DANMARKS NATIONALBANK

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The increasing importance of the largest companies

A modest number of large Danish companies account for an increasing share of economic activity and they have a significant impact on the Danish economy. They differ from other companies by relying more on intangible assets and operations abroad. This means that GDP can fluctuate more without increasing fluctuations in capacity utilisation accordingly. This makes it even more important to take a broad view of the economy when designing fiscal policy.

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The largest companies account for an increasing share of Danish production

The largest Danish companies account for an increasing proportion of economic activity. The majority of these companies are characterized by being globally oriented in terms of product markets, production, and ownership. They also have fewer domestic employees and a greater use of intangible assets compared to other large Danish companies. This enables them to adjust their production with relatively small changes in domestic employment. This development reflects that intellectual property rights increasingly contributes to productivity growth in Denmark.

Concentration on large companies can affect fluctuations in the Danish economy

Increased use of intangible assets and production abroad can enable production to be more easily adjusted to fluctuations in demand with limited consequences for employment in Denmark. This can make it harder to assess the business cycle. The concentration of production can also increase the significance of individual companies for overall macroeconomic fluctuations. However, the significance is mitigated by the fact that the largest companies have a relatively lower degree of spillovers to the rest of the economy compared to other large companies.

Increasing importance of the largest companies has limited implications for economic policy

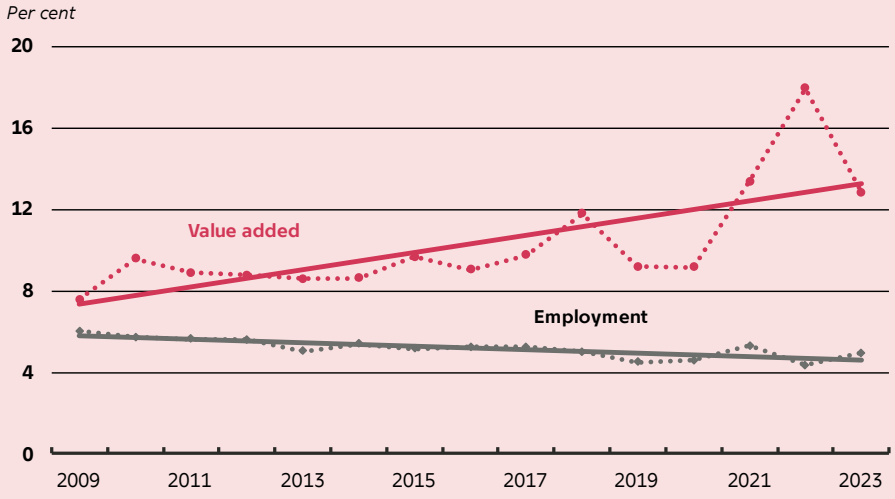
Economic policy should be aimed at stabilising the utilisation of domestic production capacity and thus the demand for labour available in Denmark. This will also support price stability. Flexible labour markets contribute to ensuring that a potential crisis in one of the largest companies does not spill over into a major economic downturn.

Why is it important?

Danmarks Nationalbank works to ensure a robust Danish economy. It does so by, among other things, providing recommendations for economic policy that aim to stabilise economic activity. Much of the activity takes place in Danish companies, and the growing importance of a few large Danish companies with global production, may therefore have an impact on business cycle development. The concentration of production in the largest companies also means that a downturn for these companies can have a significant impact on the Danish economy.

Main chart: The largest companies account for an increasing share of value added, but a declining share of employment

The 25 largest companies' share of value added and employment



Note: The chart shows the development in total value added and employment for the 25 largest companies (measured by value added) in relation to GDP and total employment. The dotted line indicates the actual shares year on year and the solid line shows the trend over time. The share in 2023 is calculated using data from Danmarks Nationalbank, as company-level data is not yet available via Statistics Denmark for 2023. Note that the value added in 2022 was particularly due to large price increases.

Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

Keywords

Danish economy | Households and corporations | Economic activity | Denmark and abroad

01

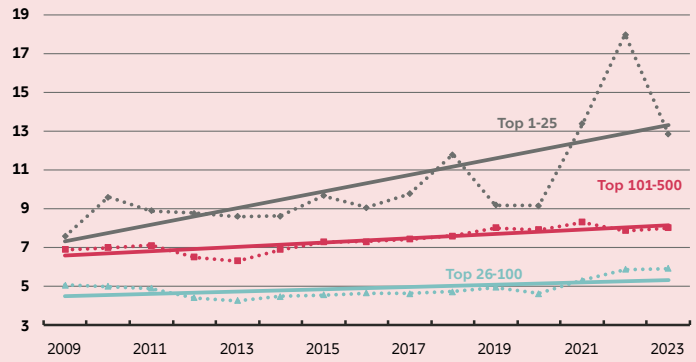
The largest companies account for an increasing share of Danish added value

In recent years, the very largest companies in Denmark have become increasingly important for value creation. The gross value added, GVA, of the 25 largest companies relative to GDP has grown from 7.6 per cent in 2009 to 12.8 per cent in 2023, and their importance to the economy was particularly high in 2022, when their GVA was 18 per cent of GDP, see chart 1.[1] Their share of employment fell from 6.0 per cent in 2009 to 4.9 per cent in 2023, see chart 2.

CHART 1

The largest companies account for an increasing share of value added...

Total value added for the group in per cent of GDP

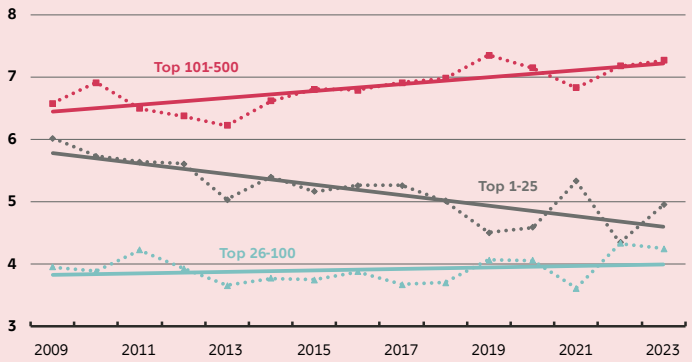


Note: The chart shows GVA for three types of companies in relation to GDP. *Top 1-25* indicates the 25 largest companies in terms of value added. *Top 26-100* indicates the 26-100 largest companies in terms of value added. *Top 101-500* indicates the 101-500 largest companies in terms of value added. The dotted line indicates the actual shares year on year and the solid line shows the trend over time. The share in 2023 is calculated using data from Danmarks Nationalbank, as company-level data is not yet available via Statistics Denmark for 2023. Note that the value added in 2022 was particularly due to large price increases.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

CHART 2

...but a decreasing share of domestic employment

Total number of employees for the group as a percentage of total employment



Note: The chart shows the number of full-time employees in Denmark employed in the three types of companies in relation to total employment (register-based labour force statistics, RAS). *Top 1-25* indicates the 25 largest companies in terms of value added. *Top 26-100* indicates the 26-100 largest companies in terms of value added. *Top 101-500* indicates the 101-500 largest companies in terms of value added. The dotted line indicates the actual shares year on year and the solid line shows the trend over time. The share in 2023 is calculated using data from Danmarks Nationalbank, as company-level data is not yet available via Statistics Denmark for 2023.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

This analysis focuses on the top 25 companies in terms of their share of value added. These companies play an important role in the Danish economy simply

[1] The top 25 companies are defined here as the 25 largest companies in a given year in terms of value added. See box 1 for a definition of the different types of large companies and of companies more generally. There is a wide variation within the group in both the share of value creation and employment. Note that 2022 was an exceptional year due to large price increases and a relatively high turnover among the top 25 companies in terms of value added.

because they account for a large share of total Danish production, as illustrated in chart 1.[2] However, even within the top 25 companies, there are significant differences in company size and other characteristics.[3] Some of the companies are of the type sometimes referred to as 'superstar companies'.[4] These are large companies that, due to relatively low marginal costs, dominate a market and can sell their products at a significant markup compared to their competitors.[5] There are few such companies in Denmark due to the size of the country, and for data confidentiality reasons, this analysis focuses only on the 25 largest companies based on value added.[6]

This chapter first describes the role of globalisation in the increasing importance of large companies and then characterises the largest companies. Finally, the importance of intangible assets over time, which is found to be particularly concentrated among the largest companies, is analysed.[7] Chapter 2 highlights the possible implications for business cycle development, while chapter 3 discusses the implications for economic policy.

Globalisation and technological advancements allow companies to specialise

The concentration of economic activity in the largest companies has occurred during a period when the volume of international trade has increased and production chains have become globalised, see charts 3 and 4.[8] While world trade has generally been growing since the 1970s to the mid-2000s, Denmark's trade with the rest of the world has grown faster than total global foreign trade over the past 20 years. The increase in Denmark's foreign trade roughly follows the development of individual countries in the EU but is higher as a share of GDP.

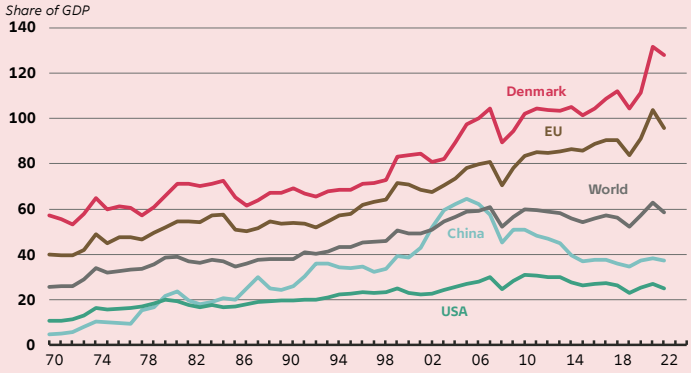
Increased international trade often leads to specialisation of production between countries. This typically leads to increased productivity and thus increased prosperity among trading countries.[9] Value creation in a small, open economy is also concentrated in fewer large exporting companies, and the increasing importance of the largest companies for the Danish economy can be seen in this light. The concentration of value creation in relatively few large companies is an international phenomenon and its impact on the economy has been documented for several countries.[10]

[2] See Xavier Gabaix, The Granular Origins of Aggregate Fluctuations, *Econometrica*, vol. 79, 2011, and Christian Ebeke and Kodjovi Eklou, The Granular Origins of Macroeconomic Fluctuations in Europe, *IMF Working Papers*, No. 2017/229, 2017.
[3] In 2023, the largest company in terms of share of GVA was around 28 times larger than the smallest in the top 25, and there is more than 3 percentage points difference in the share of employment between the 25 largest companies. The share of GVA and employment here refers to the share of total GVA and employment of private non-financial corporations. As the composition of the group varies over time, their characteristics can also vary. On average, each company that was in the top 25 at some point between 2009-2022 has spent approximately six years in the top 25. The number can actually be higher depending on how a company is tracked over time. The calculated number is only the number of the top 25 companies that were among the 25 largest companies in 2009-22 and had the same ultimate owner during the period.
[4] See David Autor, David Dorn, Lawrence Katz, Christina Patterson and John Van Reenen, The Fall of the Labor Share and the Rise of Superstar Firms, *The Quarterly Journal of Economics*, vol. 135(2), pages 645-709, 2020.
[5] The ratio between production cost and selling price is often referred to as a company's mark-up.
[6] For data confidentiality reasons, the largest two companies within each reported group must account for less than 80 per cent of the total turnover of the group. This must be fulfilled in all years.
[7] For a definition of intangible assets, see box 2.
[8] For a description of the Danish development, see Niels Kjærgård, The Danish Economy, 1973-2009: From National Welfare State to International Market Economy, *Scandinavian Journal of History*, vol. 49, November 2023.
[9] Adam Smith put forward the first trade theory in *Wealth of Nations* (1776) on absolute advantage, which was followed by David Ricardo's theory of comparative advantage 40 years later.
[10] See Xavier Gabaix, The Granular Origins of Aggregate Fluctuations. *Econometrica*, vol. 79, 2011, Christian Ebeke and Kodjovi Eklou, The Granular Origins of Macroeconomic Fluctuations in Europe, *IMF Working Papers*, No. 2017/229, 2017, and David Autor, David Dorn, Lawrence Katz, Christina Patterson and John Van Reenen, The Fall of the Labor Share and the Rise of Superstar Firms, *The Quarterly Journal of Economics*, vol. 135(2), pp. 645-709, 2020.

Globalisation and technological developments have made it easier for companies to locate their production where it is most advantageous. This has increased their ability to reap the benefits of specialisation. Increased production abroad means that companies gain access to a larger labour market and can potentially get more out of their intellectual property rights. It can also provide easier access to the markets where the products are sold.

CHART 3

Danish foreign trade has increased as a share of GDP

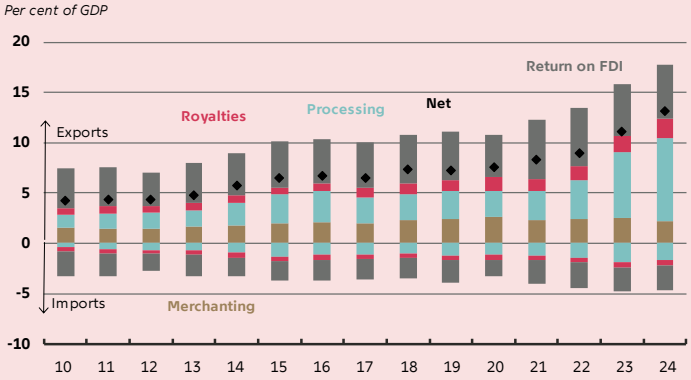


Note: Exports and imports as a share of GDP in current prices. *The EU* indicates the sum of foreign trade for each member state, where foreign trade includes both trade with other member states and countries outside the EU.
Source: World Bank and own calculations.

CHART 4

Foreign activity has increased

Danish returns from various forms of value creation abroad as a share of GDP have increased



Note: The individual contributions as a share of GDP in current prices. See footnote 15 for a definition of merchanting and processing. For further details on the terms used in the chart, see box 1 in Andreas Kuchler, Morten Spange, Mathias Busk Tjørnum, Thomas Rasmusen Damsgaard, and Robert Wederkinck, Danish productivity and competitiveness in a globalised world, *Danmarks Nationalbank Analyse,* nr. 6, marts. 2025.
Source: Statistics Denmark and own calculations.

From a business cyclical perspective, access to the global labour market means that companies can more easily adapt their production to fluctuations in demand for their products. Consequently, companies are less dependent on available physical capital and labour in Denmark. This will be particularly relevant in cases where there isa limited amount of economic slack in the Danish economy and an expansion of production is desired. The trend towards more global production structures is illustrated by the fact that Danish companies have generally experienced growing profits from their foreign activities, see chart 4.

BOX 1

How to define a 'company'

Companies are complex to define, as they can consist of one or more legal entities (CVR numbers) that are part of the same group and can therefore be considered as one in an economic sense. A company can for example consist of several subsidiaries and a parent company – often collectively considered a group. It is essential to identify entities that are part of the same group, as decisions within one group are likely to be made taking into account the other entities in the group. This analysis therefore defines a company's activity *as the sum of the activity that takes place within the group* and refers to it as the company's activity.

In the definition of a company, it is therefore necessary to determine when a given entity either owns or is itself owned by another entity. The analysis considers entities to be part of a company if 50 per cent or more of the voting rights are owned by the company. The analysis also looks through chains of ownership, so that three entities, where one entity is owned by another entity, which is ultimately owned by a third entity, are all part of the same group.

Business foundations and their activities are not included in the analysis as they are considered to be the ultimate owners on an equal footing with households, the state and foreign countries. However, due to data limitations, entities owned by the same fund are regarded as the same company, even if the only common relationship they have is the same ultimate owner (the business foundations), while entities owned by the same households are not regarded as the same company.

The analysis includes all companies in the private non-financial sector with at least one full-time employee in a given year. As the different entities within a company can belong to different sectors, the company's sector is defined based on the entity's sector within the company with the most employees.[1] The analysis divides private non-financial corporations into four groups:

- **Top 1-25 companies:** The 25 largest companies in a given year measured by their share of GVA. The analysis refers to these companies as top 25-companies.
- **Top 26-100 companies**: The 26-100 largest companies measured by GVA in a given year.
- **Top 101-500 companies**: The 101-500 largest companies measured by GVA in a given year.
- **Others:** Private non-financial corporations that are not among the 500 largest companies measured by GVA in a given year. In 2022, there were 86,183 companies in the 'others' group.

Company-level calculations are based on data from Statistics Denmark's company-level registers (FIRM, FIRE, OFATS and KONC). Details of employees in the given companies from the BFL and BEF registers are also included. Information on merchanting and processing activities at company level comes from data made available by Statistics Denmark for Danmarks Nationalbank. Data on foreign direct investment made by the companies comes from data collected by Danmarks Nationalbank and accounting data from Bisnode. For 2009-22, this data supplements company details from Statistics Denmark's business registers. For 2023, this data is used only as company-level data is not yet available through Statistics Denmark's business registers.

[1] *Sector* refers here to the sectors of the national accounts.

The largest companies are capital-intensive and internationally orientated

The largest companies differ from other large companies in several key areas:

Firstly, the 25 largest companies have a significantly lower payroll cost, see chart 5.[11] This is a trait evident from the superstar companies that typically have a relatively low labour share due to high markup compared to their competitors in the same industry.[12] Chart 5 also shows that the labour share of the 25 largest companies varies greatly and that not all 25 companies have a low payroll cost in absolute terms. However, the typical top 25 company has a labour share significantly lower than other large companies. Also note that the typical top 25 company has slightly higher payroll costs per employee compared to other large

[11] The latest year with company-level data available is 2022. To ensure that individual years with particular fluctuations at company level do not become too decisive in characterising the different types of companies, the analysis takes an average of characteristics in 2020-22, where the years are weighted equally.
[12] These companies can then come to dominate the markets they operate in. See, for example, David Autor, David Dorn, Lawrence Katz, Christina Patterson and John Van Reenen, The Fall of the Labor Share and the Rise of Superstar Firms, *The Quarterly Journal of Economics*, vol. 135(2), 2020.

companies and that there is significantly more variation in labour costs per employee among the top 25 companies.

In continuation of this, the top 25-companies typically have a larger capital stock compared to other large companies. The difference is particularly large when it comes to intangible assets.[13] The largest companies thus typically have a smaller labour input relative to value creation, and an increase in value added could therefore be expected to lead to a relatively smaller increase in the number of domestic employees compared to other large companies in Denmark. The opposing trends in their share of value added and employment are important for understanding the importance of large companies to the Danish economy.

BOX 2

Intangible assets and intellectual property

There is a significant overlap between companies' intangible assets calculated in microdata and the national accounts' calculation of the part of the capital stock defined as intellectual property rights. However, there are also some differences and both sizes are difficult to value. The following outlines what intangible assets and intellectual property include and how value is calculated.

Intangible assets
For an individual company, an intangible asset refers to a *non-physical asset owned by the company that contributes to that company's value creation*. Examples of intangible assets are a trademark or patent, specialised knowledge developed within the company and reflected in the company's infrastructure or goodwill recognised in the company's balance sheet.

A company's intangible assets can be difficult to value. The true market value will often only be determined when the company or intangible asset is sold. This means, for example, that a patent that has never been sold will be recognised at company level at its book value, which does not necessarily reflect the value that the patent potentially generates for the company. The importance of the patent to the company's total market value is therefore not necessarily reflected in the book value of the patent either. Similarly, it can be difficult to determine the value of a company's organisation or stock management, which is therefore not necessarily reflected in the value of its intangible assets.

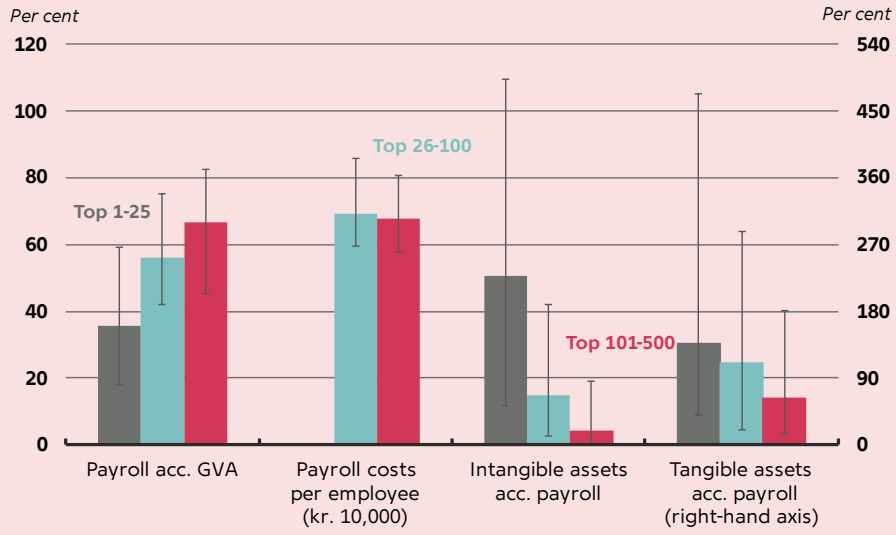
Analyses of the value of companies' intangible assets are therefore generally subject to considerable uncertainty. As this analysis focuses in particular on differences in the value of intangible assets between different types of large companies, it is particularly important that uncertainty about the valuation of intangible assets does not systematically lead to an over- or underestimation of the value of intangible assets of the largest companies relative to other types of companies that does not reflect relative differences in the market value of these assets.

Intellectual property rights
To assess the extent of intangible assets for the economy as a whole, the national accounts' inventory of intellectual property rights is therefore an obvious data source due to the considerable uncertainty in the valuation of intangible assets. Intellectual property includes research and development, oil, gas and mineral exploration, computer software and original works of art and entertainment, etc. Intellectual property rights are recognised at market value to the extent that this is available. When the market value is not available, e.g. for self-produced investments, which typically include intellectual property rights, the value is determined as cost plus a premium. The allowance should reflect the net profit from the production of the asset in question if the investment was produced by a subcontractor. As the allowance is an average consideration, the calculated value of the most successful self-produced investments can be significantly lower than the actual market value, whereas purchased intellectual property rights more closely reflect their true value.

[13] For a definition of intangible assets, see box 2.

CHART 5

The largest companies use more physical and intangible assets in their production compared to other large companies in Denmark



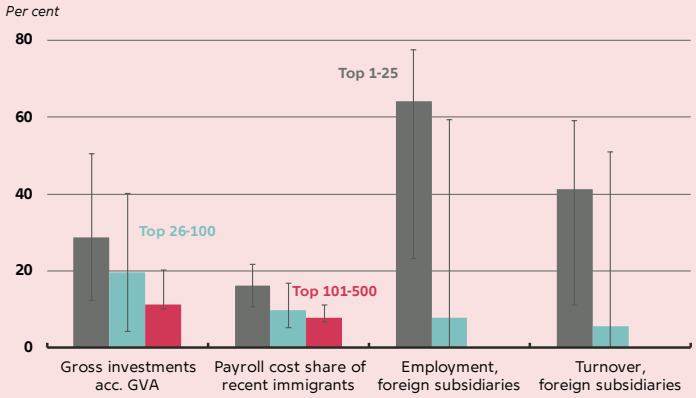
Note: Data for 2020-22. The bars in the chart shows the value for each characteristic for the typical company in the group. This value is calculated by finding the median value for each of the years 2020-22 and then determining the average of those three values. The vertical lines on each bar similarly indicate the 25th and 75th percentiles. *Payroll costs per employee* indicates payroll costs (measured in 10,000 2023-kroner) per employee and includes both payroll and pension costs. *Top 1-25* indicates the largest 25 companies in terms of value added. *Top 26-100* indicates the 26-100 largest companies in terms of value added. *Top-101-500* indicates the 101-500 largest companies in terms of value added.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

Finally, the majority of the largest companies are more internationally orientated in terms of sales markets, production and employment compared to other large companies in Denmark, see charts 6 and 7.[14] Foreign production is reflected to a significant extent by employment in foreign subsidiaries, see chart 6, as well as merchanting and processing, see chart 7. Merchanting and processing contribute to the weaker correlation between the development of Danish GVA and domestic employment over the economic cycle, as profits from merchanting and processing are included in GVA, while employees abroad are not included in domestic employment. However, foreign activities will often be conditional on the company's domestic activities, for example, in relation to research and development, marketing or management and organisation. There may therefore be a positive correlation between the level of merchanting and processing and domestic employment in the long term.[15]

[14] Chart 7 shows that all of the top 25 companies export, but not the share of total turnover that exports represent. The importance of exports to their business therefore varies greatly between these companies.
[15] Production abroad can take place as merchanting and processing. It describes instances of Danish companies that either buy and sell products abroad or process inputs from other companies and sell them abroad. In both cases, the products never cross the Danish border, but are bought, produced and sold abroad. Danish companies can also produce abroad by owning a subsidiary abroad via FDI. For an analysis of production abroad by Danish companies, see Andreas Kuchler, Morten Spange, Mathias Busk Tjørnum, Thomas Rasmusen Damsgaard Tørsløv, and Robert Wederkinck, Danish productivity and competitiveness in a globalised world, *Danmarks Nationalbank Analyse,* nr. 6, marts. 2025.

CHART 6

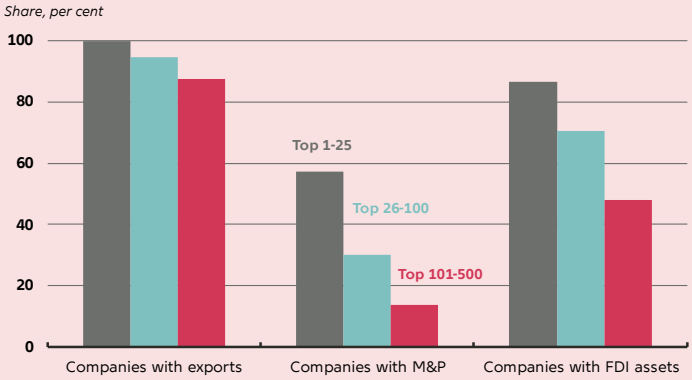
The largest companies have employment and sales abroad...



Note: Data for 2020-22. The bars in the chart shows the value for each characteristic for the typical company in the group. This value is calculated by finding the median value for each of the years 2020-2022 and then determining the average of those three values. The vertical lines on each bar similarly indicate the 25th and 75th percentiles. *Employment and sales in foreign subsidiaries* indicates the share of the company's employment and sales abroad. *Recent immigrants* indicates the proportion of employees in the company who have immigrated to Denmark within the last five years in relation to the year of the survey. *Top 1-25* indicates the 25 largest companies in terms of value added. *Top 26-100* indicates the 26-100 largest companies in terms of value added. *Top 101-500* indicates the 101-500 largest companies in terms of value added.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

CHART 7

... and production takes place both through foreign subsidiaries and through merchanting and processing



Note: Data for 2020-22. The share indicates the average share for 2020-22. *Companies with Danish foreign direct investment (FDI assets)* shows the share of companies that have FDI assets, regardless of whether those assets generate returns. *Top 1-25* indicates the 25 largest companies in terms of value added. *Top 26-100* indicates the 26-100 largest companies in terms of value added. *Top 101-500* indicates the 101-500 largest companies in terms of value added.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

The largest companies account for a significant share of value creation and foreign activity, but a relatively smaller share of payroll and employment

The low labour share, high capital intensity and international orientation of the majority of the 25 largest companies characterise their collective importance to the Danish economy. The largest companies are of great importance to the Danish economy not only because of their large share of value creation, but also because their profits accounted for just over half of the total profits of private non-financial corporations for the years 2020-22, see chart 8. However, their importance to the Danish economy is significantly smaller in terms of employment and payroll. All these factors are essential to understand the contribution of the largest companies to economic fluctuations and to assess the risks associated with an increasing concentration of value creation in these companies. Chapter 2 analyses the impact of the largest companies on fluctuations in the economy and the risks associated with the increasing concentration of value creation.

As the largest companies in Denmark are generally more global than other large companies in the country, they also account for the majority of private non-financial corporations' activities abroad, see chart 9. The largest companies accounted for approximately 56 per cent of gross merchanting and processing activities among private non-financial corporations in 2020-22.[16] They also owned approximately 50 per cent of Danish foreign direct investments (FDI

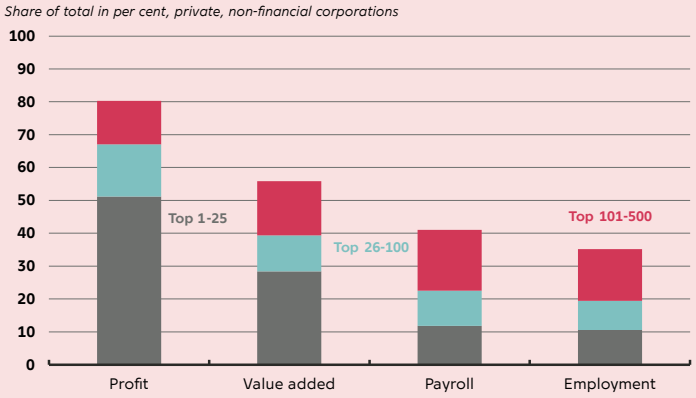
[16] *Gross merchanting and processing* indicates that merchanting and processing activities in Denmark by foreign companies are not excluded.

assets). The largest companies' large share of the activities of Danish companies abroad contributes to their low labour share and employment compared to the result compared to other Danish companies.

The largest companies also accounted for a very large share of total gross savings and investments of private, non-financial corporations.[17] They accounted for approximately 58 per cent of gross savings and approximately 48 per cent of gross investments in 2020-22. Through their large impact on overall investment, the largest companies can influence short-term macroeconomic fluctuations and long-term growth. However, it is beyond the scope of this analysis to investigate the latter.

CHART 8

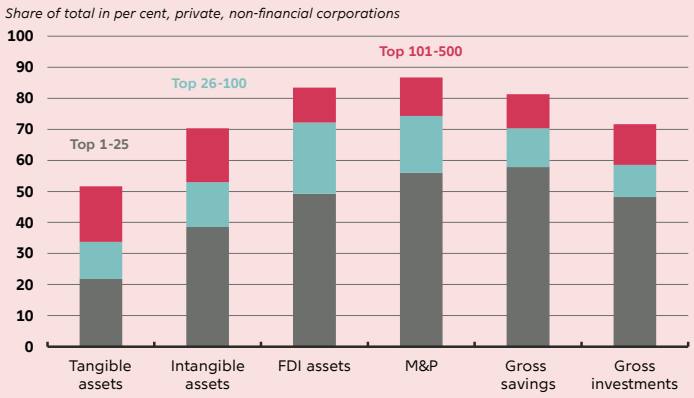
The largest companies account for a relatively larger share of profits and value added than of employment and wages



Note: Data for 2020-22. Share of total is calculated for the total period 2020-22. *Top 1-25* indicates the 25 largest companies in terms of value added. *Top 26-100* indicates the 26-100 largest companies in terms of value added. *Top 101-500* indicates the 101-500 largest companies in terms of value added.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

CHART 9

The largest companies account for the majority of merchanting and processing, as well as savings and investments



Note: Data for 2020-22. Share of total is calculated for the total period 2020-22. *M&P* refers to gross merchanting and processing activities. *Top 1-25* indicates the 25 largest companies in terms of value added. *Top 26-100* indicates the 26-100 largest companies in terms of value added. *Top 101-500* indicates the 101-500 largest companies in terms of value added.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

Companies' capital stock increasingly consists of intellectual property rights

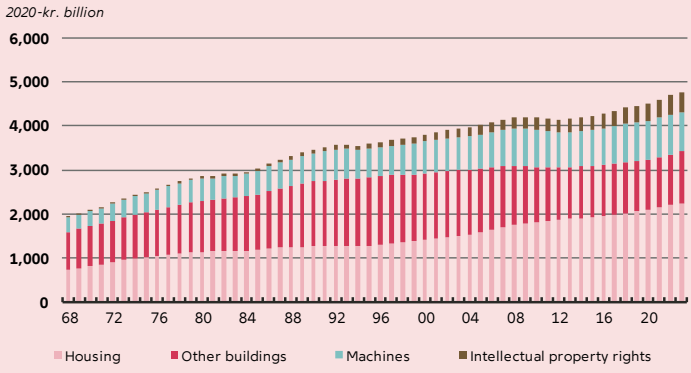
As the contribution of the largest companies to the total value creation in Denmark has grown, intellectual property rights have become increasingly important to the Danish economy.[18] The share of intellectual property rights in the total capital stock (excluding private sector housing) has grown since 2000 by just over 10 percentage points, reaching 18.5 per cent in 2023.[19] During the

[17] For an overview of Danish companies' savings over time, see Henrik Yde Andersen, Lars Risbjerg, Morten Spange and Robert Wederkinck, The Danish savings surplus: Trends in firm and household savings, *Danmarks Nationalbank Economic Memo*, no. 6, September 2024.
[18] In national accounts, *intangible assets* are defined as intellectual property rights. In the following sections, *intellectual property* rights refer to intangible assets as reported in the national accounts for Denmark as a whole, while intangible assets refer to intangible assets as reported for the individual company in the company accounts. For an overview of the relationship between intellectual property and intangible assets, see box 2.
[19] Private companies are calculated as the entire economy excluding 6 industries where activity is concentrated in the public sector, as well as *housing, owner-occupied housing, etc.*, which consists of the value of households owner-occupied housing and is therefore not representative of non-financial corporations. Private companies do not correspond one-to-one to the private sector, as the public sector also has activity outside the 6 industries and parts of the activity in the 6 industries are private.

same period, the share of building and machinery capital in total capital stock excluding housing has decreased accordingly. Intellectual property rights currently account for around 10 per cent of the total capital stock, see chart 10, and around a third of the capital stock in industry. Intellectual rights have thus come to mean more as an input in Danish production, whereas labour and physical capital mean less.[20]

CHART 10

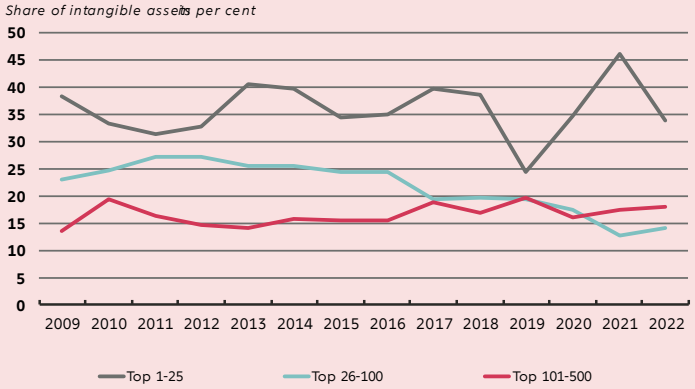
Intellectual property rights make up an increasing share of the total capital stock in private companies



Note: For a definition of private companies, see footnote 19.
Source: Statistics Denmark and own calculations.

CHART 11

The largest companies' share of total intangible assets has remained relatively constant



Note: For a definition of intangible assets, see box 2. *Top 1-25* indicates the 25 largest companies in terms of value added. *Top 26-100* indicates the 26-100 largest companies in terms of value added. *Top 101-500* indicates the 101-500 largest companies in terms of value added.
Source: Own calculations based on data from Statistics Denmark.

Although the largest companies' share of the total intangible capital stock in Denmark is high, it has not increased over the period 2009-22, see chart 11. The development in chart 10 therefore not only reflects that the carrying amount of the 25 largest companies' intangible assets has grown over the period. Instead, these companies are part of a wider technological trend where intangible assets have become increasingly important to production. However, intangible assets are particularly important for the production of the 25 largest companies, see chart 5, and the increase in their intangible capital stock may therefore be particularly important for Danish production, as their share of total value added has been growing over the same period.

The intangible capital owned by the largest companies can also differ from other intangible capital. For example, as previously shown, the top 25 companies accounted for the vast majority of merchanting and processing activities in 2020-22. Such activities often depend on patents, which can be particularly difficult to value compared to other intangible assets such as purchased software. The companies accounts therefore do not necessarily reflect the difference in market value between these assets. See box 2 for a further description of the valuation of intangible assets. Similarly, within the top 25 companies, there may be differences in the characteristics of the intangible assets that companies own.

[20] Note that the value of intellectual property rights does not necessarily reflect their market value, as intellectual property rights in the national accounts are recognised at cost price, see box 2. This means that chart 10 does not show fluctuations in the market value of intellectual property rights. The same applies to the rest of the capital stock.

This is emphasised by the large difference in the importance of intangible assets as an input to their value creation, see chart 5.

An increasing share of productivity growth can be attributed to intellectual property rights

As intellectual property rights have become an increasingly important part of the total capital stock, they also play an increasingly vital role in the development of productivity, see chart 12. The average contribution to hourly productivity growth in private companies from increased capital intensity of intellectual property has been 0.35 percentage points since 2000. This is more than the average growth contribution from the capital intensity of buildings and machinery, which together accounted for 0.25 percentage points. Details of the calculation can be found in box 3. In manufacturing, the large and growing importance of intellectual property rights means that intellectual property rights now receive a larger share of capital factor labour than buildings and machinery combined and can offset the decline in the labour share that occurred since 2008 alone, see chart 13. The large increase in the factor remuneration of intellectual property reflects not only the increasing importance of intellectual property but also the decreasing importance of machines in particular over the past three decades.

BOX 3

Breakdown of productivity growth and remuneration of each capital type

To illustrate the importance of intellectual property rigths to the economy, productivity growth can be broken down into contributions from total factor productivity and capital intensity by different types of capital, including intellectual property rights. This is done based on the methodological descriptions behind the productivity calculations published by Statistics Denmark and the OECD.[1] The total remuneration of capital is also distributed among the different types of capital.

Calculation of total factor productivity
The total factor productivity index is calculated as value added divided by the total input of factors of production (total factor input) in the form of labour and capital. The increase in total factor input is calculated as the increase in the individual factors of production weighted by the share of remuneration attributable to the different factors of production in the previous year.

Calculating the remuneration of different types of capital
The national accounts only contain industry-specific information on the total remuneration of capital (gross operating surplus and mixed income), but have capital and industry-specific information on depreciation (consumption of fixed capital). Instead, the remuneration of each capital type can be calculated based on a capital and industry-specific user cost rate, which consists of a depreciation rate and a required rate of return. This requirement can be calculated for each industry and is initially assumed to be the same across capital types. The required rate of return is then calculated to ensure that the total remuneration of capital is in line with the national accounts.

Methodological caveats
The breakdown of productivity growth in this analysis breaks productivity growth down into seven different types of capital, but does not take into account different quality of labour (education level) or differences in material consumption across industries.[2] In general, a more granular breakdown of productivity growth will result in higher total factor inputs and therefore lower total factor productivity growth. The development of total factor productivity in this analysis generally follows Statistics Denmark's figures closely, but explicitly illustrates the importance of intellectual property rights.

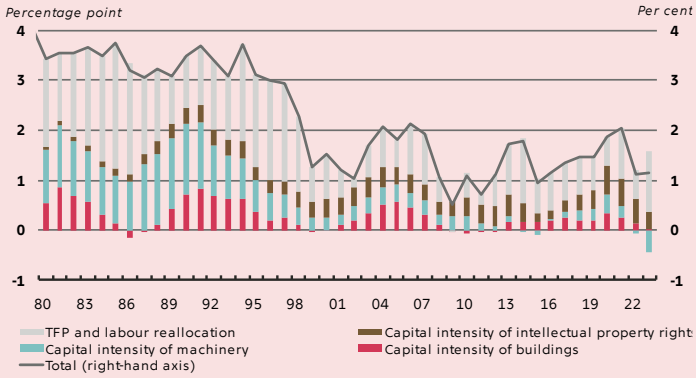
[1] See, e.g. Statistics Denmark, *Productivity development in Denmark, 1966-2003*, May 2005.
[2] Statistics Denmark takes this into account in the productivity calculations they publish.

Intangible assets have been instrumental in enabling the increasing value creation of production abroad under Danish ownership that has taken place over the past 20 years. Production abroad under Danish ownership particularly affects Danish value creation when production can be sold with a significant

markup to labour and material costs and depreciation on the physical capital abroad. Danish companies can choose to produce abroad even if they do not possess significant intangible assets, but without intangible assets they will probably not be able to sell their products at the same premium to production costs.

CHART 12

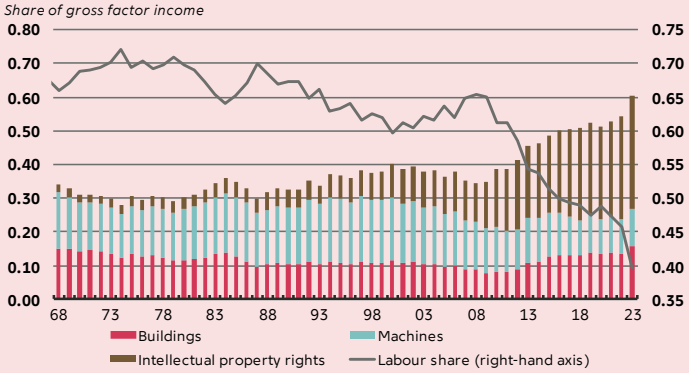
The capital intensity of intellectual property rights contributes more to productivity development than buildings and machinery in private companies



Note: The chart shows the contribution of total factor productivity, TFP and capital intensity to productivity growth in private companies. The chart shows approximate five-year moving averages.
Source: Statistics Denmark and own calculations.

CHART 13

Intellectual property rights are particularly important in manfucturing and make up the majority of the remuneration of capital



Note: The left axis of the chart shows the remuneration of different types of capital in relation to gross factor income, GFI.

Source: Statistics Denmark and own calculations.

02

The macroeconomic importance of the largest companies

The trend towards an increasing share of production being concentrated in the largest companies could affect the business cycle in two ways.

Firstly, it could have an impact on the size of business cycle fluctuations in the macroeconomy. The increased concentration in this respect means that individual companies will account for a larger share of the overall macroeconomic fluctuations. At first glance, this can lead to larger overall fluctuations. However, there are indications that the largest companies are less integrated into national production structures compared to other companies. This means that even though their share of value added is increasing, macroeconomic fluctuations are not necessarily growing.

Secondly, developments could change key macroeconomic relationships between production, employment and capacity utilisation. The production structures of the largest companies with, among other things, less importance of domestic labour may mean that the value of production fluctuates more without leading to greater fluctuations in domestic employment and capacity utilisation.

Increasing contribution from the largest companies to fluctuations in the Danish economy

The increasing concentration of value creation among the largest companies suggests that their importance for business cycle fluctuations in the Danish economy has increased. However, the effect also depends on the interaction between these companies and other players in the economy. For example, the output of some companies is used as input in the production of other companies, which is one of several channels through which shocks to individual companies can propagate more widely.[21]

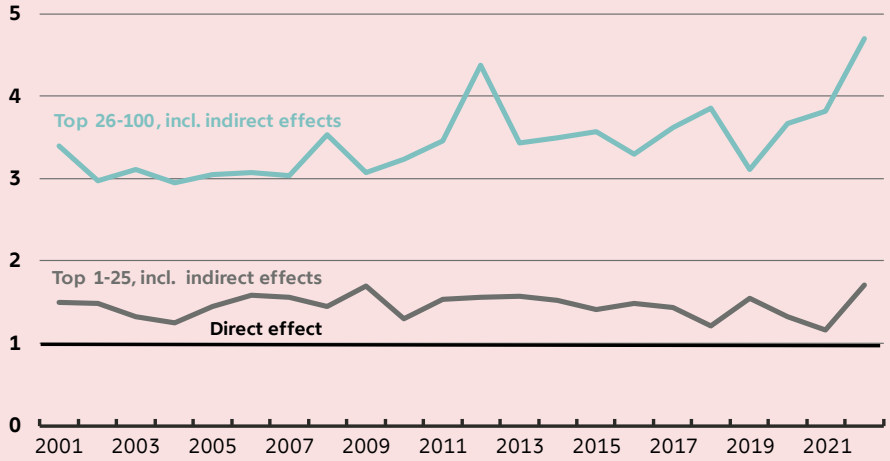
The results in chart 14 indicate that the contribution to Danish GDP fluctuations from the largest companies exceeds the direct effect, as expected. However, relative to their size, the spillover effect is smaller than for shocks to other large organisations. This may be due to the fact that the largest companies are more internationally orientated and therefore have a less central position in the production network of the Danish economy.

[21] The overall knock-on effect of a shock to one of the largest companies will also depend on such factors as the consumption composition of the households employed by the relevant companies. Andersen et al. show that the derived effects of a shock depend on the share of imports among the affected households' consumption, and that this share varies geographically, see Asger Lau Andersen, Kilian Huber, Niels Johannesen, Ludwig Straub, Emil Toft Vestergaard, Disaggregated Economic Accounts, *NBER Working Paper,* no. w30630, November 2022. Based on this context, Hansen and Jørgensen show that the derived effects are slightly larger for an export shock to the pharmaceutical industry compared to a general industrial export shock. The calculated knock-on effect on the Danish economy is subject to significant uncertainty, see Nikolaj Mose Dreisig Hansen and Mia Jørgensen, Increased pharma-ceutical exports have both aggregate and distributional effects, *Danmarks Nationalbank Economic Memo* no. 5, August 2024.

CHART 14

The largest companies have relatively smaller knock-on effects in relation to their share of value added compared to other large companies

Effect on GVA in relation to companies' share of GVA



Note: The indirect effects take into account the companies' knock-on effects on the value creation of trading partners, among other things. The indirect effect is determined by the ratio between the elasticity of GDP with respect to productivity growth among companies in, for example, the top 25, calculated from their share of total sales and value creation. The calculation also takes into account the historical correlation between these productivity shocks and the development of GDP (the adjusted Domar weight). The method is described in more detail in box 4.
Source: Own calculations based on data from Statistics Denmark and Danmarks Nationalbank.

BOX 4

The largest companies have a greater impact on GDP fluctuations but moderate spillovers effect on the rest of the economy

The largest companies are increasingly contributing directly to value creation in Denmark due to their increasing share of total value added, but how large is their contribution to the overall fluctuations in GDP when indirect effects are included? To answer this question, we start with Hulten's theorem, which states that under certain assumptions in an efficient economy, the first-order approximation to the effect of a productivity shock in a single firm on aggregate productivity is equal to the company's sales to GDP ratio. This is referred to as the "Domar weight".[1] Since fluctuations in total factor productivity feed one-to-one into production, it is also the theoretical effect of a productivity shock in a company on real GDP. It is important that this is a first-order approximation, as Farhi and Baqaee show that factors such as substitution elasticities between products, network connections and the possibility of returns to scale in the individual company have an impact on the expected theoretical effect.[2]

Productivity growth at the company level
The first step towards assessing the importance of the productivity development of the largest companies is to measure the productivity of individual companies. The simplest measure of this is the value added per full-time employee. Building on Hulten's theorem, Gabaix uses this measure to examine how company-specific productivity shocks among large companies in the US have affected US GDP.[3] This analysis uses the same approach to examine the impact of shocks to the largest companies on Danish GDP. In line with Gabaix, the productivity of the largest Danish companies and then the "granular residual" is calculated as the Domar-weighted average of the productivity growth of the companies relative to the productivity growth of other companies in the same sectors.

The relationship between productivity growth and GDP of the largest companies
To assess the empirical relationship between productivity growth in the largest companies and GDP growth, GDP growth is regressed on the granular residual. The estimated regression coefficient, β, ideally captures the causal effect of productivity growth in the largest companies on GDP. In practice, however, this causal effect is indistinguishable from the possibility that productivity in large companies has a different cyclical effect than in smaller companies. Note that Hulten's theorem implies that β should theoretically be equal to 1. If β is not equal to 1 in practice, this can be explained by the factors mentioned in Farhi and Baqaee (2019), among others. If β is less than 1, this may be mainly because the products of the largest companies are easy to substitute, or because those companies have a more peripheral location in Denmark's production network. The coefficient β is estimated based on data from 2002-22.

In the data, there is a positive correlation between GDP growth and the granular residual, but the correlation appears to be weaker than Hulten's theorem suggests. This estimation gives $\beta = 0.47$ with a standard error of $\sigma = 0.25$. The correlation is therefore significant at the 10 per cent level. However, due to the short time series, the estimate is not precise and there is considerable statistical uncertainty. The 95 per cent confidence interval ranges from -0.05, which means that large companies have no effect on GDP growth, to 1, which means that the effect of large companies is given by their Domar weight. However, the estimated $\beta = 0.47$ is the best estimate of the impact of the granular residual on GDP. The estimated β is constant over time, but as the Domar weights and granular residual vary over time with the size of the largest companies, it can be used to calculate an expected time-varying elasticity between real GDP growth and productivity growth among the largest companies, see chart.

Illustration of Domar and adjusted Domar weights over time
The chart illustrates three measures of the importance of the largest companies to the Danish economy: *The grey line* shows the development of the largest companies' share of value added. This indicates their direct impact on GDP if there was no spillover effects on other companies in Denmark. This could be the case, for example, if they import all inputs and export all output. The largest companies' share of value added increases from around 0.05 to 0.1 in 2020 and almost doubles from 2020 to a final value of around 0.17 in 2022. *The pink line* in the charts show the simultaneous development in the Domar weight of the largest companies. This increases from around 0.2 to around 0.3 between 2002 and 2020. From 2020 to 2022, the Domar weight also increases drastically to almost 0.8. This indicates a – theoretically approximated – significant degree of spillovers to the rest of the economy from productivity shocks among the largest companies. Finally, *the red line* in the charts shows the adjusted Domar weight, which represents the best estimate of the impact of productivity growth in the largest companies on GDP growth. This corresponds to about half the weight of Domar. The adjusted Domar weight increases from approximately 0.1 in 2002 to approximately 0.3 in 2022. As the adjusted Domar weight is between one and a half and two times larger than the direct contribution in terms of value added share, this indicates some spillover effect from the largest companies, although the exact degree based on this approach should be interpreted with caution.

Continues ...

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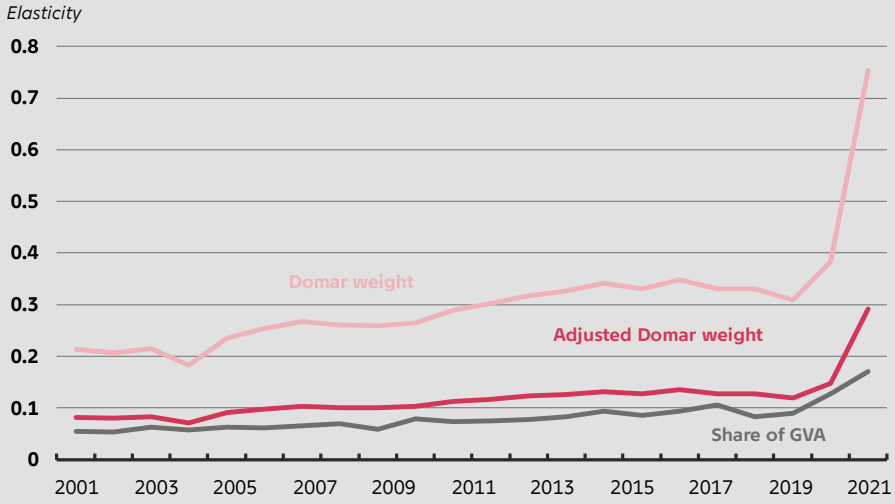
Chart

Increasing effect on GDP of a 1 per cent increase in productivity among the largest companies



Note: *The adjusted Domar weight* is based on a regression of the "granular residual" on real GDP growth from 2002 to 2020, see Gabaix (2011).
Source: Statistics Denmark, Danmarks Nationalbank and own calculations.

[1] Charles R. Hulten, Growth Accounting with Intermediate Inputs, *The Review of Economic Studies*, vol. 45(3), pp. 511–518, 1978.
[2] David Rezza Baqaee and Emmanuel Farhi, The Macroeconomic Impact of Microeconomic Shocks: Beyond Hulten's Theorem,"*Econometrica*, vol. 87(4), pp. 1155-1203, July 2019.
[3] Xavier Gabaix, The Granular Origins of Aggregate Fluctuations, *Econometrica*, vol. 79, 2011.

The fact that the spillover effects from the largest companies on the rest of the economy are moderate is supported by calculations of input-output multipliers, which take into account the position of individual industries in the Danish economy's production network, see chart 15. The multipliers show how much production, value added and employment increase overall when production in an industry increases by kr. 1 million. The impact of the largest companies on the rest of the economy is modest compared to the economy as a whole. Even compared to manufacturing, the largest companies have a smaller spillover effect on production value and employment, while a larger part of the effect on GVA comes directly from value creation in the largest companies.[22] The calculations do not take into account derived effects on demand.

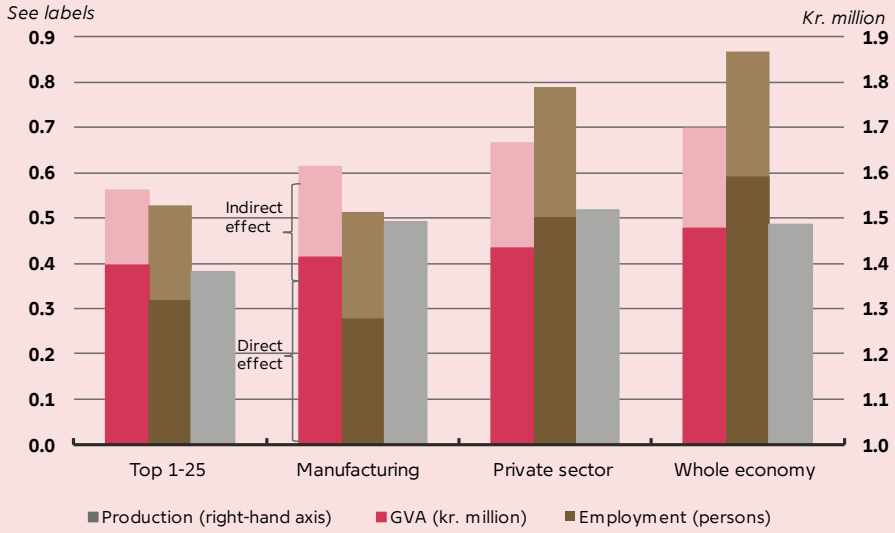
The input-output multipliers complement the results of the method described in box 4 in that the indirect effects on value creation from an increase in the production of the largest Danish companies are relatively muted. The input-output calculations illustrate the difference in spillover effects based on industry composition, but ignore that the largest companies may differ from other companies within the same industry. Conversely, the calculations in box 4

[22] Input-output multipliers for the largest companies are based on the assumption that the deliveries to and from these companies within a given industry are reflected in the average for that industry. If the largest companies have fewer deliveries from other Danish manufacturers than the average within an industry, the multipliers shown may be an overestimate of the knock-on effects.

illustrate that the contribution of the largest companies differs from other companies in the same industry, but ignores the effect of industry composition.

CHART 15

Input-output multipliers support that the largest companies have smaller spillover effects on other parts of the economy



Note: The chart shows the change in production, GVA and employment after a kr. 1 million shock to the production value in the largest companies. The dark part of the bar shows the direct effect of the impact, while the light part the indirect effect of the impact. In the calculation, the weight of the 25 largest companies is calculated based on their total share of turnover in each industry. Each company's turnover is broken down between each industry in accordance with the share of the company's turnover from each industry. The calculations are based on Statistics Denmark's input-output tables on the 69 grouping from 2023.
Source: Statistics Denmark, Danmarks Nationalbank and own calculations.

Limited effect on wealth due to demand for the largest companies

In addition to the direct effects on production and employment, fluctuations in profit will affect demand in the economy through effects on the wealth of shareholders and dividends received. In the long term, all income and wealth must, in principle, be assumed to be converted into consumption but the speed at which this happens, and therefore the impact on demand in the shorter term, depends very much on who owns the companies. The large listed companies typically have a large foreign ownership share, and overall, foreign ownership accounted for 57 per cent of the listed share of the 25 largest companies, see chart 16. This is significantly more than the foreign ownership share for other listed and unlisted Danish companies. Fluctuations in the value of the largest companies are therefore expected to have a lesser effect on demand for Danish goods and services than similar fluctuations in the value of other Danish companies.

The breakdown across groups of domestic owners further suggests that effects on wealth are less for the largest companies. Of the 43 per cent of the value of the largest companies owned by domestic players, business foundations account for 28 percentage points, which is more than for other Danish companies. Business foundations are expected to react only gradually to fluctuations in the value of their shareholdings. Households directly own 9 per cent of the largest

companies, and a further 7 per cent are owned by other Danish entities, including pension companies, investment funds, etc., which to some extent reflects indirect ownership among households.

CHART 16

The biggest companies are largely foreign-owned

Note: Data from 2023. *The ownership shares for listed companies in the top 1-25 and other listed companies* are based on market values, whereas *unlisted* companies are based on the carrying amount of the individual companies. The *household* data reflects direct ownership of companies. The share owned by *business foundations* only includes the value of companies controlled by business foundations and not ownership in other companies and is adjusted for the top 1-25 companies' holdings of unlisted A-shares. *I and P+IF* covers the industries *insurance and pension* and *Investment funds*. For the *other domestic*, non-financial corporations and financial holding companies account for a very large share of unlisted shares.
Source: Statistics Denmark, Danmarks Nationalbank and own calculations.

Households are the group that is expected to react most directly to fluctuations in wealth. However, reaction is limited by the fact that it is primarily the most affluent who own shares,[23] and that they are less likely to translate income increases into consumption than the average household.[24] Consumption is also assumed to react less to the element of wealth owned indirectly through, e.g. pension savings, as these are less liquid.

Increased importance of individual companies can be associated with risks

Increased specialisation in production among Danish companies has led to increased prosperity by supporting productivity, employment and investments. However, as value creation is concentrated in fewer companies, the negative consequences for the Danish economy increase if one of those companies runs into difficulties or moves abroad.

Overall, the macroeconomic consequences of a downturn for a very large company can be significant – especially if they materialise at the same time as a

[23] See Henrik Yde Andersen, Niels Lynggård Hansen and Andreas Kuchler, Pension wealth and macroeconomic stability, in Torben M. Andersen, Svend Erik Hougaard Jensen and Jesper Rangvid (ed.), *The Danish pension system: Design, performance and challenges*, Oxford University Press, 2022.
[24] See Edmund Crawley and Andreas Kuchler, Consumption heterogeneity: Micro drivers and macro implications, *American Economic Journal: Macroeconomics*, vol. 15(1), January 2023.

recession in the economy more broadly. However, the overall risks should be seen in light of the fact that the probability of a sudden bankruptcy in one of the largest companies is probably relatively low. The following sections first discuss the likelihood of such a scenario and then the purely mechanical consequences for value creation and employment. Finally, we discuss the effect on investment and consumption and the potentially significant effects on confidence in such a scenario, that make all calculations subject to considerable uncertainty.

The risk associated with the greater importance of individual companies depends on the consequences if one of them gets into trouble or experiences a major downturn, and on the probability of this happening. There is a risk that the foundation of their business model will disappear for all companies. As a result, a large part of the company's capital stock (both physical and intangible) can lose its value and employment levels fall. The likelihood of a sudden bankruptcy in one of the largest companies is probably relatively modest, although it has been seen before that even large companies can lose significant parts of their business base. Alternatively, it is conceivable that a globally-orientated company may completely or partially discontinue its activities in Denmark and instead continue them abroad. However, the fact that a significant proportion of the largest companies are controlled by, among others, Danish business foundations in Denmark, see chart 16, may reduce the likelihood of a liquidation.

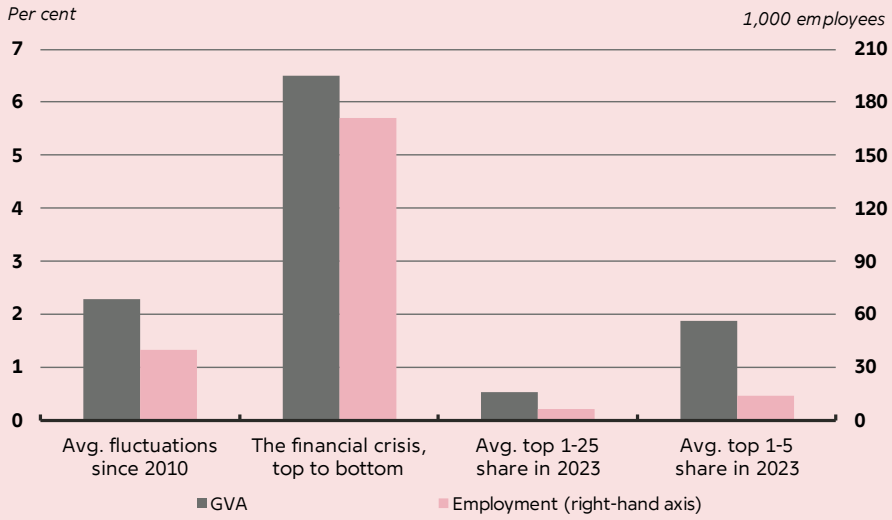
The purely mechanical consequences for Danish employment and value creation of losing one of the 25 largest companies will depend on the size of the specific company. On average, the 25 largest companies in Denmark in 2023 had approximately 6,000 employees and accounted for 0.5 per cent of the total value added of private, non-financial corporations. This is less than the average annual change in value added and employment (up or down) since the financial crisis of 2.3 per cent and 40,000 people respectively, see chart 17. If an average top 25-company were to go bankrupt overnight, the immediate drop in production would be mechanically significant, but not by itself sufficient to cause a full-scale recession in the Danish economy. However, there is considerable variation in the size of the individual top 25 companies, and a situation where one of the very largest companies gets into trouble could obviously be more serious. The immediate purely mechanical decrease in this case would be approximately 1.9 per cent of the value added and approximately 14,000 people.

The effect on employment is smaller than the drop in GVA would suggest, reflecting the capital-intensive production structure of large companies. A large part of the labour force is also highly skilled and will probably be in demand in the rest of the Danish economy.[25] The largest companies also employ a lot of foreign labour, some of which is likely to leave Denmark. In an economic boom, laid-off employees will find it easier to find new jobs, whereas a crisis at one of the largest companies in a recession is likely to lead to a prolonged increase in unemployment.

[25] In the experience of technology company Nokia, 70 per cent of those made redundant found other employment within a year, and the proportion was higher among the most qualified. See Ali-Yrkkö Jyrki Natalia Kuosmanen, Mika Pajarinen, Structural change in the ICT Sector- where have former Nokia employees ended up? *Journal of the Finnish Economic Association,* vol.(3), no. 1, 2022.

CHART 17

The average top 25-company in 2022 accounted for a smaller share of the economy than the typical annual fluctuations in the economy



Note: *The average fluctuations since 2010* indicate the average absolute change in employment and GVA. *The peak of the financial crisis for GDP* was Q1 2007 and *the bottom* was Q2 2009, whereas *the peak for employment* was Q3 2008 and *the bottom* was Q1 2010.
Source: Statistics Denmark and own calculations.

However, these purely mechanical calculations do not give the full picture of the consequences for the Danish economy of a bankruptcy in one of the largest Danish companies. As discussed above, there will be spillover effects on the economy more broadly. A downturn in a large company will not only affect employment but also lead to lower consumption and investment. While the capital-intensive production of large companies reduces the effect on employment, it strengthens the possible effect on investment.

The effect on consumption of a downturn in a large company reflects the immediate increase in unemployment and the loss households will suffer on their shareholdings. The average market capitalisation of the 25 largest companies is approximately kr. 250 billion, of which 9 per cent are owned directly by households. Based on research into the effects of unexpected stock gains and losses, the figures for Danish companies indicate that a total write-down of an average top 25-company would lead to an immediate reduction in private consumption of approximately kr. 1 billion within a year.[26] In 2023, private consumption totalled kr. 1,300 billion. However, significant reservations should be made about a calculation that uses historical reactions to 'normal' fluctuations in equity prices as the basis for the possible reaction to a company losing its entire value.

The drop in consumption and investment can be amplified by the significant negative confidence effects that can be associated with a crisis in a large company. The macroeconomic implications of a crisis in one or more large companies are not necessarily proportional to the number of redundancies, for

[26] The estimate is based on an assessment of a marginal propensity to consume out of the loss of 4.4 per cent within one year and 16 per cent over three years, see Asger Lau Andersen, Niels Johannesen and Adam Sheridan, Dynamic Spending Responses to Wealth Shocks: Evidence from Quasi Lotteries on the Stock Market, *American Economic Review: Insights*, vol. 6(3), September 2024.

example. A negative event in a large company will be felt across the country and therefore, as a result of increased uncertainty about the future, may also lead to a reduction in consumption and investment in households and businesses that are not directly affected. There can also be serious consequences in geographical areas where a large proportion of the labour force is employed by the company in difficulty. Against this background, it is not possible to predict the effects of a potential crisis in a large Danish company with any precision based on historical economic contexts.

Production structures can affect the correlation between GDP, employment and capacity utilisation

The increasing importance of the 25 largest companies has contributed to an increase in the importance of intellectual property rights and production abroad for Danish value creation. When the production structure of the Danish economy changes, it can affect the correlation between key economic variables such as GDP, employment and capacity utilisation. It is necessary to take this into account when assessing economic development.

GDP has historically played a significant role in assessing the economic development. However, an increase in GDP can be due to either stronger demand or an increase in the economy's underlying production potential. To get the full picture of the economy and to plan economic policy appropriately, it is necessary to compare the development of GDP with the underlying development of the economy's potential. The potential depends on several factors, including productivity and the amount of production factors available to companies in the form of capital and labour.

The ratio between actual GDP and potential provides an indication capacity pressure. If capacity pressures are positive so that economic activity exceeds potential, there will be a tendency for price and wage growth rates to increase. Conversely, negative capacity pressure will have a dampening effect on wages and prices. The potential of the economy can thus be considered as the level of GDP compatible with stable wage and price development.

In the short term, there will typically be a close correlation between capacity pressure and GDP, see chart 18. This reflects that fluctuations in the economy are largely driven by fluctuations in demand in the form of consumption and investment, as well as foreign demand, while the underlying production potential is more stable. Fluctuations in consumption or investment will have spillover effects on production, employment, imports, etc., and therefore affect the economy more broadly. Thus, there will often also be a relatively close correlation between GDP and employment, although the labour market typically reacts to changes in economic activity with a delay of a few quarters, see chart 19.[27] The correlation reflects the fact that an increase in demand, which translates into higher production and thus higher GDP, is typically made possible by an increase in employment.

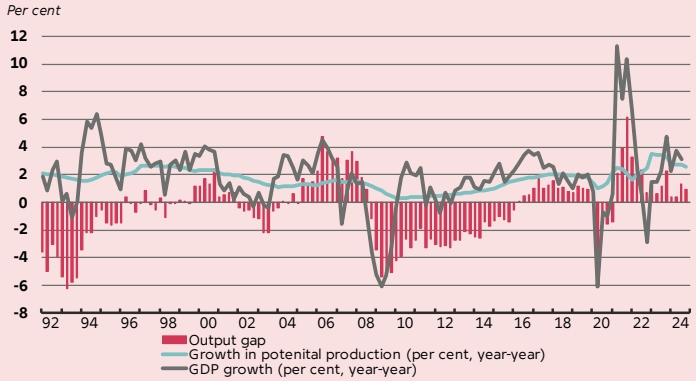
As intellectual property rights such as patents have come to play a greater role, this may weaken the link between GDP and capacity pressures. A patent will often be associated with high costs, but once in the company's possession, by shielding the company from competition for a period of time, it can enable the company to sell its products at a price that significantly exceeds the marginal cost of production.[28] This means that a relatively modest increase in the

[27] See Danmarks Nationalbank, The pressure on the labour market has eased after a job-intensive expansion, *Danmarks Nationalbank Analysis (Outlook for the Danish Economy)*, no. 4, March 2024.
[28] See for example M. Bajgar, C. Criscuolo and J. Timmis, Intangibles and industry concentration: Supersize me, *OECD Science, Technology and Industry Working Papers,* 2021/12, and N. Crouzet and J.C. Eberly, Understanding weak capital investment: The role of market concentration and intangibles, *National Bureau of Economic Research,* no. w25869, 2019.

workforce can generate a significant increase in added value. It also means that production, measured as either turnover or value added, can fluctuate significantly in response to fluctuations in demand without having a correspondingly large impact on employment. The form of production based on intellectual property rights, which is particularly prevalent in the largest companies, thus reduces the impact of GDP fluctuations on capacity utilisation.

CHART 18

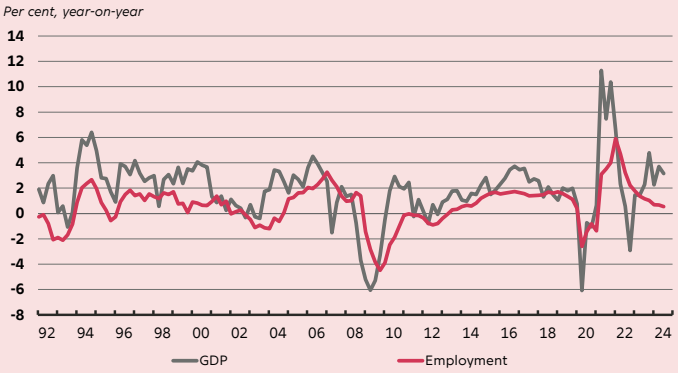
Capacity pressure typically increases when GDP growth is high



Note: *Potential production* indicates the level of production compatible with stable price and wage levels in the long term.
Source: Statistics Denmark and own calculations.

CHART 19

Fluctuations in GDP and employment traditionally follow each other, but the correlation has weakened in recent years



Source: Statistics Denmark and own calculations.

The link between cyclical fluctuations in GDP, employment and thus capacity pressure is further weakened if intellectual property rights are combined with production abroad under Danish ownership. In this situation, production can adapt to fluctuations in demand with very limited direct consequences for employment in Denmark. However, production abroad can have an indirect impact on domestic employment, see above.

Changing structures towards less labour-intensive production can have an impact on competitiveness, which is one of the economy's built-in stabilising mechanisms.[29] In a situation with positive capacity pressure, there will be a tendency for wage increases to accelerate, making it more expensive for companies to produce. As the exchange rate does not change due to the fixed exchange rate policy, this means that companies' products will become more expensive compared to similar products produced abroad and demand will decrease. This loss of competitiveness against foreign competitors helps to stabilise GDP fluctuations, although the effect is likely to be very gradual.

If wages make up a smaller proportion of total production costs, an increase in wages will have less of an impact on costs and thus their competitiveness for companies. Against this background, a shift in production structures towards an increased importance of intellectual property rights can weaken an inherent stabilisation of GDP. However, to the extent that an increase in GDP leads to an

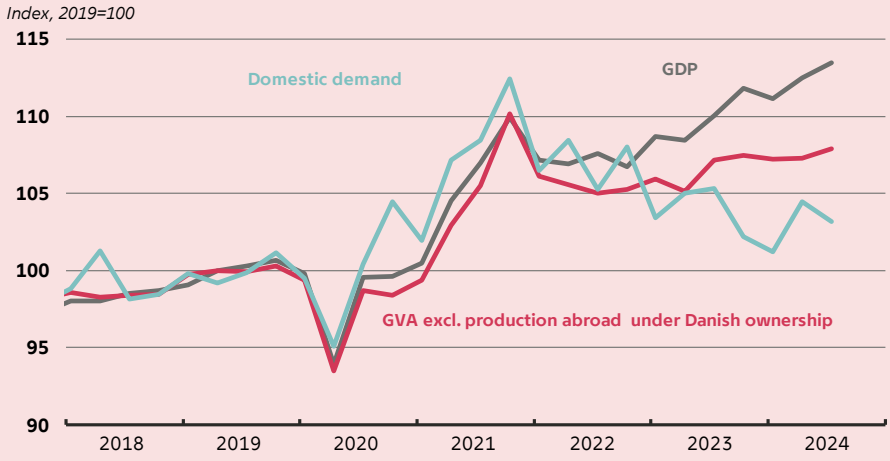
[29] For a further discussion of how changing production structures can affect competitiveness, see Andreas Kuchler, Morten Spange, Mathias Busk Tjørnum, Thomas Rasmusen Damsgaard, and Robert Wederkinck, Danish productivity and competitiveness in a globalised world, Danmarks Nationalbank Analyse, nr. 6, marts. 2025.

increase in employment, it is still likely to be reflected in a higher rate of wage growth, which increases production costs and tends to reduce the demand for labour. This maintains a key stabilisation mechanism in relation to the labour market.

Larger fluctuations in GDP coupled with less impact on capacity pressures can make it more difficult to identify turning points in the business cycle. Turning points in production and value creation are typically seen before those in the labour market and are therefore important to identify in order to adjust economic policy in a timely manner. In recent years, GDP development has been characterised by extraordinarily large quarterly fluctuations, partly due to production and exports from industries dominated by large, international Danish companies. Overall, such fluctuations have boosted GDP and occurred at the same time as domestic demand has fallen, see chart 20.

CHART 20

GDP has risen sharply in recent years, while domestic demand has been weak



Source: Statistics Denmark and own calculations.

Danmarks Nationalbank has assessed that the demand for labour and thus the capacity pressure within the typical forecast horizon of 2-3 years has a closer correlation with GVA excluding production abroad under Danish ownership than with GDP.[30] GVA excluding production abroad excludes a large part of the value creation that takes place abroad using Danish intangible assets with limited direct use of Danish labour and physical capital stock. This alternative measure shows a clearer slowdown in the business cycle in 2022 following Russia's invasion of Ukraine than the development of GDP immediately indicates. This interpretation is also supported by trends in prices and wages, where inflation has come down again after a period of very high price increases.

[30] See Danmarks Nationalbank, The outlook is for lower wage increases and stable inflation despite uncertain times, *Danmarks Nationalbank Analysis (Outlook for the Danish economy)*, no. 9, March 2025.

03
The impact of large global companies on economic policy

In Denmark, monetary policy is conducted solely with the aim of maintaining a fixed exchange rate of kroner against the euro. This ensures low and stable inflation in the long term, just as the fixed exchange rate policy has generally created the foundation for a relatively stable development in the economy in general. To the extent that stabilisation is needed beyond what comes from monetary policy, it is the responsibility of fiscal policy. On this basis, Danmarks Nationalbank provides recommendations for fiscal policy in order to ensure a stable business cycle.[31]

One of the things characterising a stable business cycle is GDP not deviating significantly from the potential level, which is determined by productivity and the quantity of production factors. This will often give rise to stable wage and price development. The increasing importance of intellectual property rights combined with production abroad can potentially cause GDP to fluctuate more than before, without reflecting fluctuations in capacity utilisation. This can happen as a result of fluctuations in the economy's potential output without, for example, pressure on the labour market fluctuating accordingly.

Fiscal policy should only to a minor extent to dampen an increase in GDP if it does not also lead to an increase in domestic employment beyond potential. This may be the case, for example, if the increase in GDP is primarily made possible by higher utilisation of intellectual property rights, possibly supplemented by higher employment in foreign entities. Against this background, the expression for GVA excluding Danish companies' production abroad is relevant when designing fiscal policy. However, it is important to be aware of whether an increase in activity through confidence and wealth effects strengthens domestic demand, which can support capacity pressures.

In a small, open economy, a large company will inherently have a larger share of total production and employment. The largest companies are private companies operating on global market terms, and a small country like Denmark has clear wealth gains from such highly productive companies. Fundamentally, companies should be allowed to take advantage of favourable market conditions as long as they do not do so at the expense of other market agents, beyond what normal competitive conditions dictate.

The Danish labour market is characterised by a relatively high degree of flexibility. The ‘flexicurity model’ means that the costs of hiring and firing employees are relatively limited, which, among other things, leads to relatively large movements in employment across companies. A large part of the labour force is also covered by collective unemployment insurance. Flexible labour markets and a highly-skilled workforce contribute to that a crisis in one of the largest companies does not spill over into a major economic downturn with a lasting increase in unemployment and a decline in consumption.

[31] For an introduction to stabilisation policy in Denmark, see Morten Spange, Monetary and Fiscal Policy in Denmark, *Danmarks Nationalbank Analysis*, No. 12, October 2022.

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