

Box 4

The total wage index

In July, Statistics Iceland published an index for total wages for the first time. The index provides new information on firms' and institutions' wage costs and provides a useful supplement to the wage statistics currently available. It is calculated based on total taxable wages and salaries for paid hours. The estimate has been enhanced with information from administrative documents and Statistics Iceland research.¹ In addition, subindices are published for public sector and private sector employees, as well as for specific economic sectors. The figures currently extend back to Q1/2008. Among the advantages of the index is its quarterly frequency, which gives an indication of developments in wage costs much earlier than annual figures currently available from the production accounts. The new index is therefore a useful additional tool for the Central Bank to use in estimating wage developments and preparing its macroeconomic forecasts.

Composition of labour force, hours worked, and wages affect developments in total wages

The total wage index reflects more than just changes in wages per hour worked, as changes in wage distribution and the composition of hours worked also make an impact. An increase in the share of high-earning people or of overtime would push the index higher, whereas an increase in the share of low-earning people and an increased share of regular day-work hours would tend to lower it. The index also takes account of irregular payments, such as bonuses and annual one-off payments. Students and substitute workers enter the labour market during the summer and generally receive lower pay than permanent employees. The share of lower-paid workers increases as a result, which tends to lower the index in Q3 of each year. In Q4, the effect of summer workers is reversed, and December supplements are paid as well; therefore, the index usually rises most in Q4 of the year. These changes cause strong seasonal fluctuations in the index. The impact of changes in composition of the labour force can also surface over a longer period of time; for instance, due to changes in the share of sectors with varying wage levels or the share of foreign workers.

Comparison with other measures of wage developments

When comparing the total wage index to the general wage index, it must be borne in mind that the two indices do not measure wage developments in the same way. The wage index is an index of regular wages per hour paid; therefore, care is taken to ensure that changes in the composition of groups and hours worked, in addition to irregular payments, do not affect the measurement of the index. A third measure of wage developments is wage costs according to the production accounts. This is the measure that the Central Bank takes most account of in estimating wage developments, although the wage index is also used for reference. This measure is based on information from firms' annual accounts, and to measure wages per hour worked, wage costs are divided by hours worked according to Statistics Iceland's labour force survey. Because the production accounts are as yet prepared only on an annual basis, quarterly figures have been constructed using information on quarterly developments in the wage index. The disadvantage in using wage infor-

1. In the main, the total wage index is based on a multi-modal statistical evaluation by Statistics Iceland, where relative variables from the Icelandic Survey on Wages, Earnings, and Labour Costs are applied to administrative data that span the entire population. The administrative data include pay-as-you-earn (PAYE) data, personal income tax returns, and individuals' wage slips, as well as the educational database, fishermen's registered days at sea, and corporate income tax returns.

mation from the production accounts, however, is that this information is published with a time lag and is often revised significantly between publications (see, for instance, the discussion in Box 4 of *Monetary Bulletin* 2015/4). In the Bank's analyses, it has therefore proven necessary to estimate historical changes in wages as much as two years back in time, usually using the wage index. Therefore, over time, the new total wage index should give the Bank more detailed information for use in estimating wage developments.

Developments in wages by various measures

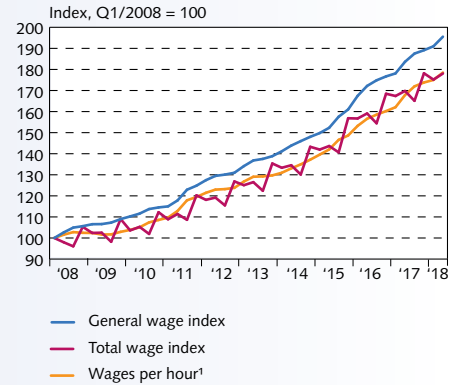
Chart 1 shows that the total wage index and wage costs according to the production accounts move closely together over the period and, over a ten-year period from Q1/2008 through Q1/2018, rose by the same amount, or 75%.² However, the wage index rose considerably more over the same period, or by 91%. From end-2015 onwards, the number of foreign workers rose steeply, and it can be seen that the difference between developments in the wage index and the other measures also grew larger from that time on. Furthermore, the share of tourism-related sectors, where wages are generally below average, has increased, while the share of the financial sector, where wages are generally relatively high (and were particularly high a decade ago), has decreased. This change in composition does not affect the wage index but can affect the other two measures.

If a company responds to wage increases by streamlining — for example, by hiring younger workers or foreign workers at lower wages instead of higher-paid local employees — the rise in the total wage index and in wages per hour worked be smaller, whereas there is no impact on the wage index. The same happens when overtime hours are reduced. In this context, it is also interesting to examine developments in the wake of wage settlements in recent years, as there is a particularly striking difference between the wage index and the total wage index when wage increases peaked following the 2011 wage settlement, on the one hand, and following the settlements reached in 2015 and 2016, on the other. In the former instance, the twelve-month rise in the wage index peaked at 11%, and in the latter case, it peaked at 13%. The total wage index peaks at the same time as the wage index in both cases, but the growth rate of the total wage index was a full 2 percentage points less (Chart 2). Comparing the total wage index and the wage index therefore gives an indication that employers have to a degree responded to contractual pay increases by reducing overtime and hiring cheaper labour. On the other hand, wages per hour worked do not always show a comparable trend. Based on wages per hour worked, the pay rises following the 2011 settlements showed fully in wage costs, as in the wage index. In addition, wages rose more slowly than both the total wage index and the wage index in the latter part of the settlements and at the beginning of the next settlements, in late 2013. Wages per hour worked and the total wage index are better aligned, however, following the 2015 and 2016 wage settlements, but they diverge again in early 2017.

Divergent developments in these differing measures of wage developments reflect differing methodologies in estimating wages per hour worked, but they can also reflect both uncertainties in measurements and measurement errors in wages and hours worked. In view of this, it can be expected that some uncertainty in estimating recent developments in wage costs will remain.

2. Developments in wage costs according to the production accounts from Q1/2017 through Q2/2018 are based on Central Bank estimates.

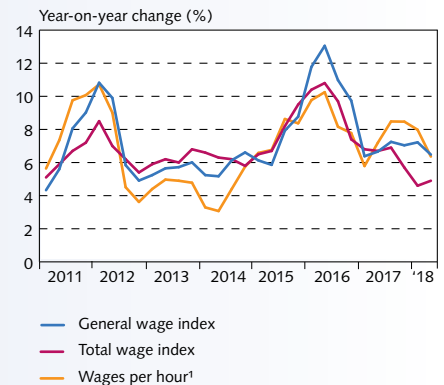
Chart 1
Different measures of wages
Q1/2008 - Q2/2018



1. Wages per hour worked are based on annual figures for the wage portion of the "wages and related expenses" category from the production accounts, as a share of total hours worked according to the Statistics Iceland labour force survey. Estimate from Q4/2016 onwards.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart 2
Different measures of wages
Q1/2011 - Q2/2018



1. Wages per hour worked are based on annual figures for the wage portion of the "wages and related expenses" category from the production accounts, as a share of total hours worked according to the Statistics Iceland labour force survey. Estimate from Q4/2016 onwards.

Sources: Statistics Iceland, Central Bank of Iceland.