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Once again labour shortage in construction

The share of construction firms reporting labour shortage has almost reached the level in the mid-00s. Experience testifies to labour shortage affecting all types of construction firms when labour market pressures are high.

Employment in the construction sectors is highly cyclically sensitive, and given the rising labour shortage, further stimulation of demand for construction services would not be advantageous in the current cyclical position. As the Danish economy is heading towards a boom with growing capacity pressures, it would thus be expedient to discontinue the tax deductibility of certain builder services under the scheme for home repairs and improvements.

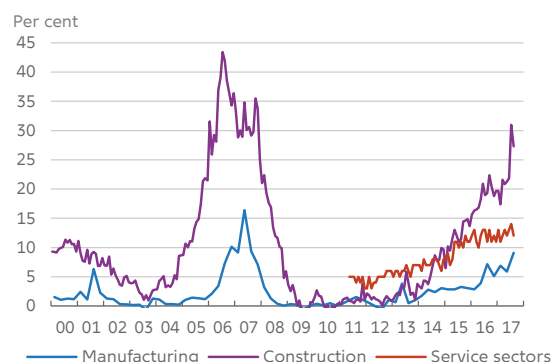
This analysis reviews labour shortage in construction in the early upswing in 2004-06 and during the following overheating in 2007-08, making connections to recent years' upswing.

The labour shortage in the construction sectors was broad-based during the pre-crisis upswing. Firms of all sizes and types and in all sub-industries stated to a higher degree that they experienced labour shortage during the upswing, relative to the preceding years. Moreover, there was no great regional variation in the labour shortage. However, there was a slight tendency towards a higher degree of labour shortage in larger, more creditworthy firms in a growth process, compared with other firms.

A similar pattern emerges in the early phase of the current upswing, i.e. 2013-15. Again, it seems that firms of all types and sizes are affected by labour shortage.

Labour shortage in construction is close to pre-crisis level

Chart 1



Note: Employment-weighted share of firms stating in Statistics Denmark's business tendency surveys that labour shortage is an impediment to production.

Source: Statistics Denmark and own seasonal adjustment.

Labour shortage in construction

According to Statistics Denmark’s business tendency surveys, firms in construction, manufacturing and the service sectors state that the gradually increasing labour shortage is an impediment to production, cf. Chart 1. This applies especially in the construction sectors, which have experienced added challenges in recent months in their recruitment of the employees they need.

The experience from the upswing in the mid-00s also testifies to relatively fast intensification of labour shortage in the construction sectors. The demand for new construction and maintenance works is highly cyclically sensitive, so employment in the construction sectors varies substantially over time, cf. Chart 2. It rose by around 36,000 persons from 2004 to 2007 due a large influx of foreign labour in that period, among other factors, cf. Danielsen and Jørgensen (2015). This contributed to dampening pressures on the labour market.

Employment in construction has risen by 23,000 full-time equivalents since 2013, cf. Chart 2. Foreign nationals account for around one fourth of this increase. The extent to which increased demand for labour in the construction sectors can be met through this channel in future is uncertain, given that the economic situation in the countries of origin of the foreign labour may be different, compared with the previous boom.

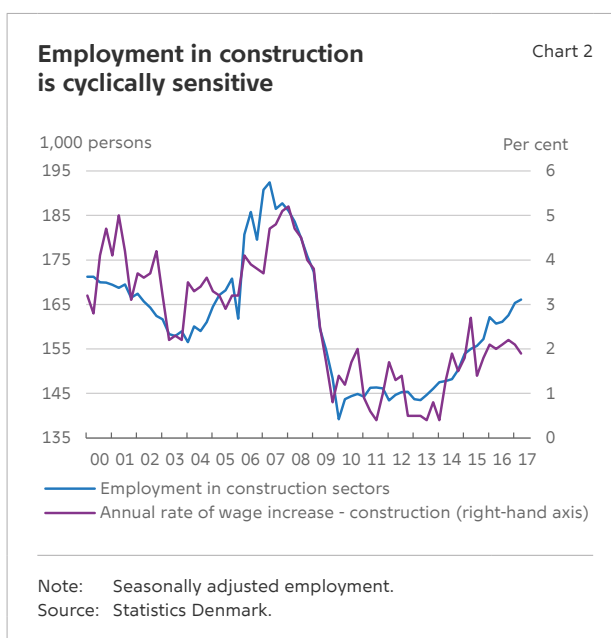
The labour shortage may result in higher wages when firms attempt to attract labour. So far, the rate of wage increase has been relatively subdued during the current upswing. The rate of wage increase did not rise until late in the period of overheating in the 00s, cf. Chart 2. This means that the rate of wage increase is not necessarily a strong indicator of current pressures on the labour market.

Firms behind the figures

Firms’ reported problems filling vacant positions may be due to a number of reasons. For example, labour shortage may reflect a general mismatch between the size and qualifications of the labour force and demand from firms during the upswing. Another possible reason is insufficient allocation of labour to the firms with the greatest need and value creation during the upswing. Both factors may result in a loss of production opportunities. Conversely, it is less of a concern if the labour shortage primarily affects low-productivity firms.

A key issue for an assessment of the effects of the rising labour shortage is thus whether the problem of labour shortage affects mainly certain types of firms or whether it has a more broad-based effect when labour market pressures are high.

The data behind the analysis consists of responses from Statistics Denmark’s business tendency surveys for the construction sectors, together with account-



ing data for the participating firms, cf. Box 1. Since the data series only covers the period until 2015, it is not possible to analyse the most recent development. There are similarities between the current situation and the early phase of the boom before the financial crisis (the period 2004-06). We take a closer look below at the types of firms that reported labour shortage during the previous upswing. The first step is to look at the duration of the labour shortage.

Labour shortage is often relatively short-lived...

For the period 2001-15 taken as one, a substantial share of the firms experiencing labour shortage report a shortage for only a few months in a given year, cf. Chart 3. This also indicates that firms reporting a labour shortage are able to find the employees they need with a certain lag. The pattern in Chart 3 may also be attributed to the significant seasonal element of labour shortage in the construction sectors.

... but it persists longer when labour market pressures are high

During the pre-crisis upswing, firms reported labour shortage for several months per year, however. The average period of firms' reported labour shortage rose from less than three months in 2003 to six months in 2006 and 2007, concurrently with an increase in job turnover. The rising labour shortage during the period of overheating in the mid-00s

Analysis data

Box 1

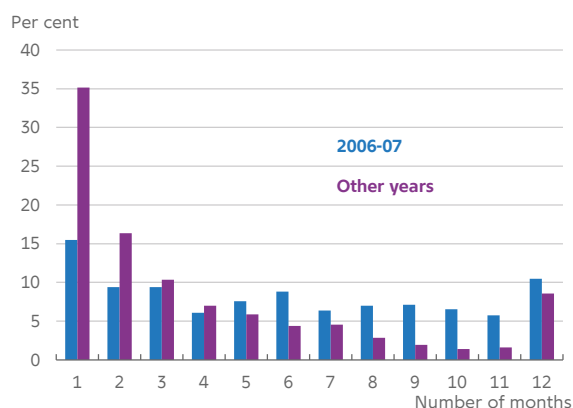
The data behind the analysis consists of responses to the questionnaire surveys used for compilation of Statistics Denmark's business tendency surveys for the construction sector. The survey question about capacity constraints for the confidence indicator has a monthly frequency. When responding to the questionnaire, firms are to assess whether a number of factors have resulted in production constraints for the firm during the most recent period. Firms may choose between several factors. One of them is labour shortage.

The responses are merged with accounting data for the participating firms. The primary source of accounting data is Statistics Denmark's Firm Accounts Database covering all private non-primary and non-financial firms. Data is based on questionnaires and tax reportings, and the series covers the period 2000-14. The firms' responses are merged with accounts data for the previous year. The main reason is that this reduces the possible impact of labour shortage on the firm's financial ratios in the year in question. The total data set covers the period 2001-15.

Labour shortage is more prolonged in periods of labour market pressures

Chart 3

Number of months per year with labour shortage



Average duration of labour shortage



Note: The left-hand chart shows the distribution of the number of months per year for which firms state labour shortage as an impediment to production. The right-hand chart shows the average number of months per year for which firms experienced labour shortage. The calculations comprise only firms that have reported labour shortage at least once in a given year and which are included in the sample for all 12 months in a given year.

Source: Own calculations based on firm-level data from Statistics Denmark.

could thus partly be explained by the longer time it took for firms to fill vacancies, as well as the higher number of firms reporting labour shortage.

Below, firms reporting labour shortage for at least three of the 12 months in a given year are classified as firms experiencing labour shortage. The aim of such classification is to focus on persistent, considerable labour shortage and to reduce the impact of seasonal fluctuations.

Labour shortage is broad-based when labour market pressures exist

The labour shortage in the construction sectors was broad-based during the pre-crisis years. Firms of all sizes and types in all parts of Denmark and all sub-industries reported labour shortage to a higher degree in the period 2004-06 relative to the preceding years. A similar pattern seems to appear in the first phase of the current upswing: in the period 2013-15, firms, i.e. the same broad range of firms, again increasingly reported labour shortage.

Growing firms reported slightly more frequent labour shortage in the pre-crisis years

However, firms with higher growth in turnover reported labour shortage slightly more frequently than other firms in 2005-07, cf. Chart 4. There were no significant differences between the two groups in the early phase of the upswing. This was also the case in the early phase of the current upswing (2013-15). A similar pattern appears when considering growth in employment instead of turnover (not illustrated by a chart).

Larger firms experience more labour shortage

During the upswing in the mid-00s, especially the large firms experienced labour shortage. In that period, 70 per cent of the medium-sized and large participating firms with at least 50 full-time employees stated that labour shortage was an impediment to production, while only 53 per cent of the small firms with 10-49 employees and 39 per cent of the micro-firms with less than 10 employees stated the same, cf. Chart 5. A similar pattern emerged in 2015 when the respective shares were 20 per cent of the medium-sized and large firms, 19 per cent of the small firms and 8 per cent of the micro-firms.

In general, there are no obvious connections between the extent of construction firms' labour shortage and their financial ratios. However, in 2006-07 the more productive and creditworthy firms tended

Growing firms tended to experience slightly more labour shortage in the mid-00s

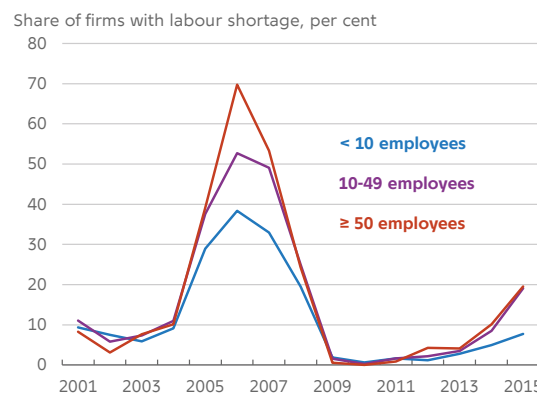
Chart 4



Note: Firms with high growth in turnover are firms with growth in turnover exceeding the median in the given year. Firms experiencing labour shortage are defined as firms which have stated labour shortage as an impediment to production for at least three months in a given year in Statistics Denmark's business tendency surveys.
Source: Own calculations based on firm-level data from Statistics Denmark.

Labour shortage affected especially larger firms in the mid-00s

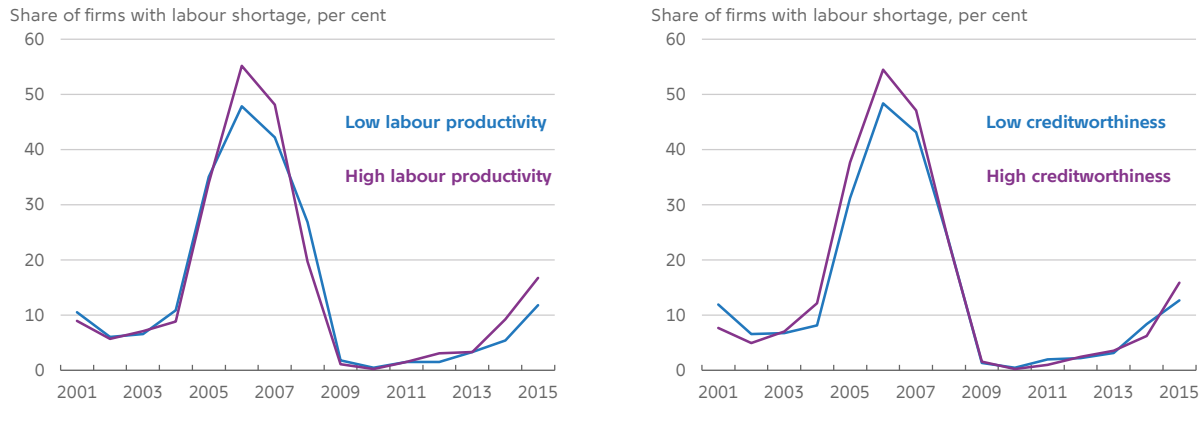
Chart 5



Note: Firms experiencing labour shortage are defined as firms which have stated labour shortage as an impediment to production for at least three months in a given year in Statistics Denmark's business tendency surveys.
Source: Own calculations based on firm-level data from Statistics Denmark.

More productive and creditworthy firms tended to experience slightly more labour shortage in the mid-00s

Chart 6



Note: Firms experiencing labour shortage are defined as firms which have stated labour shortage as an impediment to production for at least three months in a given year in Statistics Denmark's business tendency surveys. Firms with a high degree of labour productivity are firms with labour productivity exceeding the median, while firms with high creditworthiness are firms paying an implicit interest rate (interest expenses relative to total debt) below the median.
Source: Own calculations based on firm-level data from Statistics Denmark.

to experience labour shortage to a slightly higher degree, cf. Chart 6.

Model-based analysis of labour shortage

We estimate an econometric model with a view to a more formalised analysis of labour shortage across firms, cf. Box 2. The model calculates the probability of a firm reporting labour shortage, based on several characteristics of the firm. The estimates cover two periods in order to enable a comparison between the early phase of the upswing in 2004-06 and the years 2013-15, which cover the beginning of the current upswing.

Growing firms tend to experience more labour shortage than other firms, as reflected in Chart 4. However, this result is not statistically significant in the model for 2004-06, possibly due to the increase in turnover for the majority of the construction firms in that period. Here, the larger and more credit-worthy firms tended to experience labour shortage to a higher degree.

In recent years, the larger firms especially have reported labour shortage. Moreover, the more productive firms have reported labour shortage to a slightly higher degree than the less productive firms.

But the probability of labour shortage across firms with different characteristics varies only little. The model calculations thus confirm that labour shortage is broad-based in upswings, both geographically and in terms of firm type and size.

Literature

Danielsen, Troels Kromand and Casper Winther Jørgensen (2015), Spare capacity in the labour market, Danmarks Nationalbank, *Monetary Review*, 3rd Quarter.

Econometric model for labour shortage

Box 2

We estimate an econometric model with a view to a more formal assessment of the relationships reflected in the charts. Specifically, we model the probability of a given firm reporting labour shortage in a logit model. The model includes several firm characteristics as explanatory variables. The table shows the main results from the model, as marginal effects, i.e. indicating the change in the probability

(in percentage points) of labour shortage due to a one unit change in the explanatory variable. In general, the various firm characteristics have little impact on the probability of labour shortage. This is in accordance with the more descriptive results, which also showed that labour shortage is broad-based in periods of labour market pressures.

Impact of firm characteristics on the probability of labour shortage

	2004-06	2013-15
LN(number of employees)	***3.25	**1.08
Age (years)	-0.09	-0.08
Implicit interest rate (per cent)	***-165.8	-2.18
Employment growth (per cent over 3 years)	0.02	***0.03
Labour productivity	-0.00	*0.01
Number of observations	1,992	2,181

Note: The table states marginal effects (in percentage points, i.e. multiplied by 100) for various firm characteristics in a logit model for labour shortage. *** p < 0.01, ** p < 0.05, * p < 0.10. Outliers (2 per cent highest and 2 per cent lowest observations for each explanatory variable) have been excluded before the estimation.

Source: Own calculations based on firm-level data from Statistics Denmark.

ABOUT ANALYSIS



As a consequence of Danmarks Nationalbank's role in society we conduct analysis of economic and financial conditions.

Analysis are published ongoing and assess i.a. the current cyclical position and structural conditions.

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