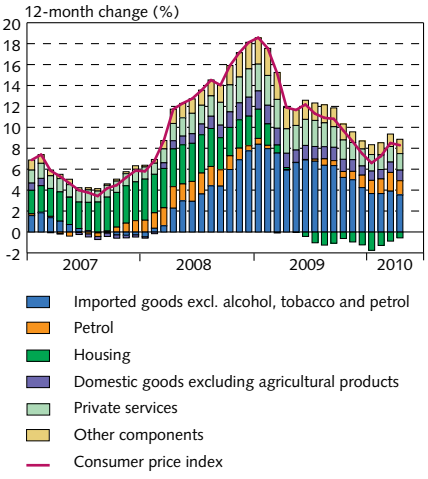
Chart VIII-7
Unit labour costs and the contribution of domestic goods and private services to 12-month inflation



1. Domestic goods excluding agricultural products.
Sources: Statistics Iceland, Central Bank of Iceland.

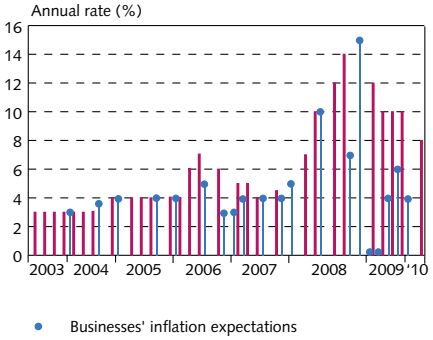
Chart VIII-8
Components of CPI inflation
January 2007 - April 2010

Contribution to inflation in past 12 months



Source: Statistics Iceland.

Chart VIII-9
Inflation expectations of businesses and households one year ahead



Source: Capacent Gallup.

in the next six months, as opposed to 38% in the September 2009 survey.[2] Just under 60% of executives expected prices to remain stable. Median expectations concerning twelve-month inflation two years ahead were unchanged at 5% since the September survey. Only 27% of firms that expressed an opinion expected inflation to fall below 4% in two years' time. In view of the fact that inflation forecasts from the Central Bank and other analysts assume inflation will continue to retreat as the effects of spare capacity gain ground, it is interesting to note that corporate inflation expectations two years ahead are higher than one-year expectations. One possible interpretation is that executives expect the exchange rate of the króna to fall once the capital controls are lifted. That interpretation squares poorly with the survey's findings concerning exchange rate, however, as firms indicate that they generally expect the króna to remain stable or appreciate over the period in question.

In another poll from March and April 2010, Capacent Gallup surveyed households' inflation expectations one and two years ahead. According to the median response, households expected 8% inflation one year ahead, some two percentage points less than in the December survey. Two-year inflation expectations, on the other hand, have risen by half a percentage point since the last survey, to 6.5%. Household inflation expectations have been extremely high in the recent term – they have not dipped below 10% since March 2008 – and there seems to be a strong correlation between expectations and current inflation at any point in time. It is also possible that inflation expectations reflect assumptions concerning price developments for frequently bought goods, such as groceries, which have risen sharply in recent months.

Inflation expectations in the bond market have also declined so far in 2010. The breakeven inflation rate based on the spread between nominal and index-linked bonds indicates that inflation expectations are nearly 3½% for average inflation over the next five years, while five-year inflation expectations five years ahead (expectations of average inflation between 2015 and 2020) are just over 2½%. This measure of inflation expectations should be interpreted with caution, however, as the interest rate spread reflects not only the inflation rate expected in the future, but also the risk premium due to uncertainty about the inflation outlook, which has probably risen. However, the breakeven inflation rate indicates that medium-term inflation expectations in the bond market are becoming better aligned with the inflation target after having become decisively disconnected before and after the crisis. A similar result can be construed from the long-term nominal interest rate differential with abroad, as is discussed in Section III, with the interest rate differential appearing to be well in line with the target, once it is adjusted for the risk premium on Icelandic Treasury bonds. On the other hand, as is stated above, household and business inflation expectations remain somewhat above the inflation target, which gives cause for concern.

2. Capacent Gallup conducts a quarterly survey of the status and future prospects of Iceland's 400 largest firms. Two of the surveys are rather broad in scope and are carried out in March/April and September each year, while the other two, carried out in May/June and December, are more limited.

Inflation has been somewhat higher than previously forecast

Inflation measured 7.4% in Q1/2010, while the January *Monetary Bulletin* projected 7.1%. The outlook is also for Q2 inflation to be slightly higher than was forecast then, or 7.4% instead of 6.8%. For the most part, the rise is attributable to higher global commodity and oil prices, a more modest decline in house prices, and a less pronounced slack in the economy than was assumed in that forecast. Underlying inflation was 6.1% in Q1, while the forecast projected 5.8%. As is discussed in Section IV, last year's contraction in private consumption was somewhat less than in the January forecast. Private consumption is also forecast to be somewhat stronger in 2010. On the other hand, the króna has been stronger than was projected in January, and the flexibility of the labour market has resulted in a less pronounced rise in wage costs. These factors have reduced inflationary pressures.

Significant spare capacity ensures disinflation

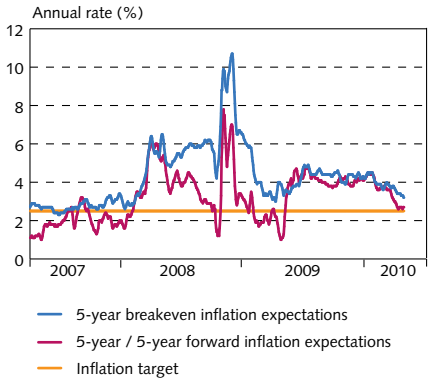
When assessing the short-term outlook for underlying inflation, various short-term forecasting models are, among the tools used. A simple cost-push model that focuses on the effects of exchange rate and wage costs on price levels on a monthly basis forecasts 6.3% underlying inflation in Q2/2010. An ARIMA model, which focuses only on recent inflation developments, forecasts slightly higher inflation, or 6.5%. In Q3, underlying inflation will be 5.5% according to the cost-push model, but considerably higher, or 6.8%, according to the ARIMA model.

In the baseline forecast, inflation dissipates somewhat faster than according to these simple time-series models, although the difference between the forecast and the cost-push model is negligible. The baseline forecast assumes that underlying inflationary pressures will be less, due to significant spare capacity in the economy, declining inflation expectations, and limited inflationary pressures from the labour market, as well as the fact that the exchange rate pass-through effect has emerged for the most part. As a result, the outlook is for inflation to subside faster in the coming months than it has hitherto. On the other hand, unit labour costs are expected to rise more in 2010 than was forecast in January. As is stated in Section VI, this revision is due to strong performance by export companies. The baseline forecast assumes, however, that these wage rises will be restricted for the most part to the export sector, and that general wage pressures – and resulting inflationary pressures – will be limited. In addition, the exchange rate is stronger during the forecast horizon, offsetting the effects of higher wage costs.

Producer price increases have lost momentum

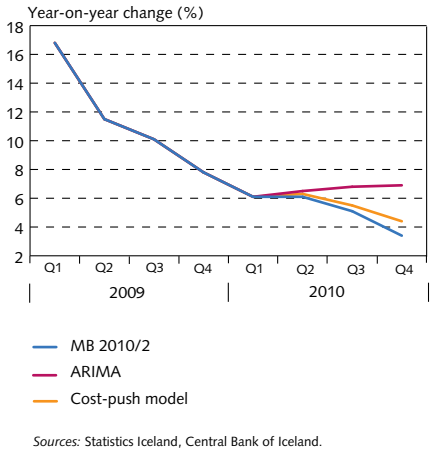
Developments in producer prices are a possible indicator of underlying cost pressures. In March, producer prices of goods sold domestically had risen by 4.3% year-on-year. By this criterion, inflation has subsided rapidly during the past year, indicating spare capacity in the goods market.

Chart VIII-10
Inflation expectations according to the difference between nominal and indexed interest rates[1]
Daily data 2 April 2007 - 30 April 2010



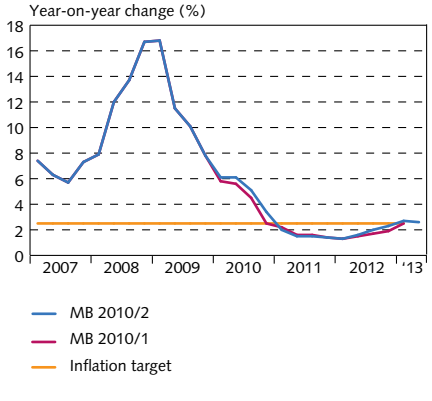
1. Breakeven inflation expectations are calculated from yield spreads between nominal and index-linked Government and Government-backed bonds (5-day moving averages).
Source: Central Bank of Iceland.

Chart VIII-11
Inflation forecasts using different models
Inflation excluding tax effects



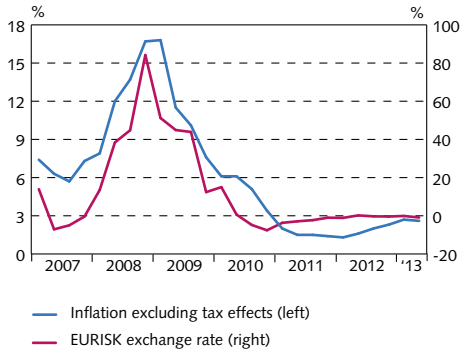
Sources: Statistics Iceland, Central Bank of Iceland.

Chart VIII-12
Inflation excluding tax effects - comparison with MB 2010/1



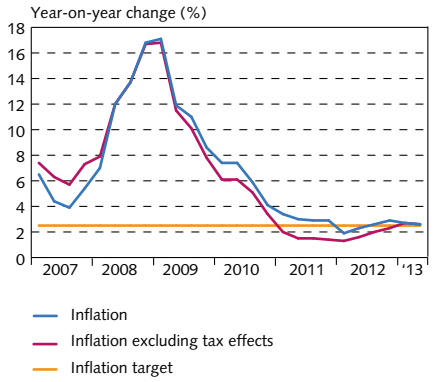
Sources: Statistics Iceland, Central Bank of Iceland.

Chart VIII-13
Inflation and changes in EURISK exchange rate
Change from previous year



Sources: Statistics Iceland, Central Bank of Iceland.

Chart VIII-14
Inflation including and excluding tax effects



Sources: Statistics Iceland, Central Bank of Iceland.

Underlying inflation set to return to target early in 2011

The baseline forecast assumes that underlying inflation will decline fairly rapidly in 2010 and reach the inflation target in Q1/2011, one quarter later than in the January forecast. The present forecast assumes smaller increases in indirect taxes during the forecast horizon, as public sector finances are stronger than was thought in January. Headline inflation is forecast at 6.2% in 2010 and about 3% in 2011, and looks set to approach the inflation target towards the end of 2011. The inflationary effects of the tax changes amounted to 0.6 percentage points in 2009 and are projected at 1.1 percentage points in 2010, as was assumed in the last forecast. On the other hand, they are expected to be about 1.4 percentage points in 2011, considerably less than in the January forecast, which assumed inflationary effects of 2.4 percentage points. The inflationary effects of year-2012 tax changes, however, are unchanged from the previous forecast, or 0.6 percentage points.

Inflation outlook uncertain

The inflation outlook is subject to a number of uncertainties (see Section I). The baseline forecast assumes a marked drop in house prices. If the real estate market recovers to any significant degree, house prices could fall less sharply or could hold steady. Moreover, there is uncertainty concerning the effects of the aforementioned measurement difficulties if real estate market turnover should increase. The forecast also assumes that the second-round effects of hikes in indirect taxes and oil prices on inflation expectations will be limited. Because it has proven difficult to contain inflation in recent years, however, it could be that these effects are stronger and that inflation will be more persistent than the baseline forecast allows for. Finally, it is assumed as well that inflationary pressures from the labour market will be limited, as wage rises will probably be modest in the near term due to high unemployment and considerable slack in the labour market. On the other hand, various indicators suggest that wage pressures could increase more than is assumed in the baseline forecast, particularly in the tradable sector. This could generate increased cost pressures and resultant inflation, particularly if wage pressures spread to other sectors.

Appendix 1

Baseline macroeconomic and inflation forecast 2010/2

Table 1 Macroeconomic forecast[1]

		Volume change on previous year (%) unless otherwise stated			
	B.kr.		*Forecast*		
GDP and its main components	*2009*	*2009*	*2010*	*2011*	*2012*
Private consumption	774.6	-14.6 (-16.0)	1.1 (-1.2)	3.1 (2.7)	4.1 (4.2)
Public consumption	391.6	-3.0 (-0.4)	-3.0 (-3.2)	-3.5 (-3.8)	-2.4 (-3.2)
Gross capital formation	211.8	-49.9 (-48.3)	-10.2 (-5.7)	24.8 (12.6)	3.5 (4.9)
Business investment	117.7	-54.2 (-53.6)	8.4 (12.6)	37.0 (20.7)	-0.3 (2.3)
Residential investment	40.1	-55.7 (-50.6)	-35.1 (-18.7)	21.0 (9.5)	24.4 (16.3)
Public investment	54.0	-28.9 (-28.6)	-32.4 (-34.3)	-15.5 (-14.9)	4.4 (4.4)
National expenditure	1,379.8	-20.1 (-19.4)	-1.9 (-2.8)	4.5 (2.3)	2.4 (2.5)
Exports of goods and services	784.1	6.2 (1.6)	0.4 (1.5)	1.0 (1.7)	2.6 (5.2)
Imports of goods and services	663.7	-24.0 (-25.4)	2.5 (0.0)	2.7 (0.6)	3.8 (5.3)
Gross domestic product	1,500.2	-6.5 (-7.7)	-2.6 (-3.4)	3.4 (2.6)	1.9 (2.8)
Other key aggregates					
Trade account balance (% of GDP)		8.0 (6.7)	9.8 (9.6)	9.7 (9.9)	9.6 (10.2)
Current account balance (% of GDP)		-3.3 (-17.3)	-0.6 (-9.0)	-2.0 (-9.7)	-2.0 (-8.9)
Underlying current account balance (% of GDP)[2]		3.0 (-3.0)	5.0 (3.2)	2.4 (1.3)	1.6 (1.1)
Output gap (% of potential output)		-3.4 (-3.9)	-4.4 (-4.3)	-1.3 (-1.0)	-0.5 (-0.2)
Unit labour costs (change in average year-on-year)		-0.6 (7.3)	5.2 (6.0)	3.7 (3.5)	4.6 (2.8)
Real disposable income (change in average year-on-year)		-18.0 (-17.6)	-9.8 (-9.7)	0.3 (-1.6)	3.0 (2.6)
Unemployment (% of labour force)		8.0 (8.0)	9.5 (9.5)	8.9 (9.0)	6.7 (6.8)
EURISK exchange rate		172.0 (172.0)	172.3 (179.1)	168.1 (174.4)	167.3 (173.2)

1. Figures in parentheses are from the forecast in *Monetary Bulletin* 2010/1.
2. Current account without accured interest due to deposit institutions undergoing winding-up proceedings.

Table 2 Inflation forecast (%)[3]

Quarter	*Inflation (change year-on-year)*	*Inflation excluding tax effects (change year-on-year)*	*Inflation (annualised quarter-on-quarter change)*
		Measured value	
2008:4	16.8 (16.8)	16.7 (16.7)	20.5 (20.5)
2009:1	17.1 (17.1)	16.8 (16.8)	9.6 (9.6)
2009:2	11.9 (11.9)	11.5 (11.5)	5.9 (5.9)
2009:3	11.0 (11.0)	10.1 (10.1)	8.6 (8.6)
2009:4	8.6 (8.6)	7.8 (7.8)	10.4 (10.4)
2010:1	7.4 (7.1)	6.1 (5.8)	4.9 (3.7)
		Forecasted value	
2010:2	7.4 (6.8)	6.1 (5.6)	5.7 (4.7)
2010:3	5.9 (5.2)	5.1 (4.5)	2.8 (2.3)
2010:4	4.1 (3.3)	3.4 (2.5)	3.2 (2.4)
2011:1	3.4 (4.7)	2.0 (2.2)	2.1 (9.7)
2011:2	3.0 (4.2)	1.5 (1.6)	3.7 (2.5)
2011:3	2.9 (4.1)	1.5 (1.6)	2.6 (2.2)
2011:4	2.9 (4.0)	1.4 (1.4)	3.1 (1.7)
2012:1	1.9 (1.9)	1.3 (1.3)	-1.7 (1.3)
2012:2	2.3 (2.2)	1.6 (1.5)	5.3 (3.4)
2012:3	2.6 (2.3)	2.0 (1.7)	4.1 (3.0)
2012:4	2.9 (2.5)	2.3 (1.9)	4.2 (2.4)
2013:1	2.7 (2.8)	2.7 (2.5)	-2.6 (2.3)
2013:2	2.6	2.6	4.6

Annual average	*Inflation*	*Inflation excl. tax effects*
2009	12.0 (12.0)	11.4 (11.4)
2010	6.2 (5.6)	5.1 (4.5)
2011	3.0 (4.3)	1.6 (1.7)
2012	2.4 (2.2)	1.8 (1.6)

3. Figures in parentheses are from the forecast in *Monetary Bulletin* 2010/1.

Appendix 2

Errors in Central Bank forecasts

Errors in economic forecasts typically stem from incomplete information about the economic data on which the forecasts are based, misinterpretation of the state of the economy, unforeseen events and imperfect forecasting models. Some errors are unavoidable, while others are not. Examining errors in the Central Bank's forecasts can indicate mistakes in the preparation of the forecasts or can point to possible structural changes in the economy. Both can be used for further development of the Bank's models and their utilisation in forecasting.

Central Bank inflation forecasts

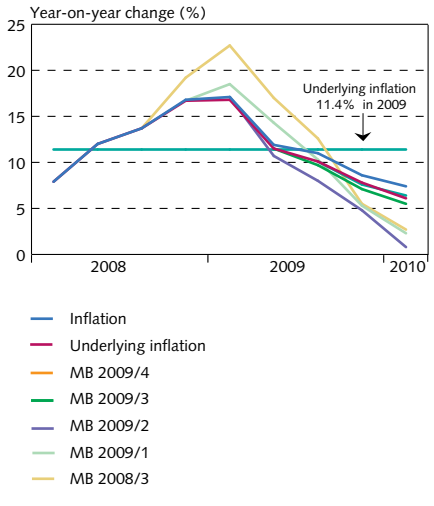
Four times a year, the Central Bank prepares an inflation forecast covering a forecast horizon of three years. The forecasts are set up so as to allow monetary policy in the forecast to respond to future deviations in inflation from the Bank's inflation target, as well as the output gap. This technical assumption implies that the Central Bank's interest rate adjusts such that inflation will converge towards the Bank's target in accordance with the time lags in the monetary policy transmission mechanism, while minimising the output cost during the adjustment phase. This characteristic of the forecast ensures that inflation is always at or near the inflation target by the end of the forecast horizon.

Inflation in 2009

Twelve-month inflation peaked at 18.6% in January 2009. It took a sharp turn during the year, declining rather rapidly and measuring 7.5% by year-end, the lowest measured inflation rate since February 2008. Twelve-month inflation averaged 12% in 2009, while underlying inflation (inflation excluding the direct effects of increases in indirect taxes) measured 11.4%.

Chart 1 illustrates the inflation forecast from November 2008 through year-end 2009. In August 2009, the Central Bank began to prepare a separate forecast of the direct inflationary effects of hikes in consumption taxes. The forecasts published in *Monetary Bulletin* 2009/3 and 2009/4 therefore show underlying inflation. When the forecast in the November 2008 *Monetary Bulletin* was published, shortly after the collapse of Iceland's banking system, there seemed to be no limit to possiple depreciation of the króna, and inflation looked set to exceed 20%. At the time, there was great uncertainty about the monetary policy framework. At the end of November, however, capital account restrictions were imposed so as to prevent the exchange rate from plunging still further. By January 2009, the króna had strengthened somewhat after a sharp decline during the autumn, and was 14% stronger than it had been in November, when *Monetary Bulletin* was published. In January, the Bank forecast 11.9% inflation for the year 2009. The forecast published in early May 2009, however, assumed much weaker economic activity than the previous

Chart 1
Inflation forecasts MB 2008/3 - MB 2009/4 and underlying inflation



Sources: Statistics Iceland, Central Bank of Iceland.

forecast, and projected that inflation would subside much more rapidly, falling to 9.9% in 2009.

In the forecast that appeared in *Monetary Bulletin* 2009/3, inflation was projected at 11.8% for 2009, with underlying inflation estimated at 11.1%. The November issue of *Monetary Bulletin* forecast 12% inflation and 11.3% underlying inflation.

Assessment of forecasting errors over a longer period

In assessing inflation forecasts, it is important to consider the average deviation (bias) and the root mean square error (RMSE) of the forecasts concerned. The bias shows the forecasts' average deviation from actual inflation and thus whether inflation is being systematically over- or underforecast. A negative sign indicates that inflation has been systematically underforecast. The RMSE, on the other hand, measures how large the deviations are on average.

Table 1 Central Bank of Iceland inflation forecast errors since Q1/1994

(%)	*Q1*	*Q2*	*Q3*	*Q4*
Mean forecast error	0.0	-0.3	-0.8	-1.2
RMSE	0.6	1.7	2.5	2.9

In order for it to be possible to draw conclusions from such measures, the forecast errors must be independent and sufficiently large in number. As forecasts extend farther ahead in time, it can also be expected that the forecast errors will increase. Table 1 shows the bias and RMSE in the Bank's inflation forecasts up to four quarters ahead from 1994 through the January 2010 forecast. By this criterion, inflation has been underforecast two to four quarters ahead, to an increasing degree along the horizon. In all cases, except those involving forecasting errors one and two quarters ahead, the bias proved to be statistically significant at the 5% critical level.

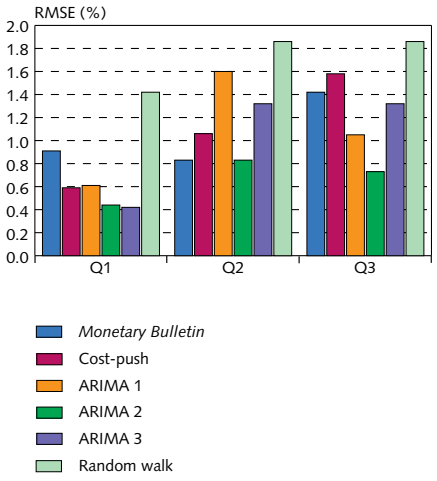
Table 2 Central Bank of Iceland inflation forecast errors since Q2/2001

	Number of measurements	*Mean forecast error (%)*	*RMSE (%)*
Four quarters ahead	*30*	*-1.7*	*3.3*
Eight quarters ahead	*26*	*-3.1*	*5.0*

Since adopting an inflation target in March 2001, the Central Bank has also published inflation forecasts two years ahead. Table 2 shows the bias and the RMSE for the period since the Bank introduced inflation targeting. A comparison of Tables 1 and 2 shows that the standard deviation for the one-year forecast has been greater since the Bank adopted the inflation target (3.3%) than it was for the entire period (2.9%). It should be noted, however, that no forecasts of developments in the exchange rate or the policy interest rate were made until the latter half of 2006, as previous forecasts simply used the technical assumption of unchanged interest rate and exchange rate. Therefore, these forecasts did not make full use of Bank staff's assessments of likely developments in these variables, and it is indeed

Chart 2

Forecast error for inflation in *Monetary Bulletin* and from simple models in 2009[1]



1. Q1 is the quarter in which the report is published or the first quarter forecasted; Q2 is the quarter after the report has been published; Q3 is the following quarter.

Source: Central Bank of Iceland.

clear that forecasting errors appear closely linked to fluctuations in the exchange rate of the króna for the majority of the forecast period.

Success in short-term inflation forecasting

For the past 1½ years, the Central Bank has also used a cost-push model, wherein inflation is determined by historical developments in wage costs and exchange rate, and a simple ARIMA time-series model, which uses only past inflation for short-term inflation forecasting. These models do not use any indicators of economic activity or measures of inflation expectations, as the Bank's macroeconomic model does. It can prove useful to compare the accuracy of these models to forecasts using the macroeconomic model, which were published in *Monetary Bulletin* for 2009.

Chart 2 compares the Central Bank's inflation forecasts one to three quarters ahead for the year 2009. The standard deviation of the forecasts published in *Monetary Bulletin* in that year is compared with the cost-push model and three different ARIMA models.[1] Also shown, for comparison, are forecasting errors based on a simple random walk, which forecasts that inflation in a given quarter will be the same as in the previous quarter throughout the forecast horizon.

The simple time series models all generate better results (smaller forecast errors) than the *Monetary Bulletin* forecasts one quarter ahead. The forecasts obtained with the ARIMA 2 model and *Monetary Bulletin* are similar, however, when the forecast extends two quarters ahead in time. The ARIMA 2 model performs best for forecasts three quarters ahead. The *Monetary Bulletin* forecasts three quarters ahead are somewhat less accurate, however, than the forecasts from the ARIMA models. In all cases, the random walk forecasts were least accurate. It should be borne in mind that the short-term inflation forecasts published in *Monetary Bulletin* in 2009 were based to some extent on results from ARIMA models. Comparing the standard deviation of forecasts published in *Monetary Bulletin* 2009 with that of forecasts published in 2008 (see the discussion in *Monetary Bulletin* 2009/2) reveals that the deviation for 2009 declined significantly, irrespective of whether the forecast extends one, two, or three quarters ahead. As in *Monetary Bulletin* 2009/2, these results indicate that the Central Bank could further improve its short-term inflation forecasting by using these simple time-series models.

Forecasts of macroeconomic developments in 2009

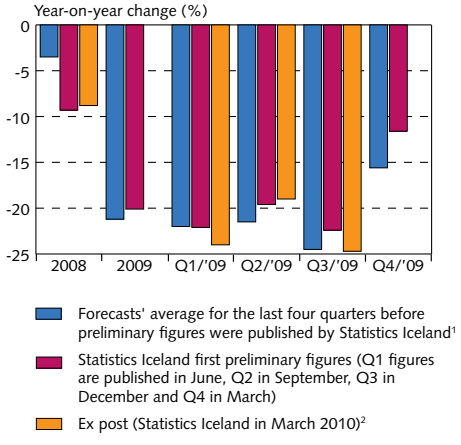
In order to gain a more accurate view of inflation forecast quality, it is also necessary to analyse the forecasts for key determinants of inflation, such as output growth, labour market conditions, and asset prices. Table 3 shows a comparison of *Monetary Bulletin* forecasts of

1. The first ARIMA model draws on forecasts for the main subcomponents of the consumer price index and weights them together to create a single overall index. The second, ARIMA 2, directly forecasts the overall consumer price index. Both of these models were discussed in Appendix 2 in *Monetary Bulletin* 2009/2. In addition to these, the Bank has now estimated an ARIMA model that forecasts the overall CPI excluding indirect tax effects (ARIMA 3). The twelve subcomponents of the consumer price index are as follows: agricultural products less vegetables, vegetables, other domestic food and beverages, other domestic goods, imported food and beverages, cars and spare parts, petrol, other imported goods, alcohol and tobacco, housing, public services, and other services.

developments in major macroeconomic variables for the year 2009. Any assessment of economic forecasts for 2009 must take into account, however, that it was an extraordinary year in Icelandic economic history. For example, the contraction in domestic demand and GDP was the largest in the history of Iceland's national accounts, unemployment was at an all-time high, and changes in relative factor price and prices of a number of expenditure items were unprecedented.

A common characteristic of all of the forecasts is that they assumed that a larger share of the adjustment to the financial crisis would be channelled through real variables rather than relative price changes. Thus they assumed too sharp a contraction in GDP and therefore a more pronounced negative output gap and higher unemployment. Forecasts of domestic demand are not far from accurate, however. Statistics Iceland revises national accounts figures up to four times over a two-year period if necessary. If preliminary and revised figures differ greatly, it can strongly affect forecasts. Chart 3 shows the average of the forecasts for national expenditure the year before Statistics Iceland's first preliminary figures are published, compared with the first preliminary figures and the most recent revised figures. It can be seen that the quarterly forecasts for Q2-Q4/2009 all assumed a stronger contraction in national expenditure. The most recent national accounts figures from March indicate that the contraction in national expenditure was more pronounced in Q1 and Q3 than the first figures indicated.

Chart 3
National expenditure



1. Average of quarterly forecasts does not extent further back than MB 2008/3. 2. The first preliminary figures for Q4 2009 were published in March 2010. Therefore, first preliminary figures have not been revised.
Sources: Statistics Iceland, Central Bank of Iceland.

Table 3 Forecasts and assumptions concerning developments in major macroeconomic variables for the year 2009 from *Monetary Bulletin* 2008/3 through 2010/1

(%)	*MB 2008/3*	*MB 2009/1*	*MB 2009/2*	*MB 2009/3*	*MB 2009/4*	*MB 2010/1*	*Preliminary accounts*[1]
Private consumption	-24.8	-25.2	-23.5	-19.7	-16.2	-16.0	-14.6
Public consumption	2.9	1.5	-2.7	-2.3	-1.2	-0.4	-3.0
Investment	-20.2	-28.9	-44.8	-48.4	-48.0	-48.3	-49.9
National expenditure	-17.6	-20.3	-23.5	-21.5	-19.7	-19.4	-20.1
Exports	-0.5	0.4	-3.0	-1.8	1.3	1.6	6.2
Imports	-24.5	-26.9	-35.6	-33.0	-25.7	-25.4	-24.0
GDP	-8.3	-9.9	-11.0	-9.1	-8.5	-7.7	-6.5
Inflation	14.1	11.9	9.9	11.8	12.0	12.0	12.0
Underlying inflation	14.1	11.8	9.6	11.1	11.3	11.4	11.4
EURISK ecxhange rate	141.1	146.6	158.2	169.2	171.7	172.0	172.0
Output gap	-4.7	-5.8	-8.3	-6.8	-4.2	-3.9	-3.4
Unemployment	6.3	9.4	9.3	8.9	8.2	8.0	8.0
Wage growth[2]	6.4	4.2	4.2	4.4	4.4	4.7	0.6
Real disposable income	-13.7	-17.1	-15.6	-19.9	-19.2	-17.6	-18.0[3]
Trade	5.2	5.4	-14.1	-11.4	-11.4	-10.3	-8.2
Price of aluminium in USD	-3.4	-39.2	-41.8	-38.7	-36.1	-35.4	-35.8
Price of marine products in foreign currency	-2.9	-9.0	-12.0	-12.6	-8.5	-10.4	-12.8
Export of aluminium	4.5	7.9	3.0	3.5	4.7	6.0	3.8
Export of marine products	-2.9	2.0	0.0	-1.0	-2.0	4.0	3.4

1. Preliminary figures are used as a basis for the Central Bank of Iceland baseline forecast as published in this issue of *Monetary Bulletin*.
2. The first figures for wage growth in 2009 were published in March 2010. They turned out to be different from the previous forecast for the year, but they were based primarily on the Statistics Iceland wage index.
3. 2009 figures for disposable income will be published in September 2010. The -18% figure is the Central Banks' forecast.

Contraction in private consumption proved smaller than forecast

As regards individual sub-components of national expenditure, forecasts of developments in investment have been quite accurate, but it has proven more difficult to project developments in private consumption in 2009. Originally, a contraction of more than 20% in private consumption was assumed, but that estimate declined as the year passed, especially after national accounts figures for Q1 and Q2 were published in June and September 2009. Private consumption depends on variables such as disposable household income, unemployment, and exchange rate. The exchange rate forecast for 2009 has been broadly unchanged since the summer of 2009. Forecasts of disposable income have been more variable, however. It has been difficult to project developments in disposable income, and the final figures for 2009 will not be available until September 2010. In September 2009, for example, it was revealed that disposable income for 2008 had risen by 0.5%, while earlier estimates had assumed a 7.5% contraction.

Revised figures for public consumption in 2008 changed forecasts for 2009

The assumptions concerning developments in public consumption are obtained from Government estimates and data from Statistics Iceland. Public consumption growth in 2009 has changed somewhat in the Central Bank's forecasts due to the considerable uncertainty about public consumption in 2008. In *Monetary Bulletin* 2009/3, it was estimated that public consumption for 2008 had risen by 2.8%, but when national accounts figures were released in September 2009, the increase proved to be 4.6%. The national accounts figures published in September 2009 indicated that public consumption had grown by 0.4% in the first half of 2009; therefore, it was decided to assume a much smaller contraction in the forecasts for 2009. As a result, a contraction of only 1.2% was forecast in November. Preliminary figures from March indicate that public consumption contracted by 3%, which is close to the Bank's forecast prior to the publication of those figures.

Exports rose by over 4 percentage points in 2009 due to ships and aircraft

Forecasts of developments in trade in goods and services have not been fully borne out, in part due to large transactions involving irregular and unpredictable items such as ships and aircraft, for which information is often received after a long time lag. Exports of ships and aircraft totalled 32 b.kr. fob value in 2009, while imports of these items totalled 16.6 b.kr. Only one-third of the imports and just over one-fifth of the exports had been included in national accounts figures by the time the January forecast was prepared. This explains the dramatic difference in export figures between the January forecast and Statistics Iceland's preliminary figures from March. If these irregular items had not been included, the 2009 rise in exports would have measured 2.9%, while imports would have declined by over 25%. It should be noted that they made no impact on GDP growth, as investment was scaled down by a corresponding amount.

Chain-volume effect influences 2009 forecasts

An unusually strong chain-volume effect in the 2009 national accounts also led to errors in GDP growth forecasts. Until this issue of *Monetary Bulletin*, the Central Bank's forecasts of volume changes in national accounts variables have been based on data that are adjusted to year-2000 price levels using the chain-volume approach. In preparing GDP forecasts, however, it has been assumed that the constant-price expenditure items of the national account identity will sum up to GDP. According to the chain-volume approach, however, instead of adjusting all amounts to a fixed price level according to a specified base year, volume changes are calculated so that amounts at the price level of a specific year are adjusted to the price level of the preceding calendar year, and the volume change is calculated from this. Annual chain-volume linking means that the expenditure sum does not equal GDP except in the reference year for price indices (currently 2000) and the year thereafter. This was not a problem until last year, when relative prices changed unusually dramatically, particularly the relative price of imports and exports. Table 4 reveals some difference between the Central Bank's GDP growth forecasts with and without the chain-volume approach, while forecasts of national expenditure are virtually identical.

Table 4 Central Bank of Iceland forecasts with and without chain-volume index

		GDP		*National expenditure*	
Forecast	*Year*	*Forecast without chain-volume index*	*Forecast with chain-volume index*	*Forecast without chain-volume index*	*Forecast with chain-volume index*
MB 2009/4	2009	-8.5%	-7.8%	-19.7%	-20.0%
MB 2009/3	2009	-9.1%	-7.2%	-21.5%	-21.5%
MB 2009/2	2009	-11.0%	-9.0%	-23.5%	-23.9%
MB 2009/1	2009	-9.9%	-8.1%	-20.4%	-20.8%
MB 2008/3	2009	-8.3%	-6.4%	-17.6%	-17.5%