

## Economic and monetary developments and prospects<sup>1</sup>

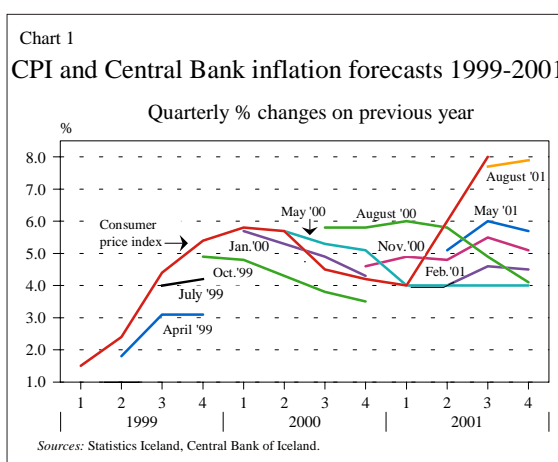
### Demand is contracting, inflation prospects broadly unchanged

National income has begun to decline. Ahead is a recession which is part of the adjustment required to re-establish macroeconomic equilibrium, which should result in a smaller current account deficit and lower rate of inflation. Economic activity proved more robust in the recent term than had been expected, but the probability of a relatively sharp contraction has increased correspondingly. There are various indicators of a cooling economy, and the enormous credit expansion of recent years has now largely come to a halt. The outlook is that the output gap will turn negative in the near future. Thus the likelihood of the Central Bank's inflation target being attained in 2003 has grown, although uncertainties remain due to the review of wage agreements next year. In the short term, nonetheless, inflation is at present forecast to rise more than previously forecast: by 8½% from the beginning to the end of 2001 and 4% from the beginning to the end of next year. The reasons are that wage drift has risen recently and the exchange rate depreciated. Fiscal balance this year will deteriorate from earlier estimates on account of higher outlays, and the cyclically adjusted balance will be worse than last year. Coupled with the economic contraction, this could undermine some of the plans announced in the draft budget. All things being equal, the downturn in the treasury balance restricts the Central Bank's scope for easing the monetary stance. However, the Central Bank's policy rate has risen in real terms recently because of lower inflation expectations.

#### CPI rise in Q3 is largely in line with the Central Bank's forecast

In August the Central Bank forecast that the CPI would be 7.7% higher in the third quarter than in the same period the previous year. In the event, the CPI rose by 8%. The deviation is only 0.3 percentage points, which is well within statistical confidence limits. The twelve-month rise in the index was 8.0% in October, down from the September figure of 8.4%. Merchandise imports accounted for almost one-quarter of the CPI rise over the past three months and roughly 40% over the past twelve.

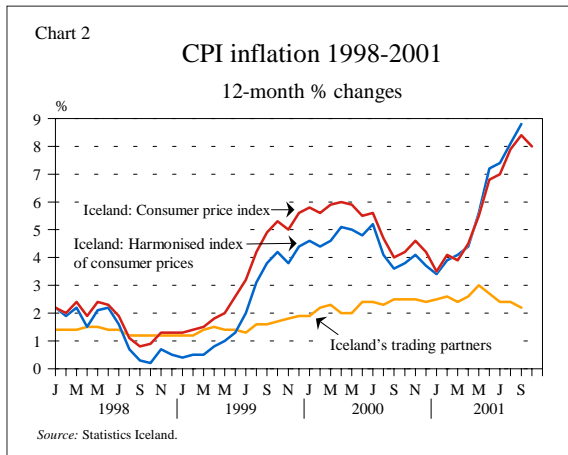
Inflation increased considerably in September and the twelve-month rise in the Harmonised Consumer Price Index (HICP) for the European Economic Area exceeded the increase in the national



CPI. This is a marked turnabout from 1998-2000, when the HICP rose at a slower pace. The reason lies in their different methods applied to calculating

1. This article uses data available on October 31, 2001.

changes in housing costs. Inflation measured by the HICP rose from 7.2% in June to 8.8% in September, its largest twelve-month rise since the HICP was introduced in 1995. At the same time, inflation slowed down somewhat among Iceland's main trading partner countries, from 2.7% in June to 2.2% in September.



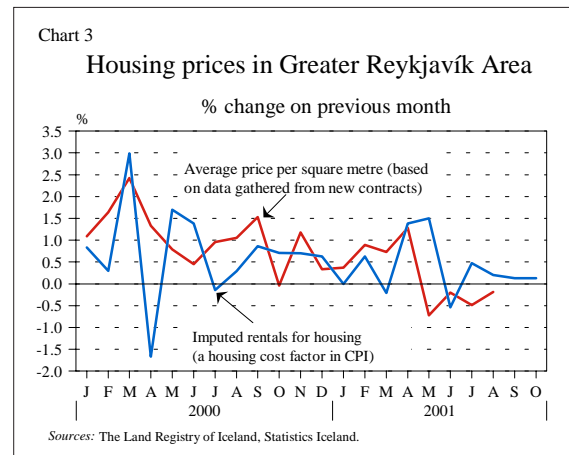
*Large price rises in general services and domestic goods excluding agricultural products and vegetables*

Prices of general services are still rising fast. In October the three-month rise was equivalent to an annualised 9.7% and the twelve-month rise 8.8%. Domestic goods excluding agricultural products and vegetables also went up significantly. They have risen by an annualised 8.4% over the past three months, and by 10.1% over the past twelve months. The domestic goods component is sensitive to changes in domestic costs, especially wage costs. The large increase in domestic prices reflects considerable wage increases over and above productivity growth, both contractual increases and substantial wage drift. The depreciation of the króna over the past year has also contributed to the increase in the domestic goods component by making it easier for domestic businesses which are competing with imports to adjust their prices to reflect cost increases.

*Slight rise in housing prices in recent months, but a fall in real terms*

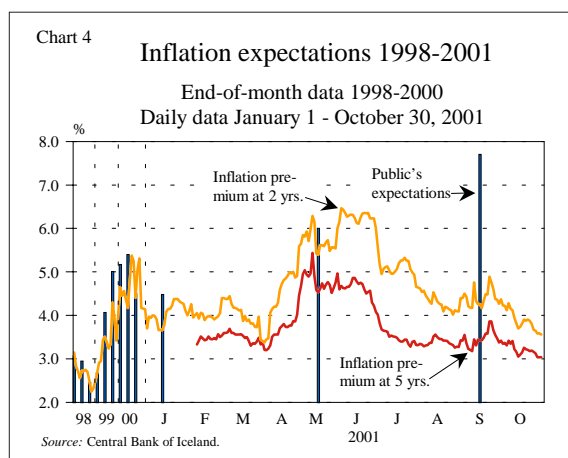
Housing prices have recently been rising at a much slower pace. The twelve-month rise in the housing

component of the CPI was 6% in October, and in recent months it has been rising by less than the index as a whole. Imputed rent from own accommodation, which is calculated from market value, went up by 5.1% over the same period. The index of residential housing prices in the Greater Reykjavík Area, published by the The Land Registry of Iceland, had risen by even less in August, or 4.7%. In the past four months the index has even dropped in nominal terms, but the decline has not yet been reflected in the CPI. These two criteria for housing prices differ in two ways. Firstly, Statistics Iceland (Stattice) measures housing prices in all of Iceland, while the Land Registry index only covers the Greater Reykjavík Area. Secondly, different methods of weighting are applied for detached and multiresidential accommodation. Detached housing has a heavier weighting in the Land Registry index than in the housing component of the CPI. It is precisely the prices of detached and larger multiresidential accommodation in the Greater Reykjavík Area which have declined recently. Both indices are based on a three-month average, but with a one-month lag in the case of the housing component of the CPI. Slack has apparently developed in the market for larger properties, while the market for smaller properties still seems to be fairly tight. In the next few months, the fall in prices of larger properties can be expected to offset the rise in smaller multiresidential ones.



*Public inflation expectations have increased since May, but the T-bond inflation premium has decreased in recent weeks*

The Central Bank conducts surveys of public inflation expectations three times a year. According to the most recent survey, in September, the general public on average expected an inflation rate of 7.7% over the next twelve months, up from 6% in May. The median in September was somewhat higher than the average, at 8%. This suggests that most respondents expected inflation slightly over 8%, while a considerable number expected a significantly lower rate. The standard deviation in the survey was 2.4%, up from 1.5% in May. A larger standard deviation indicates more uncertainty about inflation prospects than before. This is the largest standard deviation since these surveys were launched in September 1997. Public inflation expectations in September were considerably higher than the inflation premium on treasury bonds, which averaged 4.4%. However, these figures are not entirely comparable, because the inflation premium on treasury bonds is calculated on the basis of the required rate of return on bonds with a lifetime of just over two years, while public inflation expectations refer to the following twelve months. The T-bond inflation premium also includes a risk premium and therefore probably overestimates inflation expectations to some extent.



The inflation premium on treasury bonds has fluctuated considerably since August, when the last *Monetary Bulletin* was published. In August the inflation premium averaged 4.3% on bonds with a

lifetime of just over two years and 3.4% on five-year bonds. It went up marginally in September, by 0.1% on both types of bond. Following the terrorist attacks on the USA on September 11, the inflation premium on T-bonds rose somewhat to peak at 4.9% on September 21. Uncertainty seemed to wane at the end of September and in October. By then the outlook for oil prices had improved, as the disruption of supply became less likely and demand was affected by the crisis in the transport sector as a result of the terrorist attacks and the deepening economic downturn. The Central Bank's intervention in the foreign exchange market also appeared to contribute to lower inflation expectations early in October and the CPI rise that month was in line with market participants' expectations. Towards the end of October the inflation premium on T-bonds with a lifetime of just over two years had dropped to 3.6%, and to 3.0% on five-year bonds.

*The labour market is still tight, but the outlook is that it will ease*

The labour market still seems quite tight, on the basis of common indicators. Unemployment in September measured only 1%, or roughly the same as a year before. Tightness in the labour market and its relation to the concept of equilibrium unemployment are discussed in Box 1. Seasonally adjusted unemployment rose marginally, from 1.3% in August to 1.4% in September. In September last year the seasonally adjusted figure reached a low of 1.2%. A considerable number of new work permits are still being issued to citizens from outside the EEA, although somewhat fewer than the year before. However, one-third more work permits were issued in Q3/2001 compared with the average for the same period in 1996 and 1997. Another reflection of the tight labour market is the large number of vacant positions registered with employment agencies. At the end of September there were 678 registered vacancies, a slightly larger number than year before but more than three times the figure in September 1996 and 1997.

A clear indication that conditions in the labour market will soon ease emerged in the labour market survey conducted by the National Economic Institute (NEI) in September. According to the survey employers desired to cut back on their number of staff by 0.3%. This is a substantial turnaround from

## Box 1 Equilibrium unemployment and labour market pressures

The state of the domestic labour market has a significant impact on price and wage developments. Labour market pressures fuel wage rises, which in turn contribute to higher prices and inflation. Positive measured unemployment could be assumed to preclude the presence of labour market pressures, since by definition unemployment means that individuals who are prepared to work do not have jobs. Supply of labour therefore exceeds demand, which on first impression ought to restrain wage rises. However, this cannot be taken for granted. A certain low rate of unemployment may still represent excess overall demand for labour, e.g. when vacancies exceed the number of unemployed, or some of those registered as unemployed are not really actively seeking work or are unsuitable for the type of jobs available.

Unemployment which is compatible with equilibrium in the labour market and a stable rate of inflation is known as the natural rate of unemployment or equilibrium unemployment. This refers to the level of unemployment where inflation tends neither to increase nor decrease, since wage rises are in pace with productivity developments and inflation expectations. Research widely suggests that the equilibrium rate of unemployment varies over time. This is considered to be the result of both social and economic factors, which may include unemployment benefit arrangements, labour market institutions, regulations on employee appointment and dismissal, competition in the goods market and the efficiency of the market economy. Easy access of foreign labour can also lead to a lower equilibrium rate of unemployment. Monetary policy does not affect equilibrium unemployment. However, it can cause the actual unemployment rate to fluctuate around the equilibrium rate. Monetary policy which aims to maintain unemployment systematically below its equilibrium value will only generate increasing inflation.

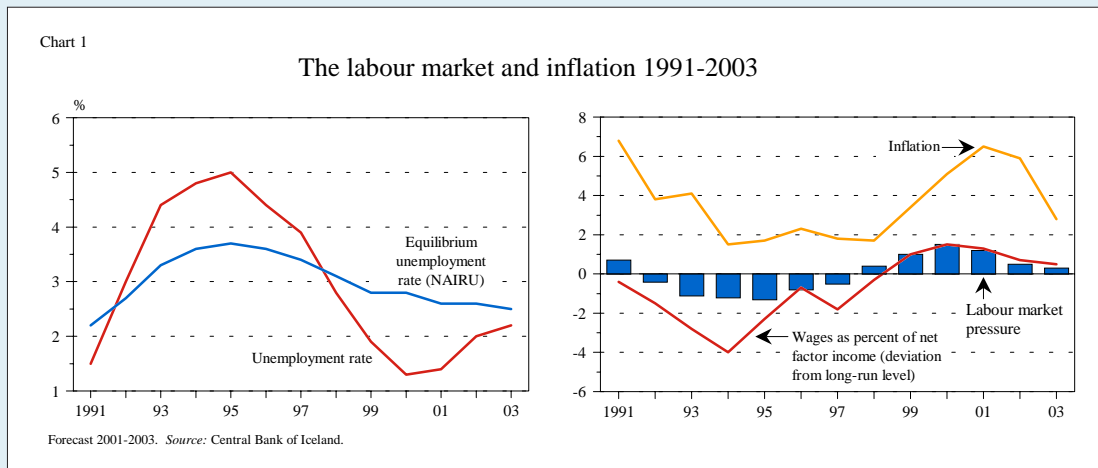
Over the past two years, Iceland's labour market has been characterised by overheating. This has taken the form of, for example, competition among businesses for new recruits, problems in retaining employees, sizeable wage drift over and above generous wage

rises, and inflation. At the same time unemployment has measured in the range 1%-1½%. Most indicators therefore suggest that equilibrium unemployment in Iceland is somewhat higher than this figure. Accurate estimation of the equilibrium rate is, however, very difficult. This especially applies to the current rate at any time. In Iceland the problem is compounded by easier access of foreign labour in recent years, which has probably decreased the equilibrium rate of unemployment. Estimation methods that rely on historical relationships may, however, fail to take sufficient account of these changes. The point remains, that in order to establish equilibrium in the Icelandic labour market, a rise in measured unemployment is in all likelihood unavoidable.

The charts overleaf show an attempt to estimate the equilibrium rate of unemployment using simple time series techniques.<sup>1</sup> It should be underlined that the estimation is subject to considerable uncertainty. Be that as it may, the equilibrium rate of unemployment seems to have increased in the first part of the 1990s, probably as the result of lower fish catches and deteriorating terms of trade at the beginning of the decade. Equilibrium unemployment apparently fell again in the second half of the 1990s, converging to a level around 2½%. Presumably this rate of unemployment is close to being compatible with equilibrium in the Icelandic labour market.

The chart also shows the interaction of labour market pressure (the difference between equilibrium and actual unemployment), the wage share in net factor income (as a deviation from long-run equilibrium, which is assumed to be at 64%) and inflation.<sup>2</sup> The

1. The result is based on three approaches. Firstly, a simple Hodrick-Prescott filter is applied to measured unemployment. Secondly, a simple Kalman filter model of Okun's Law (the relationship between equilibrium levels in the goods and labour market) is estimated. The third approach is based on the estimated relationship between unemployment and inflation in Þórarinn G. Pétursson (2001), "Wage and price formation in a small open economy: Evidence from Iceland", a pending Central Bank of Iceland Working Paper.
2. From a historical perspective, a wage share of 64% seems to be well compatible with a low and stable rate of inflation. The average over



interaction can be interpreted as showing that excess demand in the economy causes unemployment to fall below its equilibrium level. Demand for labour increases, firms start competing for capable employees by offering higher wages, and the bargaining position of labour unions strengthens. The wage share rises above its equilibrium level and firms' profit margins are squeezed. Combined with increased demand in the goods market, such conditions contribute to higher inflation, which calls for even higher wage rises, etc. Such a spiral is only broken when equilibrium is re-established in the goods and labour market and wages and profits as a share of factor income move towards their long-run equilibrium levels. Monetary policy can play a key role in this adjustment process. A tighter monetary stance can squeeze excess demand until inflation moves into line with monetary policy targets.

the period 1980-2003 was slightly under 63% and the average for 1990-2003 is marginally above 63%. The actual choice makes no difference to this analysis; the process shows a slight upward or downward shift but the path remains the same.

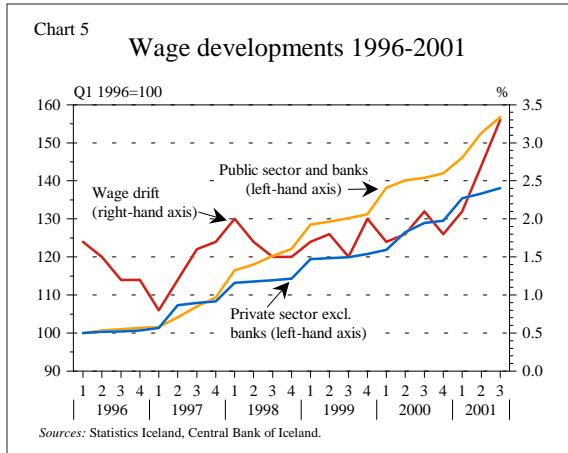
A scaling-down of economic activity is inevitable while the spiral is being broken. If inflation goes seriously out of control a temporary recession may even become unavoidable.

This trend is clearly shown on the chart. During the first half of the period, a slack in the economy went hand in hand with higher unemployment and a falling wage share. Pressure began to mount again around the middle of the period and peaked in 2000, accompanied by higher inflation. The monetary stance was tightened in response. According to the latest inflation forecast of the Central Bank and National Economic Institute output and unemployment projections, pressure will ease in the next few years and macroeconomic imbalances and inflation will decrease. The chart shows that, on the basis of current forecasts, the landing will be a relatively soft one compared with earlier periods. For example, no slack will develop in the labour market. It is conceivably unrealistic to assume that, in the wake of one of the most intense periods of economic overheating for decades, such a soft landing can be achieved.

the survey conducted in September last year, when they wanted to increase the workforce by 0.6%. According to the survey, demand for labour will continue to drop until the middle of next year, or by more than 3%.

#### *Wage rises in excess of agreements*

In the last two years the rate of wage increases has been high. In September the total wage index had risen by 9.1% from September last year and in Q3 it was 8.7% higher than during the same quarter in 2000. Over this period, public sector wages increased by 11.3% and wages in the non-financial private sec-



tor by 7.2%. Between Q1 and Q3 this year, general market wages went up by 2%, which is probably to a large degree wage drift, since no contracted wage increases were expected during this period. Estimated wage drift over the preceding year, in excess of wage settlements in the non-financial private sector, was 3.3% in the third quarter of 2001.

In September, real wages in the labour market as a whole had inched up by 0.7% over the preceding twelve months, despite high inflation during the period. If the Central Bank's inflation forecast holds good and wages remain stable until the end of this year, real wages at the beginning of 2002 should be at the same level as a year before. Any rise in the wage index in the final quarter of 2001 will imply an increase in real wages during the year. On the basis of current wage agreements, an assumed 1% wage drift and the Central Bank's inflation forecast, real wages during Q1/2003 will be marginally higher than at the beginning of 2002, or 0.6%. Based on the same assumptions real wages will increase by 1.6% between Q1 2003 and 2004.

#### *Inflation in Q4 will be somewhat higher than was forecast in August*

The forecast presented hereafter reflects tighter domestic goods and labour markets than previously assumed. Moreover, the current account deficit, gloomier economic outlook and poorer investment opportunities have weakened the exchange rate of the króna further. The output gap in 2000 seems to have been considerably wider than previously estimated and a substantial positive output gap remains,

Table 1 Inflation forecast of the Central Bank

	<i>Quarterly changes</i>		
	<i>Change from previous quarter (%)</i>	<i>Annualised quarterly change (%)</i>	<i>Change on same quarter of previous year (%)</i>
2000:1	1.1	4.3	5.8
2000:2	1.4	5.9	5.7
2000:3	0.5	2.1	4.5
2000:4	1.1	4.6	4.2
2001:1	0.9	3.4	4.0
2001:2	3.5	14.5	6.0
2001:3	2.3	9.7	8.0
2001:4	1.3	5.3	8.1
2002:1	1.2	4.9	8.5
2002:2	1.3	5.2	6.2
2002:3	1.0	4.0	4.8
2002:4	0.8	3.3	4.3
2003:1	0.3	1.4	3.5
2003:2	0.7	2.8	2.9
2003:3	0.6	2.6	2.5
2003:4	0.6	2.6	2.3

Figures indicate changes between quarterly averages of the consumer price index. Shaded area indicates forecast.

	<i>Annual changes</i>	
	<i>Year on year</i>	<i>Within year</i>
1998	1.7	1.3
1999	3.4	5.8
2000	5.0	3.5
2001	6.5	8.5
2002	5.9	4.1
2003	2.8	2.3

Shaded area indicates forecast.

even though the economy is starting to cool. By the same token, the labour market has been tighter this year than would otherwise have been the case. In consequence, larger wage drift this year is assumed in the current forecast. For the above reasons the current forecast is for higher inflation, both for the current year and next year, than forecast in August. Consumer prices are forecast to rise 8½% from the beginning to the end of this year, compared to the 8% forecast in August. Inflation of 4% is forecast from the beginning to the end of 2002, compared to just under 3% forecast in August. However, the inflation outlook for 2003 is virtually unchanged. The

unchanged outlook for 2003 is explained by the assumption that the positive output gap will close in full next year and some slack emerge in 2003. Moreover, at that time the impact of the depreciation will have been transmitted in full into the domestic price level, provided that the exchange rate remains broadly stable throughout the period. If the assumptions for exchange rates and wage developments hold good, the Central Bank's inflation target should be attained in 2003, as previously assumed. Nonetheless, a high degree of uncertainty remains, as discussed later.

According to the forecast, inflation will continue to increase until the middle of next year, then decelerate fairly rapidly afterwards. Inflation is expected to be within 4½%, the upper tolerance limit of the inflation target, during the final quarter of next year, and the 2½% inflation target is expected to be achieved in the third quarter of 2003. As Table 2 shows, the Central Bank's forecast for 2001 is similar to those of other institutions and market participants. The Central Bank assesses the inflation outlook for 2002 and 2003 as rather more favourable, but the difference is small and barely statistically significant.

Table 2 Other inflation forecasts and inflation expectations

	2001		2002		2003	
	Year on year	Over year	Year on year	Over year	Year on year	Over year
Average forecast.....	6.6	8.5	6.2	4.1	3.3	2.3
General public's inflation expectations		7.7				
Inflation premium on treasury instruments		3.6				

Inflation forecasts are published by ECF, Íslandsbanki, Kaupthing, Landsbanki and the National Economic Institute. Íslandsbanki and Kaupthing have issued a forecast for 2002 but only Íslandsbanki has issued a forecast for 2003. The public's inflation expectations are surveyed quarterly. The interest rate premium is the difference between interest rates of indexed and non-indexed treasury instruments with a maturity of approximately two years. It is a measure of market participants' expectations for the average rate of inflation over the next two years

Source: Central Bank of Iceland.

The table also shows inflation expectations among the general public and market participants. As mentioned above, public inflation expectations

Table 3 Main assumptions of the inflation forecast

<i>Percent changes between annual averages</i>				
	2000	2001	2002	2003
Contractual wages .....	3.7	5.4	3.7	2.9
Wage drift .....	2.0	2.3	1.7	1.0
Domestic productivity .....	2.0	1.7	1.0	1.3
Effective exchange rate of the króna (based on imports)...	0.0	20.1	5.9	0.0
Import prices in foreign currency terms .....	3.3	2.4	1.0	1.3
<i>Percent changes over year</i>				
Contractual wages .....	5.3	3.8	3.7	2.9
Wage drift .....	2.0	2.5	1.0	1.0
Domestic productivity .....	2.5	1.0	1.0	1.5
Effective exchange rate of the króna (based on imports)...	9.1	19.2	0.0	0.0
Import prices in foreign currency terms .....	4.0	1.0	1.0	1.5

Source: Central Bank of Iceland.

measured 7.7% in September. The Central Bank, by comparison, is forecasting inflation of 4% until the third quarter of next year. Expectations among the public are therefore out of line with that forecast. However, it should be borne in mind that inflation expectations of the public have a tendency to reflect recent inflation rather than macroeconomic prospects. Market participants' expectations are estimated on the basis of the inflation premium on two-year T-bonds, cited here as it stood at the end of October. Average forecast inflation for the next two years is 3½%, which conforms with the inflation premium at the end of October. This indicates that market participants have gained confidence that the Central Bank's inflation target will be attained.

#### *Assumptions behind the inflation forecast*

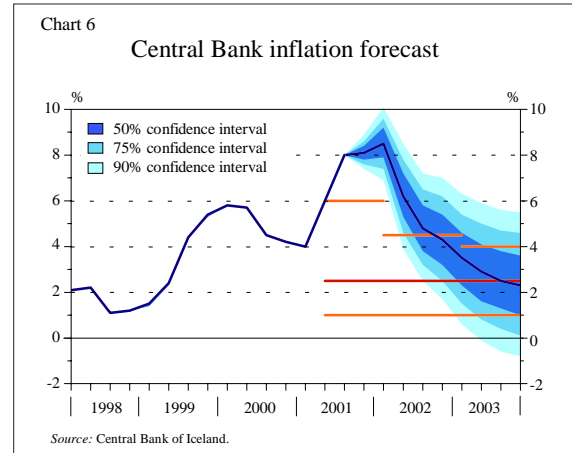
Some changes have been made in the assumptions behind the inflation forecast, based on recently published data and information, including the national budget published in October and updated forecasts for foreign trade prices. The estimated rise in contractual wages is based on current agreements by the largest groups of wage earners in the non-financial private sector. Wage drift is expected to diminish over the next two years, on the assumption that the

labour market will ease in line with the NEI survey. Labour use will decrease somewhat in the years to come, but since economic growth will decrease even more, growth in labour productivity will also drop. Import prices are projected on the basis of OECD and IMF forecasts and the assumption that the exchange rate of the króna remains unchanged from the day of the forecast, October 24. These are standard assumptions in the Bank's forecasts. As discussed in Box 3, exchange rate forecasting is problematic and assuming no change often seems to be the best short-term forecast. The exchange rate applied in the current forecast is the index value on October 24. At that time the official exchange rate index stood at 144.4, which is 4½% lower than in the Bank's forecast published in the August issue of *Monetary Bulletin*. In November the CPI is expected to increase only modestly, e.g. due to an expected drop in petrol prices. Finally, as in the Bank's latest forecast, housing prices are expected to fall by just over 5% in real terms over the next six months. Other things being equal, if demand shrinks more sharply and on a larger scale than the assumed in the national budget, housing prices will conceivably drop by more, resulting in lower inflation.

#### Uncertainties and risk factors

Given the inherent uncertainties in all forecasts which make it rash to draw sweeping conclusions from specific values, the forecast is shown with an assessment of its uncertainty range in Chart 6. Thus the entire coloured area shows the 90% confidence area; the two darkest ranges show the corresponding 75% confidence interval, and there is 50% probability that inflation will remain within the darkest range. The uncertainty increases the longer the horizon of the forecast, as reflected in the widening of the confidence interval.<sup>2</sup> Based on the uncertainty range at the end of 2003, there is therefore only a 50% probability that inflation will be within the target toler-

2. The assessment of uncertainty in the inflation forecast is principally based on the Bank's historical forecasting errors where appropriate, and on a simple extrapolation of the forecasting uncertainty over the horizon the Bank has not hitherto forecast. Just as forecasts for individual values are subject to uncertainty, so is the estimated uncertainty of forecasts. The estimated forecast uncertainty should therefore be interpreted with caution. The aim is to highlight the inherent uncertainty of forecasting rather than to provide a precise assessment of the probability distribution of forecast inflation.

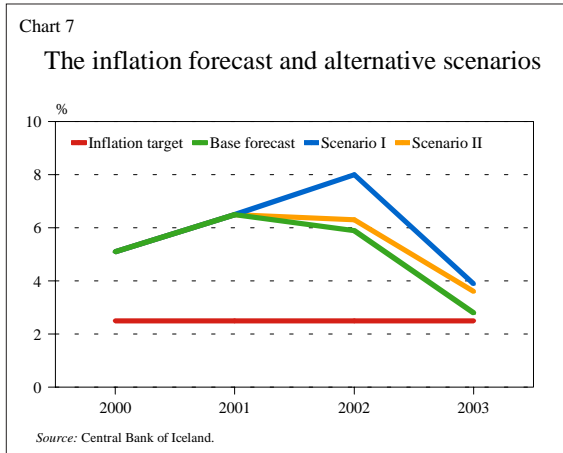


ance limits, but in fact the probability of it being under 1% is somewhat greater than that it will be over 4%. In this way the substantial uncertainty surrounding the future path of inflation is reflected in the forecast.

In part the uncertainty lies in the forecast assumptions, most notably concerning the exchange rate of the króna, the depth of the coming recession and developments in the domestic labour market over the next few years. Based on economic fundamentals there is a strong case for a real appreciation of the króna over the medium term. If the appreciation occurs through a higher nominal exchange rate during the forecast period, inflation should turn out lower than forecast, other things being equal. The precondition for such a development is that no further wage increases, in excess of the current contracts, will result from the upcoming review in February next year. If wage agreements are revoked, resulting in wage increases in excess of what has already been negotiated, the risk of a wage-price spiral increases. Such a development could cause the króna to depreciate further, which in turn might cause high inflation expectations to become entrenched.

Chart 7 presents possible scenarios if wage agreements are revoked and a wage-price spiral follows, but without causing exchange rate depreciation. Since the price spiral is eventually broken by the stable exchange rate, the results would be even more damaging if that assumption did not hold. The first scenario shown in Chart 7 assumes that wage agreements are revoked in the first half of 2002 and con-





tractual wages go up immediately afterwards, which does seem a rather unlikely course of events. In the second scenario it is also assumed that the agreements will be revoked, but wages do not rise subsequently until the second half of 2002. In this case the wage-price spiral will be smaller, since there will be more slack in the domestic goods and labour market by then. The greater the slack, the less the probability of large wage increases, since businesses cannot pass them on to prices as easily and the wage-earners' bargaining position is weaker when employment is less secure. In spite of this, inflation next year would be around  $\frac{1}{2}\%$  higher than assumed in the base forecast and just under 1% higher in 2003. These alternative scenarios indicate some of the risk posed to price stability if wage agreements are revoked next year. It should be borne in mind that no

response by the Central Bank is assumed in the alternative scenarios. All things being equal, the Bank might feel compelled to forestall such a development by tightening the monetary stance.

The productivity trend, which is fairly uncertain next year, could have some impact on inflation in the near future. The above inflation forecast assumes that productivity will increase in 2002, but on a smaller scale than in recent years. In contrast, the NEI forecast assumes that average productivity of labour, i.e. GDP per capita employed, will drop by just over  $\frac{1}{2}\%$ . There are two reasons for this difference. Firstly, the Bank's inflation forecasts do not measure productivity of labour in terms of GDP per capita employed. Instead, they try to assess the underlying productivity trend, which is not as broad a measure of productivity. This is in line with the Bank's historical experience of inflation forecasting. Secondly, a somewhat larger contraction in employment next year, and consequently higher level of unemployment, is assumed in the Central Bank forecast compared to the NEI forecast.

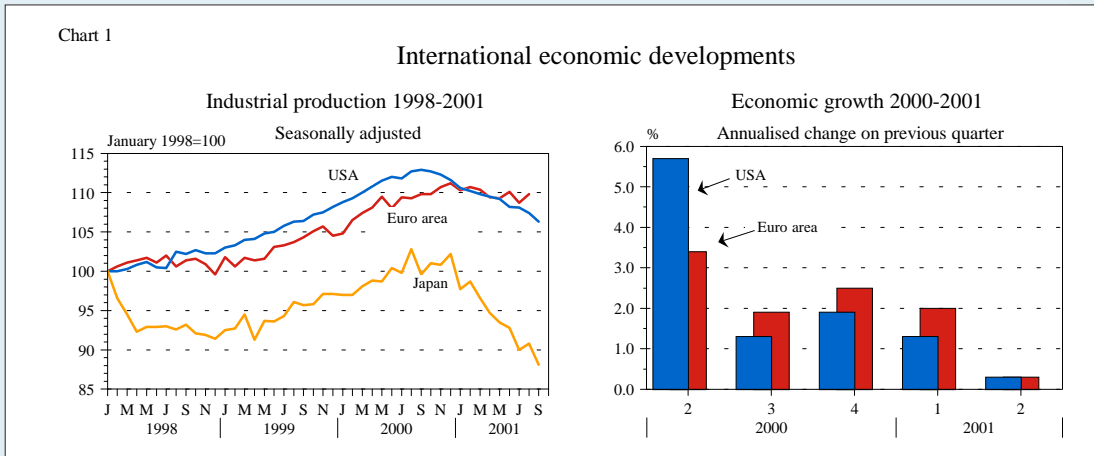
#### *The global economic climate has deteriorated*

Economic prospects among Iceland's main trading partner countries have worsened considerably recently, at the same time as the Icelandic economy's susceptibility to such changes has grown. A recession has begun in the USA, several European countries are on the brink of one and the Japanese economy is forecast to keep on contracting. Furthermore, a downturn is looming or has already begun in many

### Box 2 The global economic outlook

The global economic outlook has deteriorated steadily over the past year, to the extent that it could be called a global recession. The events of September 11 accelerated the downturn which started in the wake of last year's slump in the equities market. GDP in the USA contracted during Q3. The impact of the terrorist attacks are only to a limited extent reflected in these figures. Europe is on the brink of a recession and the Japanese economy is expected to dip into a recession once again. Furthermore, a recession either has already begun or is looming in many emerging economies.

US GDP contracted by an annualised 0.4% during Q3, after stagnation during Q2. These figures are widely expected to be revised downwards later and the contraction is expected to continue into Q4. Until recently, the contraction had primarily appeared in a decline in industrial production. In September it had fallen for twelve consecutive months, by a total of 5.8%. This is the largest continuous slide in industrial production since 1945, although it should be borne in mind that the share of industrial production in the US economy has decreased. As a result, the utilisation of capacity in



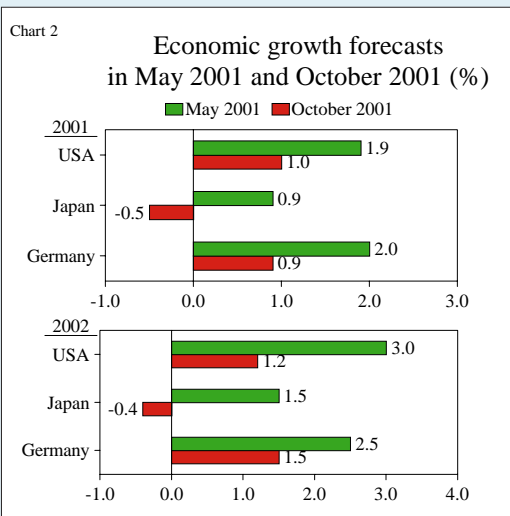
the manufacturing sector has reached its lowest level since 1983. Relatively buoyant private consumption has until recently prevented the slump in industrial production and sharp contraction in investment from manifesting themselves in falling GDP. In September, however, retail turnover declined by 2.4%, which could suggest that the recession is spreading to private consumption. While this figure reflects the impact of the terrorist attacks on the USA, other forces are also at work.

Unemployment has been increasing rapidly in the USA and rose in October by ½%, to 5.4%. Continuing mass redundancies and a rise in initial claims for

unemployment benefits in recent weeks suggest that unemployment will continue to increase in the near future. This will inevitably undermine private consumption, which could prove sensitive due to household debt accumulation in recent years and a fall in households' financial wealth.

Although the contraction in the USA looks certain to persist until the end of this year, there is less agreement on what the more distant future holds in store. Some analysts claim that the monetary and financial measures which have already been taken will prompt a relatively swift recovery next year, while others point out that the low level of capacity utilisation and household and corporate indebtedness will dampen the impact of lower interest rates on aggregate demand.

Economic developments in Europe follow broadly a similar path to that in the USA, although the downturn is at a less advanced stage. Industrial production has contracted since the beginning of this year but is running at a similar level to that of a year ago, and the contraction has not been a continuous one (for example, growth was recorded in August). Sentiment has been developing along similar lines, however, and could suggest that a recession is looming in some of the major European countries, including Germany. Since the preceding upswing was not as strong in Europe as in the USA, it is not certain that the reversal will be as abrupt either, at least not on the continent as a whole. The euro region's advantageous competitive position could also soften the impact of the global



downturn on European businesses. Nonetheless, a substantial slowdown is at present being forecast for Europe, which was not foreseen a year ago.

Recent economic developments in Japan have been a cause of some concern. Industrial production has shrunk rapidly. Japanese exports were struck hard by the global contraction in the technology sector. An even sharper downturn in growth appears to be taking place in some Asian emerging market economies. In

Singapore, annualised growth during Q2 and Q3 plunged by close to 10%, while Taiwan witnessed a drop in GDP during the first two quarters, for the first time in 26 years. There was a contraction in South Korea at the end of 2000, but a recovery at the beginning of this year. Considerable economic difficulties are also being felt in many countries worldwide, e.g. Argentina and elsewhere in South America.

emerging economies. The worsening global economic outlook is discussed in Box 2.

So far, these upheavals have not had any substantial impact on Iceland's main economic sectors. Aluminium prices have fallen, though, and technology companies have suffered the same shocks as elsewhere in the world, but fisheries products are fetching fairly high prices in foreign currencies, and extremely high in króna terms. Difficulties that have hit European agriculture in recent times may partly explain high prices in foreign markets and scarce supply may also have contributed to strong prices. Supply of marine products has probably affected prices more than has aggregate demand, although it is difficult to predict the outcome of the interaction of supply and demand factors in the near term.

On the other hand, inflation is clearly slowing down among Iceland's main trading partner countries in pace with lower economic growth. Crude oil and petrol prices have fallen, for example. This trend will counteract the impact that exchange rate depreciation and domestic cost increases have on prices, although the latter are still predominant.

*Robust economic activity until mid-year, but a considerable downturn has become likely*

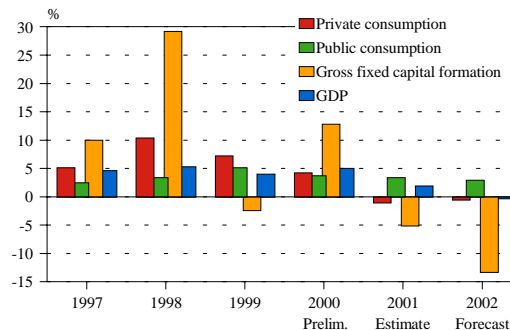
Recent data, including revised national account figures, have to some extent affected the bank's assessments of the state of the business cycle. In a nutshell, economic activity in 2000 and in the first half of 2001 was much more robust than had previously been thought. On the other hand, the probability of a fairly sharp contraction next year has increased rather than decreased. Thus the peak of the economic cycle was higher and reached later than had previously been thought. The likelihood of a sharp change of economic climate has increased correspondingly.

*Higher growth last year than originally estimated ...*

Revised estimates of GDP growth in 2000 indicate that the economy expanded by 5%, or almost 1½ percentage points faster than in earlier estimates. This means that rather than growth slowing down, as had been thought, the economy continued to grow at a high rate in 2000. Primarily this was the result of considerably higher investment, but private consumption also expanded somewhat faster than had been projected before. Growth during the first two quarters of the current year also confirms that the economy was fairly robust until mid-year, although indications of a belated adjustment can also be discerned. Quarterly figures for changes in GDP should be treated with caution, since there is little experience of their reliability. As a rule quarterly GDP growth estimates tends to fluctuate, even in large economies where sector-related swings ought to be levelled out to a greater extent than in Iceland.

Chart 8

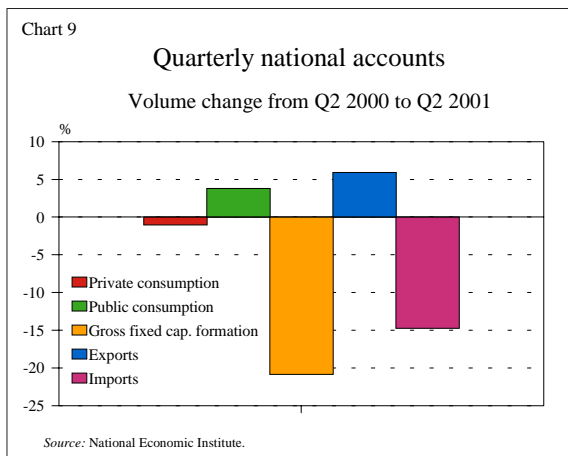
Growth of consumption, gross fixed capital formation and GDP 1997-2002



Source: National Economic Institute.

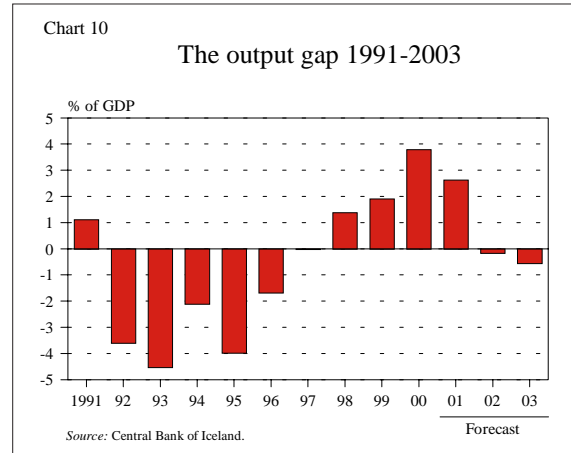
*Dynamic growth until mid-2001, but a sharper underlying reversal*

Growth during Q2 measured 3% from the same quarter last year, which is half the rate during the preceding quarter. To put this figure in context, however, the Q2 growth rate was still higher than in four quarters over the period 1998 to 2000, three years of a particularly strong upswing. Beneath the calm surface, however, there are signs of a considerable reversal. Capital formation during Q2, for example, shrank by one-fifth from year ago, according to preliminary NEI figures, while growth in the preceding quarter ran almost as high as the year before. Private consumption also shrank slightly, while the minor contraction previously measured during Q1 disappeared when revised figures were published. All in all, national expenditure decreased by 5½% from the previous year, but considerable export growth and a 15% fall in imports prevented this from leading to a drop in GDP.



*Output gap is still large, but forecast to disappear next year ...*

The output gap, i.e. the difference between actual and potential output, provides an important indicator of the cyclical position. When revised figures for GDP growth in 2000 have been taken into account, the output gap was larger last year than had previously been estimated. It comes close to the figure for 1987 and 1988, which was generated under highly exceptional conditions (a “tax-free” year during the changeover from a deferred income tax system to PAYE). At the same time, a revised estimate of the



output gap for this year shows that a substantial positive output gap remains, provided that the GDP forecast on which this assessment is based is not far off. An eight-year period of growth is forecast to come to an end next year and the output gap will turn slightly negative, but much smaller than in 1992-1996. The NEI forecast of a 0.3% decrease in GDP next year can therefore be regarded as a fairly modest adjustment in historical terms.

*...but the current account deficit will shrink fairly slowly, according to the NEI forecast*

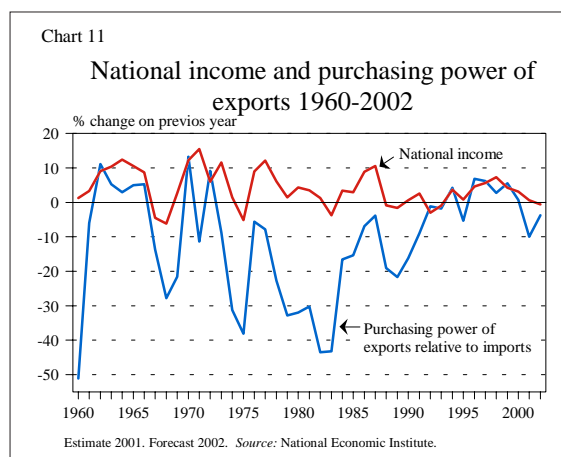
A gradual adjustment of domestic demand to potential output entails that the current account deficit will shrink slowly. It will remain quite large next year, despite a minor contraction. According to the NEI forecast, the current account deficit will be equivalent to 8% of GDP this year and just under 6% next year. As result of the assumptions on which the forecast is based the external balance will move rather slowly to a sustainable position in 2005. A more abrupt adjustment with a more rapid reversal is not unlikely, although hardly at the speed associated with recent currency and financial crises in various parts of the world. There are examples of reversals amounting to one-fifth of GDP in the space of two years. Given that Iceland’s current account deficit is not produced by a deteriorating competitive position or external shocks, which are likely to be levelled out, the adjustment could take longer than would otherwise be the case. The reason is that most of the adjustment has to come from the demand side. Bearing in mind the obvious need for adjustment, the

NEI forecast for growth in the coming years can be deemed somewhat optimistic, e.g. in the absence of large investment projects in the aluminium sector, which may be launched in 2003. If these projects are realised, the recession could be fairly short, but by the same token, the current account deficit would also be larger and inflation higher in 2003 and beyond.

#### *What is the nature of the contraction ahead?*

As mentioned above, GDP is forecast to contract by 0.3% next year. There is some probability of a larger contraction. If this forecast holds good, it will be the first contraction in GDP since 1992. At that time, however, the contraction was much larger, at 3.3%. National income is forecast to shrink slightly more than GDP, or 0.6%. The reason is not – as is usually the case – a deterioration in the terms of trade, but rather higher interest payments to abroad as a result of a higher level of foreign debt.

Most recessions in Iceland have gone hand in hand with some kind of external shocks; indeed, 90% of the variation in national income growth can be explained by export and terms of trade developments. This relationship can be seen to some extent in Chart 11, showing changes in national income and in the purchasing power of exports of goods and services.<sup>3</sup> The possibility that this relationship may have weakened during the past upswing has recently been contemplated, but on closer examination that does not seem to be the case.<sup>4</sup> Soaring national income over the period 1996 to 2000 is to a large extent explained by the favourable development of exports and the terms of trade. Nonetheless, national expenditure increased much more towards the end of



the period, generating a current account deficit of a magnitude which is unprecedented during upswings in Iceland. This trend has earlier been traced to factors including the deregulation of capital movements, easier access to credit, an underestimation of the risk of foreign borrowing and unrealistic optimism that the boom would continue.

An economic recession can generally be traced to one of the following factors:

1. An external shock, normally a drop in exports or a deterioration in the terms of trade, disrupts income formation in the economy.
2. Aggregate demand contracts below a level consistent with full utilisation of production capacity.
3. Persistent macroeconomic imbalance makes the adjustment of demand unavoidable and a necessary part of the process of adjustment to a new equilibrium.

Historically, recessions in Iceland have had the characteristics of the first type. If national income contracts due to external shocks, economic policy faces the problem of assessing how large, fast or lengthy a reduction in national expenditure is inevitable or necessary for domestic demand to adjust to lower national income. There may be justification for softening a minor or short-lived drop in national income by foreign borrowing, which leads to a temporary increase in the current account deficit. However, if the contraction is large or likely to be permanent, it may be necessary to bring national expenditure down. The pending contraction does not appear to be of this type. Purchasing power of

3. This term refers to the purchasing power of exports relative to imports, i.e. the volume of imports than can be purchased for national exports. This aggregate may equally be regarded as the multiple of exports of goods and services and the terms of trade, or as the nominal value of exports of goods and services divided by import prices.

4. In 1995 a single equation model was estimated at the Central Bank which accounted for 88% of changes in national income growth in terms of the development of these two aggregates over the period 1960-1994. It has been suggested that this relationship may have weakened during the past upswing. However, re-estimating the equation to the year 2000 revealed quite the opposite. If anything its explanatory power had increased and its characteristics were better. When the equation was estimated on the basis of data only until 1995 and applied to forecast national income to 2000, it managed to simulate quite accurately the upswing that occurred during those years.

exports is not forecast to shrink next year, and will continue to grow over the medium term, as forecast. In fact the Ministry of Finance is more optimistic and expects export growth of almost 3% next year.

A contraction of type two generally results from worsening consumer or corporate expectations. Consumption and investment decrease and savings increase. If the economy has been close to equilibrium to begin with, this will result in excess supply of goods and factors of production. Such conditions serve to keep wage rises lower or even reduce wages, inflation slows down and unemployment increases. A contraction of this kind has taken place in many industrial countries, e.g. the USA and Japan. The roots of the current economic problems of Japan, however, are more complex.<sup>5</sup> Economic theory provides simple remedies, namely to cut interest rates, increase government spending or cut taxes. The pending contraction in Iceland is not of this type either. Strong macroeconomic imbalances prevail at the start of the contraction, reflected in a large current account deficit and a positive output gap, and in inflationary pressures. Macroeconomic policies have aimed to contain excessive demand growth and are beginning to produce significant results. There has been no need to stimulate demand – far from it.

In the Central Bank's view, the pending contraction is of the third type. The output gap and current account deficit are shrinking, and macroeconomic imbalances are on the wane. The NEI forecasts that national expenditure will decrease by 1.8% this year and 2.5% next year. The contraction will be accompanied by various difficulties, particularly in the non-traded goods. Export and import competing sectors, on the other hand, will be better placed, since their competitive position as reflected in the real exchange rate of the króna is more favourable than it has been for decades. The positive output gap will vanish entirely next year, according to the NEI forecast, but the slack afterwards will not be particularly large.

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5. The difficulties being tackled in Japan are rooted in the overheating of the economy and an asset price bubble a decade ago, which seriously weakened the financial system when asset prices plummeted.

#### *Adjustment of national expenditure to national income could be sharper than the national budget assumes*

Next year's reduction in national expenditure, according to the NEI, will not suffice to bring the current account deficit down to a sustainable level. It is conceivable that the reversal will be faster and more akin to historical experience in Iceland and elsewhere. Two scenarios are presented here. In both cases national expenditure is assumed to contract sufficiently to bring the current account deficit down to a sustainable level, defined as a deficit that is consistent with a stable net external position as a proportion of GDP. For this to happen, the current account deficit must not exceed the equivalent of 2½% of GDP. The first scenario assumes that national expenditure shrinks sufficiently to achieve this in 2003, while the second posits a slower adjustment where sustainability is not restored until 2004. For comparison, a base model is stated which is broadly in line with the outlook presented by the NEI forecast. Inflation in 2003 is higher according to the base line scenario than in the forecast presented above, for two reasons. Firstly, the Bank's inflation forecast expects wage agreements to hold good and wage drift to diminish in pace with the easing of the labour market, while wages are in part an endogenous component of the model producing the base line scenario. Secondly, in the Bank's forecast it is assumed that pressures will ease by more next year and in 2003 than assumed in the base line scenario. All scenarios are based on the assumption of a stable nominal exchange rate of the króna. It should be emphasised that this is merely a technical exercise in order to demonstrate the impact of different paths of adjustment on key aggregates.

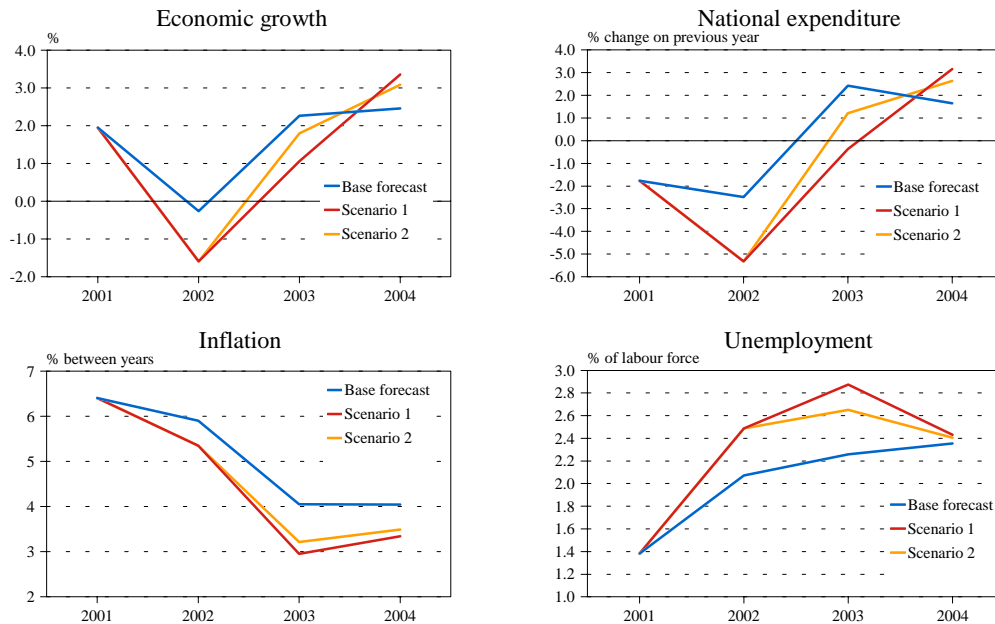
In the first scenario, national expenditure contracts by almost 5½% next year, then slightly in 2003. GDP would then contract by 1½% next year and grow by only 1% in 2003, and finally rally in 2004 to reach 3½%. As consequence of slower growth, unemployment would rise to 3% in 2003, then decrease. Less tight labour and goods markets than in the base line scenario imply that inflation would be very close to the Central Bank's target in 2003. In the second scenario, the adjustment is slower. The contraction in 2002 would be somewhat smaller, or 0.7%, and unemployment just under 3%

Chart 12

## Base forecast and alternative scenarios 2001-2004

Scenario 1: Current account sustainable 2003.

Scenario 2: Current account sustainable 2004.



Sources: National Economic Institute, Central Bank of Iceland.

in 2003. Inflation would be half a percentage point higher than in the first scenario, but within the tolerance limits of the Bank's target.

In light of this analysis, the Central Bank's view is that the pending contraction is an unavoidable part of the process to restore macroeconomic balance and therefore not fundamentally malignant. It will also contribute towards the Central Bank's 2½% inflation target being reached. However, this analysis does not alter the need to remain on the alert that the contraction does not undermine the stability of the financial system, which could amplify the contraction beyond what is needed in order to restore balance. At present, however, there are no visible signs that such a development is looming. Financial system stability is discussed in a separate article elsewhere in *Monetary Bulletin*.

#### *Fiscal result this year will be worse than expected*

An examination of the treasury's regular revenues and outlays shows a deteriorating result with a slight

deficit this year and next year. Outlays have increased considerably, due to both discretionary measures and public sector wage increases, while regular revenues have declined due to a drop in tax revenues from consumption and imports. Table 4 shows that the surplus excluding extraordinary items, which amounted to almost 3% of GDP in 2000, has disappeared in a short space of time.

It is difficult to forecast various extraordinary fiscal items, such as asset sales, pension fund liability transfers and tax impacts. Furthermore, they usually have little current macroeconomic impact. For this reason, the discussion here is confined to revenues excluding asset sales and to outlays excluding special civil service pension charges and write-offs of tax claims. When the budget for 2001 was passed by Parliament, the Ministry of Finance estimated that revenues excluding asset sales would rise by 3% on a cash basis between 2000 and 2001, while outlays excluding extraordinary items would rise by 7½%. Receipts in excess of outlays paid, excluding extraor-

Table 4 Treasury finances overview

	Accruals basis				
% of GDP	1998	1999	2000	2001	2002
A Core revenues <sup>1,2</sup> .....	30.8	33.1	32.8	31.2	30.9
B Core expenditure <sup>1,3</sup> .....	29.9	30.8	30.0	30.7	30.6
C Revised core expend. <sup>4</sup> ....	29.9	30.8	30.0	31.4	31.2
Core balance (A-B).....	0.9	2.4	2.8	0.4	0.4
Rev. core balance (A-C)....	0.9	2.4	2.8	-0.2	-0.3

1. According to treasury estimates and proposals.

2. Excluding asset sales.

3. Excluding extraordinary pension charges and tax claim writeoffs.

4. Estimated 2001 overrun repeated in 2002.

dinary items, were expected to amount to about 9 b.kr.

A simple projection of receipts until the end of September 2001 indicates that the budget estimate and a similar autumn forecast by the Ministry of Finance for revenues excluding asset sales will more or less hold good. Receipts from direct taxes will probably be somewhat higher than originally estimated while indirect tax receipts will fall somewhat short of forecasts. All in all, treasury revenues are heading towards 223 b.kr. this year.

Similar projections for total outlays suggest that, on a cash basis and excluding extraordinary items, expenditures are heading for 228 b.kr., while the supplementary budget for this year, presented in October, assumed 223 b.kr. and the original budget 211 b.kr. Assuming a similar overrun on an accruals basis, revised outlays in 2001 will be 237 b.kr. instead of the 232 b.kr. assumed in the supplementary budget. The budget assumed that outlays would rise by just over 7% on a cash basis between the years. Current treasury estimates are for a 17½% rise, which now appears, however, to be heading for 20%. Either way such spending growth must be con-

sidered quite large, even allowing for the fact that inflation and wage rises will probably be roughly 2% higher than assumed in the budget.<sup>6</sup>

Assuming a 20% rise in outlays and a 5% rise in revenues between years on a cash basis, this year's fiscal balance will be negative by 7½ b.kr. on a cash basis. On an accruals basis the deficit will be smaller.

#### *Poorer fiscal position this year and economic downturn could erode the surplus in next year's draft budget*

Broadly speaking the forecast rise in treasury revenues next year seems consistent with the economic outlook as presented in the national budget. Revenues from personal income taxes and social security taxes are supposed to grow in pace with nominal GDP, and indirect taxes are to grow by 1% more than national expenditure. More uncertainty surrounds the outlay forecast. The planned year-on-year increase in outlays represents a status quo in real terms. This target ought to be manageable given that 3. b.kr. of this year's discretionary outlays are not scheduled for repetition next year. However, the outcome will depend on whether this year's expenditure overruns can be brought under control. If additional treasury expenditures run at the same level next year, the draft budget outlay figure should be revised from 239 b.kr. to 244 b.kr.

Underlying fiscal balance excluding extraordinary items is scheduled to show some improvement on a cash basis between 2001 and 2002. However, expenditures payable but previously accrued will be lower in 2002 than this year. As a result, the cash-basis improvement is not present on an accruals basis in the budget proposals.

As pointed out in *Monetary Bulletin* 2001/1, increases in outlays and cuts in revenues have limited the treasury's earlier scope for manoeuvre to counteract a possible cyclical downturn. Specific expenditure increases include parental leave payments, higher child allowance and real estate tax relief in regional parts of Iceland. The revenue cuts include a reduction in the personal income rate in connection with wage agreements made in 2000 and 2001. These changes alone will erode the fiscal surplus by around 8 b.kr. per year when they are in full effect. State construction and development projects have also been undertaken on an undesirably large

6. There are various specific occasions for this year's outlays. These include parental leave allowance, the Local Authorities' Equalisation Fund, a Supreme Court ruling on disability pensions, interest payments connected with the redemption of government bonds, higher interest payments on foreign loans, an ad hoc payment to buy up sheep farming quotas and action to ease the liquidity of healthcare institutions. In total, such specific outlays amount to at least 11 b.kr. Of this figure, some 3 b.kr. will expire next year. Since part of the outlays had already been entered into the treasury accounts, the rise between 2000 and 2001 will be lower on an accruals basis than on a cash basis, or in real terms 4-5% and 7% respectively.



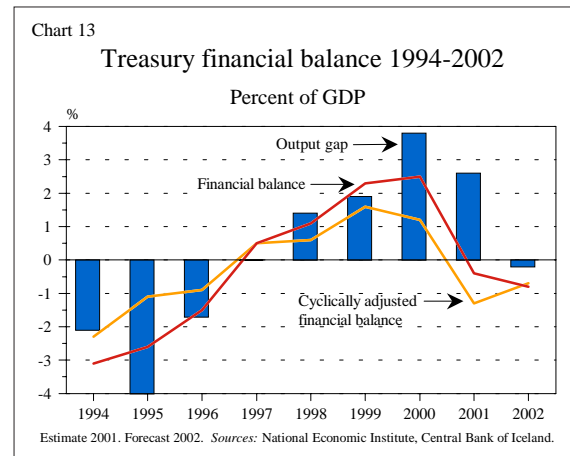
scale for an economic upswing. Further tax cuts of 1.8 b.kr. are to take effect in 2002 with an additional 4 b.kr. due in 2003. It may be expected that some of the waived revenue will be recouped through higher levels of economic activity, but how far and how quickly is very uncertain. Last year's eased fiscal stance probably played some part in delaying the downswing, but leaves the treasury in a correspondingly weaker position for tackling a sizeable contraction.

*Fiscal position has worsened by more than the cyclical impact*

Treasury tax collection and welfare payments intrinsically tend to produce a better fiscal result during an upswing than a downswing. The impact of the business cycle on the fiscal result is generally estimated based on NEI statistics for general government revenues and expenditures, which follow the UN national accounts standard. Figures for this year and next year are based on a similar assessment of treasury finances to that described above, with adjustment for the same extraordinary items. Measured in these terms, the fiscal balance will deteriorate by just under 3% of GDP from 2000 to 2001, while the cyclically adjusted balance deteriorates by 2.4% of GDP. The poorer fiscal outcome cannot therefore be attributed to the downturn alone. Next year the outlook is for a slight increase in the treasury deficit as defined here. If the budget proposals are accepted in their current form, however, the degree of deterioration will not fully reflect the contraction in the economy, which implies that the cyclically adjusted deficit will show a marginal improvement.

These conclusions must be seen in light of the fact that the cyclical adjustment only covers changes on the supply side of the economy, while the main macroeconomic change this year has involved the adjustment of national expenditure to production capacity. In particular, this has been reflected in an estimated 8% drop in general merchandise imports and a slight decrease in private consumption. Treasury revenues from indirect taxes are highly sensitive to such factors, especially to imports. As pointed out in *Monetary Bulletin* 2001/1, the treasury's position is at present more uncertain because of the risk that tax revenues will be substantially affected by lower private consumption and a smaller current

account deficit. This must be viewed in light of the outlook for a sizeable current account deficit this year (8% of GDP according to the NEI forecast) and the need for further adjustment which will inevitably require lower merchandise imports.

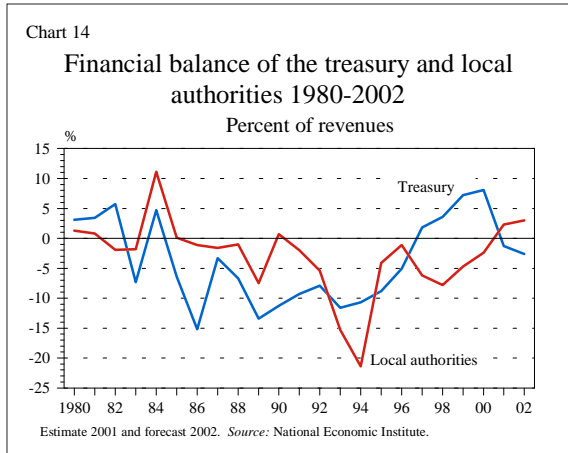


Through the impact on import duties and other consumption taxes, treasury revenues drop by roughly 2 b.kr. for every 10 b.kr. by which merchandise imports decrease. If 80% of the existing current account deficit were to be closed through a contraction of merchandise imports, the loss in treasury revenues would amount to around 10 b.kr.<sup>7</sup>

*Local authorities' position has improved after deficits in recent years*

There are various indications that the local authorities' finances are improving, after a period of deficits. When local authorities accepted the responsibility for primary education in mid-1996 their expenditures increased by somewhat more than had been expected. The introduction of a whole-day

7. State revenues from imports are equivalent to approximately 8% of import value, and other revenues from goods and services amount to around 12% of national expenditure. Were the current account deficit to be closed with a 60 b.kr. decrease in merchandise imports, assuming no other reduction in national expenditure or output, treasury revenues would fall by something like 12 b.kr. A more realistic assumption is that part of it will be closed through trade in services, which yields negligible treasury revenues. The February edition of *Monetary Bulletin* estimated the treasury's probable revenues from the current account deficit at 6-8 b.kr., based on a 70 b.kr. deficit, counting only taxes on imports. Here, revenues accruing to the treasury from subsequent consumption and use of these goods are included in the figure.

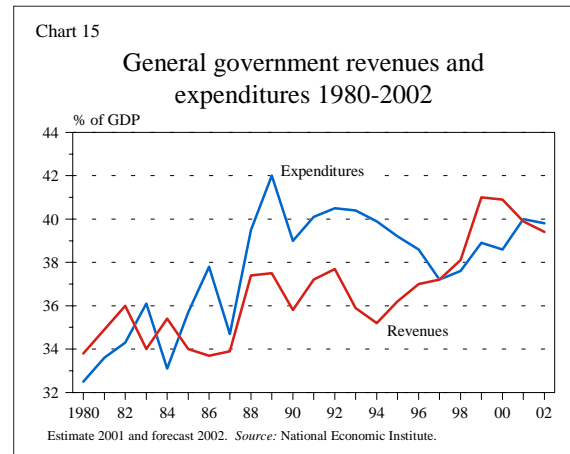


schooling requirement necessitated substantial investment, but this was met to some extent with greater contributions from the Municipal Equalisation Fund. At the beginning of 2001 the municipal tax ceiling was raised by 0.66% of the tax base and will go up by a further 0.33% at the beginning of 2002. Local government outlays have grown from 8.5% of GDP to more than 10% since the takeover of primary schooling, while revenues have grown noticeably more, from 7.5% to 10% of GDP. Increased revenues therefore appear to have sufficed to swing local government from a deficit to a surplus which the NEI estimates at just under 2 b.kr. this year and 2.5 b.kr. next year.

*The cyclically adjusted general government balance worsens, but by less than central government fiscal balance*

Growing outlays by both central and local government in recent years have seen general government outlays rise as a proportion of GDP, from 38% in 1996-1998 to 40% according to forecasts for 2001 and 2002. Revenues kept pace with outlays and even outstripped them at the peak of the upswing, but have recently lost momentum, largely reflecting the economic cycle. The fiscal downturn this year and next year swamps the minor improvement forecast for local government finances. According to NEI estimates, the overall general government balance swings from a surplus equivalent to just over 2% of GDP in 2000 to a ½% deficit next year. When the economic situation takes a turn for the worse, cyclically adjusted balances deteriorate less than unad-

justed balances. The cyclically adjusted general government balance is expected to worsen by just under 2% of GDP this year, while the unadjusted deterioration is estimated at 2½%. Next year the cyclically adjusted balance is expected to show a marginal improvement.



*Tax reforms*

Early in October the government announced proposals for amendments to tax legislation. By and large they entail a reduction in capital taxation and higher taxes on labour. Furthermore, it has been announced that inflation-linked accounting principles will be abolished in January 2002 and that business accounts and annual financial statements may be presented in foreign currencies from the same time, on fulfilment of certain conditions.

The government's proposals are as follows:

1. The corporate income tax will be reduced as of the tax year 2002, from 30% to 18%.
2. The tax-free limit for net wealth tax and supplementary wealth tax on individuals will be raised by 20% with respect to assets at year-end 2001.
3. Net wealth tax on individuals and corporations will be halved (from 1.2% to 0.6%) and the supplementary wealth tax (originally earmarked for construction of the new National Library) will be abolished as of the tax year 2002.
4. Personal income tax will be reduced from 26.08% to 25.75% in the PAYE system for the tax year 2002.

5. The tax-free limit for the private income tax surcharge will be raised by 15% with respect to income in 2001.
6. The social security tax will rise by 0.77% from the beginning of 2003.
7. Rent relief allowance will be tax-free from the beginning of 2002.
8. Stamp duty will be reduced from January 1, 2003.

The above proposals will not cause a significant loss in treasury revenues until 2003. This is estimated at 7 b.kr. annually when the full impact is felt, corresponding to just under 1% of GDP. However, this figure does not include a revenue loss of 900 m.kr. from the announced reduction in stamp duty. Local government budgets will also suffer somewhat initially with higher national insurance tax on their wage payments, lower municipal income tax revenues due to the exemption of rent relief allowances, and lower treasury base contributions to the Municipal Equalisation Fund. Both central and local government could lose revenues since the tax changes present an incentive for the self-employed to set up their own companies. Offsetting the direct central and local government losses is an indirect rise in revenues due to the stimulus that these measures will give to economic activity, although the extent and timing of this impact are very uncertain.

In its report to the government on June 20, the Central Bank said: "The Central Bank is of the view that a demand stimulus is untimely. Measures which strengthen the supply side of the economy, i.e. increase the supply of factors of production (labour and capital), boost productivity and encourage savings would simultaneously create conditions for sustained growth and support the Bank's inflation target." The Bank believes that this argument still applies in principle, although the time is drawing near when the stance can be eased.

The above proposals more or less fulfil the criteria of the Bank's June report. Firstly, they involve a reduction in taxation of capital which is deployed in business operations, and higher taxation of labour through the rise in social security taxes. In an economy characterised by excess demand for labour and a low level of national saving, there are strong grounds in favour of a tax shift of this kind. Secondly, a size-

able cut in the corporate income tax to one of the lowest levels prevailing among the countries with which Iceland competes will spur capital inflows to Iceland and prevent the outflow which would otherwise have taken place. For example, Icelandic companies which have conducted activities in other countries are likely to consider transferring them to Iceland, and to abandon plans they might have had for relocating abroad. This will have a positive impact on direct investment, and thereby on the exchange rate of the króna, although the scale of this impact is highly uncertain, especially at first. Thirdly, lowering the stamp duty is a positive step. Taxation of this kind is no longer applied on such a scale in developed countries and it impedes the evolution and effectiveness of financial markets.

Nonetheless, it cannot be ignored that these proposals will reduce the treasury surplus, compounding the fiscal weaknesses discussed above. Admittedly, the impact will not be felt in full until 2003, by which time the output gap should have turned from positive to slightly negative, according to the current outlook. It should also be borne in mind that a 1 b.kr. loss in revenues in 2002, resulting from the 20% rise in the tax-free limit for net personal worth as at year-end 2001, serves to prevent a rise which would otherwise have taken place in the wealth tax following an official property revaluation. The cut in personal income tax, costing the treasury almost 2 b.kr. in revenues next year, is much more ambiguous, especially given the present outlook for an excessive current account deficit in 2002 and continuing inadequate national saving. While a cut in personal taxation was promised when the position of general wage agreements was reviewed in March, this does not alter the broad economic assessment that there is still no need for tax measures that stimulate general consumption, which is too high rather than too low.

In the Bank's view, it is desirable to raise other taxes to offset the reduction in taxes on capital deployed in business operations and/or cut government spending, to prevent the foreseeable weakening in the treasury's position in the near future. All things being equal, the poorer the treasury's position, the higher the Central Bank's policy interest rate needs to be in order to make its inflation target more likely to be reached. Nonetheless, the Bank considers that given the scale of these tax changes and, not least,

the timing of their impact, they will not create macro-economic imbalance or jeopardise the inflation target.

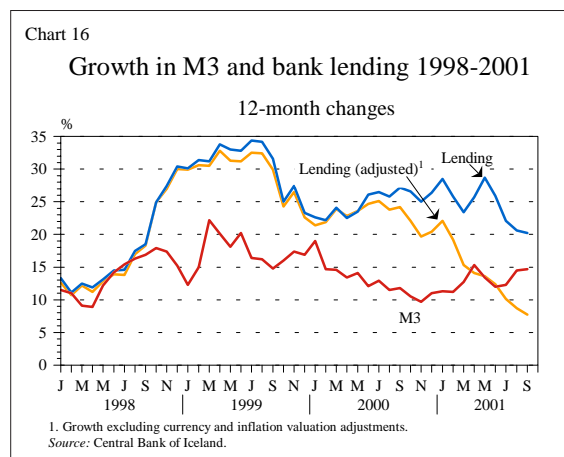
#### *Has credit expansion come to a halt?*

Underlying growth of lending by the deposit money banks (DMBs) has been steadily slowing down in recent months. This is seen when the impact of exchange rate changes and the automatic rise in the outstanding CPI-indexed or foreign currency-linked loan stock caused by inflation are excluded from nominal lending growth. Measured in these terms, twelve-month growth in DMB lending stood at 7½% at the end of September. Lending excluding currency and inflation adjustments increased by 0.4% in September, but fell during the two preceding months by a total of 0.8%. Annualised growth over the previous half-year measured just over 5% and a slight decrease was shown over the past three months. Underlying growth in DMB lending in recent months has therefore reached or gone below the level compatible with long-term stability and low inflation. This is an important development, since credit growth is a leading indicator of the demand path.

Slower DMB credit growth may conceivably be partly explained by greater shares in lending by other financial institutions, especially pension funds and investment credit funds. Data for lending by the credit system as a whole are only available until the end of June. At that time, lending had increased by 25½% over the preceding twelve months, but by 13½% excluding exchange rate changes and the automatic rise in the outstanding CPI-indexed or foreign currency-linked loan stock caused by inflation. Unadjusted annualised growth since the beginning of the year was almost 14%, which is marginally greater than over the same period in 2000. Lending by pension funds to their members increased by almost 22% from the beginning of the year to the end of August, equivalent to just over 13% in real terms and only a slightly lower real increase than over the same period last year. Lending by the Housing Financing Fund, however, has fallen somewhat in real terms, measuring 5% from the beginning of this year to the end of August, compared with 11% over the same period in 2000. Estimated annualised lending growth by DMBs, investment credit funds and pension funds, excluding loans to the public sector and other

financial institutions and excluding foreign-denominated and indexed loans, amounted to 7½% from January to August inclusive this year, but was 8.1% over the same period in 2000. Looking beyond the DMBs alone, credit expansion has therefore clearly not come to a halt, but underlying growth has slowed down substantially. It will probably not take long before it comes down to a level compatible with stability and low inflation.

Credit growth in the recent term was largely financed through foreign borrowing. In the past few months the share of foreign loans behind DMB lending growth appears to have diminished. Excluding own funding by the DMBs and similar items, the share of foreign borrowing in credit growth from the beginning of the year until the end of September was 36%, and the share of deposits 44%. Securities issues financed 15% and Central Bank funding was just over 5%.



#### *Still a sizeable increase in broad money and savings*

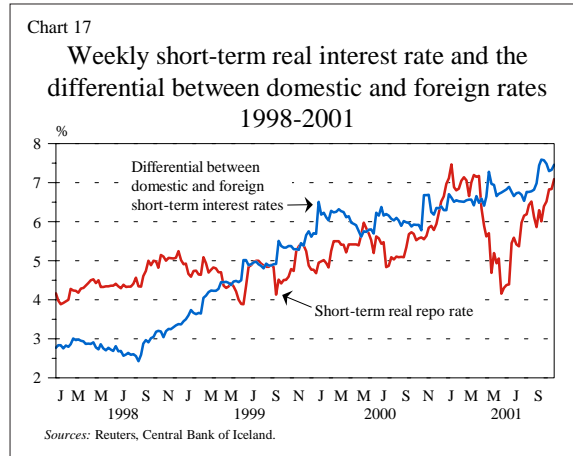
A considerable increase is still taking place in broad money (M3). Over the twelve months to the end of September it measured 14.7%, or somewhat more than during the preceding months. Such an increase is unsustainable in the long run, although it should be borne in mind that M3 in Iceland tends to indicate contemporary rather than future demand. M3 growth therefore primarily reflects the fact that incomes were still on the increase during Q3. Increased demand for money could be at work here to some extent, over and above what is warranted by income

developments, since uncertainties in the foreign exchange and securities markets have prompted greater use of currency and money market accounts, along with inflation-indexed accounts. In real terms, broad money increased by just over 5½% over the twelve months to the end of September and annualised three-month growth was similar. This does not suggest that the contraction has left much of an imprint on the level of economic activity yet.

*Monetary stance has tightened alongside lower inflation expectations*

The monetary stance eased somewhat during the first half of the summer alongside higher inflation expectations and the depreciation of the króna. By the time *Monetary Bulletin* was published in August, however, inflation expectations measured in terms of the inflation premium on government bonds had fallen and the króna had strengthened slightly. The Central Bank's real repo rate was around 5½% on July 20. The August inflation forecast was based on the exchange rate for that day. Inflation expectations have decreased since then, offset by the fact that the króna has depreciated. The inflation forecast published here is based on the exchange rate on October 24, which was just under 4½% lower than on July 20, while the real Central Bank policy rate had increased to 7%. As shown in Box 4, such high short-term real interest rates are by no means unparalleled among industrialised countries which have had to tackle domestic overheating; they are necessary in order to bring down inflation. The relationship between interest rates and inflation is discussed in a separate box. The short-term interest rate differential with abroad has widened by 0.7-0.8 percentage points since the beginning of August, at the same time as inflation expectations have come down, increasing the interest rate differential by even more in real terms.

Other financial conditions than the exchange rate and short-term interest rates have not changed much since the latter part of the summer, apart from a rise in equity prices of almost 5% from the beginning of August to the end of October. To a large extent this



increase is explained by the planned corporate tax cuts, although a market assessment that various publicly quoted companies were abnormally undervalued may also underlie it. Equity market developments are discussed in a separate box. Indexed long-term interest rates, on the other hand, have not changed significantly, and housing bond rates in particular have been relatively stable at marginally below 6%.

Towards the end of October, the Central Bank's policy rate was higher in real terms than after its interest rate cut on March 27. Inflation expectations have fallen again recently and are lower than at the end of March. Signs that a cooling of the economy is well under way are now much more explicit and there is greater probability that the positive output gap will be closed next year, although it is still present at the moment. A milestone has also been reached now that credit expansion has come down to a level compatible with stability and low inflation. The Bank's August inflation forecast for the third quarter was very close to the mark and in principle the inflation outlook has not changed, despite a somewhat weaker exchange rate. The probability that the Bank's inflation target will be achieved in 2003 has therefore increased somewhat. However, uncertainty still looms due to the conceivable review of wage agreements next year.

### Box 3 What determines the exchange rate of currencies?

Exchange rate developments are crucial to the performance of industries and the economy as a whole, especially in small, open economies like Iceland. An understanding of exchange rate developments is obviously an important precondition for forecasting them. However, exchange rate models which are useful for forecasting have proved difficult to design. The strong appreciation of the US dollar against the euro, for example, was contrary to most forecasts. And models which could explain the strengthening of the dollar against the euro ex-post seem inadequate for explaining its developments against the yen at the same time.

The following is a brief outline of the main theories about exchange rate determination and how well they have been able to explain actual exchange rate developments. Since there is no scope here for a detailed analysis of the historical evolution of such theories, this outline is confined to the main concepts which are current today, some of which have a long history. Twentieth-century theorists tried to explain exchange rate developments by referring to developments of relative prices (PPP), price elasticity of imports and exports, the (Keynesian) relationship between expenditure and income in an open economy, relative allocation of domestic and foreign financial assets, proportional developments in money supply, domestic production, real interest rates, expected inflation, etc. Attempts were subsequently made to improve these simple models and explain why they failed to account for actual exchange rate developments. These include models in which price stickiness and expectations played a key role.<sup>1</sup>

None of the above theories has managed to provide a satisfactory explanation for exchange rate developments or predict them in different periods and regions. There is a growing tendency to regard the development of the exchange rate as a complex interaction of

macroeconomic fundamentals and expectations about the course they will take. It is emphasised that the exchange rate is an asset price which, like other assets prices, is largely determined by expectations about the relative return on it and by other factors which are considered to affect this. Consequently, exchange rates are highly sensitive to new information (news) about fundamentals which could reveal information on their future path and thereby the future return on assets tied up in a specific currency.

The problem is to assess which fundamentals prevail at any given time and how markets will interpret new information about their future path. This is no easy matter, since expectations sometimes appear to change quickly without any clear link to corresponding fluctuations in the fundamentals themselves. Some theorists have proposed models based on rational expectations, which in effect preclude systemic deviations between fundamentals and investors' expectations about them. According to such models, two types of fundamentals are most important: those concerning domestic inflation expectations relative to abroad, and those determining the position of the real domestic economy relative to abroad. All things being equal, a poorer inflation outlook at home than abroad, e.g. as a result of a lax monetary stance, ought to lead to a depreciation of the domestic currency, since higher domestic inflation will erode its future purchasing power. Investors will therefore want to divest themselves of that currency to avoid later exchange rate losses, causing it to depreciate immediately. An event which gives market participants grounds for supposing that growth prospects have improved should, all things being equal, lead to a strengthening of the currency, given the likely relationship between economic growth and return on assets denominated in it. Expected return on domestic assets will therefore exceed that on foreign assets with a similar risk. Thus demand for the domestic currency increases and the exchange rate appreciates.

Expectation-based models do not show as obvious a link between domestic interest rates and the exchange rate as earlier exchange rate models. In ear-

1. A detailed discussion of these theories and many of the topics covered here can be found in M. Obstfeld and K. Rogoff (1996), *Foundations of International Economics*, MIT Press; and S. Lucio and M. P. Taylor (2001), *The Economics of Exchange Rates*, Cambridge University Press.

lier models, a rise in domestic interest rates always caused the currency to appreciate. This does not apply if a proper distinction is made between a nominal interest rates rise which reflects a rise in the expected higher real interest rate and those caused by higher inflation expectations. In the former case, the domestic exchange rate ought to appreciate, while the opposite can be expected in the latter case. In addition, the contemporaneous impact that interest rate changes have on the exchange rate ought to differ from the longer-term impact. In models assuming nominal price stickiness, an unforeseen rise in interest rates causes an initial appreciation of the domestic currency, then a depreciation corresponding to the interest rate differential. This is because market equilibrium requires the expected return on domestic and foreign investments to be equal, and for this to happen, the domestic currency needs to depreciate if domestic interest rates are higher than foreign ones.

Models of this kind have been tested extensively for different currencies, periods and currency regimes. They fitted the development of exchange rates over the period from the end of the Bretton-Woods system to the end of the 1970s fairly well, and also exchange rate developments in countries experiencing hyperinflation. Furthermore, they have been regarded as giving a fairly accurate description of the impact of major shifts in the monetary policy stance. However, they provide a poor description of exchange rate developments since the beginning of the 1980s. For example, the development of real exchange rates has not followed the development of real interest rates as could be expected, except perhaps in the long run. Most models have difficulties in explaining the increased volatility of real exchange rates of major currencies after they were floated. Since the volatility of fundamentals has not increased it seems that fluctuations in exchange rates are broadly speaking unrelated to fluctuations in fundamentals. Only a small part of exchange rate changes can apparently be explained by new information about fundamentals – news concerning the exchange rate itself appears to have more impact. Contrary to what may be deduced from these models, a tighter monetary stance does not seem to be reflected in a strengthening of the exchange rate until after some lag. This also appears to apply to Iceland

(see the article by Thórarinn G. Pétursson in this edition of *Monetary Bulletin*).

If simple models of exchange rate developments are inadequate for in-sample description of exchange rate changes, they are even less effective for forecasting out-of-sample. In a famous paper, Meese and Rogoff found that such models do not forecast major exchange rates for up to a year any better than a random walk, which always assumes an unchanged exchange rate.<sup>2</sup> Many attempts have been made to overturn this refutation of theoretical exchange rate models, but have failed to provide alternatives which are better at forecasting for different periods and currencies. Longer-term forecasting has been more successful. Interesting new research suggests, for example, that theoretical models can provide indications about long-term exchange rate developments. However, the adjustment path to the long-run equilibrium may be non-linear, i.e. the exchange rate may more or less behave like a random walk when deviations from the long-run equilibrium, suggested by fundamentals, are small. Large deviations may, however, lead to a very swift adjustment to the long-term equilibrium.

The conclusion appears to be that theoretical exchange rate models are fairly inadequate for forecasting or explaining short-term exchange rate fluctuations and that there is a weak connection between exchange rate developments and those of economic fundamentals, at least in the shorter term.<sup>3</sup> Explanations of short-term exchange rate fluctuations lie rather in psychological and institutional factors in foreign exchange markets. In the long run, however, economic factors apparently have a stronger impact. Theoretical exchange rate models may therefore be useful for long-term forecasting. In the case of a non-linear adjustment to long-run equilibrium as described above, these type of models should be most useful when the exchange rate deviates substantially from the rate suggested by fundamentals.

2. R. A. Meese and K. Rogoff (1983), "Empirical exchange rate models of the Seventies: Do they fit out of sample?", *Journal of International Economics*, 14, 3-24.

3. This finding is not confined to exchange rates. The same problems arise with other asset prices, such as equity prices.

In the short-term, an exchange rate may be determined by self-fulfilling market expectations, which cause it to shift from its long-run equilibrium until the deviation is so great that it returns towards the equilibrium path. This effect is usually termed a bubble. Irrational as such herd behaviour may sometimes appear in the aggregate, such behaviour may be perfectly rational for each investor if they all expect that someone else is prepared to buy the currency at a rate which deviates substantially from the long-run equilibrium rate. Exactly what causes, sustains or bursts such bubbles, however, are difficult questions to answer. In recent years, attention has focused on the impact of the institutional framework of foreign exchange markets on investor behaviour and bubble formation. The assumptions underlying many rational expectations models has also been criticised. Uncertainties about the current situation, e.g. concerning monetary policy, may make investors fail to take advantage of arbitrage opportunities which in retrospect seem obvious. Rational investors may therefore respond to changes in monetary policy more slowly than if their impact were absolutely certain. Obviously investors also have different views and expectations; otherwise it would be difficult to explain the enormous amount of trading that takes place every day.

Research seems to suggest that investors may be broadly classified into two groups: long-term investors who primarily look at fundamentals, and speculators who base their decisions among other things on technical analysis. The latter group often appears to be characterised by herd behaviour which creates instability in currency price formation. A depreciation will prompt them to predict further depreciation, thereby amplifying the impact of the initial change instead of counteracting it by selling a currency when its

exchange rate is high and buying when it is low, as long-term investors do. Speculators tend to make short-term investments. Indeed, the bulk of foreign exchange market trading involves opening and closing very short-term positions. The interaction between these two types of investor may render exchange rate determination virtually unforeseeable, and even chaotic. It has even been claimed that investors allow themselves to be swayed by fashion, since they try to identify fundamentals that justify current exchange rate trends. As the data suggest, one result may be that it is primarily news about the exchange rate itself, rather than fundamentals, which cause exchange rates to move. This process may continue until investor confidence is so patently in contradiction to the facts that they change their minds and find new fundamentals to confirm the opposite view.

Foreign exchange trading arrangements may also cause exchange rate fluctuations which swamp the impact of fundamentals in the short term. Systemic fluctuations related to trading volume, e.g. on the opening or closing of markets, may indicate this. Sharp swings in the exchange rates of currencies when domestic markets open on Mondays, even though trading in the same currency has already begun in markets in other time zones, could suggest that currency trade has little to do with the arrival of new information. Attention has also focused on spirals formed in foreign exchange markets when participants roll over their customers' currency orders without any of them being prepared to take an open position. Such transactions can continue, with market participants opening positions at the start of the day's trading and then trying to close them before the market closes, without any new information arriving about fundamentals that could justify these exchange rate changes.



#### Box 4 International comparison of short-term real interest rates

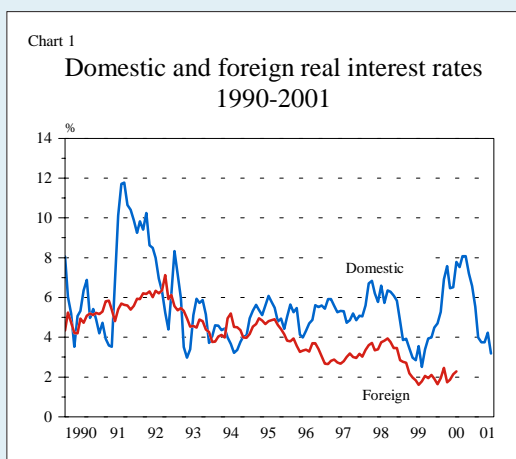
By maintaining a tight monetary stance, the Central Bank of Iceland has striven to ease overheating in the domestic goods and labour markets and thereby contribute to a low rate of inflation, in accordance with its stated inflation target. Monetary policy is implemented along similar lines to other countries which have

##### Periods of high real interest rates in selected OECD countries

<i>Country</i>	<i>Period</i>	<i>Real interest rate</i>	<i>Country</i>	<i>Period</i>	<i>Real interest rate</i>
<i>USA</i>	May 81 - July 82	7.6	<i>Italy</i>	Sept. 81 - January 82	6.6
	Nov. 82 - March 83	5.8		January 83 - April 97	6.7
	April 84 - October 84	6.6	<i>Canada</i>	April 81 - October 81	8.3
	October 85 - February 86	5.8		March 82 - Nov. 82	6.6
		Nov. 83 - May 85		7.1	
<i>Belgium</i>	March 81 - Sept. 81	6.2	December 85 - March 86	6.6	
	January 84 - January 88	6.6	August 88 - December 90	7.3	
	Sept. 89 - Nov. 93	6.6	June 91 - April 92	6.5	
<i>UK</i>	Sept. 81 - March 83	6.3	April 94 - June 94	6.4	
	February 85 - October 87	6.8	January 95 - April 95	5.8	
	February 89 - October 89	6.0	<i>Portugal</i>	August 85 - Sept. 86	7.5
	June 90 - October 92	7.1		May 87 - October 87	6.7
		May 94 - October 91		6.5	
<i>France</i>	March 82 - Sept. 82	7.0	June 92 - January 93	6.3	
	December 83 - August 84	6.0	May 94 - December 94	7.1	
	February 85 - April 86	6.6	<i>Spain</i>	Dec. 82 - Dec. 83	8.8
	June 87 - January 88	6.0		June 87 - March 88	8.4
	February 89 - Sept. 93	7.3		December 88 - June 93	7.6
March 95 - May 95	6.0	January 95 - Nov. 95	6.2		
<i>Greece</i>	August 87 - Nov. 87	6.7	<i>Switzerland</i>	April 92 - July 92	5.9
	February 93 - Sept. 95	8.1		<i>Sweden</i>	February 81 - June 81
	February 96 - Nov. 96	6.1	June 82 - October 82		6.4
	Nov. 97 - February 00	7.7	July 84 - October 84	6.1	
<i>Iceland</i>	May 91 - February 93	8.4	February 85 - March 87	7.7	
	July 93 - Sept. 93	5.8	<i>Germany</i>	August 81 - Nov. 81	6.4
	February 95 - August 95	5.6		May 90 - March 91	7.0
	Sept. 96 - March. 97	5.7			
	January 98 - Nov. 98	6.2			
	February 00 - December 00	7.1			

The table shows periods when real interest rates exceeded 5.5% on average, using short-term money market rates. Real interest rates are calculated using inflation over the six-month period on either side of the reference date. Foreign data cover the period from January 1980 to December 2000. Data for Iceland cover the period from January 1990 to September 2001. Data before that period are not used, since interest rates in Iceland were not market-determined until the late 1980s and an organised money market was not formed until the early 1990s. Sources: IMF, *International Financial Statistics*, various publications and the Central Bank of Iceland.

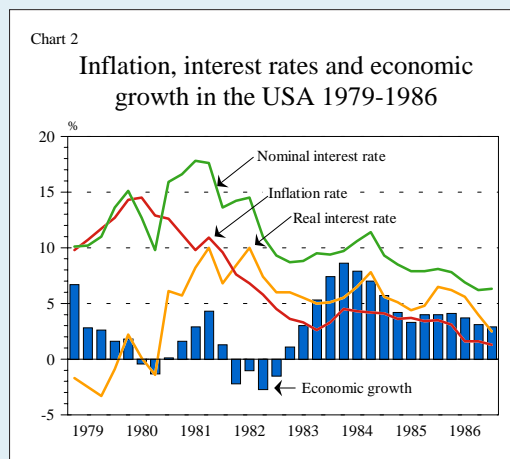
achieved good results in this field. Complaints are frequently heard about the Central Bank of Iceland maintaining high interest rates compared with those of central banks overseas. However, the higher interest rates which have prevailed recently are by no means unparalleled. Among other industrial countries, numerous examples can be found where policy rates have been raised for fairly long periods in response to domestic overheating, leading to short-term rates as high as those in Iceland at present, or even higher, as the table shows.



In fact, real interest rates were often considerably higher than the averages in the table would suggest. In Iceland, short-term real interest rates were high in the early 1990s. They were also fairly high in 2000 but have been falling in recent months, as revealed by the above chart which shows real interest rate developments in Iceland and the average rate of the countries in the table. The development of the real interest rate

1. The table is confined to industrialised countries where continuous data are available for the entire period.

in the USA is interesting. Around mid-1980 inflation in the USA was close to 15% in the wake of large oil price hikes in 1979, overheating of the US economy and a slack monetary stance. To counter overheating and bring down inflation, the Federal Reserve began raising its interest rates fairly fast in the second half of 1979. The Federal Funds rate was just under 7% at the beginning of 1978, but had risen past 15% in the first half of 1980. It peaked in the first half of 1981 at almost 18%. Real interest rates (on the same criterion as above) were negative in 1979, indicating a loose monetary stance. However, they rose rapidly and peaked in mid-1982 at 10%.



A tight monetary stance reflected in high real short-term interest rates gradually managed to combat inflation. The economy cooled rapidly and eventually a contraction took place, with real interest rates running very high by that time. In pace with decelerating inflation, the Federal Reserve eased the monetary stance by cutting short-term interest rates. A new growth period began in mid-1983 and lasted until the end of the decade without much inflation being generated.

## Box 5 The relation between interest rates and inflation

The main task of the Central Bank of Iceland's monetary policy is to maintain a low and stable rate of inflation. This is reflected in the inflation target which was set with a joint declaration by the Government and Central Bank of Iceland on March 27, 2001, whereby the Bank is obliged to keep annual inflation as close as possible to 2½%.

In order to achieve this target, the Bank deploys its monetary instruments. The main instrument is the rate of interest on the Bank's repurchase agreements with credit institutions, through which it attempts to influence aggregate demand in the economy and, ultimately, the inflation rate. As shown in a detailed discussion by Thórarinn G. Pétursson elsewhere in this edition of *Monetary Bulletin*, this impact can take some time to be transmitted. International experience and domestic research suggest that the Central Bank of Iceland's interest rate decisions begin to have an impact on inflation with a lag of approximately one year, with the main effect coming after roughly 1½ years.

One main channel for monetary policy to affect domestic price developments is through its impact on market interest rates. By raising its policy rate, the Bank generally induces a rise in other short-term interest rates, and also in long-term rates although the interaction with them can be more complex. The stickiness of inflation expectations also leads to a temporary rise in real long-term interest rates. This contracts individual and corporate disposable incomes and increases the cost of financing new expenditure. Aggregate demand shrinks as a result and inflationary pressures ease. By raising interest rates, the Central Bank therefore engineers a decrease in inflation.

Alongside these standard effects that higher interest rates have on demand, however, other effects also come into play. Firstly, many countries incorporate interest costs for housing in their CPI. When central banks raise their interest rates in these countries, the CPI increases as a result and inflation goes up temporarily while the impact lasts. For this reason, many central banks have resorted to basing their monetary policy on a price index that excludes interest costs for housing, for example in the UK, Australia and New

Zealand.<sup>1</sup> However, these countries' experience suggests that this impact is fairly short-lived and that after a few months the negative impact of the interest rate rise on demand has begun to outweigh the measured price increase effect.

A second and probably more important reason for inflation to increase after a rise in central bank policy rates is that a rise in interest rates pushes up the marginal cost of capital if there are adjustment costs to capital formation.<sup>2</sup> To some extent, business may then pass on this higher marginal cost of capital to prices. Cushioning against this impact is the negative effect on demand, which studies generally suggest will outweigh the impact on the marginal cost of capital in the long run.<sup>3</sup> This counter-effect may partly explain why it takes such a long time for interest rate changes to have an impact on inflation.

The study mentioned above concludes that, in the long run, a rise in the Central Bank policy rate causes inflation to fall. This is consistent with other countries' experience and research. To explore this issue further, it was also tested whether a direct positive effect from interest rates on inflation could be found in the models of inflation used by the Bank.<sup>4</sup> The impact was negative but not statistically significant.<sup>5</sup> Hence there are

1. The CPI in Iceland does not include interest costs for housing either.
2. See e.g. Barth, M. J., and V. A. Ramey (2000), "The cost channel of monetary transmission", NBER Working Paper, no. 7675.
3. See e.g. Chart 4 in the article by Thórarinn G. Pétursson in this edition of *Monetary Bulletin* and the discussion there. It shows that a rise in interest rates causes a temporary (although not statistically significant) increase in the inflation rate. In the long run, however, the rate of inflation falls.
4. Causal relationships need to be interpreted cautiously in such studies. A positive correlation between interest rates and inflation does not necessarily mean that a rise in interest rates (or high interest rates) causes greater inflation. On the contrary, such a correlation could indicate that the Central Bank is responding to greater inflation by raising interest rates. This is one example of the need for comprehensive economic analysis to be included with all statistical studies.
5. Note that this need not contradict the earlier claim that raising interest rates will reduce inflation. This impact is transmitted through demand in goods and labour markets and is reflected, for example, in wage changes. Since these channels are included in the Bank's inflation models, there should not be any statistically significant additional impacts caused by interest rates.

no statistical arguments for claiming that a rise in interest rates causes higher inflation in the long run.

Finally, it is important to distinguish between the impact on inflation of higher interest rates and simply

high ones. Theoretical arguments can be found that support the existence of the former impact, but there are none to support the latter, nor any statistical foundation in Icelandic data.

## Box 6 The equities market

Share prices in markets around the world have fallen this year, in most places by 20%-30% to the end of October. The fall in equity prices during Q1 was partly recouped in Q2 when the outlook brightened concerning an expected contraction in the US economy. However, the recovery was short-lived. Poor interim statements and widespread profit warnings this summer went hand in hand with greater economic uncertainties, and at the end of September were compounded by the impact of the terrorist attacks on the USA. Central banks in many parts of the world responded to these events with sharp cuts in their policy rates, which played some part in a general rise in equity prices in the beginning of October, after a dive during the previous month. Falling equity prices this year are widely seen primarily as an adjustment towards fundamental value. However, expectations seem to take into account the state of the US equities market, because of its impact on others. The contraction now under way in the USA has dampened demand for equities among investors worldwide.

Prices in the Icelandic equities market have broadly developed along the same lines as in the USA and elsewhere. The drop during the year, however, has been slightly less than in most other places, at 17%. Market value of equities on Iceland Stock Exchange (ICEX) has gone down by one-quarter from its peak in March 2000. Prices of shares in technology companies, which had taken on clear price bubble characteristics last year, have slumped in line with international trends. In most places prices have fallen by 60%-80% in the space of only 1½ years and are now similar to those in autumn 1998. Prices of the six companies in the ICEX technology index have followed a similar pattern and have fallen by more than any other equities in the Icelandic market. The pharmaceuticals index is the only one that has not gone down this year. Although a statistical study does not reveal much correlation between equity price trends in Iceland and other markets compared with the correlation between other European markets and the USA, there is no doubt that the Icelandic market is not as isolated as it used to be.

Equity market prices can provide an indicator about forthcoming economic developments because of the impact they have on corporate investments and on demand. The fall in market value of Icelandic companies means that this component of household assets has shrunk sharply, which may be expected to reduce demand for consumer goods.

Despite poor first-half company profits this year on the whole, operating results also showed positive trends. Many companies in fisheries and other sectors, for example, recorded improvements in EBITDA. Net financial losses, however, had a great impact on their results. Improvements in operating conditions served to push up fisheries sector equities towards the end of August and they had appreciated by one-third over the three months to the end of October. On October 3, plans for a reduction in the corporate income tax rate were announced. The following day share prices rose by more than 6%, a record figure for a single day.

Trading in Icelandic equities increased again in October after a low during the summer. Many aspects of the economy have been clouded by uncertainty and investors appear to have been biding their time and channelling their demand away from both Iceland and foreign equities. Net buying of foreign securities over the period January-September 2001 was equivalent to only one-sixth of the volume over the same period in 2000, the lowest figure since 1996. Year-on-year deposit growth has remained steady over the past 1½ years, or 10%-11% above estimated adjustments due to indexation. Of assets competing with equities for

### Overview July 31 - October 31, 2001

	July 31	Oct. 31
Number of listed companies .....	75	73
Market capitalisation (b.kr.).....	329.1	403.1
thereof equity funds (b.kr.).....	15.6	18.0
Average monthly turnover in previous 3 months (b.kr.).....	10.8	11.1
Turnover velocity (prev. 12 mo.) (%).....	46.3	37.3
ICEX-15: change in previous 3 mo. (%)...	-9.0	4.9
ICEX-15: change in previous 12 mo. (%)..	-33.1	-24.0

investors' savings, government bonds and highly liquid instruments have been considered the most attractive options recently, and bond turnover has grown sharply. The high level of interest rates may have hampered demand for equities in the secondary market or in public offerings insofar as this would otherwise have been financed by domestic borrowing. Other factors than high interest rates, however, are probably more important in explaining the drop in equity prices this year and last year. In some sectors prices have undergone an adjustment after become excessively high, and as a rule company profitability has not given any grounds for rises. While the P/E ratio varies widely both within and between sectors, an assessment of it for the market as a whole (excluding funds) suggests that prices have been high relative to profit ever since last year. Looking at profits for the period from mid-2000 to mid-2001, and ignoring the losses posted by 47 companies, yields a very high – but also very distorted – P/E ratio. Companies accounting for only around half of the market value announced profits. An estimate of the P/E ratio based on market participants' official profit forecasts for this year likewise produces a figure of 22, which is higher than the norm in European equities markets.

The real rate of return that Icelandic investors require from the largest companies in their evaluations appears to lie in the range 11%-16% at present. This figure may come down too if long-term interest rates drop in the near future, thereby leading to a rise in equity prices. However, investor evaluations of com-

panies' potential for generating profits is a major determining factor in price formation. Determinants of the rate of return required by investors include the risk posed to operations by an unstable economic climate and other risk factors, and how successfully companies manage to hedge against risks. The above required rate of return suggests that the risk premium on equities in the largest companies is in the range 5%-10%.

Developments in recent weeks and the results that have been published for the first nine months of the year have, at least for the time being, boosted optimism about the equities market. Improvements in the equity market framework and its informational efficiency in recent times cannot be ignored either. Icelandic companies have been going public on a large scale in recent years, but now their number appears to have stabilised. Demand, company performance and developments in foreign equities markets will determine price trends for the remainder of the year. The outlook is that private consumption will shrink by more this year than real disposable income. Although this implies the first increase in private saving for a long time, it is not certain that this saving will be channelled into equity purchases. Changes to accounting rules and corporation taxation will make Icelandic equities more attractive for foreign investors, since the tax environment is more like that in other countries and emerges more favourably from comparisons than before. Nonetheless, it would be rash to expect that the bulk of demand for Icelandic equities will come from anywhere else than domestic parties.

