



Small Great Nation
Challenges and opportunities

Summary

Preface

The collaboration between Kraka and Deloitte on the Small Great Nation project is a private initiative that analyses the long-term prospects of the Danish society. The initiative is independent of political ideologies and interests. The purpose is to map Denmark's strengths and weaknesses and point out how we can ensure welfare and cohesion in Denmark in the future. The initiative utilizes both existing research-based knowledge and, at the same time, contributes new, independent analyses that will result in academic-based solutions to create a better Denmark.

This is the first collaborative report under the Small Great Nation project. The report analyses key challenges and opportunities for Danish firms as well as for the Danish economy in general.

The productivity of firms is high on the political agenda, but how is it actually? In Denmark we have good institutions, but no one has so far shown how important these are for our prosperity. There is concern that parts of Denmark are not benefitting from the general economic growth. Are parts of Denmark, for example, more affected by the good and the bad of globalisation in terms of international trade and immigration than other parts of the country? Central to our analyses is an assessment of the future opportunities for different Danish industries. Which Danish industries are strong compared to their international competitors? And which industries are operating in international markets that have prospects for growth?

Based on the analyses, we ask a number of key questions that we hope politicians, business leaders, professional experts and ordinary Danes will discuss and provide answers to. In this way we can jointly come up with solutions that ensure that the Denmark of the future remains one of the most attractive places to live.

Over the next few years we will delve deeper into the links between Danish society, working life and retirement, as well as the future of the welfare state. In this report, we undertake an initial examination of some of these areas.

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Happy reading!

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Summary

Purpose of the report	This report analyses and assesses the future prospects for the Danish economy and business and takes an initial look at some of the issues that will be analysed in later reports ¹ .
Good starting point in many areas	In this summary we present the report's key results, and ask a number of questions for further discussion. In general, the results of the report indicate that some areas of the Danish economy are doing better than many have thought. Thus, we have a good starting point for ensuring that, in the future, Denmark remains an attractive country to live in. However, this won't happen automatically since there are also challenges that need to be addressed.
The results	The report's key analytical results are:
Productivity and value added	<ul style="list-style-type: none">• Denmark does not have a specific productivity problem, either in a traditional quantitative sense or calculated as value added. Like most other Western countries, we are experiencing a general slowdown in productivity growth. However, The Netherlands and Belgium continue to have higher productivity than most other Western countries.• Denmark is among the top internationally for terms-of-trade gains, i.e. the prices of our exports have risen more than prices of our imports. We are also at the forefront of returns of foreign assets.• The productivity trend and the slowdown in globalisation that the report reveals do not indicate that the Danish economy is currently undergoing unusually large changes - we cannot see ongoing comprehensive so-called "disruption" in these key areas.
Danish firms	<ul style="list-style-type: none">• The distribution of the size of Danish firms is broadly the same as firms in other small Western European countries. There is great dynamism among Danish firms in terms of entrance and exit of firms, but compared to firms in many other Western European countries, it appears to be harder for new Danish firms to grow large.• Denmark uses a lot of resources on research and development and holds many patents. In light of this, it is surprising that a larger proportion of Danish firms don't perceive themselves as innovative.
Education	<ul style="list-style-type: none">• The Danes are generally not especially well-educated. We are close to the OECD average for the number of school years, but we have previously been below the average.• By international comparison, Danish unskilled workers are highly productive, are paid high wages and have high employment rates.• Denmark has a compressed qualification structure. Unskilled workers, those with a high school certificate or post-secondary non-tertiary education, and those with higher education have high levels of mathematical skills compared to the corresponding groups in other countries, but this is most pronounced for the unskilled and those who have completed high

¹ The document serves as an expanded summary in English of the full report titled "Danmarks potentialer – muligheder og udfordringer". The full report (Danish only) is available at www.sgnation.dk.

school and/or post-secondary non-tertiary education. For example, the mathematical skills of unskilled Danes are on the same level as Americans who have completed high school and/or post-secondary non-tertiary education.

- There is a close relationship between mathematical skills and wages for the unskilled and the highly educated across the OECD countries when measured in terms of skills and salaries of those with a high school and/or post-secondary non-tertiary education. This, together with the compressed distribution of skills, could help explain Denmark's compressed wage structure.
- Institutional quality**
- The quality of the state support system for a well-functioning society, also called institutional quality, is high in international comparison, but we have been surpassed by other Nordic countries.
 - Institutional quality is important for our prosperity. An analysis in the report indicates that, if Denmark's institutional quality fell to the slightly lower German level, Denmark's GDP would be reduced by DKK 80 billion, which is equivalent to DKK 14,000 per capita per year (or roughly USD 2,200).
- Globalisation**
- Denmark experienced sharply rising international trade in the first decade of the 20th century, however, the pace of this trend has now lost momentum. The percentage of imports from China and Eastern Europe have increased significantly, but from a low level. Overall, therefore, Denmark's globalisation has primarily been through increased trade with other high-income countries.
 - Increasing international trade has affected different parts of the country differently, for example, parts of central, western and southern Jutland have been particularly affected.
 - Trends in the use of foreign labour are driven by cyclical factors affecting cross-border workers, the eastern enlargement of the EU and an underlying rising trend.
 - There is a particularly high proportion of foreign nationals working in central, western and southern Jutland, as well as in the Copenhagen area.
- Business opportunities and potential**
- Growth in international demand for products supplied by Danish industries is generally high in relation to the growth in our potential production in the foreseeable future. Danish firms can thus look forward to high global demand; particularly in shipping and pharmaceutical production.
 - Demand for Danish production is particularly expected to grow in industries that currently have a relatively strong position (measured by internationally comparable high production shares). It is an advantage for Denmark and the Danish business community that the demand trend seems to be greatest in areas where Danish firms are already strong.

1. Productivity, value added and national income

How can national income be increased

Denmark's national income determines how much Danes can consume now or later, and thus determines Denmark's prosperity. Denmark can increase its national income through:

- Higher productivity.
- Increased number of hours worked.
- Improved terms of trade.
- Higher income from foreign assets.

High productivity makes us more prosperous

If, for example, Denmark increased its productivity, it would mean that we could produce more with the same effort of labour and capital, and, overall, we would become richer as real income follows trends in productivity.

Political focus on productivity

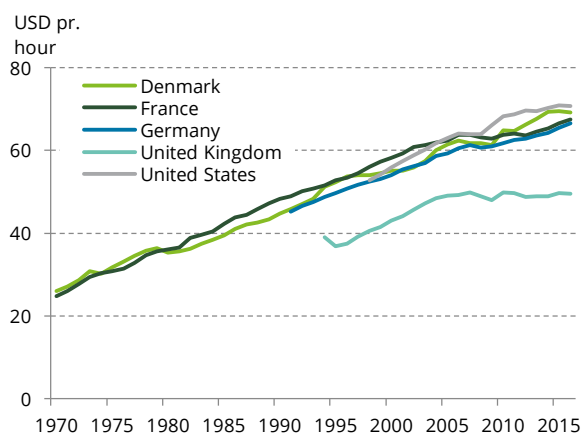
There is broad political agreement that improving productivity is desirable. The government thus plans to implement productivity-enhancing measures that aim to increase GDP by DKK 35 billion by 2025, cf. Regeringen (2017)². The Social Democratic Party has also proposed a number of concrete initiatives for how productivity could be enhanced, cf. Socialdemokratiet (2017)³.

Our productivity is not lagging behind other countries

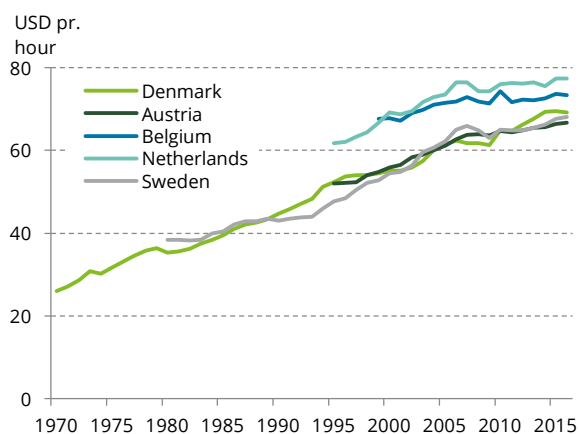
We have analysed the overall development of productivity, value added and national income in Denmark and a number of comparable countries. The analysis shows that, over a long period, the trends in Denmark have been similar to those in most of the countries we usually compare ourselves with when it comes to hourly productivity, real value added per working hour and real national income per hour worked. This applies, for example, when comparing Denmark with countries such as the United States, Germany, France and Sweden, cf. Figure 1.1. There is, however, a remarkable and persistent tendency for Holland and Belgium to be at a higher level than the other countries, which stems from the higher hourly productivity in the Netherlands and Belgium.

Figure 1 Real national income per working hour

a) Denmark and select large countries



b) Denmark and select small countries



Notes: Real national income per working hour is calculated as real purchasing power adjusted GNI adjusted for terms-of-trade changes. The purchasing power correction is made using the base year 2013 and the terms-of-trade adjustments uses 2013 as the reference year. Data for France in 2015 and 2016 and for the Netherlands in 2016 are provisional, cf. the OECD.

Source: Stats.oecd.org, tables "Disposable Income and net lending", "Gross Domestic Product", "Population and Employment" and "PPPs and exchange rates", Produktivitetskommissionen (2013). *Danmarks produktivitet – hvor er problemerne?* and own calculations.

Improved terms of trade and high returns on foreign assets

The growth in working hour productivity (which measures output *quantity*) has been lower in Denmark than in Sweden and the US over the last twenty years. There are two reasons why, despite relatively weak working hour productivity growth over the past twenty years, Denmark is, nevertheless, on par with these countries in terms of national income per working hour:

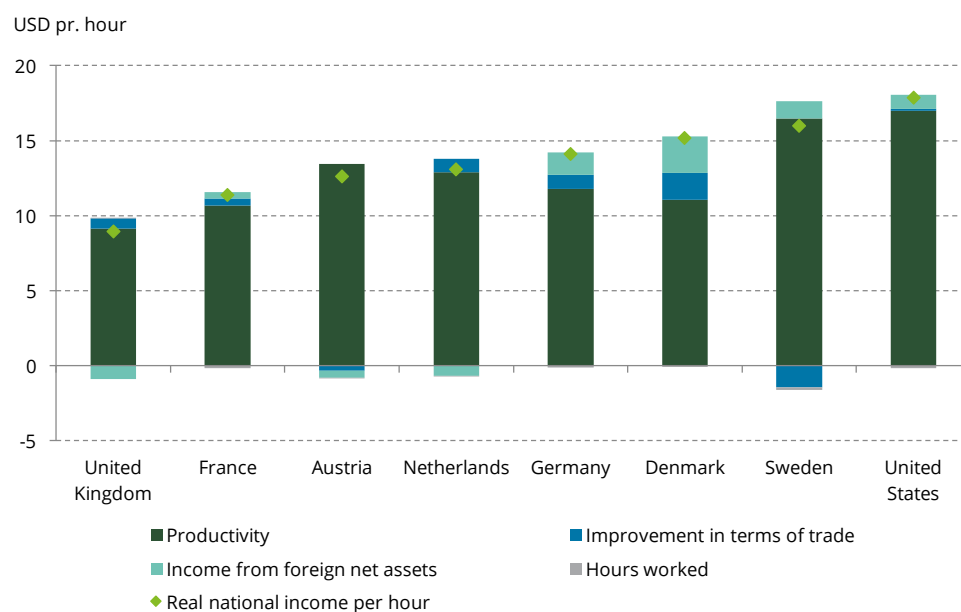
- Denmark has experienced terms of trade gains, which were particularly large from 2000 to 2010. The terms of trade gains contribute to a higher real value added per working hour because Denmark can increase its imports in return for the same amount of exports.
- Denmark has significantly improved its net foreign asset position over the past 20 years, which has generated considerable income. Additionally, the returns in the form of interest and dividends have been high in international comparison. This contributes to national income per hour worked.

² Regeringen (2017). *Vækst og velstand 2025* (Danish Government (2017) *Growth and Prosperity 2025*, in Danish only)

³ Socialdemokratiet (2017). *Vækst der virker – sådan skaber vi fremtidens arbejdspladser* (Social Democratic Party (2017) *Growth that Works – How we Create the Jobs of the Future*, in Danish only)

- In terms of terms-of-trade gains and net income from net foreign assets, Denmark sits towards the top of the world league tables.

Figure 2 Contribution to growth in real national income per work hour over the period 1998 to 2016



Notes: Real national income per working hour represents the sum of contributions from working hour productivity, terms of trade improvements, income from foreign assets and hours worked. The effect of the working hour productivity is calculated holding number of hours worked constant. Data for France in 2015 and 2016 and for the Netherlands in 2016 are provisional.

Source: Stats.oecd.org, "Disposable Income and net lending", "Gross Domestic Product", "Population and Employment" and "PPPs and exchange rates", Produktivitetskommissionen (2013). *Danmarks produktivitet - hvorfor problemerne?*, and own calculations.

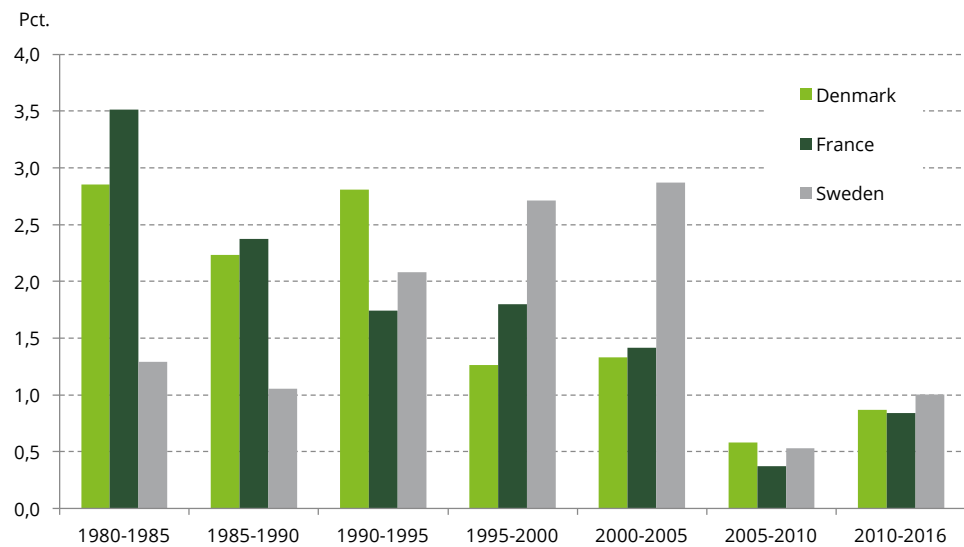
The Netherlands and Belgium take the lead

When looking over a long time period, Denmark does not have a distinct productivity problem relative to most of the countries that we usually compare ourselves with. On the other hand, there might be a large growth potential for Denmark if we are able to increase productivity to levels similar to the Netherlands or Belgium. However, the reasons behind the higher productivity in the Netherlands and Belgium are uncertain: it may be due to an attractive geographical location in relation to European and overseas markets, or a high population density, which in itself increases productivity. In that case, Denmark could not learn much from the Dutch-Belgian experience. However, if other conditions, such as institutions, tax systems, health or education specifically support the productivity of these countries, they could provide inspiration for ways that Denmark might increase its productivity.

But common problems with falling growth rates

Although Denmark's productivity is in line with that of other countries, there is still room for improvement: A number of Western countries are experiencing falling growth rates, cf. Figure 3, which shows growth rates for Denmark, France and Sweden. This suggests that the declining growth rates are not caused by conditions that are specific to Denmark, but rather by conditions that are common to this group of countries.

Figure 3 Average annual growth rates in hourly productivity



Source: Stats.oecd.org, "Gross Domestic Product", "Population and Employment" and "PPPs and exchange rates", Produktivitetskommissionen (2013). *Danmarks produktivitet – hvor er problemerne?* and own calculations.

No signs of ongoing "disruption" in Denmark

We do not see signs that Danish society is experiencing so-called disruption, i.e., that there is any more extensive societal change occurring, driven by, for example, technological development and globalisation, than we have experienced before. If we were dealing with particularly large technological changes, where an unusual number of existing jobs were replaced by new technology, it would have triggered a significant increase in productivity. Rather, globally speaking, we see a slight slowdown in productivity growth. We have had a wave of globalisation, but the trend now seems to be stagnant, cf. below. Nor does it appear that a break from the historical trend has occurred. Some are convinced that we are facing imminent major disruptions. We cannot entirely reject this hypothesis. But what we do observe is that there are no signs that the changes in the Danish economy in recent years are bigger or faster than those experienced in the past.

Questions for discussion:

- Our productivity has been in line with developments in other countries, but, as in many other countries, growth rates are decreasing. Can we maintain or even increase current productivity growth rates, e.g. by using new technology, more targeted strategic research or a more skilled workforce?
- The Netherlands and Belgium have higher productivity than Denmark. Can we learn anything from these countries, or are they just favoured by their geographical location and high population density?
- Even though we are in line with most other countries, an even higher productivity would lead to increased prosperity, which, for example, could be used for greater private consumption, more leisure time, better public services, or for a better environment. What can politicians and business leaders do to improve productivity?
- We have had favourable terms of trade for many years. Can Danish business itself do anything to maintain this, for example, by improving product quality so that they can achieve higher prices?
- We have achieved high returns on foreign assets. Are we particularly skilled in Denmark at investing abroad? How can we ensure high returns on foreign assets in the future?

- We do not see signs of ongoing, so-called, disruption in Danish society. Are we at risk of missing out on productivity gains that could result from particularly strong technological advances and dissemination? What specific factors could create a disruptive development in the future and what challenges could this pose for Denmark?

2. Bird's eye view of business

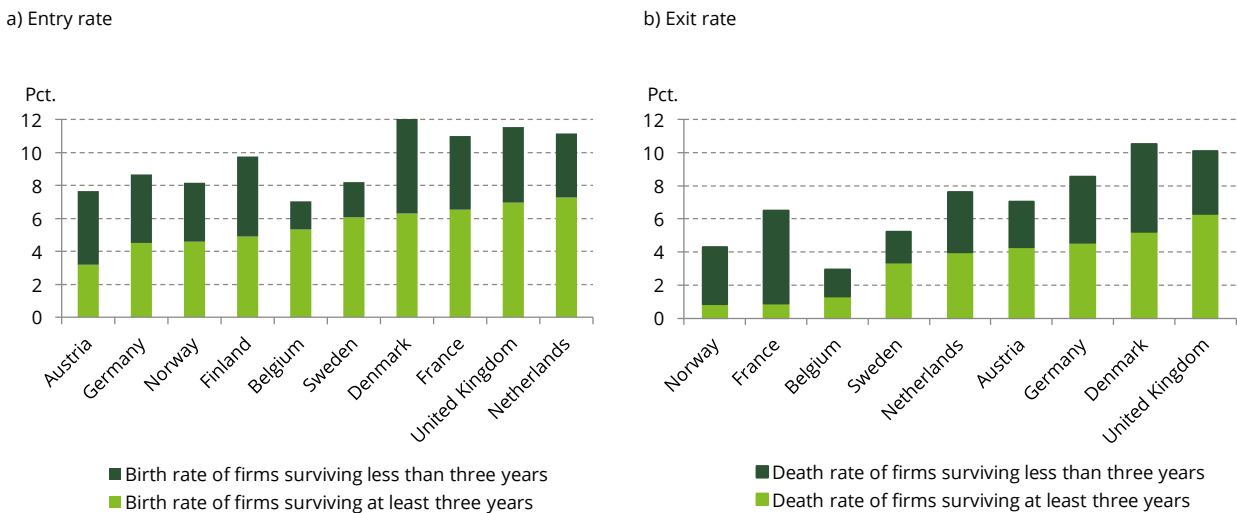
Many myths abound

A well-functioning Danish business community is essential for Denmark's prosperity and well-being. In the debate on business conditions there are some prevailing myths. In the report we try to separate these myths from the facts

High degree of firm dynamics, but too few firms grow large

It is sometimes suggested that Denmark does not have a healthy entrepreneurial culture and that the desire to start a business in Denmark is limited. If this is correct, it is a problem because new firms create dynamics and can help move production resources to more efficient uses, which is essential for productivity growth. However, Denmark has a very high degree of firm dynamics compared to other Western European countries when measured by the entrance of new and closure of old firms, cf. Figure 4.

Figure 4 Two Measures of Firm Dynamics: Firm entry and exit rates, 2011



Notes: The entry rate is defined as the number of new firms compared to number of existing firms. The exit rate is defined as number of firm closures compared to number of existing firms. Both figures are sorted by the rate of firms that survive/have survived for a minimum of three years. There are no data available for the exit rate in Finland in 2011.

Sources: Eurostat, Structural Business Indicators, table "Business demography by size class" and own calculations.

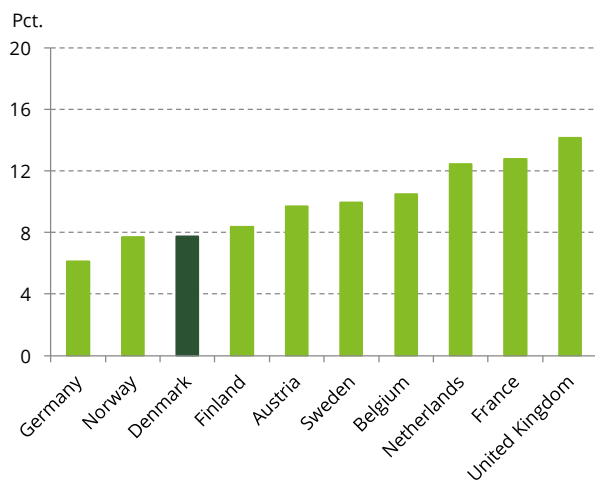
The new firms, however, employ relatively few people, suggesting that it is difficult for new firms to grow, cf. Figure 5. Growth firms are firms that grow by at least ten percent per year over a three year period. Danish growth firms employ a relatively small proportion of the total workforce compared to other countries, cf. Figure 5

Three factors can cause missed productivity gains

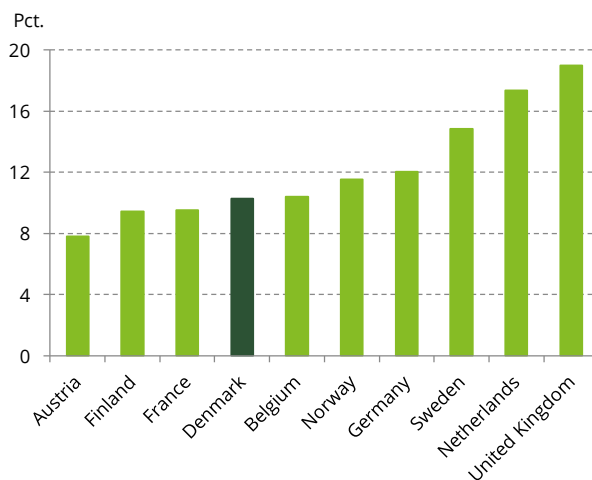
Typically, the most productive small firms will eventually become major productive firms, contributing to overall productivity growth. If small firms grow large to a lesser extent in Denmark, it may be because either not many productive small businesses start up, that there are barriers to productive small businesses growing large, or that productive smaller businesses leave Denmark. All three factors can mean that we miss out on productivity gains.

Figure 5 Two indicators of business performance: The employment share of young firms and growth firms

a) Share of young firms in total business employment, 2014



b) Share of growth firms in total business employment, 2015



Notes.: Young firms are defined as firms that have existed for less than six years. A growth firm is a firm with a minimum of ten employees, which increases employment by at least 10 percent per year for three consecutive years. In panel b), data for Denmark is for 2014.

Source: Eurostat, Structural Business Indicators, tables "Business demography by size class" and "High growth enterprises (growth by 10% or more) and related employment" and own calculations.

Denmark uses a lot of resources on R&D

There is a widespread perception that Danish firms are more creative and innovative than firms in other countries. Whether Danish firms are innovative is important because innovative firms are often more productive than other firms. Data shows that Denmark is one of the European countries with the largest expenditure on R&D as a share of total income - only surpassed by Sweden and Austria.

Denmark is granted many patents, but few firms are innovative

Denmark is also one of the countries in the world with the highest per capita number of granted patents. On the other hand, studies suggest that the proportion of innovative firms is lower in Denmark than in other comparable countries. It is surprising that we take out relatively many patents, but have relatively few innovative firms. This may be due to the fact that patents are concentrated on relatively few highly innovative firms such as the pharmaceutical companies.

Business conditions are good ...

The business conditions in Denmark in the form of regulations, access to skilled labour, financial markets, etc. are often debated. The business conditions are important because they affect the potential for firms to grow. Data from the Global Competitiveness Index of the World Economic Forum show that the conditions for businesses in Denmark are relatively good, but not entirely on the same level as Switzerland, the United States, the Netherlands, Germany and Sweden. Denmark ranks high on higher education, macroeconomic climate and the efficiency of the labour market, but ranks lower on market size, financial markets and primary education and health. In general, however, Denmark and the other countries mentioned have relatively similar business environments.

... but there is room for improvement

If business in Denmark is to continue to grow, it is important that the business conditions for Danish firms that ensure healthy competition, high firm dynamics and a high degree of innovation remain sound. Thus, productive and innovative firms can grow and better compete with less productive companies. Denmark has relatively good business conditions, but there is still room for improvement.

Question for discussion:

- Denmark does not stand out negatively in terms of the size and dynamics of Danish firms, but employment figures indicate that relatively few new businesses grow big. What are the reasons for this?
- We spend a lot of money on research and development, but do we get a sufficiently large return on these investments?
- Primary education and health are important basic conditions. How can Denmark be weak compared to other comparable countries when it comes to primary education, even though we spend quite a lot of resources in this area? How do we maintain our high international ranking in terms of business conditions?

3. Education, skills and income

Denmark has many unskilled adults

In the 1960s the average number of years of education of the Danish population was below the OECD average. Only in the mid-1990s did we reach the average for the other OECD countries. Today, an average adult Dane has almost 12 years of education. However, almost every fifth Dane of working age is unskilled, and unskilled workers risk higher unemployment, lower incomes and fewer years in the labour market compared to higher educated workers.

But they have good competencies

However, Danish unskilled workers have relatively high incomes and a high employment rate compared to unskilled workers in other OECD countries. The report shows that one of the possible explanations of the good international position of the unskilled in Denmark is their competency relative to years of formal education. While the unskilled in Denmark have literacy skills at the level of the OECD average, they have significantly better mathematical skills and IT skills than the unskilled in most other OECD countries. The international comparison is based on PIAAC results, which is the largest international survey of adult competencies.

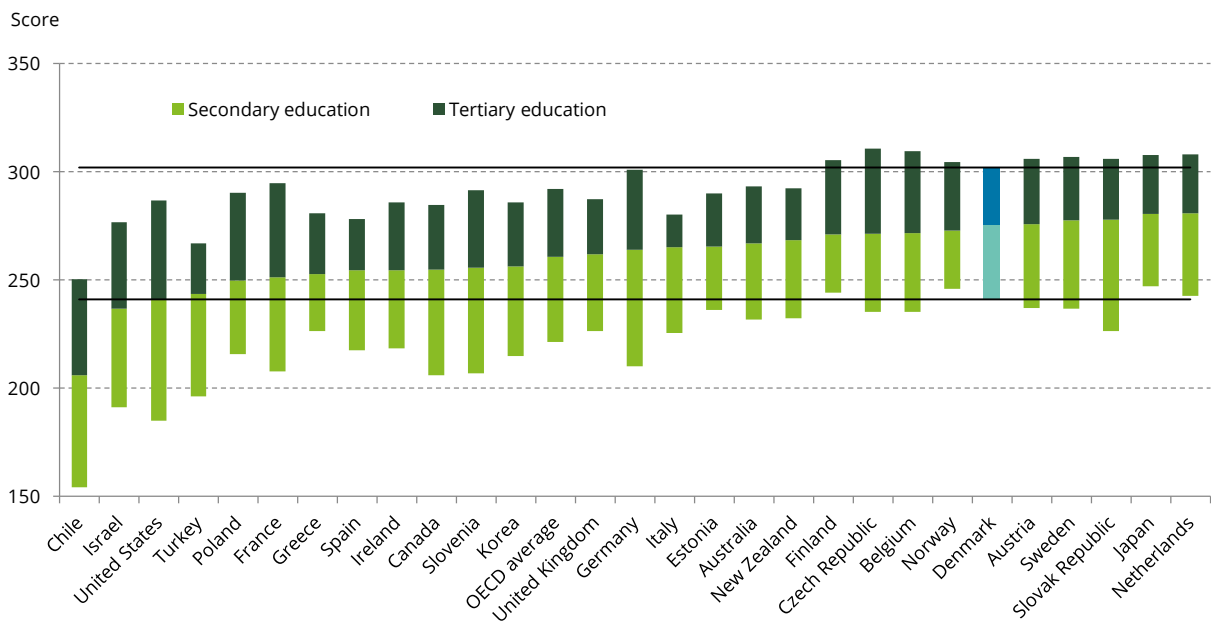
Danish unskilled workers rank fifth in mathematics

Among unskilled workers in OECD countries, the Danish unskilled workers are ranked fifth in mathematical skills. Only unskilled workers in Japan, Norway, Finland and the Netherlands have slightly higher mathematical skills on average. The mathematical skills of the Danish unskilled workers are in line with the skills of people who have completed high school and/or post-secondary non-tertiary education in the United States. The unskilled average score in mathematical skills is read as the bottom of the light green columns in Figure 6.

Persons with high school and/or post-secondary non-tertiary education are ranked sixth in mathematics

Danes who have completed high school and/or post-secondary non-tertiary education are ranked number six in mathematical skills among the OECD countries. The difference in the mathematical skills of the unskilled and those who have completed high school and/or post-secondary non-tertiary education in Denmark is also marginal. The centre of the columns where the light and dark green meet in Figure 6, show the mathematical skills of those who have completed high school and/or post-secondary non-tertiary education.

Figur 6 Difference in mathematical skills for the lower secondary and tertiary educated compared to the high school and/or post-secondary non-tertiary educated



Notes: The countries are ranked by the mathematical skills of those who have completed high school and/or post-secondary non-tertiary education. The level of skills of those who have completed high school and/or post-secondary non-tertiary education is indicated at the centre of each pillar. Mathematical skills are calculated on a scale from 0 to 500. The figure shows the results for 25-64 year olds. The category for elementary and lower secondary school covers the education levels ISCED 0-2. High school and post-secondary non-tertiary education covers ISCED 3-4, and higher education covers ISCED 5-8. Denmark is indicated by the blue bars. The upper and lower black lines indicate the level of mathematical skills for Danes with higher education and the Danish unskilled, respectively.

Source: OECD (2016). *Skills Matter: Further Results from the Survey of Adult Skills* and own calculations.

Danish highly educated rank 10th in mathematics

The score for those with higher education is shown at the top of the dark green columns in Figure 7. The Danish highly educated are ranked 10th in mathematical skills among the OECD countries. The Danish highly educated have a high international ranking but are not quite at the top. For example, the Swedish, Norwegian and Finnish highly educated are ranked higher. The difference in mathematical skills of Danes who are highly educated and those in the ISCED 3-4 group is small by international comparison and less than the difference between the Danish unskilled and Danes in the ISCED 3-4 group.

Compressed skill distribution

Denmark has a relatively compressed distribution of skills relative to other OECD countries, where Danes in all three education groups have a high level of mathematical skills. The report also finds a positive correlation between relative skills and relative pay, measured in terms of persons with lower secondary education, which may indicate that the compressed distribution of skills can be one of the reasons for the compressed earnings structure in Denmark.

Questions for discussion

- On average, Danish unskilled workers are comparatively competent. Can we maintain this favourable relationship when there is also a political desire for more unskilled workers to become skilled?
- In the 2000s there was increasing political pressure to increase the number of students in tertiary education. Today the focus is on the skilled, while our unskilled workers are well-qualified. Where does society get the highest return to education and continuing education?

4. The quality of institutions and the impact on income

What is meant by “institutions”?

In this report, "institutions" is a common term for a number of basic characteristics of the way the state and society function more generally, and which can be expected to influence how effectively the economy works. Institutional quality reflects, for example, the effectiveness of governance and administration, regulation and tax collection, absence of bribery and corruption, the effectiveness of the judiciary and judicial protection, including property rights and contract enforcement, etc.

Analysis of institutional quality

The World Bank regularly measures six aspects of institutional quality for a large number of countries. The analysis covers the period from 1996 to 2016.

Denmark ranks highly but has been overtaken

In general, institutional quality in Denmark has been high for many years. In 1996, Denmark ranked number two among the OECD countries, measured by the quality of economic and administrative institutions (average of 3-6), cf. Table 1. Since 1996, several countries have overtaken Denmark in the quality of economic and administrative institutions, including Norway and Sweden. In 2016, Denmark was ranked as seventh. However, the difference in institutional quality between Denmark and the most comparable countries is very small.

Biggest fall in political stability and regulatory quality

The fall in the ranking was greatest in Political Stability, cf. Table 1. A large part of this decline occurred in the period 2002-2004, which followed immediately after the terrorist attacks in the United States on September 11, 2001, and when the war in Iraq began in 2003. A number of other OECD countries have experienced a similar decline in the political stability index over the same period. Denmark has also experienced a significant fall in the index for Regulatory Quality, which covers, among other things, the effectiveness of tax collection.

Table 1 Denmark's ranking for the various institutional quality measures, 1996 and 2016

	1996	2016
1) Voice and Accountability	6	5
2) Political Stability and Absence of Violence	5	17
3) Government Effectiveness	9	2
4) Regulatory Quality	4	14
5) Rule of Law	5	6
6) Control of Corruption	1	3
Average of 3)-6)	2	7

Source: World Bank (2017). *The Worldwide Governance Indicators, 2017 Update. Aggregate Governance Indicators 1996-2016* and own calculations.

Better methodology than before

The report assesses the importance of institutional quality for the economic prosperity of OECD and EU countries. The analysis uses a dynamic panel data model, which has been used previously to, among other things, analyse the impact of democracy on economic development⁴. A dynamic panel data model is based on data for several countries over several years, which has a number of benefits for the analysis. Several years of observations allow for time-invariant differences across countries in all observable and unobservable dimensions to be controlled for, and it controls for the impacts of common shocks that affect all countries simultaneously, such as financial crises. In addition, the historical development of prosperity in each country is controlled for by conditioning on GDP per worker in previous years. The purpose is to take into account the impact of economic prosperity on institutional quality and to check for the potential presence of a third factor that is simultaneously positively correlated with both prosperity and institutional quality.

⁴ Acemoglu, D., Naidu, S., Restrepo, P., Robinson, J. A. (Forthcoming). *Democracy Does Cause Growth*, Journal of Political Economy.

Good institutions increase prosperity

The results of the analysis indicate that institutional quality has a significant positive effect on prosperity. For example, Denmark and Germany are close to each other in terms of institutional quality, but according to the World Bank, Denmark's institutions are of a slightly higher quality than Germany's, especially in terms of Control of Corruption. The analysis points out that if Denmark had institutions with a quality corresponding to Germany's for a long period, Denmark's GDP would, according to the estimated effect of institutional quality on GDP, be about DKK 80 billion lower than today. This corresponds to approx. DKK 14,000 per capita per year (or roughly USD 2,200).

Some measures of institutional quality are declining

Denmark has experienced a number of problems in recent years that could indicate a decline in institutional quality: A degree of deterioration in the effectiveness of tax assessment and collection, an act of parliament that reduced the transparency of the administration, long waiting times for convictions and sentencing in the judicial system, unprecedented criminal charges based on bribery of officials, etc.

Specific measures

Denmark still has comparatively high-quality institutions, but the analysis emphasises that it is important from a socio-economic perspective to maintain high quality institutions in order to increase economic prosperity. Examples of specific actions that directly result in higher quality institutions are to improve tax collection and to reduce the administrative burdens on business, for example, by more user-friendly digital solutions.

Questions for discussion

- That institutional quality is so important for prosperity in developed countries is new. Do we have sufficient focus on this relationship?
- Our institutional quality is still high, but in recent years we have been overtaken by, among others, other Scandinavian countries. Are we lagging behind? What specific measures are needed in order to maintain our ranking or to even reattain a leading ranking?

5. Impacts of globalisation

Globalisation has gains, but not necessarily immediately for everyone

For many years there has been much focus on how increasing internationalisation and globalisation affects Western countries, including Denmark. International trade is fundamentally positive for long-term prosperity. The opportunity to attract foreign workers who can alleviate bottlenecks in the Danish labour market or who have some special skills also benefits the Danish economy. However, there are real concerns over whether everyone is benefitting. These concerns largely depend on whether the increased international trade leads to the closure of firms in certain geographical areas and particular industries. Thus, some people lose their jobs and may be facing longer spells of unemployment or may experience lower salaries in new jobs that do not fit their qualifications.

Offshoring and import penetration

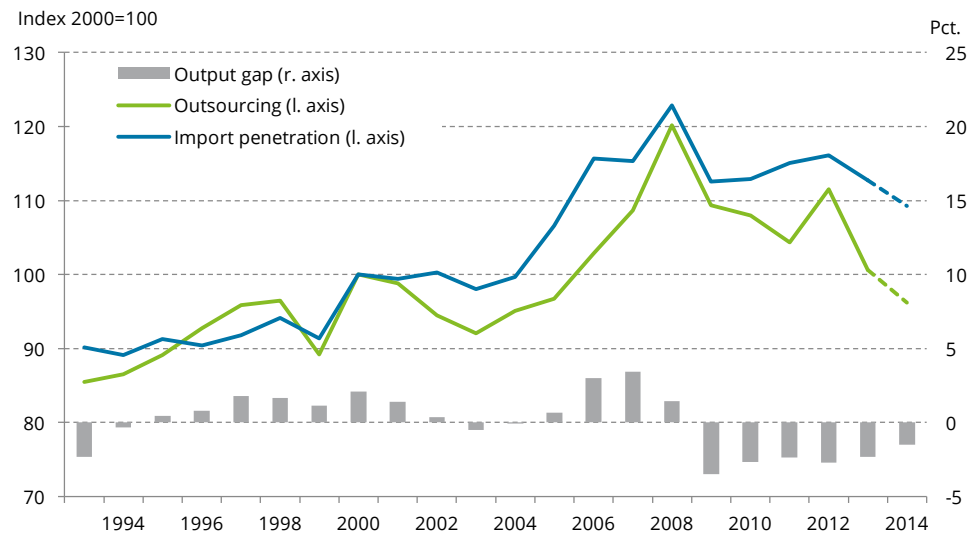
The first part of the analysis quantifies offshoring and import penetration using methods from the international economic literature. An increase in the offshoring indicator shows that Danish firms increasingly use imported inputs in production, which they could, in principle, have produced in-house. An increase in the import penetration indicator suggests that more and more imported goods are consumed domestically which, in principle, could also have been produced in Denmark. The indicators thus roughly measure the impact of international trade on the import side of the Danish economy, but do not reflect the increased opportunities on the export side that globalisation opens up for Danish firms.

Trends in international trade

In the 1990s Denmark experienced a steady increase in globalisation indicators based on international trade, but with moderate annual changes, cf. Figure 7. The increase in the mid-2000s, on the other hand, were both of a significant size and occurred over a short period of time up to 2008. However, the existing data does not indicate that globalisation in the form of international trade has continued at this high pace. The recession in the wake of the financial crisis may have

dampened the momentum, and it is uncertain if the pace will pick up when the Danish and international economic situation is normalised.

Figure 7 Indicators for offshoring and import penetration in Denmark, 1993-2014



Notes: The figure shows the average evolution in indicators for offshoring and import penetration for Danish non-agricultural private businesses, weighted by employment. The measure of offshoring is an indicator of how exposed Denmark is to globalisation, based on the use of foreign inputs in production. The import competition indicator is a measure of globalisation based on imports of goods for consumption. The series are indexed to the year 2000 = 100. The indicators for 2014 are calculated using an alternative data source and are level-corrected. The output gap is the Ministry of Finance's business cycle indicator, which is positive during a boom and negative in a recession.

Source: *Globalisation indicators*: Danmark Statistik (2017). *Input-output tables*, Danmarks Statistik's register data, World Input-Output Database, and own calculations. *The output gap*: Økonomi- og Indenrigsministeriet (2017). *Danmarks Konvergensprogram 2017*.

Significant increase from Eastern Europe and China ...

The globalisation indicators based on international trade can be disaggregated based on country of origin, cf. Figure 8. Distinction is made between high-wage countries, China, the Eastern European EU countries – here called EU-13⁵ – and other low-wage countries. Both for the offshoring indicators and for the import competition, the increases in imports from China and Eastern Europe were very significant during the period. China's import competition increased by 600 percent from 2000 to 2014. This is an increase of a completely different order of magnitude than the total increases from all countries of around 10 percent over the same period, cf. Figure 7.

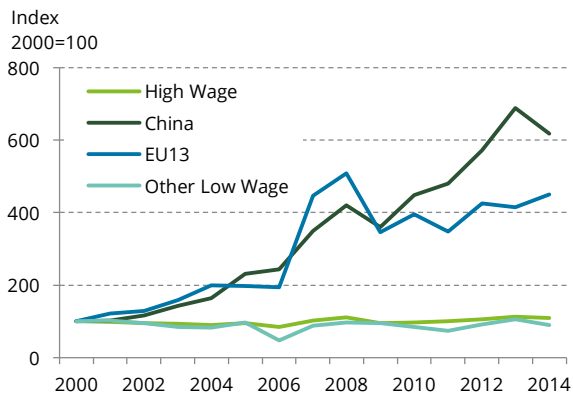
... which is still a small fraction of the aggregate globalisation indicators

China and Eastern Europe still only account for a small fraction of our international trade, and other high-wage countries continue to contribute the vast majority of the globalisation indicators. However, the increase has meant that China and Eastern Europe together accounted for 17 percent of offshoring in 2014 against only 4 percent in 2000.

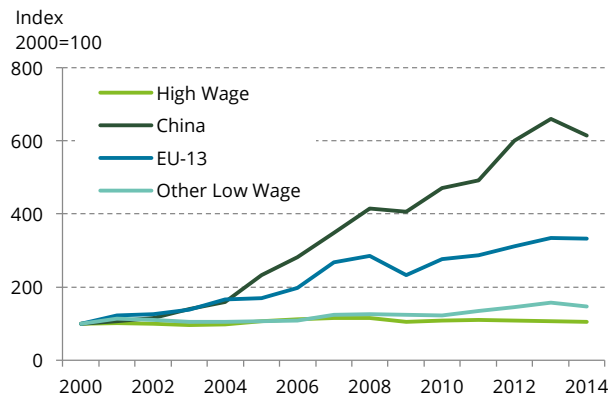
⁵ Bulgaria, Romania, Croatia, the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia.

Figure 8 Globalisation by country of origin. Index 2000 = 100

a) Offshoring



b) Import penetration



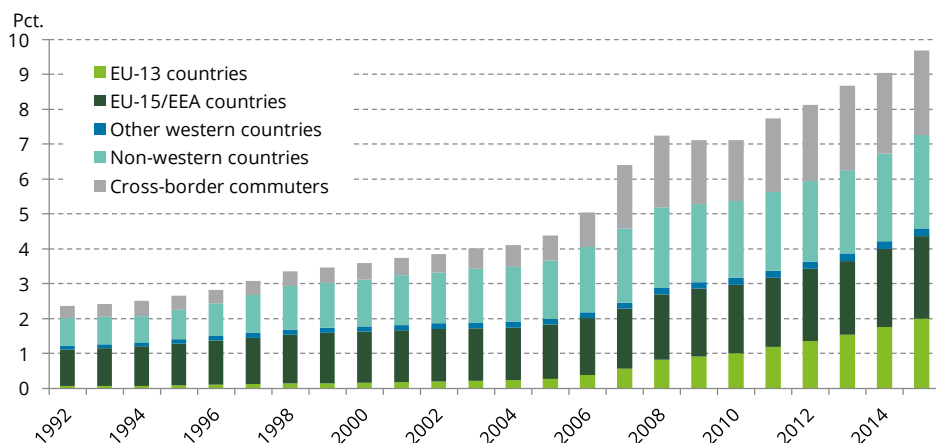
Notes: The figures show the average movements in the narrow offshoring and import penetration indicators for Danish private non-agricultural businesses, weighted by employment. The measures are broken down by country of origin. The series are indexed to the year 2000 = 100. EU-13 indicates the group of Eastern European countries that joined the EU after enlargements in 2004 and later.

Source: World Input-Output Database, Danmarks Statistik's register data and own calculations.

Also increasing immigration

In addition to increasing offshoring and import competition, Denmark has seen an increase in foreign labour since the 1990s. There was only a slight short-term slowdown in 2008-2009, and the increase continued immediately following the Global Financial Crisis. The increase was especially high due to the influx of foreign labour from EU-13 countries - the new eastern European countries - and due to the influx of cross-border workers during the boom in 2004-2008, cf. Figure 9. However, this flow might not continue in the future as immigration of workers from other EU countries slowed down in 2016.

Figure 9 Foreign labour in Denmark, share of the labour force



Notes: The fraction is calculated as the number of persons recorded in the AKM register as employed, excluding those who died during the year in question. EU-15 / EEA nationals are defined as nationals of EU-15/EEA countries excluding Denmark. The breakdown of nationals in the other western and non-western follows Danmarks Statistik's definition. The "without residence in Denmark" group consists of employees who receive salary income in Denmark but can not be identified as residents.

Source: Danmark Statistik's register data and own calculations.

Geographic variations in offshoring and import penetration...

The analysis provides globalisation indicators for different parts of Denmark, cf. Figure 10. Regardless of which of the indicators of globalisation via international trade you are looking at, Central, Western and Southern Jutland are the most affected, which is a consequence of the industry composition in these areas. Common to the areas most exposed to globalisation through international trade is that they have a high degree of manufacturing.

... and in foreign labour

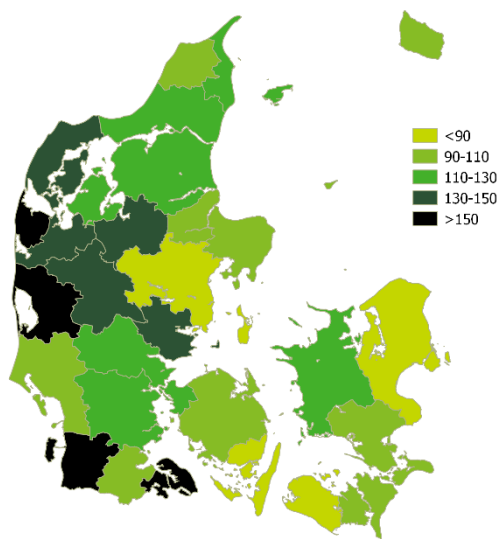
There are also large regional variations in the extent of foreign labour. The concentration of European workers is greatest in Southern Jutland near the German border and around Copenhagen. On the other hand, the concentration is lowest in North Jutland, Zealand outside the Copenhagen commuter area, and in the areas around Langeland and Ærø. Non-European citizens are most concentrated in the workforce in Western and Eastern Jutland, as well as around Copenhagen and Western Zealand.

Central, Western and Southern Jutland affected most

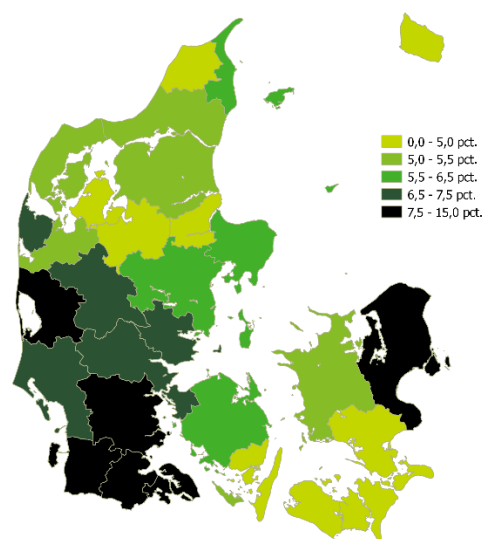
Central, Western and Southern Jutland are the areas most affected by the offshoring of Danish jobs, import competition and the influx of foreign labour to the Danish labour market.

Figure 10 Regional variations in offshoring and foreign labour

a) Offshoring. Level of indicator in 2014



b) Foreign labour. Share of wage earners in 2015



Notes: Figure a) shows the offshoring indicator for Danish firms in the private non-agricultural sector weighted by employment. The indicator is indexed to the national average. Figure b) shows foreign nationals resident in Denmark and cross-border workers as a percentage of all employees, calculated as full-time employees.

Source: World Input-Output Database, Danmarks Statistik's register data, and own calculations.

Questions for discussion:

- Following the relatively strong growth in international trade over the period 2003 to 2008, the trend is now stagnating. This might be due to the prolonged recession, but there are no signs in the current data of any marked increase relative to the historical trends, i.e., so-called "disruption", in this area. Adjustment costs to globalisation may be smaller in the future relative to the 2000s, but what measures are required to capture the benefits from globalisation going forward?
- Some regions are more exposed to pressure from globalisation than others. This may have resulted in greater adjustment costs in these areas, while the gains from globalisation, e.g.

lower commodity prices, are spread more evenly across the country. In view of this, is there an argument for a special political focus on some regions rather than others?

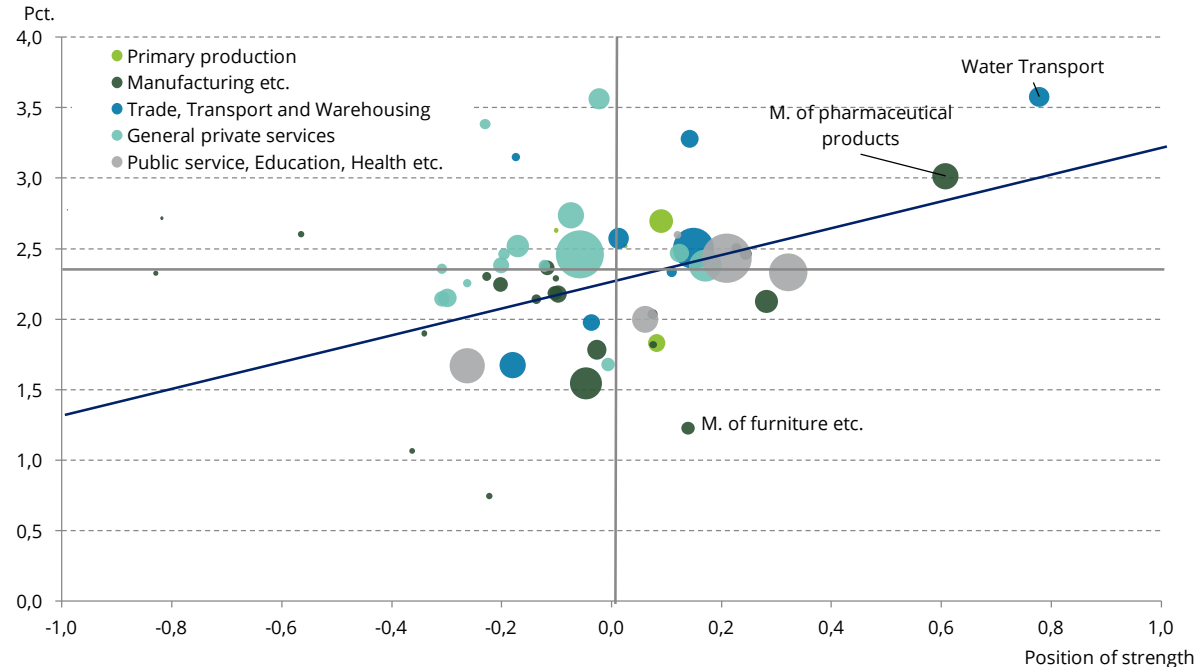
- Since the EU's eastern enlargement in 2004, Denmark has experienced an increase in immigration, which only briefly slowed during the Global Financial Crisis. But has the immigration been a result of pressure from outside, or did it help to alleviate labour shortages in certain industries and regions?
- In the EU and Denmark, a number of measures have been put in place to reduce the number of refugee arrivals and family reunifications - but good access to foreign labour is a prerequisite for the growth of Danish firms. In this context, how do firms ensure access to the necessary foreign labour? How does foreign labor affect cohesion in Denmark?

6. Potential Business Opportunities Diagram

A diagram of potential business opportunities

The analysis of the future prospects for Danish industries is based on the newly developed framework "Potential Business Opportunities Diagram". The framework shows, for each of the 56 different industries in the Danish economy, whether they have a strong position relative to other industries, and what the demand for the industry's products is expected to be in the future, cf. Figure 11. Overall, the prospects look good for high future demand for Danish goods and services. Demand is particularly high for industries that are already in a strong position and, therefore, have good possibilities to reap the benefits of increasing demand for their products.

Figure 11 Potential Business Opportunities Diagram



Notes: The horizontal axis shows the industry's share of the economy compared to the share in comparable countries. The relative ratio has been transformed so that it is symmetrical around 0. The vertical axis shows projected annual potential GVA growth up to 2040. The bubble size indicates the size of the industry measured by GVA. The blue line is a trend line weighted by the bubble size. The slope of the trend line is 0.934 (0.003).

Source: OECD (2014). *OECD Economic outlook 95 – Long-term baseline projections*, World Input-Output Database and own calculations.

The vertical dimension	The vertical dimension of the Potential Business Opportunities Diagram illustrates how Danish and international demand for the 56 different industries' products is expected to affect the growth potential of each Danish industry. Growth potential is measured as the potential annual growth of the industry's gross value added (GVA) by 2040.
Good to be high on the diagram	The starting point is demand for goods and services for investment, as well as private and public consumption in Denmark and the rest of the world. This is based on the OECD's growth forecast, which predicts high growth rates in China and Southeast Asia, but more moderate growth rates in Europe. It is also taking into account that a sector can grow without producing directly for final use if it produces inputs for other sectors that are increasingly specialising in final good production. The focus is on the parts of the world market that Danish firms in the individual industry already sell to. Businesses in industries facing increasing demand for their products can take advantage of their favourable positions. Therefore, a position high in the diagram will always be beneficial for the individual industry as well as for Denmark as a whole.
The horizontal dimension	The horizontal dimension gives an indication of the industry's international strengths. A sector's horizontal position in the diagram is calculated as the added value of the Danish industry relative to the total value added in the corresponding industry in comparable countries; adjusted to a mean of zero. If an industry has achieved a high value on the horizontal axis, it indicates that the sector has a comparative advantage that has enabled high growth compared to that industry in similar countries. This may be due, for example, to the fact that firms in the Danish industry have been particularly skilled or that they have been favoured by especially high demand, for example, driven by the relatively large Danish public sector. This can also be due to natural conditions, such as proximity to water, or that Danish consumers have preferences for certain products.
The size of the bubbles	The absolute size of the industry in Denmark is illustrated in the diagram by the area of the circle for each industry.
Diagonal trend is good	Despite a significant spread, the Danish industries have a clear tendency to be positioned along the diagonal from "southwest" to "northeast", cf. Figure 11. This means that the industries where Denmark currently has a strong position have a tendency towards higher potential growth than those industries where Denmark doesn't have a strong position in international comparison. Therefore, the positive slope of the diagonal suggests that Denmark is in a favourable position relative to other comparable countries.
Shipping and pharmaceutical industries are notably strong	The two most significant Danish strengths are in shipping and in the pharmaceutical industry, which respectively constitute eight and four times more of the Danish GVA than in comparable countries. Both of these industries have significant potential growth rates - over three per cent. based on expected growth potential. These industries are characterized by very large firms that are highly specialized, which is clearly the case for the composition of the Danish pharmaceutical industry where Novo Nordisk represents a very large proportion, and where this business is even significantly more dominant in the diabetes market than the strength of the pharmaceutical industry as a whole.
Few industries with high strength have weak prospects	Generally, there are only a few Danish strength positions that have weak potential growth prospects. The sole Danish strength position with potential growth that deviates significantly in a negative direction from average growth rates is furniture production. However, this may reflect major differences within the industry, where, for example, the production of the cheapest types of furniture falls off, while high quality furniture designs may have good prospects. For the industry as a whole, the estimated potential growth is 1.2 per cent a year.
Big demand in service industry	There is a general tendency for the potential growth as a result of demand to be high in private service industries. Disregarding trade, transport and warehousing, which represent a relatively large proportion of Denmark's GVA, private services include a number of industries where Denmark is not currently in a strong position. Therefore, these industries dominate the north-western corner of the diagram. Among industries with lower potential growth there is no clear dominance, however, there are a majority of manufacturing industries in the lower half of the diagram.

Almost half of the demand comes from abroad

The overall Danish potential for growth in the projections for global demand is almost 2.4 percent a year up to 2040. Almost half of this potential comes from final goods demand from abroad. It is not surprising that trade, transport and warehousing, food production and manufacturing industries are the most dependent on foreign markets. Conversely, a number of service industries, not least those dominated by government consumption, as well as housing and construction, are largely dependent on domestic demand.

Sub-sector strengths are not necessarily reflected

As each of the 56 sectors in the analysis covers several different activities, the Potential Business Opportunities Diagram does not give the full picture of the strengths of Danish business. Thus, within the individual main industries there may be sub-sectors in a stronger position than the main industry. There may also be strength positions in Danish business that cross the industry divisions used here, and which therefore do not appear in the Potential Business Opportunities Diagram. This applies, for example, to areas such as energy and environmental technologies.

Our supply side can hardly keep up

Annual growth of 2.4 percent a year up to 2040 is more than the supply side of the Danish economy is expected to be able to deliver. The OECD forecasts annual growth of 2 percent a year until 2040, while the Ministry of the Finance and Interior Affairs, in the convergence program 2017, estimates a more modest annual growth of 1.3 percent.

Can the supply side be increased?

This analysis thus indicates abundant future demand. Therefore, to increase economic growth in Denmark, the focus should be on enhancing the supply side of the economy. This can either be achieved through increasing labour supply, or by increasing productivity. Productivity expresses the value added per hour worked, see above. Productivity can, for example, be enhanced through improved and more targeted education, targeted strategic research, well-functioning labour and capital markets, well-functioning markets for goods and services, and a stable and consistent business environment.

Focus on foreign labour

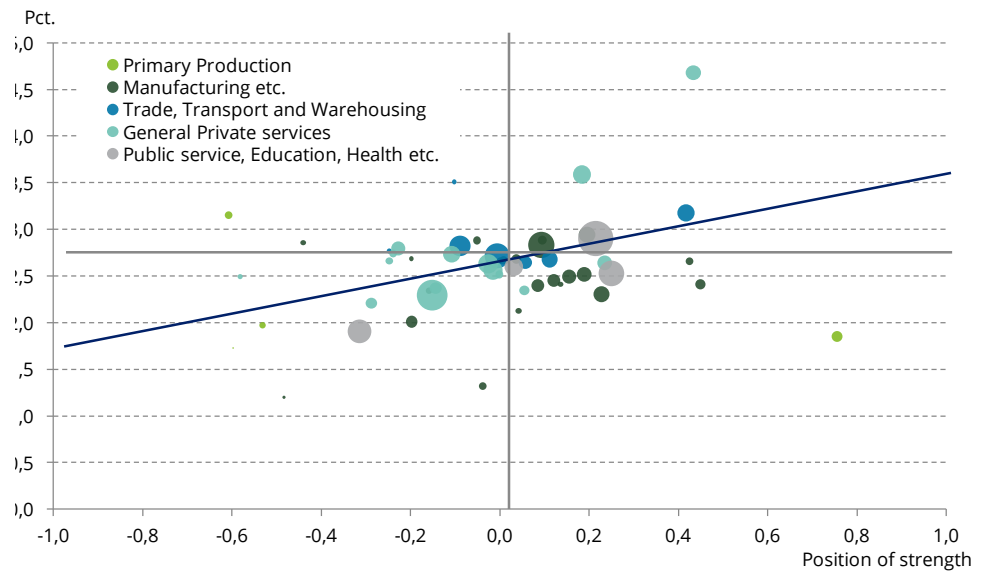
The labour supply could be increased in several ways: Longer working days, extended working lives, more of those who are unemployed or out of the labour force could move into employment, or we can try to attract more foreign labour. A number of labour market reforms have reduced the number of unemployed in recent decades and led many of the previously unemployed to join the labour market. This has happened through changes in the rules, such as early retirement reforms and the shortened unemployment benefit period, and through changes in tax and transfer income. There is currently no political support for postponing the retirement age beyond the existing age. Therefore, the possibilities for a further significant increase in the domestic labour supply are probably limited. However, the analysis in the Potential Business Opportunities Diagram indicates that there is a potential for further growth through facilitating easier access to foreign labour.

Economic growth is not the only goal

However, it is important to emphasise that an increase in the labour supply and/or productivity should not be seen as an end in itself but as a means of ensuring higher welfare for the Danish population. Welfare depends not only on the possibilities for private and public consumption, but also on the possibilities for "disconnecting" during leisure time, the quality of our environment, and a variety of "soft" values. It is up to the individual citizens to choose their work effort and efforts to enhance themselves through education, etc., ensuring the greatest possible well-being within the parameters that society establishes. The welfare state's institutions and rules of law, however, are of major importance for the individual's choices and opportunities regarding work, education, etc. The institutional structure of the Danish welfare state can only be sustained if a large proportion of the population is in work, and our high level of prosperity and the consequent capacity for solving important social needs are dependent on a high level of productivity. Political reforms that increase labour supply or productivity can bring welfare benefits in the form of increased opportunities for private and public consumption, but there may also be welfare costs associated with pushing labour supply or productivity too far. It is a political task to balance these trade-offs. The Potential Business Opportunities Diagram simply suggests that there is probably no shortage of demand that limits the growth potential.

Don't treat different industries differently, ...	It is also important to use the results in the Potential Business Opportunities Diagram correctly. It is not possible to conclude, on the basis of the analyses, that some sectors should have special advantages at the expense of others. It is, therefore, wrong to support an industry because it appears that it will be important for employment and value added in Denmark in the years to come. However, it is equally wrong to assist industries in decline.
... it is counter-productive	If you give special treatment to prosperous industries, it can be a waste of resources as they are already resourceful. Conversely, if you give special treatment to declining industries, you tie up resources in less productive applications at the expense of industries with greater potential.
Uniform conditions	Overall, the best advice is thus to set attractive but uniform conditions for all industries, which means no special tax incentives, no special grants and no political disadvantage or prioritisation of individual industries unless such special treatment is necessary to correct market failures.
Political decisions have to be made	Having said that, some political decisions must be taken that affect the opportunities for business to develop. For example, prioritising of funding for both basic and strategic research is of the utmost importance. In this context, it is natural to seek to promote technologies that can help solve important societal problems. For example, it can be a technological development that makes it easier for Denmark to fulfil its obligations to free itself from dependence on fossil fuels or to help solve other environmental problems. What's more, the courses of education available to young people must also be decided centrally. If the educational mix fits badly with the needs of business, it means lower productivity than we might otherwise have had.
Strong demand for Swedish products	<p><i>Comparison with Sweden and the Netherlands</i></p> <p>The analysis generally shows that there is very strong demand for Swedish goods and services. Overall, the demand pull shows possible Swedish growth in GVA of 2.7 percent annually, cf. Figure 12. This should be seen in light of the OECD's forecast for Swedish growth up to 2040 of 2.4 percent annually. This is somewhat higher than the corresponding Danish estimate of approximately 2 percent a year. The estimated potential growth in Sweden is approximately 1.12 times higher than the country's own demand growth, while the corresponding figure for Denmark is 1.20.</p>
Sweden has the same diagonal tendency as Denmark	The Swedish diagram, like the Danish one, clearly reflects the fact that the industries lie along a diagonal from southwest to northeast, cf. Figure 12. This is seen from the positive coefficient of the slope of the weighted trend line, which, like the Danish one, is 0.93. For Sweden, therefore, the most favourable estimates for GVA growth from the forecast for global demand are where the greatest strengths are and vice versa for the less favourable estimates.

Figure 12 Potential Business Opportunities Diagram for Sweden



Notes: See notes to Figure 11. The slope of the trend line is 0.931 (0,003).

Source: OECD (2014). *OECD Economic outlook 95 - Long-term baseline projections*, World Input-Output Database and own calculations.

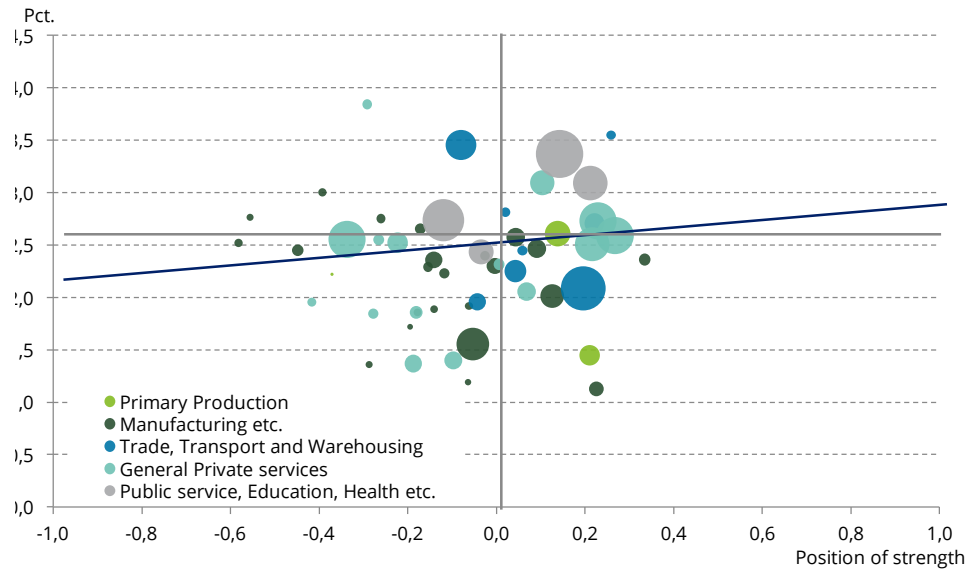
Dutch industry is distributed in a cloud shape in the potential diagram

The distribution of the Dutch industries is clearly different from the Danish and Swedish ones. In the Dutch Potential Business Opportunities Diagram, the industries are more in a "cloud" formation, which is distributed on all four quadrants of the diagram cf. Figure 13. The distribution of sectors across the vertical axis is larger when the size of the sectors is accounted for. This is shown by the weighted trend line - the slope of this is only approximately 1/3 of the slope of Denmark and Sweden's.

Big spread a sign of the Netherland's large export trade

The potential Dutch growth is about 2.5 percent in the analysis, which is only slightly above the OECD's forecast for GDP growth of just over 2.2 percent annually. The large spread in the calculated Dutch potential growth rates is, among other things, a reflection of the Netherland's large export share, which means that many industries are not tied to the growth rate in domestic demand to the same extent as in smaller open economies with lower export shares. In addition, trends in demand play a particular role in those industries where low potential growth is forecast.

Figure 13 Potential Business Opportunities Diagram for the Netherlands



Notes: See notes to Figure 11. Slope of the trend line is 0,334 (0,003).

Source: OECD (2014). *OECD Economic outlook 95 - Long-term baseline projections*, World Input-Output and own calculations.

Questions for discussion:

- Targeted industry assistance can not be recommended, either to turbo charge sectors that have big prospects, or to support industries in decline. However, policies need to take a stance on the educational needs of the future. How great is the need to update the educational composition? How should strategic research be structured to provide the greatest possible economic returns and help solve important societal problems?
- Firms face a generally favourable situation, with prospects of high demand, especially in those sectors that contribute to a high proportion of the value added in Denmark, relative to other countries. How can such firms, and those in less favourable situations apply this insight to make the best decisions?
- It appears as though demand for Danish products will increase faster than our production potential. Can/should we increase our efforts and investments so that we can keep up with the demand? If not, can we then take advantage of the demand pull to continue improving the terms of trade by, for example, investing in higher product quality rather than mass production of standard goods?
- The estimate of potential business opportunities relates to value added in Denmark. Many Danish firms already have establishments abroad. Will/should the capacity constraint in Denmark cause Danish multinational firms to increase production abroad more than they increase it in Denmark? Can more Danish firms benefit from establishing themselves abroad? And what does it mean for the Danish economy if they do?
- How can we ensure that Danish firms continue to capitalize on their comparative advantages and have access to export markets in a world characterized by Brexit, the Transatlantic trade agreement cancellation and a US president who is leaning in a protectionist direction?



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