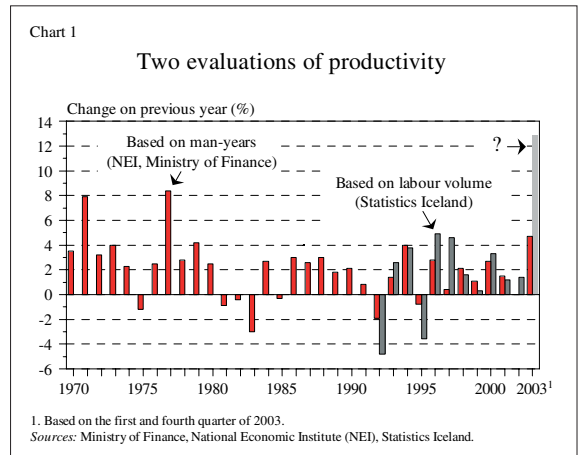


Appendix 2 Was there a productivity miracle in 2003?

Output growth in 2003 measured 4%, according to the national accounts. The high rate of growth was a surprise, especially in view of declining rather than increasing labour use during the year. This robust growth and developments in the labour market imply a leap in labour productivity. In fact, above-average productivity growth is not abnormal at the beginning of an upswing. After weathering a contraction, businesses generally have considerable excess production capacity that enables them to step up production without recruiting labour. It is expensive to lay off employees to meet a short-lived slump in demand and to recruit when a recovery gets under way. Hence, it may be more cost-efficient to retain employees and reduce their working hours. In some cases a minimum staff level cannot be avoided. For example, shops need staff present even when business is slack for part of the day.

Although productivity growth at the start of an upswing may be natural for these reasons, a surge on last year's apparent scale should be viewed with caution. Measurements of both the denominator and numerator of the ratio known as labour productivity (production/labour force) are subject to considerable uncertainty. Soaring productivity may be the result of either overestimating output growth or underestimating labour use growth, or both. Chart 1 plots two measures of productivity (based on estimates by the National Economic Institute and later by the Ministry of Finance) applying two different measures of labour use, man-years worked over the period 1970-2003, and a measure of labour volume based on Statistics Iceland's labour market surveys from 1992-2003. It should be pointed out at the outset that figures for labour use in 2003 are not strictly comparable with those for previous years (see later). Apart from 2002, productivity trends move in the same direction regardless of which of the two evaluation methodologies is used. On the basis of labour market surveys of the number of employed in April and November 2002 and the first and last quarters of 2003, i.e. the periods that offer the best comparison year-on-year, productivity grew by almost 13% in 2003. No prior examples of productivity growth on such a scale are found

using the man-year data from the National Economic Institute and Ministry of Finance.



These measurements are subject to a range of uncertainties. The following discussion will attempt to shed light on these uncertainties from two angles. Firstly, by contemplating whether GDP growth last year might be substantially overestimated, and secondly, by highlighting the large uncertainty surrounding labour volume measurements.

Is growth overestimated?

GDP statistics are generally revised quite significantly in the first year after their publication and may not be finalised for several years. Iceland is not the only country to face the problem of fairly large revisions from first provisional estimates to final figures; initial GDP figures from German and Japan, for example, have been considered untrustworthy. The reliability of recent data showing robust growth in output and productivity in the US has also been questioned, prompted by exceptionally wide discrepancies between growth of industrial output and GDP, by the unusually large mismatch between the expenditure and income side of the national accounts, and by the paradox of a jobless recovery. One conceivable reason for overestimated GDP growth in the US is that the scope of outsourcing has been underestimated. Productivity growth may also be overestimated dur-

ing recoveries due to underestimated illegal immigration of labour (especially across the border from Mexico) when the economy picks up.

Output growth and year-on-year price changes

It is interesting to examine the breakdown of Iceland's GDP growth into price and volume components last year. Statistics Iceland estimates year-on-year GDP growth of 4.0% between 2002 and 2003, measured at fixed prices. At the same time, the GDP deflator decreased by 0.4%. If the data are correct, this was the first year-on-year decrease in the GDP deflator since 1947. By far the largest single component of domestic production is private consumption, with a weight of 55%. Statistics Iceland estimates that private consumption grew by 6.4%, measured at fixed prices, and private consumption prices by 0.5%. The change in the private consumption deflator invites comparison with the CPI, which rose by 2.0% year-on-year from 2002 to 2003, or by 1.5 percentage points more. As Table 1 shows, changes in the private consumption deflator and CPI are often out of line, but a difference of 1.5 percentage points is on the high side, especially considering the very low inflation rate. This might be simply a matter of different methodologies. The private consumption deflator is weighted with the contemporaneous composition of consumption, while the CPI uses historical weights. An appreciation of the exchange rate, as was experienced last year, in tandem with an increase in the share of imported goods, could explain the discrepancy.

Prices indices are only used to deflate certain sub-components, for example to derive estimates of volume on the basis of changes in turnover. If the year-on-year rise in the private consumption deflator from 2002 to 2003 is underestimated, the change in private consumption volume has probably been overestimated at the same time, and therefore output growth as well.

Table 1 shows the difference between changes in private consumption prices and the CPI. It also shows changes in the import-weighted exchange rate index. A clear correlation is visible between changes in the exchange rate and the difference between the two price indices. The correlation is also obvious from the year-or-year change in quarterly data, but this disappears almost entirely between consecutive quarters.

Table 1 Private consumption prices and the exchange rate

<i>Changes from previous year (%)</i>	<i>CPI</i>	<i>Private consumption deflator</i>	<i>Difference</i>	<i>Exchange rate index (import-weighted)</i>	<i>GDP deflator</i>
1998	1.7	0.9	-0.8	-1.9	4.9
1999	3.4	2.6	-0.9	-0.2	2.8
2000	5.0	4.4	-0.6	-0.7	2.9
2001	6.7	8.1	1.4	19.4	9.4
2002	4.8	3.7	-1.1	-2.4	5.3
2003	2.1	0.5	-1.5	-5.0	-0.4

Sources: Statistics Iceland and Central Bank of Iceland.

No judgement will be made here as to whether or not output growth, and thereby productivity growth, is overestimated in the national accounts. Certain aspects of the data indicate that the appreciation of the króna might have driven up measured output growth and vice versa; Iceland also faces a similar problem to other countries in measurements of imported services. A clearer picture should emerge with the next revision of the national accounts.

Is labour use in 2003 underestimated?

Let us now turn to the alternative possibility, that actual labour use was greater than in the measurements above. Great uncertainty surrounds these measurements, especially in the case of 2003. This applies to both criteria. The methodology used in estimating man-years has not been adequately described. Changes in the implementation of Statistics Iceland's labour market surveys last year have made comparisons with previous years less reliable than usual.

Over the period 1991-2002, Statistics Iceland conducted labour market surveys twice a year, in April and November. As of January 1, 2003 continuous surveying was introduced, i.e. the survey was spread evenly over the year and the results published on a quarterly basis. The two survey formats were not allowed to overlap in 2003, which would have been necessary in order to produce comparable data, with the result that the time series was broken. Since most labour market aggregates are subject to seasonal changes, a survey that is limited to two periods of two weeks a year, in April and November, can scarcely be compared with one conducted over the whole year.

An examination of the findings for hours worked or number of employed in 2003 shows a sizeable difference between the winter and summer quarters. The rise during Q2 and Q3 is largely explained by increased participation by students over the period May to August, as Table 2 shows. Although April is in Q2, labour participation then is more in line with the winter pattern than the summer. Thus the most natural approach is to compare the findings of previous labour market surveys with data from Q1 and Q4/2003.

Table 2 Hours worked and number of employed per quarter in 2003

<i>Total</i>	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>
Hours worked in reference week	40.9	41.9	42.9	41.5
No. employed	151,800	159,800	162,900	153,200
<i>Of which aged 16-24</i>				
Hours worked	31.3	36.9	39.7	31.4
No. employed	22,300	26,200	29,100	22,300

Source: Statistics Iceland.

Despite the limited comparability of the old and new labour market survey data, the change is so sharp that a contraction in labour volume in 2003 seems likely. Although unemployment in Q1/2004 was down year-on-year according to the latest Statistics Iceland survey (the first for some while that enables such comparisons), labour volume hardly increased at

all. It seems almost certain that labour use contracted last year, when unemployment grew by almost 1% on average.¹ The extent is difficult to ascertain, however. A rough comparison of labour market surveys for 2002 and 2003, with all the reservations outlined above, could suggest that labour volume contracted between 4% and almost 8%, depending upon the definition of labour use.²

Such a large contraction is difficult to believe in light of the rate of output growth during the year, even if the lower of the two figures is applied. Other possible sources of underestimated labour use can be identified. It has been pointed out that the actual number of foreign workers employed at the Kárahnjúkar power station site is not known for certain, but could be in the region of 1,000. Since the labour market survey sample is taken from the national register, it would probably hardly cover this group, if at all. If so, labour volume may have shrunk by less than the poorly comparable surveys might lead one to conclude. Nonetheless, the number involved does not seem large enough to alter the finding that a contraction did in fact take place.

The conclusion from all the above is that much remains unclear about the productivity trend in 2003. Productivity probably increased by considerably more than during an average year, but there is reason to be sceptical that the surge was as large as calculations based on a rough comparison of labour market statistics would suggest.

1. The labour market surveys produce two kinds of evaluation of hours worked: by those who were present for work during the reference week, and by those who were present for or temporarily absent from work then. Similarly, data for the number of persons employed state the number who were at work during the reference week and the number in employment, i.e. either at work or temporarily absent. There are many possible explanations for temporary absence from formal employment, e.g. the weather, slack periods or the seasonal nature of the work. To prevent such fluctuations from distorting the comparison of labour use in 2002 and 2003, it is more appropriate to calculate labour volume on the basis of persons at work during the reference week.
2. Admittedly, it is not uncommon for labour market surveys to record rising unemployment even when employment begins to climb, because people who have withdrawn from the labour market during a period of contraction, and have stopped seeking work, begin looking again. Given the development in Q1/2004, however, this seems unlikely to have occurred last year.