

The Danish savings surplus: Trends in firm and household savings

Over the past 30 years, Denmark has had a savings surplus in the sense that gross savings have exceeded gross investments. This is equivalent to a current account surplus, and it has been particularly evident since the global financial crisis in 2008. The savings surplus has to a large extent been accounted for by firms. While the level of investment of non-financial firms is comparable to other countries, their earnings and gross savings are high by international comparison. For households, healthy pension contributions have to some extent been offset by borrowing, but their financial wealth has been increasing due to valuation gains on financial assets.

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Denmark is characterised by a persistent savings surplus

Since the early 1990s, savings have exceeded investments at the national level. While this is to a large extent accounted for by firms, sound public finances have also played a role. Following the global financial crisis, the savings surplus has been particularly high, coinciding with a shift towards higher savings rates by households.



Large firms account for a substantial share of the savings surplus

The savings surplus of Danish firms reflects high earnings and gross savings rates in non-financial corporations, while gross investments are in line with those of other advanced economies. This is to a large extent driven by large, capital intensive firms. These firms use part of their savings surplus for foreign direct investments in subsidiaries abroad, and they also perform buybacks of own shares.



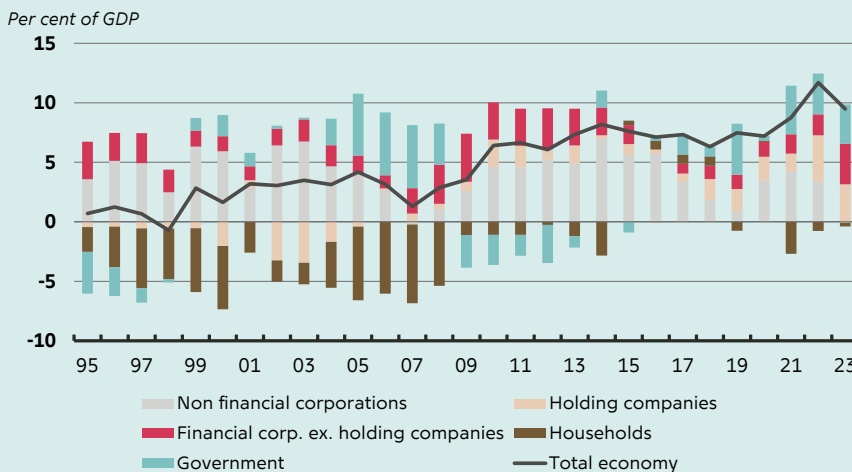
For households, pension contributions have partly been offset by borrowing

Danish households have generally not contributed to the savings surplus. This reflects that borrowing to some extent offsets pension contributions, although debt accumulation slowed significantly following the global financial crisis. Nevertheless, the net worth of Danish households is among the highest in the world. This reflects valuation gains on their assets, in particular pension wealth.

Why is this important?

Since the global financial crisis in 2007/08, Denmark has been characterised by a substantial savings surplus in the sense that savings have exceeded investments. This memo investigates the underlying trends in savings and investments for firms and households. Savings and investments are important macroeconomic fundamentals, and having a firm grasp of their trends is a prerequisite for understanding their drivers and for discussing associated policy questions.

Main chart: Strong savings surplus by firms since 1995 – households consolidated following global financial crisis



Note: The chart shows the contribution of individual sectors to the aggregate savings surplus. Some holding companies are closely associated with the non-financial corporations that they own. This suggests that part of the savings surplus by holding companies can in some sense be attributed to non-financial corporations.

Source: Statistics Denmark.

Keywords

Households and corporations

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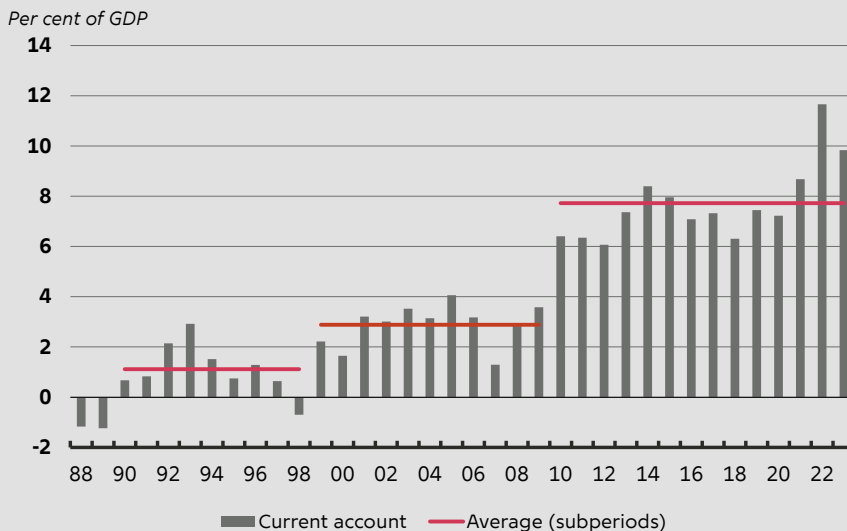
Direct investments

01 Introduction

Since the global financial crisis (GFC) in 2007/08, Denmark has been characterised by substantial current account surpluses, cf. chart 1.¹ Over the period 2010-23, the current account surplus averaged 7.7 per cent of GDP, and 2022 stands out with a record surplus of 11.7 per cent. The current account surplus is not a new phenomenon, but has built up gradually for the last approximately 30 years. The period of consistent and increasing current account surpluses since 1990 follows almost four decades of successive deficits.

CHART 1

Substantial increase in current account surplus



Note: The horizontal lines illustrate averages over the periods 1990-1998, 1999-2009 and 2010-2023.
Source: Statistics Denmark.

A current account surplus indicates that a country saves more than it invests. This surplus of savings is often referred to as net lending, which is the terminology that will be used in the remainder of this memo. Defining net lending as the difference between gross savings and gross investments for a specific sector, the current account surplus is for all practical purposes equal to the sum of net lending across all sectors at the national level.² See also box 1 for an introduction to net lending and the associated concepts used in this section.

¹ See Pedersen (2003) for a discussion of the journey from consistent current account deficits to sustained surpluses in Denmark.

² There is a small discrepancy between the current account and aggregate net lending, which is accounted for by the capital account. The capital account records transactions that lead to a change in the ownership of assets (in kind or cash) without any counter transaction received in return. Examples of transactions in the capital account are investment grants and debt relief.

BOX 1

Net lending in national accounts

Net lending of a sector or a country is the net supply of financial capital by all economic agents within the sector or country. This is used to finance other sectors or countries in which net lending is negative. Net lending is therefore used to acquire financial assets or, if negative, to finance investment.

A sector or country with positive net lending can be characterised as having a savings surplus while a sector or country with negative net lending instead borrows funds. Positive net lending at the national level is invested in assets abroad. The value of all Danish owned assets abroad minus the value of foreign owned Danish assets represents the net foreign asset position.

Net lending is defined as gross savings minus gross investments, i.e.:

$$\text{Net lending} = \text{Gross savings} + \text{Net capital transfers} - \text{Gross investments}$$

At the national level, net lending equals the sum of net lending of the different economic sectors, i.e., households, non-financial and financial firms, and the public sector. Aggregate net lending across sectors is equivalent to the sum of the current account balance and the capital account, i.e.:

$$\text{Current account balance} + \text{Capital account balance} = \text{National net lending} = \sum \text{Net lending of sectors}$$

Summing across all sectors and countries in the world, by definition, net lending is zero. This reflects that a lender always needs to be matched by a borrower.

Non-financial and financial corporations

For non-financial and financial corporations, gross savings are given by gross profits minus dividends paid, where gross profits cover a range of categories

$$\begin{aligned} \text{Gross savings} \\ = \text{Gross operating surplus} - \text{Taxes} + \text{Net transfers} + \text{Property income} - \text{Interests paid} - \text{Dividends paid} \\ \text{Gross profits} \end{aligned}$$

To simplify notations, net transfers include both current and capital transfers. The term property income in this memo is defined as (net) property income in the national accounts excluding interest and dividend paid. Thus, property income includes interest received, dividends received, reinvested earnings on direct foreign investments (net), rent (net) and other investment income (net). Interest paid and dividends paid are shown as separate items.

Turning to the second term in the above definition of net lending, Gross investments are defined by

$$\begin{aligned} \text{Gross investments} = \text{Gross capital formation} + \Delta \text{Inventories} \\ + \text{Net acquisition of non financial nonproduced assets} + \text{Net acquisitions of valuables}, \end{aligned}$$

where Δ denotes the first difference in a stock.

In addition to traditional investments in its capital stock, a corporation can increase its productive capacity, i.e., the amount of capital equipment controlled by the corporation, by acquiring existing firms. Where a corporation acquires a non-resident firm, this represents foreign direct investment (FDI). In the national accounts, FDI is treated as a financial transaction since it is a change of ownership of existing capital equipment and not formation of new capital. This implies that unlike investment in new capital, it does not affect the level of net lending.

Households

For households, gross savings are given by gross disposable income plus adjustment for changes in pension entitlements less consumption expenditure:

$$\begin{aligned} \text{Gross savings} = \text{Gross disposable income} \\ + \text{Adjustment for changes in pension entitlement} - \text{Consumption expenditure} \end{aligned}$$

The savings measure incorporates the fact that households have a claim on pension entitlements. The adjustment for changes in pension entitlements is given by total contributions to pension schemes plus property income attributed to the pension schemes less service charges and less pension paid out. For households' gross investments are defined in the same way as for corporations. However, dwellings are the main investment by households, captured by gross capital formation.

Public sector

Public sector gross savings are given by gross disposable income, that is gross operating surplus and mixed income, tax revenue and property income, net transfers less consumption expenditure, while gross investment is defined identically to the other two sectors.

As the memo demonstrates, the current account surplus in Denmark reflects strong and persistent net lending by corporations as well as a sharp increase in net lending by households since the global financial crisis. In addition, prudent public finances have contributed to the surplus. This memo lays out a number of stylised facts, while two additional and forthcoming analyses on the driving forces behind savings and the current account are planned by Danmarks Nationalbank, cf. box 2.

BOX 2

Planned publications on savings, net lending and the current account

1. **Describing trends in net lending (current memo).** This memo lays the foundation for the forthcoming publications by providing comprehensive empirical descriptions of savings at the aggregate level as well as more detailed insights into net lending by firms and households.
2. **Analysing drivers.** In a forthcoming publication, the factors that drive savings of Danish firms and households will be explored in more detail, such as taxation, the pension system, and the ownership structure of firms.
3. **Assessing competitiveness.** Another forthcoming publication will explore how the traditional link between the current account and competitiveness is affected by merchanting and processing as well as investment income from abroad.

Strong net lending by firms is to a large extent driven by large, internationally oriented firms that conduct foreign direct investment. Within this group, a small number of the very largest firms stand out by having exceptionally high net lending. While investments by Danish firms compare to those of firms in other countries, their strong net lending is accounted for by high gross savings, which coincides with strong earnings.

The Danish occupational pensions contribute significantly to net lending by households, and this will continue until the system is expected to be fully matured by around 2040. Pension contributions have, however, to a large extent been offset by high borrowing relative to other advanced economies. Nonetheless, net worth in Danish households, is the highest in the OECD relative to income, reflecting substantial financial wealth, particularly pensions assets. These assets earn capital gains which, accrued over time, compensate for the modest net lending by Danish households.

The large current account surplus and the underlying balance of savings and investments have also been analysed by the Danish Economic Councils and the IMF. The Danish Economic Councils points out that since 2000, non-financial corporations have on average accounted for more than half of total net lending.³ The IMF has also emphasised the role of non-financial corporations, but like the

³ See section II.3 in De Økonomiske Råd (2024).

Danish Economic Councils, the IMF does not explore firm level data.⁴ By relying in part on firm level data, we are able to explore the implications of heterogeneity across firms and to assess the contributions of different types of firms, e.g. in relation to size.⁵

⁴ See IMF (2022).

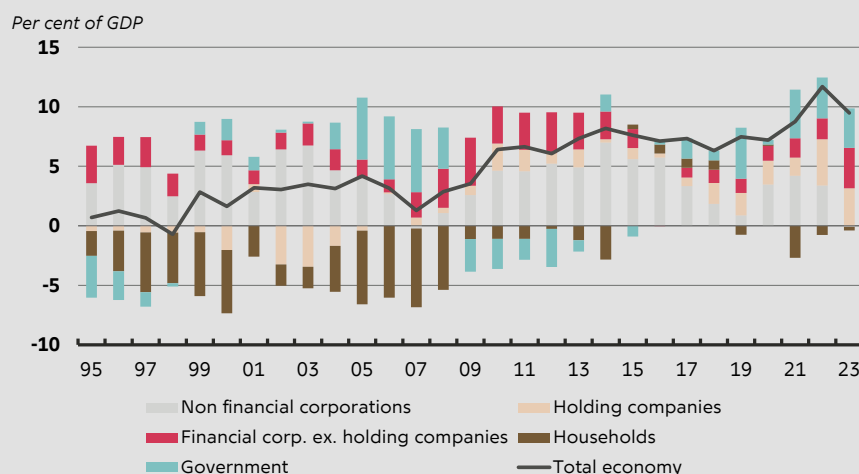
⁵ For a thorough study of firm heterogeneity and net lending in a Dutch context, see Butler et al. (2019).

02 Aggregate trends

Chart 2 shows the contributions of households, non-financial firms (NFCs), holding companies, other financial firms and the government to net lending in Denmark. NFCs have been characterised by positive net lending for most of the past three decades. In addition, net lending by holding companies, which are categorised as financial firms in the national accounts, has tended to be positive.

CHART 2

Strong net lending by firms since 1995 – households consolidated following global financial crisis



Note: Holding companies are also called captive financial institutions. Households include non-profit institutions serving households (NPISH).

Source: Statistics Denmark.

Some holding companies are closely associated with the firms that they own. This reflects that many of the largest Danish NFCs are ultimately owned by business foundations through holding companies, who receive dividends accordingly, cf. box 3. The close association between these holding companies and the non-financial corporations that they own suggests that part of net lending by holding companies can in some sense be interpreted as net lending by non-financial corporations.

BOX 3

Part of net lending ends up in holding companies

The main activity and purpose of holding companies is to own shares in corporations. Some holding companies associated with non-financial corporations own a controlling share of the underlying corporations. Accordingly, there is a close economic link between these holding companies and the underlying corporations. Firms that are at least partly owned by holding companies include Novo Nordisk, A.P. Møller-Mærsk, Lundbeck, Grundfos, and Demant. In these cases, the holding companies

have majority voting rights and thus control the firms. At the same time the holding companies are controlled by business foundations that are typically categorised as non-financial corporations in the national accounts.

Holding companies receive intra-group dividend payments and although they also pay out dividends to their owners, i.e. the ultimate owners of the non-financial corporations, they have tended to have a positive net lending position in the aggregate since 2006. This has been especially pronounced in 2022/23 where dividend payments by non-financial corporations increased significantly, part of which ended up in holding companies. Whether net lending ends up in the NFC or in the holding company is decided by the ultimate owners, e.g. by business foundations.

The importance of holding companies' net lending can be illustrated by the fact that net lending for non-financial corporations alone averaged 7.5 per cent of gross value added over the period 2010-23 while the corresponding ratio for non-financial corporations and holding companies combined is 10.5 per cent.

While net lending by NCFs has been positive for decades, there was a noticeable and persistent change in the contribution from households around the time of the GFC. From 1995 to 2009, households' net lending was negative in every single year, often close to 5 per cent of GDP. However, after 2009 it has on average been close to zero. The impact of the GFC is also visible when looking at financial corporations excluding holding companies. Here net lending was substantial in the years 2007-2013, which may reflect consolidation in the aftermath of the GFC.

Net lending by the government is closely linked to the business cycle. This reflects the impact of automatic stabilisers as well as discretionary fiscal measures taken with the aim of ironing out fluctuations in aggregate demand. When the economy is performing strongly, the government is typically a net lender, which was the case for instance in the run up to the GFC as well as in recent years since 2017. However, as the economy protracted following the GFC, the government became a net borrower.

Savings and investments by firms and households over time

In the following, focus is on the aggregate economy as well as on households and non-financial corporations. These are the parts of the private sector that determine developments in the real economy by making consumption and investment decisions.⁶

Chart 3 decomposes how fluctuations in net lending by NFCs are accounted for by savings and investment. As illustrated by the chart, the slightly negative net lending position in 2007 reflected a gradual decline in savings starting around 2003, while investments rose in the run-up to the outbreak of the GFC in 2008. Following the GFC, firms reduced their investments, thereby restoring a positive net lending position. In the subsequent years, savings increased alongside a recovery in investments.

Firms use part of their earnings to make foreign direct investments (FDI), thereby expanding their productive capacity abroad. From the firms' perspective, investing at home or doing FDI may be seen as two sides of the same coin. However, in the national accounts, FDI is considered a financial transaction, meaning that it does not subtract from net lending.⁷ The investments of the foreign subsidiary are included in business investment in the country of the subsidiary. As Danish outward FDI has generally exceeded inward FDI, this

⁶ We disregard the financial sector, whose role is to function as a financial intermediary. By disregarding holding companies, which are part of the financial sector, we may to some extent underestimate the net lending of companies in the following, cf. discussion above.

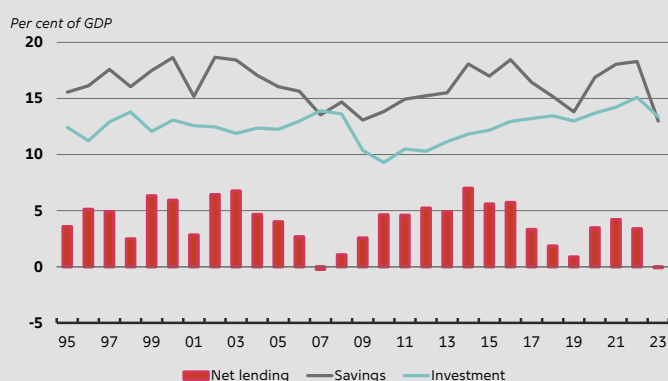
⁷ This illustrates that net lending is not equivalent to simply hoarding cash.

suggest that firms have expanded their global capital stock by more than what is implied by the series for business investments in the Danish national accounts.⁸

Households' investment was roughly constant at around 6 percent of GDP from 1995 to 2005, cf. chart 4. As household investment largely reflects investment in housing, it increased to 8 per cent of GDP during the housing boom leading up to the GFC, after which it roughly halved as the housing market deteriorated sharply. This was followed by a gradual recovery. Household savings also have a clear cyclical component. When the economy was booming in the late 1990s and late 2000s, savings were low at 0-2 per cent of GDP. During the subsequent downturns, savings rose to 3-4 per cent of GDP. In general, savings in Danish households have tended to be higher following the GFC compared to the decade before.

CHART 3

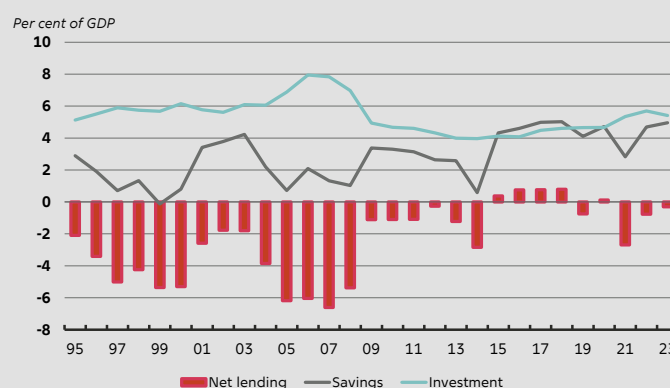
Non-financial corporations have primarily been net lenders



Note: The chart shows savings and investments by NFCs.
Source: Statistics Denmark.

CHART 4

Households reduced investments and increased savings following the global financial crisis



Note: The chart shows savings and investments by households including non-profit institutions serving households (NPISH).
Source: Statistics Denmark.

While private sector savings are often split between households and firms in studies of savings and investment behaviour, households would in some cases have the option to directly choose between accumulating financial savings in firms or having it paid out as dividends. This is typically the case for small family-owned businesses. As we shall see, a significant part of net lending is accounted for by large corporations. For these firms, the individual shareholders' influence on the proportion of earnings that is being paid out as dividends is likely to be more limited and indirect.

Nevertheless, households could interpret retained earnings of firms in which they own shares as part of their net wealth. They may be indifferent between whether profits in a firm are distributed in the form of dividends or whether they are retained in the firm, leading instead to an increase in share prices. In the latter case, the household could sell part of its shares in order to realise the capital gains. However, shareholders as a whole can only be net sellers of shares if the firm buys back its own shares. In that sense, buybacks can be seen as an

⁸ From 2005 to 2022, Danish firms expanded their FDI equity investments from 28 to 57 percent of GDP, while foreign FDI into Denmark had only risen from 22 to 27 percent of GDP. Cesaroni et al (2017) and and Eggelte et al. (2014) find a positive link between firms' net FDI and their net lending across countries.

alternative to paying dividends. The fact that these buybacks do not enter the calculation of net lending would suggest that from an economic perspective, the net lending of firms is overstated in the national accounts while net lending by households is understated.

Cross-country evidence suggests that households do not fully internalise changes in the savings behaviour of firms.⁹ This indicates that studying net lending by individual sectors provides additional and valuable insights. Also, part of net lending by firms is ultimately owned by shareholders situated abroad or by business foundations.

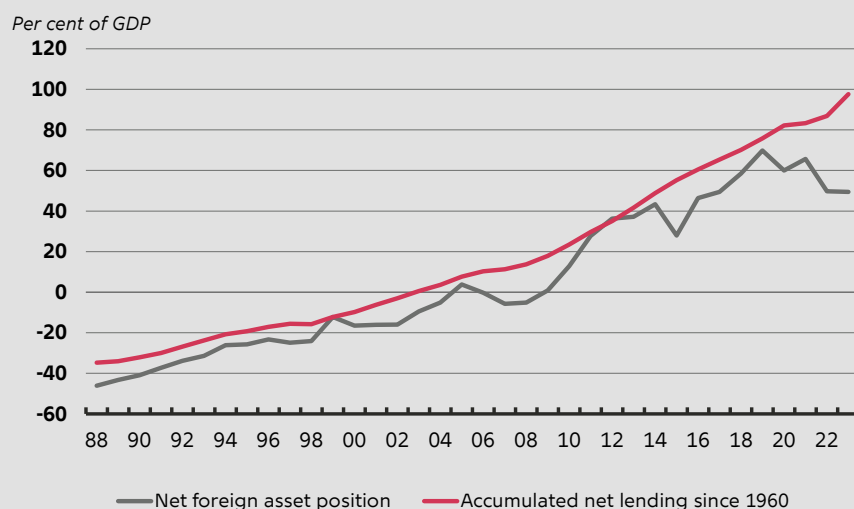
Persistent net lending has led to a large net foreign asset position

Persistently positive net lending has resulted in a gradual rise in the net foreign asset (NFA) position, cf. chart 5. Deviations of accumulated net lending from the net foreign asset position arise from changes in the valuation of assets held across international borders. While valuation changes are reflected in the net foreign asset position, they do not affect net lending or the current account.

In 2021/22 share prices of several Danish firms, including Novo Nordisk, rose sharply thereby increasing Danish liabilities vis-à-vis the rest of world. Since the rise in share prices is likely to reflect an upward adjustment in expected future earnings, part of which will accrue to domestic shareholders, this illustrated that the NFA position is not a measure of national wealth. In addition to net ownership of assets abroad, Danish households and firms have significant wealth in the form of physical capital such as machinery and buildings.

CHART 5

Consecutive years of current account surpluses have resulted in a substantially positive net foreign asset position



Source: Statistics Denmark and own calculations.

While there is an obvious link between accumulated net lending and the NFA at the national level, this is not the case when looking at NFCs and households

⁹ See e.g. Dao and Maggi (2018) and Behringer and van Treeck (2023).

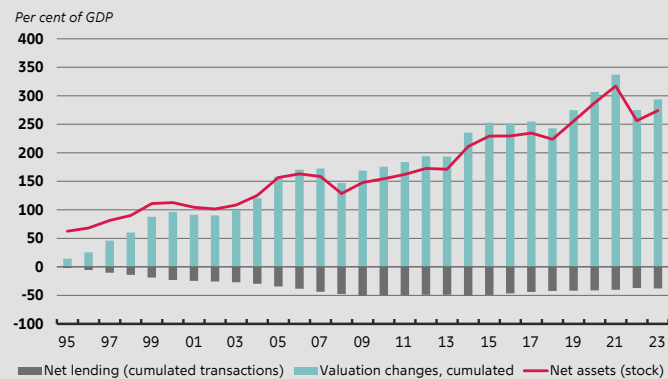
separately. For households, net financial wealth has risen more sharply than would be suggested by cumulating across their annual net lending, cf. chart 6. This reflects that, as holders of financial assets, they have benefited from rising asset prices.

The flip side of the increase in household net wealth is a sharp deterioration in the net financial asset position of firms, cf. chart 7. This reflects that in the national accounts, the value of outstanding stocks is a liability on the balance sheet of the firms. Therefore, all else equal, an increase in share prices reduces the net financial wealth of firms. The effect on the net asset position of firms of a change in stock prices is not exactly matched by the change in the net asset position of households. This reflects that firms are partly owned by foreign residents and business foundations, while Danish households also hold own stocks in foreign firms.

Part of net lending by non-financial corporations in Denmark belongs to foreign residents while being counted as Danish net lending in the national accounts. This relates to foreign investors' portfolio equity investments in listed Danish non-financial corporations. In the national accounts, all retained earnings in these corporations are counted as Danish net lending despite foreign investors owning part of the shares. In isolation, this would introduce a measurement bias into the current account. However, Danish investors, especially pension and investment funds, have large portfolio equity investments abroad, which would work in the other direction. Analysis by the IMF suggests that in the case of Denmark, the portfolio equity retained earnings bias is small and with no clear sign.¹⁰

CHART 6

Increasing stock prices have led to substantial household net financial wealth despite modest net lending

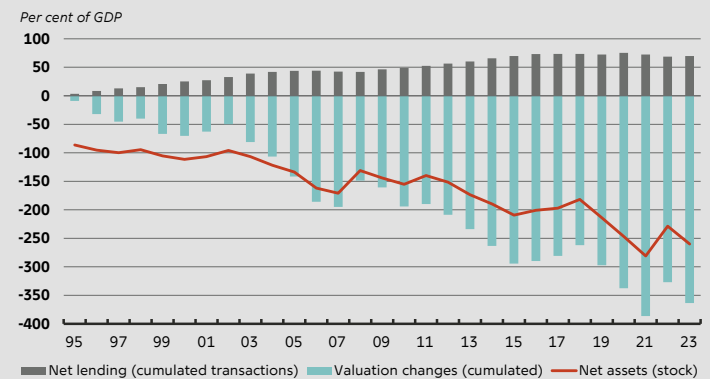


Note: The bars show cumulated transactions and valuation changes for households including NPISH since 1995.

Source: Statistics Denmark.

CHART 7

Despite positive net lending, increases in stock prices have reduced corporations' net financial wealth



Note: The bars show cumulated transactions and valuation changes for NFCs since 1995.

Source: Statistics Denmark.

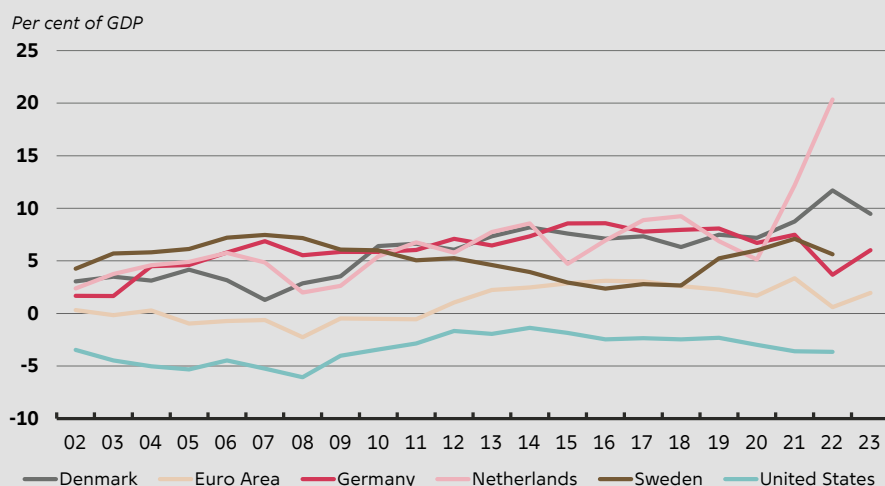
¹⁰ See IMF (2022) which includes data up until 2021. In 2022, the operating surplus of Danish non-financial corporations increased significantly above the level in e.g. the euro area and the US, cf. chart 17. The level of retained earnings relative to market value was also higher for the Danish stock market index (OMX C25) compared to indices for Europe (Stoxx600) and the US (S&P 500). As Danish equity portfolio investments abroad are around the same level as foreign investors' equity portfolio investments in Denmark this indicates a higher level of retained earnings for Danish shares owned by foreign portfolio investors than for foreign shares, primarily US and European shares, owned by Danish portfolio investors. Altogether this would suggest that measurement bias contributes to an overstatement of the Danish current account balance surplus in 2022. This may have reversed somewhat in 2023.

Investments in Denmark are on par, while savings are higher than in other countries

This section explores how Denmark compares to Germany, the Netherlands, Sweden, the euro area and the United States in terms of the current account and net lending. While the euro area and the US represent the two largest global economies, Germany, the Netherlands and Sweden are included as they are all high income economies that are similar to Denmark in the sense that they have a history of persistent current account surpluses or, equivalently, positive net lending, cf. chart 8.

CHART 8

Substantial Danish current account surplus equivalent to strong net lending



Note: The chart shows total net lending/net borrowing as a percentage of GDP. The sharp rise in net lending for the Netherlands in 2022 is due to the sale of intellectual property within a multinational enterprise group, see De Nederlandsche Bank (2022).

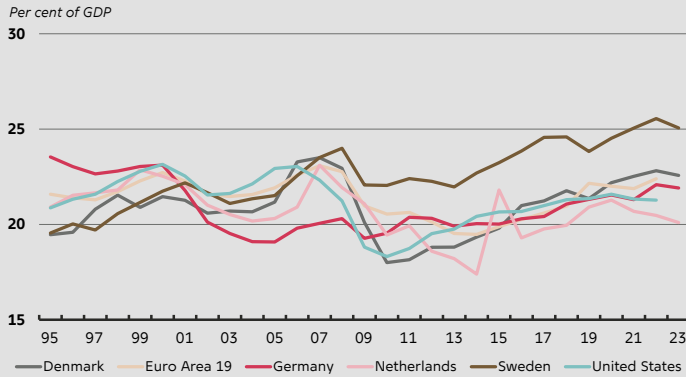
Source: Statistics Denmark for Denmark and OECD for other countries.

Chart 9 shows that in the case of Denmark, the substantial current account surplus does not reflect that investments have been low relative to comparable countries. In fact, on average since 2015 investment as a share of GDP has been surpassed only by Sweden. In contrast, the United States, which over the last 20 years has experienced by far the lowest net lending of the six economies, has actually been characterised by relatively modest investment in recent years.

While Denmark does not invest less than other high-income economies, gross savings as a percentage of GDP have exceeded those of the euro area and the United States in every single year since 2000, cf. chart 10. This suggests that any explanation for the large Danish current account surplus and the associated strong net lending position would most likely be found by focusing on the factors behind savings rather than investment. Hence, when taking a more detailed look at firms and households in the following sections, we will primarily focus on savings.

CHART 9

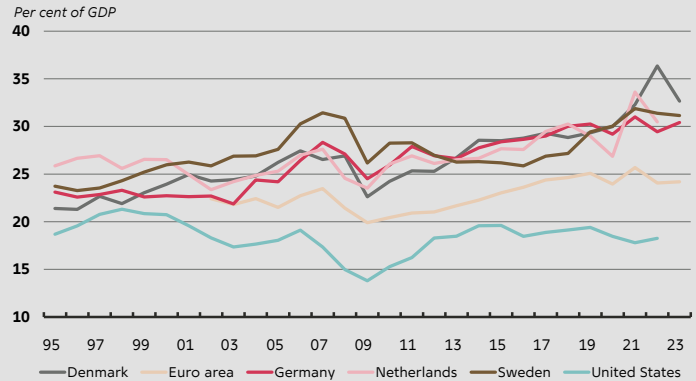
Aggregate investment on par with the euro area and higher than the United States



Note: The chart shows gross fixed capital formation as a percentage of GDP.
Source: Statistics Denmark for Denmark and OECD for other countries.

CHART 10

Aggregate savings in Denmark exceed the euro area and the United States

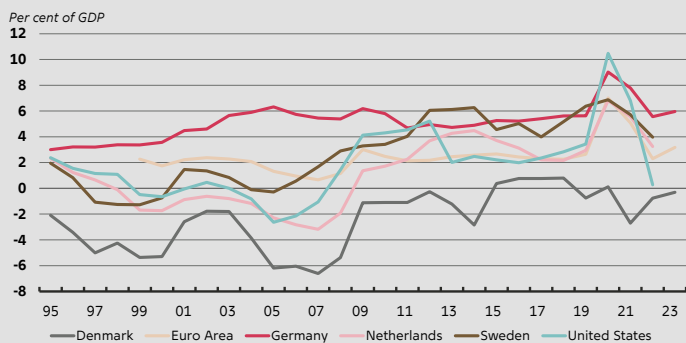


Note: The chart shows gross national savings as a percentage of GDP.
Source: Statistics Denmark for Denmark and OECD for other countries.

Relative to other countries characterised by persistently positive net lending, Denmark stands out when considering the contributions to net lending from firms and households, respectively. In particular, the net lending position of Danish households is lower than the five other economies in the comparison, cf. chart 11. While household net lending has generally been modest, firms have consistently been significant net lenders, cf. chart 12. The Danish current account surplus is also supported by relatively prudent public finances, cf. chart 13.

CHART 11

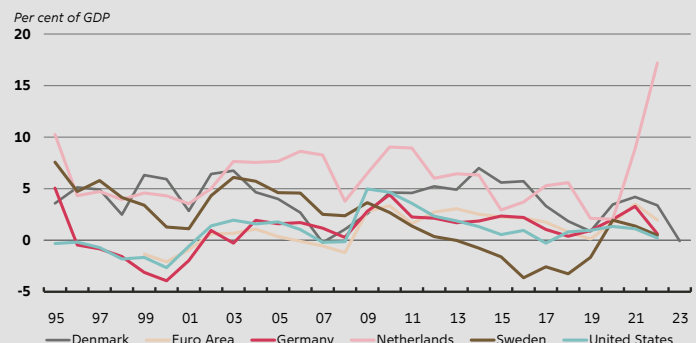
Household net lending in Denmark low by international standards



Note: The chart shows net lending for households and NPISHs as a percentage of GDP.
Source: Statistics Denmark for Denmark and OECD for other countries.

CHART 12

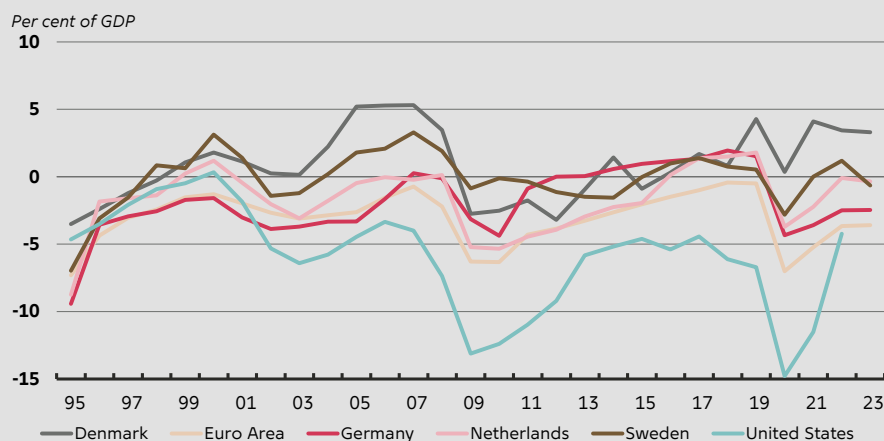
High corporate net lending in Denmark by international standards



Note: The chart shows net lending for non-financial corporations as a percentage of GDP. The sharp rise in net lending for the Netherlands in 2022 is due to sale of intellectual property within a multinational enterprise group, see De Nederlandsche Bank (2022).
Source: Statistics Denmark for Denmark and OECD for other countries.

CHART 13

Strong public finances contribute to net lending in Denmark



Note: The chart shows net lending for general government as a percentage of GDP.
Source: Statistics Denmark for Denmark and OECD for other countries.

Internationally, there has been a rise in corporate saving in recent decades.¹¹ In most countries, the NFC-sector has transitioned from being a net borrower to being a net lender to the rest of the economy. In fact, in contrast to the Danish experience, the external adjustment process following the GFC has in most countries been reflected in a reduction of expenditure in the corporate sector rather than a reduction of consumption in the household sector.¹² Nevertheless, even after the adjustments, net lending by Danish firms remains high in an international context, while net lending by Danish households is below that of most other countries.

It is noteworthy that in Denmark and the Netherlands which have both experienced substantial current account surpluses for an extended period, this has to a large extent been accounted for by significant net lending by corporates whereas net lending by households is more modest. This tends to corroborate the finding by Allen (2019) that cross country differences in current account balances are to a large extent accounted for by differences in the net lending of firms and the government whereas the role of households is less clear.¹³

¹¹ See e.g. Chen et al (2017), Dao and Maggi (2018) and Gruber and Kamin (2016).

¹² See Allen (2019). Obviously, there are differences across countries and the savings behaviour of households in the US and the Netherlands in the aftermath of the GFC tend to resemble that of Danish households.

¹³ The importance of corporate and government savings in determining the current account is in contrast to the predictions from the theoretical literature where the current account is to be determined by intertemporal optimisation of households, see e.g. Obstfeld and Rogoff (1995).

03 Firms

This section presents three key insights about Danish non-financial corporations and their net lending. First, high net lending by Danish firms reflects high earnings and gross savings, while in terms of investments, Danish firms are comparable to firms internationally. Second, so-called mega firms with at least 2,000 employees account for a substantial share of net lending. This insight arises from firm-level accounting data, covering all Danish firms over almost two decades, for which savings measures are constructed to resemble those of the national accounts (see appendix). Finally, Danish firms use part of their net lending to expand abroad through foreign direct investment (FDI), but they also perform significant buybacks of own shares. While FDI can be seen as an alternative to investing at home, buybacks can be seen as an alternative to paying dividends.

High gross savings in Danish non-financial corporations reflect high earnings

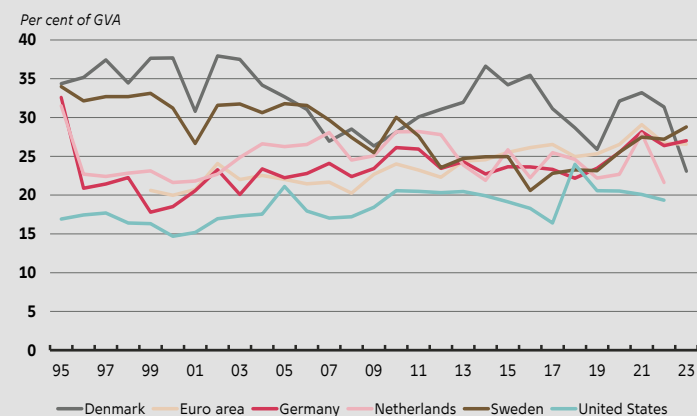
In charts 14 and 15, the net lending of NFCs is split into its two main components, gross savings and gross investments, respectively, over the period 1995-2023. The charts illustrate that the high level of net lending by Danish NFCs originates from high gross savings, while investments in physical capital do not deviate significantly from those of the euro area. As for data on the national level shown earlier in this memo, the data for NFCs suggest that explanations of high net lending by firms should be found in the factors behind savings rather than those of investment.

Decomposing gross savings into key components

Box 1 describes how gross savings can be decomposed into six components. Three components that contribute positively to savings are 1) gross operating surplus, 2) property income and 3) net transfers. Three components that subtract from savings are 4) interest expenditures, 5) dividends paid, and 6) taxes. Chart 16 illustrates the magnitudes of each of the six components, averaged over the period 2010-22 for the six economies that were also analysed in the previous section. Gross operating surplus, property income and dividends paid are by far the most important components in forming gross savings in NFCs.

CHART 14

High gross savings among Danish non-financial corporations

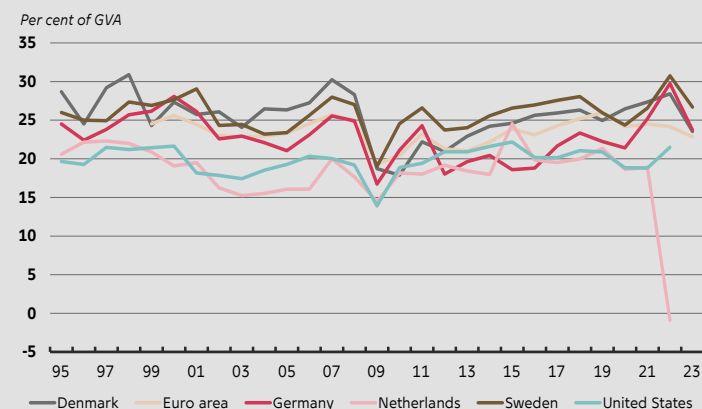


Note: Gross savings of non-financial corporations including capital transfers. GVA is gross value added.

Source: Statistics Denmark for Denmark and OECD for other countries.

CHART 15

Gross investment in Danish non-financial corporations compares to other countries



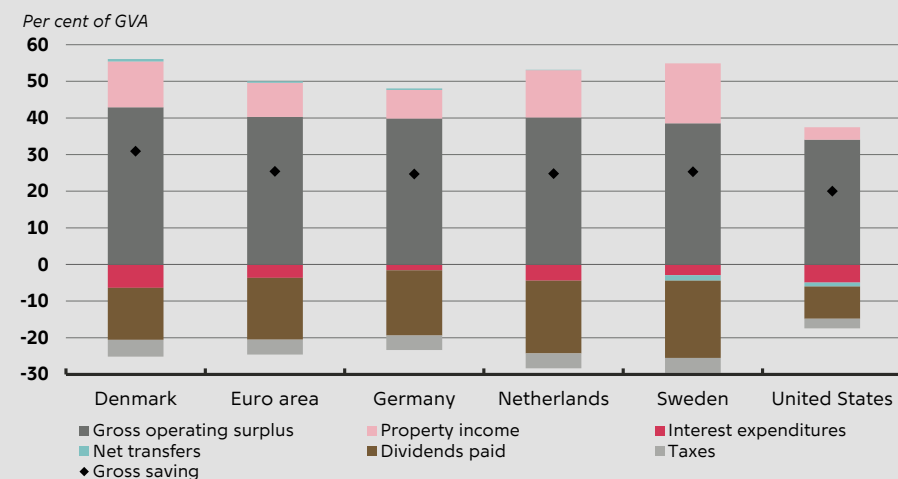
Note: Gross investment of non-financial corporations. GVA is gross value added. Gross investment is the sum of gross fixed capital formation, acquisitions less disposals of non-financial non-produced assets, and changes in inventories and acquisitions less disposals of valuables. In the case of the Netherlands the net acquisitions of non-financial non-produced assets is negative in 2022 leading to negative gross investment. This reflects the sale of intellectual property within a multinational enterprise group, see De Nederlandsche Bank (2022).

Source: Statistics Denmark for Denmark and OECD for other countries.

CHART 16

Denmark's high gross savings driven by operating surplus and property income

Averages for the period 2010-23



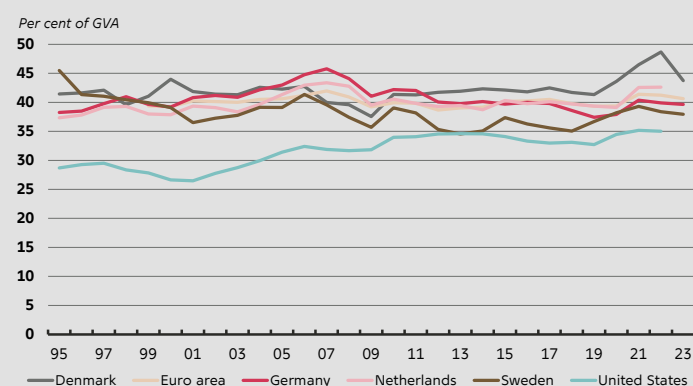
Note: Averages for the period 2010-22 for Denmark, the euro area, Germany and Sweden. Averages for the period 2010-22 for the US and Netherlands. Net transfers include both current and capital transfers.

Source: Statistics Denmark for Denmark and OECD for other countries.

In the following, we discuss developments over time in the components of net lending for Danish NFCs and their foreign counterparts. Over the last decade, the gross operating surplus (1) in Danish firms has been higher than in any other country in our comparisons, cf. chart 17. Prior to that, the operating surplus was on par with firms abroad. For property income (2), Danish firms have seen a significant increase over the last two decades. In 2023, property income in Danish NFCs exceeded that of firms abroad, cf. chart 18. Net transfers (3) only play a marginal role across countries.

CHART 17

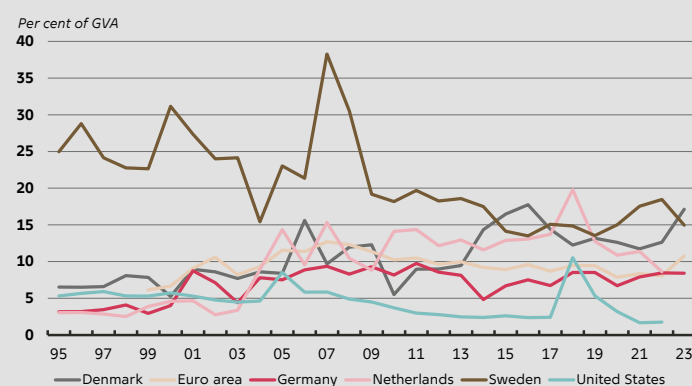
High operating surplus for Danish non-financial corporations



Note: Gross operating surplus and mixed income. GVA is gross value added.
Source: Statistics Denmark for Denmark and OECD for other countries.

CHART 18

High level of property income for Danish non-financial corporations in the recent years



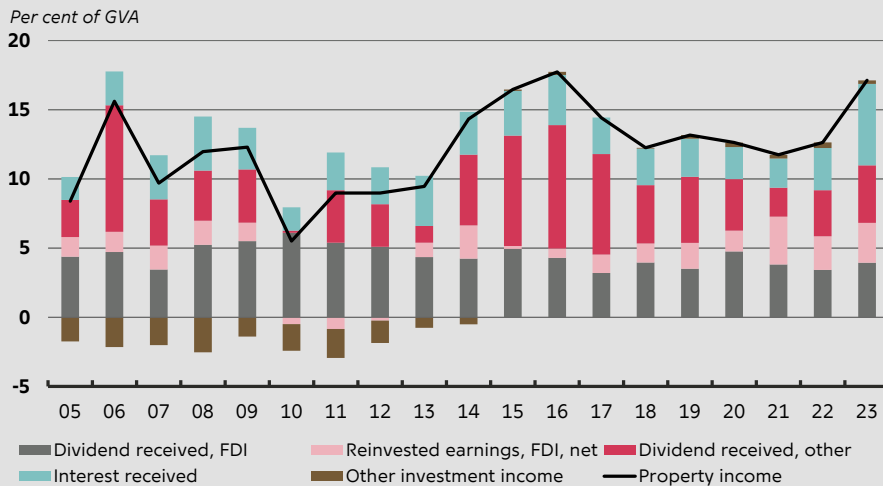
Note: The term 'property income' in this memo is defined as (net) property income in the national accounts excluding interest and dividends paid.
Source: Statistics Denmark for Denmark and OECD for other countries.

The evidence suggests that total profitability in terms of operating surpluses and property income combined (1+2) is key in accounting for the high savings and associated strong net lending position of Danish firms.¹⁴ Chart 19 illustrates that a large share of property income (2) comes from equity investments including dividend payments and retained earnings from FDI, i.e. from ownership of subsidiary companies abroad. In 2023, income from FDI constituted 40 per cent of all property income, illustrating the important contribution from ownership of production facilities abroad.

¹⁴ This is in line with the insights from Dao and Maggi (2018) that across countries, rising corporate net lending has to a large extent been accounted for by the rising profitability of firms.

CHART 19

Property income strongly influenced by equity investments, including FDI



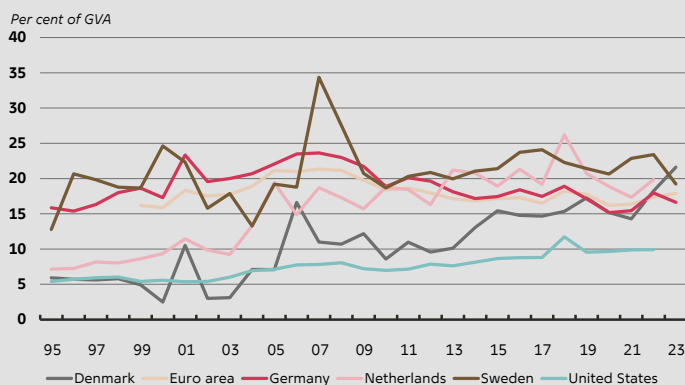
Note: Income from equity investments and interest income for non-financial corporations in Denmark. FDI is foreign direct equity investment.

Source: Statistics Denmark and Danmarks Nationalbank.

On the firms' expenditure side, we consider interest payments (4), dividends paid (5), and taxes (6). Neither of these components stand out as contributors to the high level of net lending in Denmark by international comparison in recent years. While Danish firms were paying relatively low dividends prior to 2015, dividend payments have since been on par with those of firms in the euro area cf. chart 20. Interest expenses have been on the high side compared to the other countries in the comparison, cf. chart 21. and the same holds true for tax payments, cf. chart 22.

CHART 20

Dividend payments by Danish firms used to be low by international comparison, but are now on par

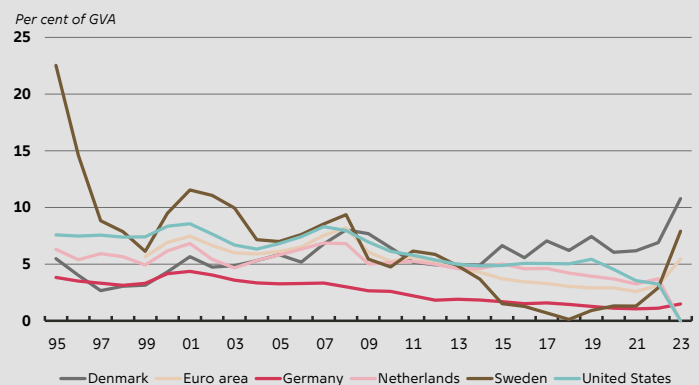


Note: Dividend payments from non-financial corporations.

Source: Statistics Denmark for Denmark and OECD for other countries.

CHART 21

Interest expenditure in Danish firms has increased in recent years

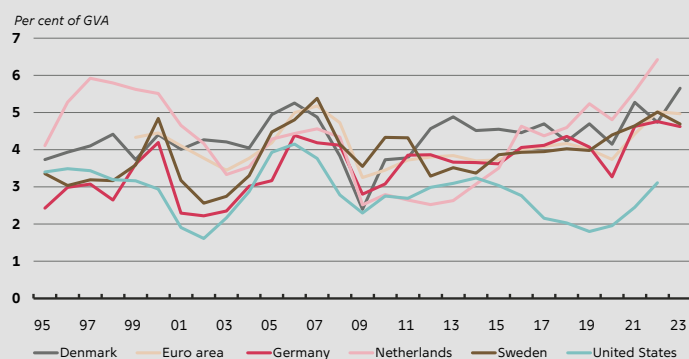


Note: Interest rate expenses of non-financial corporations.

Source: Statistics Denmark for Denmark and OECD for other countries.

CHART 22

Taxes play a modest role and Danish firms do not stand out



Note: Current taxes on income, wealth, etc.

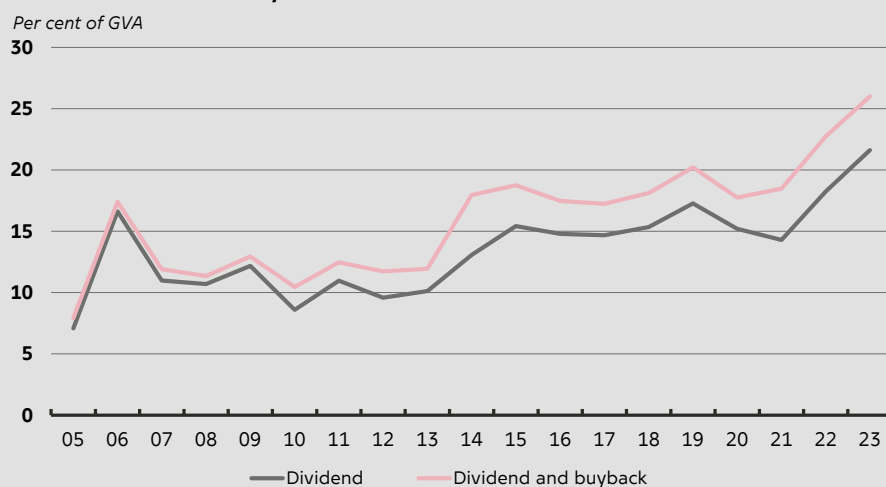
Source: Statistics Denmark for Denmark and OECD for other countries.

Buyback of own shares is an alternative to dividend payments, but has no effect on firms' net lending

In addition to paying dividends, firms can transfer funds to their shareholders by buying back own shares. Unlike dividend payments, buybacks do not reduce firms' net lending. Instead, buybacks are considered part of the firms' use of net lending. In recent years, Danish firms have increased buybacks of own shares, cf. chart 23. This is accounted for to a large extent by a few large firms. If buybacks of own shares were treated as dividend payouts, this would reduce net lending by firms as a share of GVA by 3 percentage points over the period 2010-23. This would be partly offset by higher net lending by households.

CHART 23

Firms have increased buybacks of own shares



Note: Dividend payments from listed and non-listed non-financial corporations. Listed corporations' buyback of own shares. Information on buybacks is based on Danmarks Nationalbank's securities statistics.

Source: Statistics Denmark, Danmarks Nationalbank and own calculations.

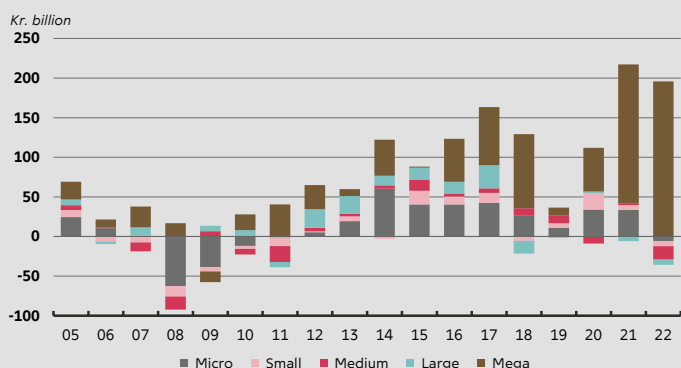
Large corporations account for the majority of net lending in recent years

In this section, we use firm level data to show that mega firms, defined as non-financial corporations with more than 2,000 employees, have accounted for the majority of net lending in recent years, cf. chart 24.¹⁵ Around 1,200 individual non-financial corporations are part of the the 50 mega firms. Over the period 2010-22, the share of total net lending of NFCs accounted for by mega firms was 65 per cent, although in 2021/22, this number was significantly higher. In fact, in 2022 total net lending by all firms with less than 2,000 employees was negative.

For mega firms, high net lending clearly reflects high levels of gross savings rather than subdued levels of investment, cf. chart 25. In fact, mega firms have higher gross investments, measured as a share of GVA, than firms with fewer employees, although their gross savings more than make up for this. Micro firms with less than 10 employees have also had positive net lending on average for 2010-22. This category covers a range of different types of firms, both smaller businesses, e.g. in the service or construction sectors, but also firms with high property income but limited operating surplus. Average net lending for firms with between 10 and 2,000 employees has been close to zero.

CHART 24

Largest corporations account for large share of net lending

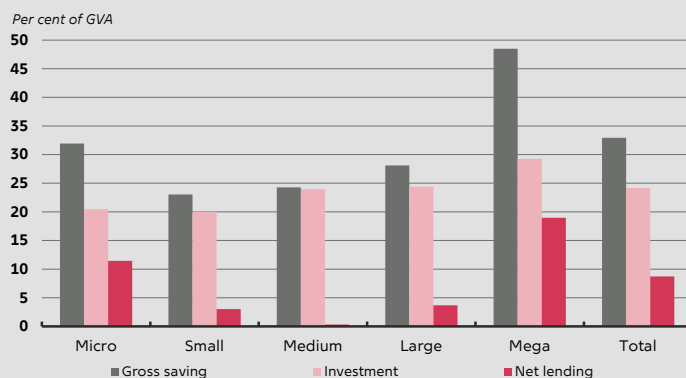


Note: Based on firm level financial accounting data for non-financial corporations. Micro: 0-9 employees, Small: 10-49 employees, Medium: 50-249 employees, Large: 250-1,999 employees, Mega: 2,000+ employees. Firms are divided into size categories based on the number of employees at group-level, cf. appendix.

Source: Bis Node, Experian, Danmarks Nationalbank, and own calculations.

CHART 25

Largest corporations also have the highest propensity to save and invest



Note: Average for 2010-22. Based on firm level financial accounting data for non-financial corporations. Micro: 0-9 employees, Small: 10-49 employees, Medium: 50-249 employees, Large: 250-1,999 employees, Mega: 2,000+ employees. Firms are divided into size categories based on the number of employees at group-level, cf. appendix.

Source: Bis Node, Experian, Danmarks Nationalbank and own calculations.

Net lending is highly concentrated even within the group of mega firms. While the five largest mega firms in Denmark accounted for only 14 per cent of NFC's total GVA, averaged over 2010-2022, they accounted for 58 percent of net lending in the same period, cf. chart 26. Although the five mega firms own a number of subsidiaries, this suggests that concentration plays a important role in understanding the Danish savings surplus. This pattern has been even more

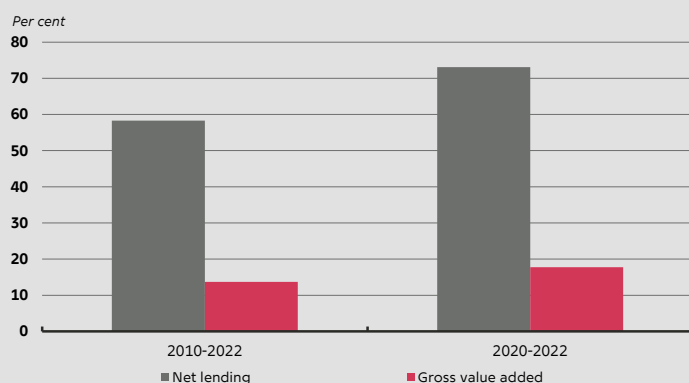
¹⁵ The definition of mega firms is based on the number of employees in Denmark. When counting the number of employees in firms and dividing firms into size categories, this is done at the level of the ultimate owner – the parent company, i.e. on a group level, cf. appendix.

prevalent in recent years, as the same five mega firms accounted for 73 per cent of all net lending by NFCs in 2020-2022.

CHART 26

The five largest firms account for almost 60 per cent of total net lending by NFCs, averaged over 2010-2022

Shares of totals in NFCs accounted for by top five firms in terms of GVA



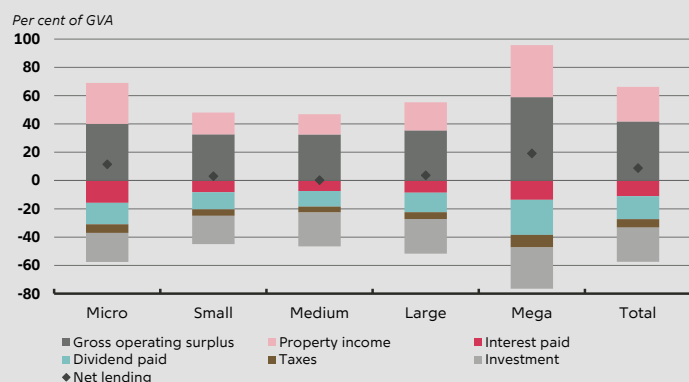
Note: Note that top-5 firms in this chart as well for all other charts in the memo, are counted at the group level. This implies that more than five non-financial corporations are included in the chart, but that all these NFCs are owned by five groups.

Source: Bis Node, Experian, Danmarks Nationalbank, and own calculations.

As was the case when comparing NFCs across countries based on data from the national accounts, differences in income in the form of operating surpluses and property income are key in accounting for differences in net lending across groups of firms. Mega firms account for around a quarter of GVA among all non-financial corporations, and their operating surplus relative to GVA is substantially higher compared to firms with fewer employees, cf. chart 27. A significant share of property income among mega firms arises from FDI, cf. chart 28. In addition, mega firms have a relatively low wage share, cf. chart 29.

CHART 27

High net lending in the largest corporations coincides with high operating surplus and property income

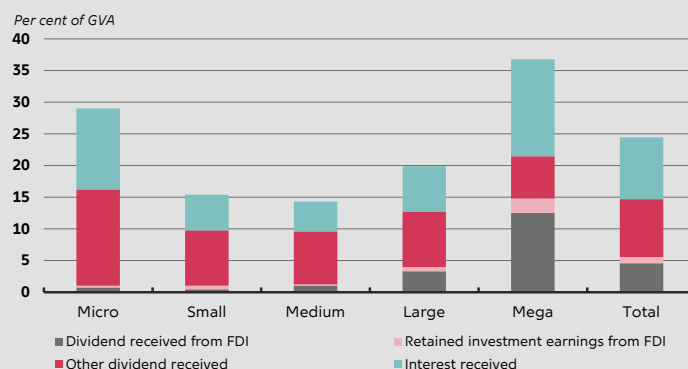


Note: Average for 2010-22. Based on firm-level financial accounting data for non-financial corporations. Micro: 0-9 employees, Small: 10-49 employees, Medium: 50-249 employees, Large: 250-1,999 employees, Mega: 2,000+ employees. Firms are divided into size categories based on the number of employees at group-level. Total differs from national account data, cf. appendix.

Source: Bis Node, Experian, Danmarks Nationalbank, and own calculations.

CHART 28

Property income of the largest corporations is heavily affected by foreign direct investments (FDI)



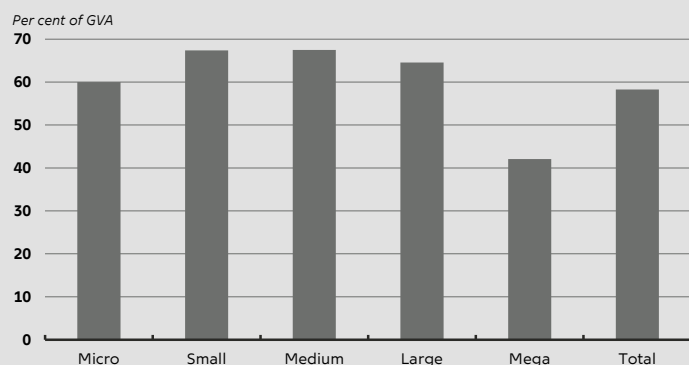
Note: The chart decomposes property income in the left-hand side chart. Average for 2010-22. Based on firm-level financial accounting data for non-financial corporations. Micro: 0-9 employees, Small: 10-49 employees, Medium: 50-249 employees, Large: 250-1,999 employees, Mega: 2,000+ employees. Firms are divided into size categories based on the number of employees at group-level. Total differs from national account data, cf. appendix.

Source: Bis Node, Experian, Danmarks Nationalbank, and own calculations.

CHART 29

The wage share is significantly lower in mega firms with more than 2,000 employees

Wage share defined by the sum of salaries as share of gross value added



Note: Average for 2010-22. Based on firm level financial accounting data for non-financial corporations. Micro: 0-9 employees, Small: 10-49 employees, Medium: 50-249 employees, Large: 250-1,999 employees, Mega 2,000+ employees.

Source: Bis Node, Experian, and own calculations.

The findings in this section are in line with international evidence. Based on Thomson Reuters Worldscope data from a number of advanced economies, Dao et al. (2018) find that larger, more profitable firms have higher net lending rates.

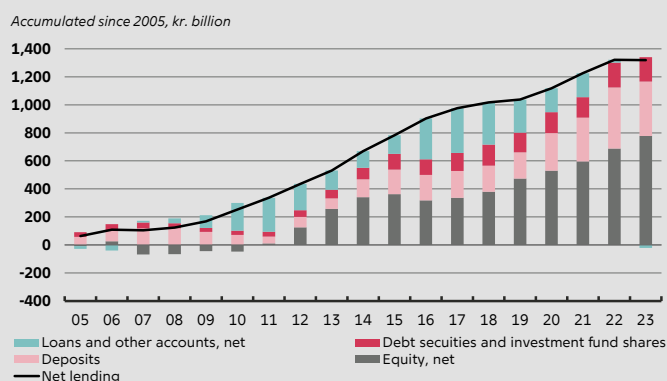
Chen et al. (2017) document a global rise in corporate saving, which is related to an increase in corporate profits and decline in labour shares. A low wage share among mega firms does not necessarily suggest that they pay lower wages. Instead, it is likely to suggest that these firms have a large capital stock relative to the number of employees. This includes physical equipment, but also intangible assets such as patents.

A significant share of net lending is used for direct investments abroad

Firms' net lending is used to acquire financial assets. To a large extent, this has been in the form of purchases of equity of different forms, while deposits have also risen, cf. chart 30.¹⁶ Chart 31 illustrates that since 2005, net equity purchases have been split fairly evenly between FDI and buybacks of own shares, whereas accumulated net purchases of other shares are negative.

CHART 30

Non-financial corporations' net lending has mainly been channeled into the purchase of equities, but also deposits

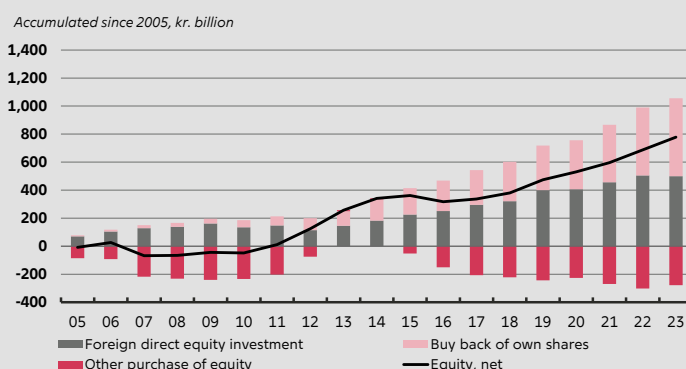


Note: Accumulated since 2005. Lending, etc., net is lending less borrowing. Deposits in banks, etc.

Source: Statistics Denmark.

CHART 31

Net equity purchases mainly constitute foreign direct investment and buybacks of own shares



Note: Accumulated since 2005. Buyback for securities statistics. The chart decomposes equity, net, i.e., the grey bars in the left-hand chart.

Source: Statistics Denmark and Danmarks Nationalbank.

Empirically, there is a strong link between net lending and FDI activities across firms. In fact, corporations with foreign direct investments account for almost all of total net lending, and within this group, mega corporations play an important role, cf. chart 32. Around 80 per cent of Danish mega corporations have foreign direct investment and the majority of foreign direct investment is made by mega corporations. Similar trends have been documented for the Netherlands.¹⁷ Combined net lending by firms without FDI is very modest.¹⁸

¹⁶ Bonin and Renkin (2022) show that the cash holding of a typical Danish firm has increased since the global financial crisis in 2008/09, especially for small firms.

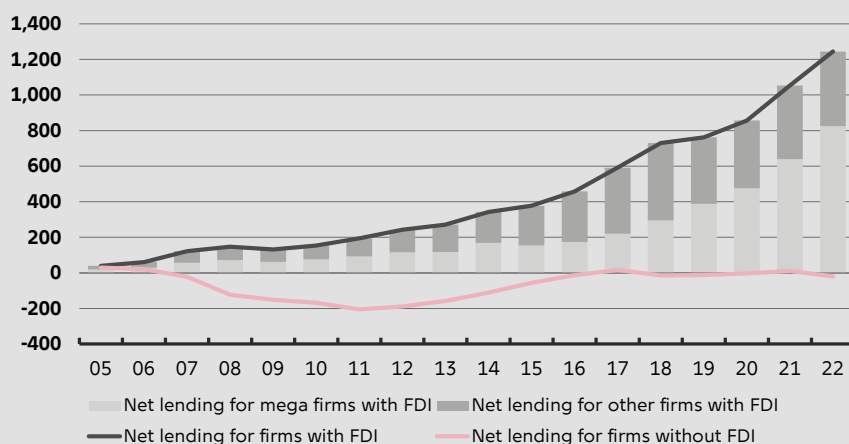
¹⁷ Butler et al. (2019), Eggelte et al. (2014) and Suyker and Wagtereld (2019) analyse the significance of large, multinational firms for corporate saving in the Netherlands. Investments by Danish firms involved in FDI activities are examined in Isaksen et al. (2016) and Jørgensen et al. (2018).

¹⁸ As a mirror image of the firms that are engaged in outward FDI, net lending for firms not doing FDI may to some extent be negatively affected by inward FDI. This is the case when they have been acquired by foreign owners and invest in Denmark on their behalf.

CHART 32

Corporations making foreign direct investments save the most

Accumulated since 2005, kr. billion



Note: Accumulated since 2005. FDI is foreign direct investment. Based on firm-level financial accounting data for non-financial corporations. Mega 2,000+ employees. Total differs from national account data, cf. appendix.

Source: Bis Node, Experian, Danmarks Nationalbank, and own calculations.

The link between net lending and FDI may to some extent reflect that firms view FDI as an alternative to increasing the domestic capital stock. Large firms that seek to expand will often consider doing so abroad, thereby resorting to FDI. As FDI is considered a financial transaction and hence does not subtract from net lending, this suggests that large, internationally oriented firms will tend to have higher net lending compared to other firms.

04 Households

Turning to households, there are three important insights from this chapter to help understand developments in Danish households' net lending. First, net lending by households has structurally been modest in Denmark as borrowing to some extent offsets pension contributions. Second, net worth of Danish households is higher than in any other OECD country and capital gains earned on households' wealth are relatively large, which in a sense compensates for the low net lending. Third, the deterioration of the housing market after the GFC reduced households' investments but also led to a long-lasting deleveraging process in Danish households. The drop in investments as well as the rise in savings rates increased net lending markedly after the GFC.

Increased net lending by Danish households since the global financial crisis

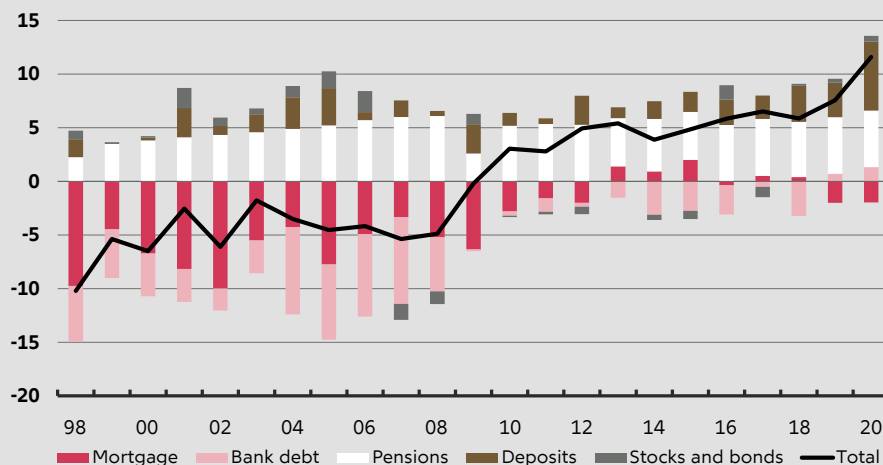
Danish households turned a net lending deficit of 4 per cent of GDP, averaged over 1995-2009, into almost neutral net lending at -0.6 per cent of GDP, averaged over 2010-2022, cf. chart 4. This reflects a substantial reduction in borrowing in the aftermath of the GFC. Similar patterns can be observed by measuring microdata-based savings rates in households. Chart 33 disaggregates savings of Danish households into annual changes in assets and liabilities, clearly showing strong and persistent deleveraging after 2008.

CHART 33

Household savings rates increased markedly after 2008, reflecting strong deleveraging after the global financial crisis

Households savings rate in Denmark disaggregated into asset and liability components

Per cent of disposable income



Note: The chart shows year-to-year changes in deposits, stocks and bond holdings, mortgage debt, and debt in commercial banks. Pensions cover contributions minus payments measured after taxes at a 40 per cent tax rate to approximate income taxation at the time of payout. The sample excludes households engaging in property transactions, in the year of the transaction, as well as households in which one or both adults are registered as self-employed.

Source: Andersen et al. (2022).

The level of the savings rate in chart 33 diverges from net lending by households in chart 4, but the developments over time of households' savings are similar across the two illustrations.¹⁹ While pension contributions (net of payouts) were generally sizable across all years, and while changes in the value of financial assets were relatively small, debt accumulation was substantial before the crisis, both in mortgage banks and commercial banks. After the crisis, however, debt accumulation was modest.

Danish households have cut debt-to-income ratios by one third since the GFC

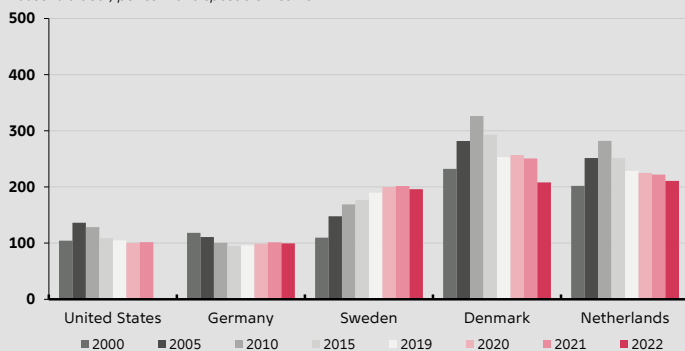
Turning focus from transactions to balance sheets, household debt in Denmark peaked at 326 percent of disposable income in 2010, shortly after the financial crisis, cf. chart 34. By 2022, this number was brought down to 208 percent of disposable income, a level similar to that of households in Sweden and the Netherlands.

A detail to notice is that the sharp reduction in household debt from 2021 to 2022 in Denmark, rather than being the result of increased household savings, reflects a feature of the Danish mortgage system. Large parts of Danish mortgages are financed by callable mortgage bonds. The price of these bonds declines when mortgage rates increase. When buying back the underlying mortgage bonds of the existing mortgage using the proceeds of a new mortgage, homeowners can reduce their outstanding loan amount. Many households did this when interest rates increased sharply in 2022, resulting in a significant reduction in overall lending growth to households from 2021 to 2022.²⁰

CHART 34

Household debt ratio in Denmark is no longer higher than in comparable countries

Household debt, per cent of disposable income

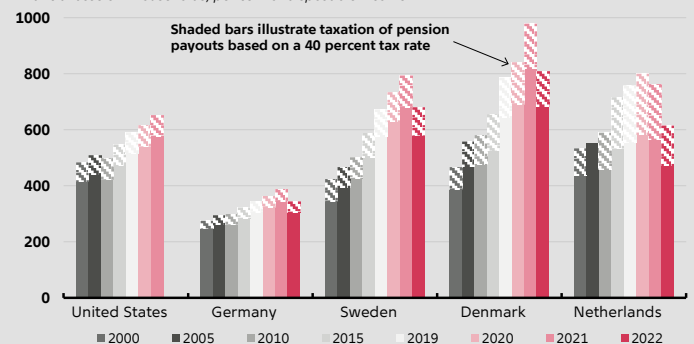


Note: Debt include both collateralised and uncollateralised debt.
Source: OECD.

CHART 35

Gross worth of households' financial assets in Denmark is high by international comparison, also after taxing pension wealth

Financial assets in households, per cent of disposable income



Note: The chart illustrates the sum of all financial assets, where 40 percent of the value of pension assets have been marked by shaded bars.
Source: OECD.

¹⁹ The average household savings rate in chart 33 is not comparable to net lending by households shown in chart 4 in terms of magnitude. This is because chart 33 is based on a subset of the population that omits households engaging in home purchases as well as households in which at least one adult member is self-employed. We do this because home buyers have substantial capital gains and losses from property sales, which we cannot account for in the data, and because we cannot separate personal income from business income for the self-employed. By omitting households engaging in home purchases, chart 33 disregards a substantial share of new mortgage debt in the year of home purchase but includes mortgage repayments in the subsequent years, effectively raising savings rates. Also, pension contributions in chart 33 are measured at a 40 per cent tax rate to mimic the after-tax value of savings.

²⁰ See Andersen et al. (2023a) for more information about the mortgage refinancing activity in Denmark in 2022.

Substantial increase in gross worth of households' financial assets in Denmark

Gross worth of financial assets in Danish households nearly doubled from 460 to 800 per cent of disposable income from 2000 to 2022, cf. Chart 35. This reflects to a large extent that Danish households hold large pension balances, and that the valuation of these balances increased substantially because of rising share prices. Similar patterns are evident for the Netherlands and Sweden, which are also countries characterised by large, funded pension systems.

In most countries, future pension payments are subject to income taxes. Chart 35 illustrates in shaded bars what future tax payments amount to under the assumption of a 40 per cent tax rate at the time of payout. This tax rate is likely to be close to the actual income tax rate of retirees in Denmark, while it could be significantly different for other countries. Nonetheless, this illustration shows that, even after taxes, financial assets' worth in Danish households remains among the highest internationally.

Debt-to-income ratios in households are connected to pension assets

Households' debt levels, relative to income, are found to be closely connected to the size of the funded pension system across countries.²¹ Deepening of capital markets supported by well developed funded pension systems tend to be more likely to facilitate flexible and low-cost home financing. Chart 36 illustrates that in countries where households have high debt-to-income ratios, pensions assets, relative to income, are also larger. This type of balance sheet expansion is particularly evident for Danish households, but also for Sweden and the Netherlands. For Denmark, similar patterns have been documented within households, namely by showing a correlation between pension assets and households' debt, both measured as share of income, over a 20 year period for wage earners.²²

The majority of household debt in Denmark constitutes mortgage debt. This suggests that housing assets should also be included in an overall assessment of household saving. Accounting for all assets, including housing assets, and liabilities in households, the average net worth (pre-tax) of Danish households was 826 per cent of disposable income in 2022, cf. chart 37. According to this measure, Danish households stand out by having the highest net wealth in the OECD.²³ This primarily reflects large holdings of financial assets, to a large extent in the form of pension assets, but also substantial housing assets posed as collateral for debt in Danish households.

²¹ See Sharfstein (2018).

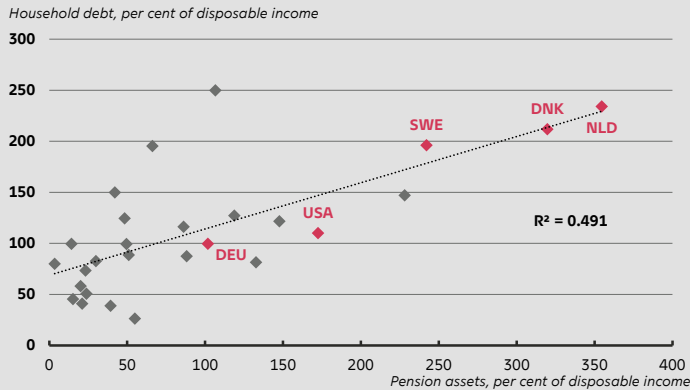
²² See Andersen et al. (2023b).

²³ When comparing debt levels across countries as a share of disposable incomes, it should also be taken into account that Danish income taxes exceed those of most other countries. This tends to reduce households' disposable incomes, thereby increasing the ratio of wealth to disposable income.

CHART 36

In countries where households have large, funded pensions, homeowners' debt-to-income ratios also tend to be higher

Household debt and pension assets in households relative to disposable income



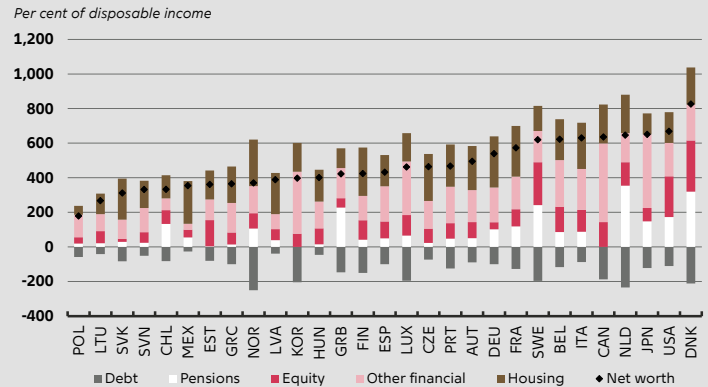
Note: Pension assets include life insurance and pension entitlements of households and NPISH. See also notes in chart 37.

Source: OECD.

CHART 37

Accounting for all assets, including housing, and liabilities, Danish households have the highest net worth internationally

Assets and liabilities in households relative to disposable income



Note: Observations are based on 2022 except from Spain, Estonia, UK, Greece, Hungary, Lithuania, Luxembourg, Latvia, Poland, and Portugal, which are based on 2021, and Norway which is based on 2020. Financial assets are measured before taxation. Housing assets are computed by adding debt to net worth and subtracting financial assets, constituting dwellings used entirely or primarily as residences.

Source: OECD.

Capital gains play an important role in financial asset accumulation

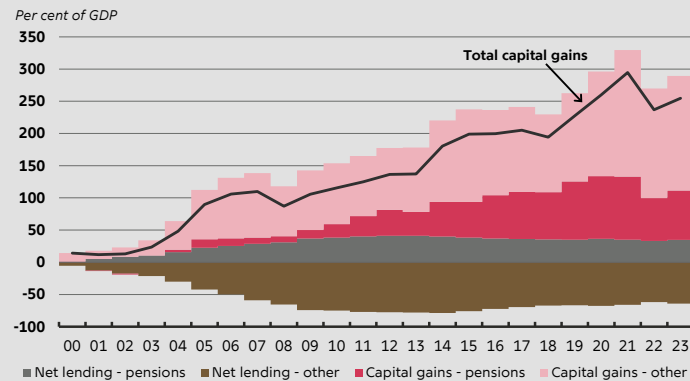
Net financial wealth generates capital gains, and the magnitude of these gains has been substantial for Danish households. Looking at the cumulative capital gains since 2000, Danish households had earned almost 255 per cent of GDP by 2023, cf. chart 38. For comparison, cumulative net pension contributions, i.e., contributions minus pension payouts, amounted to 35 per cent of GDP over the same years. Summing up the remaining transactions, i.e., deposits, net purchase of stocks and bonds minus debt accumulation, the cumulative amount over the same period was -64 per cent of GDP.²⁴ This illustrates that most of the wealth accumulation by Danish households since 2000 constitutes capital gains. Particularly since the global financial crisis, capital gains by Danish households have increased substantially.

²⁴ It is important to note that gains earned on non-pension wealth also include private equity, e.g., unlisted shares. In the national accounts, broadly speaking, the market values of such assets are assumed to develop in line with listed shares. Also, all measures are recorded before taxation with two exceptions. The first is the capital returns tax on pensions (PAL-skat), which is subtracted from the capital gains on pensions. The second exception is that pension payouts are recorded after income taxes.

CHART 38

Wealth accumulation in Danish households is accounted for by substantial capital gains, both from pensions and other assets

Cumulative net wealth for Danish households since 2000



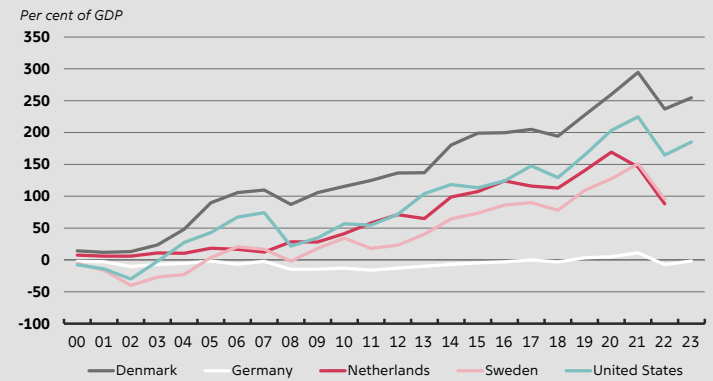
Note: Capital gains are computed by first differencing the market value of financial assets and then subtracting transactions.

Source: Statistics Denmark.

CHART 39

Capital gains are larger in Danish households than for households in other countries

Cumulative capital gains since 2005



Note: Capital gains are computed by first differencing the market value of financial assets and then subtracting transactions.

Source: OECD and Statistics Denmark.

Compared to other countries, Danish households stand out in terms of cumulative capital gains, cf. chart 39. While households in the USA, the Netherlands, and Sweden also earned capital gains – albeit fewer than in Denmark, households in Germany had close to zero valuation gains. There could be several potential explanations for this. One is that German households hold a substantially larger part of their financial assets as bank deposits in which valuation gains are limited. Another explanation is that capital gains related to pension systems are captured by the employer, meaning that households hold a future claim on their employer once they retire, i.e., a contingent claim not shown in official statistics. Generally, differences in capital gains also reflect differences in the mix between tax-financed public pension benefits and contribution-based funded pension schemes in each country.

Pension contributions are expected to exceed payouts until around 2040

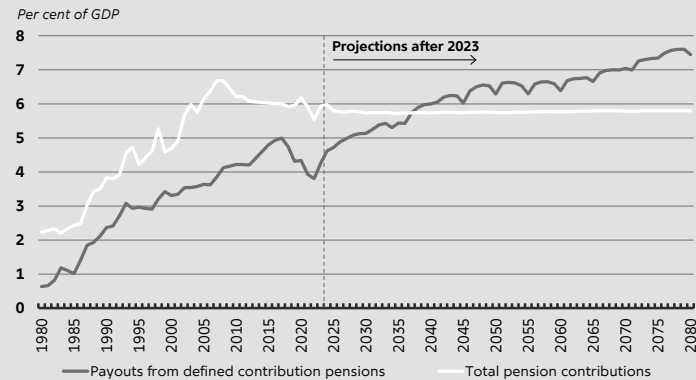
The Danish occupational pension system is still maturing, which can be measured in multiple ways. One illustration of this is to show that contributions currently exceed payouts, cf. chart 40. This balance between contributions and payouts depends on demographic developments, but also at which point retirees will have contributed to funded pension schemes throughout their whole working life. The quasi-mandatory occupational pension system was introduced early in Denmark – formally in 1987. This marked the start of the transition from a tax-financed pay-as-you-go (PAYG) pension system to a mix of PAYG and a funded pension system, which in isolation has contributed to increased savings rates in Danish households and potentially to a higher current account surplus.²⁵

²⁵ See Koomen and Wicht (2022) for a discussion of the role of pension systems in explaining the current account.

CHART 40

Total contributions are expected to exceed total payouts from the Danish pension system until shortly before 2040

Pension contributions (including ATP) and pension payments in Denmark



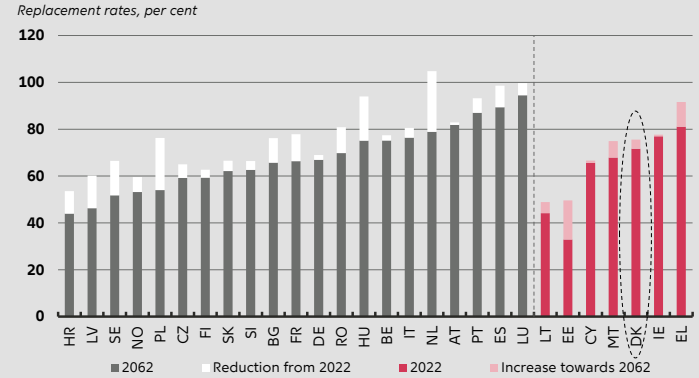
Note: The vertical line indicates the end of historic data and the start of projections. Includes contributions for ATP.

Source: Updated numbers from May 2024 based on Ministry of Finance (2017).

CHART 41

While replacement rates increase in Denmark towards 2062, many other countries expect declining replacement rates

Replacement ratios, showing retirement income as a share of pre-retirement income



Note: The chart shows theoretical replacement rates, which are defined as hypothetical income in the first year of retirement relative to income immediately before retirement for men in each country. The vertical dashed line separates countries in which replacement rates are expected to decline or increase from 2022 to 2062.

Source: The 2024 Pension Adequacy Report.

Despite low net lending, replacement rates in Denmark are on par with most other countries, and are even expected to increase further

The combination of tax-financed PAYG public pensions and funded occupational pensions ensures that Danish households currently have replacement rates of 72 per cent, cf. chart 41, meaning that income in the first year of retirement is expected to be 72 per cent, on average, of income levels immediately before retirement. Projections that take into account demographic changes, retirement age policies and the maturing of occupational pension systems indicate that replacement rates in Denmark will increase to 76 per cent by 2062. This stands in contrast to most other countries in which replacement rates are expected to decline.²⁶

In addition, other sources of wealth can finance spending in retirement. Households' liquid assets, such as bank deposits, stocks and bonds, as well as housing assets, can be terminated to fund private expenditure. Spending in retirement can also be stimulated through home equity withdrawals. By calculating an augmented replacement rate measure for all Danish households, these sources of wealth are expected to add an additional 10 and 35 percentage points to replacement rates for low to high income groups, respectively.²⁷

²⁶ See Social Protection Committee and the European Commission (2024).

²⁷ See Andersen et al. (2024).

APPENDIX 1

Net lending measure based on firm-level accounting data

Based on accounting data from Experian and Bisnode this appendix explains the definitions used in this economic memo to measure firm-level gross savings, gross investments, and the difference between the two, net lending.

The data covers all active non-financial corporations in Denmark from 2005 to 2022 at an annual frequency. Firm ownership structures play a crucial role. Specifically, for this memo, we collapse all variables at group level meaning the level of the ultimate owner of each firm. The ultimate owner could own one or several firms and each firm could be active in different industries. The data set contains around 200.000 individual non-financial corporations and around 140.000 firms at group-level in 2022. Notice that Brandt et al. (2012) also use accounting data to analyse saving of non-financial corporations in Denmark.

Calculation of the component in net lending

Calculations on the firm-level data are conducted to resemble the national accounts definitions of gross saving and gross investment to form a microdata-based measure of net lending. Many of the components to form gross savings and gross investments in the firm-level data are readily available, but for some parts, we need to approximate. Also, and as a general source of error when comparing microdata to the national accounts, not all firms covered by the national accounts will be included in the microdata. The following table shows the firm level approximation of gross savings.

Gross savings

<i>Gross savings=</i> (National accounts)	<i>Operating surplus</i>	<i>-Taxes +Net transfers</i>	<i>+Property income</i>	<i>-Interest paid</i>	<i>-Dividends paid</i>
<i>Gross savings_{it} =</i> (Firm-level data)	<i>Operating result_{it}</i> <i>+ R&D expenditure_{it}</i> <i>+ Depreciation_{it}</i>	<i>-Taxes_{it}</i>	<i>Financing income</i> <i>+ Income from shares_{it}</i> <i>+ Reinvested earnings on FDI_{it}</i>	<i>-Financing cost_{it}</i>	<i>-Expected dividends_{it}</i>

The operating surplus in the national accounts is approximated by each firm's *operating result_{it}* plus *R&D expenditure_{it}* plus *depreciation_{it}*. R&D expenditures are added as they are part of investment but actually reduce firms' operating results in the financial accounts. Depreciation is added to obtain the gross measure of savings. *Taxes_{it}* include all income taxes except tax on extraordinary results, consistent with the national accounts. There are no single items in the financial accounting data that capture net transfers in the national accounts. However, net transfers from the government to non-financial firms in Denmark are limited.

Property income is approximated by *Financing income_{it}*, *Income from shares_{it}*, e.g., dividends received, and *reinvested earnings on FDI_{it} (net)* based on financial accounts data from Experian and Bisnode. Further, *Income from shares_{it}* can be disaggregated into dividends from foreign direct investment and other income from shares based on another source of information, namely Danmarks Nationalbank's data used to produce the national accounts statistics, i.e. the balance of payment statistics. Moreover, *reinvested earnings on FDI_{it} (net)* are computed in a similar fashion with data from Danmarks Nationalbank.

Financing cost_{it} and *Expected dividends_{it}* at the firm level approximate interests and dividends paid, respectively, in the national accounts. Actual dividends paid are not available in the accounting data provided by Bisnode and Experian. Expected dividends reflect the firms' proposed dividend payments based on the annual result. The actual dividend payout is typically decided at the general assembly and completed in the beginning of the following year. Extraordinary dividend payments decided and paid out during the year are not included.

Next step is to approximate firm level gross investment:

Gross investments

<i>Gross investments=</i> (National accounts)	<i>Gross capital formation</i>	<i>+ΔInventories</i>	<i>+Net acquisition of non-financial, non-produced assets</i> <i>+Net acquisitions of valuables</i>
<i>Gross investments_{i,t}=</i> (Firm level data)	<i>ΔFixed non-financial assets_{i,t}</i> <i>+Depreciation_{i,t}</i> <i>+R&D expenditure_{i,t}</i>	<i>+ΔInventories_{i,t}</i>	

Gross fixed capital formation in the national accounts is approximated by the first difference in the stock of non-financial assets (tangible fixed assets and immaterial fixed assets), shown by the sum of $\Delta Fixed\ non-financial\ assets_{i,t}$ and $Depreciation_{i,t}$. The first difference in inventories is readily available in the firm level data, $\Delta Inventories_{i,t}$. Here, $R\&D\ expenditure_{i,t}$ is added as it reflects investment in the context of the national accounts. Finally, Net acquisitions of non-financial, non-produced assets and valuables are included in the national accounts to capture non-financial corporations' purchase of, e.g., rights to perform specific investments in the future. This information is not available in the financial account data from Experian and Bisnode and generally, these components are expected to play a minor role for net lending in non-financial corporations in Denmark.¹

The final step is to subtract $Gross\ investments_{i,t}$ from $Gross\ savings_{i,t}$ to obtain a firm level measure of net lending that approximates the national accounts:

Net lending in firm-level accounting data

<i>Net lending_{i,t}</i>	<i>Operating result_{i,t}</i> <i>+ Financing income_{i,t}</i> <i>+ Income from shares_{i,t}</i> <i>+ Reinvested earnings on FDI_{i,t}</i> <i>- Financing cost_{i,t}</i> <i>- Taxes_{i,t}</i> <i>- Expected dividend_{i,t}</i> <i>- ΔFixed non-financial assets_{i,t}</i> <i>- ΔInventories_{i,t}</i>
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Another key variable that is approximated to fit the national accounts is the firm level $Gross\ value\ added_{i,t}$ which is defined as the sum of $Operating\ result_{i,t}$, $Depreciation_{i,t}$, and $Salaries_{i,t}$.

Sources of discrepancies in property income and interest paid

Since many of the components needed to form net lending at the firm level are approximations, we recognise that adjustments can be made to improve the fit. When approximating property income and interest paid in the firm level data to that of the national accounts, two sources of discrepancies arise. First, capital and foreign exchange gains and losses may affect the financial account data, affecting property income and interest paid, while such gains and losses are omitted from the national accounts. Second, and in a similar fashion, earnings in subsidiaries and proceeds from sales of shares in subsidiaries may be included in the firm level financial account data, while they are omitted in the national accounts. Based on information from firms' financial accounts and annual reports, we make corrections for outliers in the largest firms e.g., to bring the property income data in line with the national account definition.

Ownership information

Ownership information is from the Danish Business Register. In this memo, a corporation is considered a parent company when it ultimately holds shares in the subsidiary corporation corresponding to more than 20 per cent of the voting-rights and holds the largest share of voting-rights. Also, corporations controlled by or associated with a business foundation are defined as corporations where a business foundation ultimately holds shares with more than 20 per cent of the voting-rights and holds the largest share of voting-rights. La Porta et al. (1999) also consider a shareholder with more than 20 per cent of the voting rights a controlling ultimate owner.

Firm characteristics

Finally, some remarks concerning the number of employees, whether firms engage in FDI, and whether there are holding companies, i.e. financial corporations, in the ownership structure.

When counting the number of employees in firms and dividing firms into size categories, this is done at the level of the ultimate owner – the parent company i.e. on a group level. This is because firms may administratively register employees in different subsidiaries over time. By counting employees at the level of the ultimate owner, volatility over time reflects business cycle fluctuations rather than administrative decisions in each firm. It should be noted that the financial account data only include employees in Danish entities. Similarly, firms that engage in FDI may shift from one subsidiary to another over time, while being unchanged for the ultimate owner.

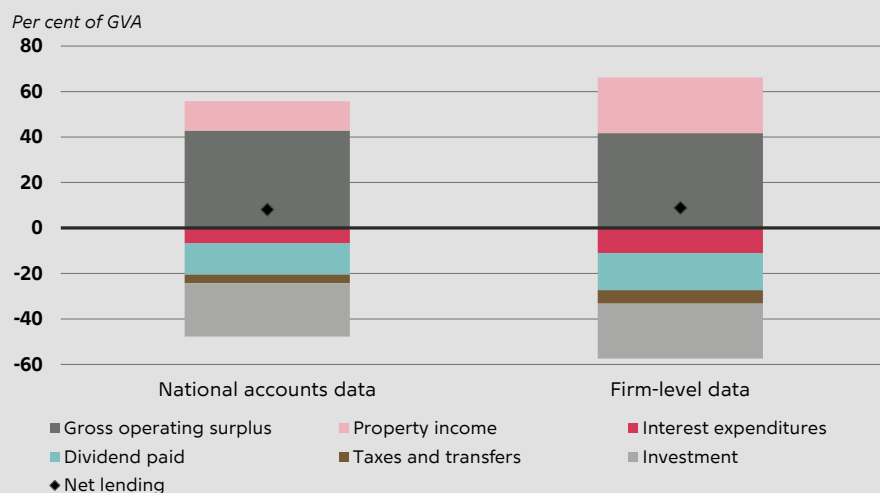
The owner of a non-financial corporation could be a holding company owning several subsidiary companies. In this case, the holding corporation itself is not included in the data as it is counted as a financial corporation, but information of all non-financial corporations that it owns is included. Holding companies are excluded to mirror the national sector account data for non-financial corporations. However, saving in holding companies is closely linked with saving in the underlying non-financial corporations. The data could be structured differently for other purposes.

Net lending based on firm-level accounting data compared to national accounts

Net lending by firms in the firm-level accounting dataset match that of the national accounts quite well, cf. chart A. The chart shows averages of gross operating surplus, property income, interest expenses, dividends, taxes and investments in the period 2010-2022 based on both data sources.

Although net lending in the disaggregated data fits the aggregated national accounts data well, the sub-components from the two sources do differ. Particularly, property income and interest expenses in the disaggregated data are significantly higher than that of the national accounts. This is likely because of capital gains and losses as well as proceeds from sales of shares which are all captured by the disaggregated accounting information, while being omitted from the national accounts as mentioned above.

Chart A: Net lending and its components in national accounts and firm-level data



Note: Averages 2010-2022.

Source: Bisnode, Experian and Danmarks Nationalbank.

¹ For the period 1995-2023, net acquisition of non-financial, non-produced assets plus net acquisition of valuables is on average less than 1 per cent of gross investment. Source: Statistics Denmark StatBank, table NAHD34.

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