Compilation and Measurement of Household Wealth and its Distribution

Katrine Søe and Kristina Stæhr Vest (Statistics Denmark)

STATISTICS DENMARK

Compilation and measurement of household wealth and its distribution

by

Katrine Søe
Kristina Stæhr Vest

August 2016

Statistics Denmark
August 2016

Katrine Søe

Head of Section
Government Finances
Phone: +45 39 17 33 52
E-mail: kso@dst.dk

Kristina Stæhr Vest

Head of Section
Government Finances
Phone: +45 39 17 34 62
E-mail: ksv@dst.dk

Abstract

Unprecedented access to a newly developed and comprehensive family distributed dataset on household wealth for Danish households paves the way for distributional analysis on the net wealth and its underlying components. This study focuses on net wealth by combining macro data from National Accounts on household's financial assets and liabilities and the family distributed dataset on household wealth in order to analyse the development and distribution of net wealth. The Danish households took a hit during the financial crisis but have experienced a substantial increase in both their financial and real wealth which by 2015 exceeded pre-crisis levels. We present an overview of the development in the level of net wealth of the Danish household using data from the National accounts, and by adjusting the family distributed wealth statistic, we analyse the distribution of household net wealth with emphasis on the role of housing, using counterfactual analysis and inequality decomposition techniques. We find net wealth is much more unevenly distributed than income, also by international comparison. The findings reveal substantial differences between homeowners and renters highlighting the unique role that household characteristics of homeowners, such as high income, age, higher education and unobserved factors, play in shaping the extensive gab in net wealth between the two groups.

Contents

1. Introduction

Levels and inequalities in the distribution of net wealth are, in line with household income as the most commonly employed inequality indicator, important measures of economic welfare of the household sector. Wealth levels serve as indicators of household's propensity to consume now and in the future as well as bequests to future generations, as assets can be converted into cash and cover immediate consumption needs. Studying the net wealth levels of households also provides a picture of the future well-being of households, as they are a result of the households' ability to invest in housing, education, high-yield investments and their capability to save for pension. Micro-level data provides momentum for assessing the underlying distribution of the accumulated levels of net wealth and its components, which function as important indicators of potential household vulnerability. In general, net wealth reflects the families' ability to smooth consumption during periods of unemployment or retirement and is thus essential to the well-being of households, as wealth is the principal source of liquidity for families in times of economic distress and provides rent on asset holdings, which accounted for 7 percent[1] of total household income in 2015. In Denmark wealth in real estate serves as the main component of household wealth and ownership of housing is the most essential wealth item in placing the household in the wealth distribution. Homeowners accumulate wealth much faster than renters with similar characteristics, as housing provides a basis for forced savings and increases in the market value of real estate. There will be emphasis on the role of housing in this study.

This study focuses on net wealth in Denmark using macro data from National Accounts and unprecedented access to a newly developed and comprehensive micro dataset on household wealth in Denmark in order to analyse the distribution of net wealth and the different wealth components. On a macroeconomic level, recent additions to the Danish household data include information on pension schemes and vastly improved data on housing, which greatly improves the compilation of household wealth. On a microeconomic level Statistics Denmark has recently collected a new set of individual based data covering the majority of financial and non-financial instruments constituting the households' total net wealth. This new set of data is based on the set of conventions and classifications proposed in the 2013 OECD Guidelines for micro statistics on household wealth. This micro-level data provides the basis for Statistics Denmark's new annual family distributed wealth and debt statistics (FDWS). The statistics initially covers the situation at the end of 2014 and sheds light on the wealth and debt levels of the full range of the Danish households. To maintain consistency throughout the analysis, the classification of wealth components in the FDWS will be adjusted to accommodate the classifications of financial instruments in National Accounts as described by ESA2010.

The analyses itself will, on a macroeconomic level, focus on the impact of the financial crisis on households at a national level and in comparison to how other countries weathered the financial crisis. This will include a descriptive assessment of net wealth in Denmark in 2015, including pension schemes and housing, the development of net wealth over the past 10 years (before, during and after the recession), the net financial wealth of the Danish household sector during the 10 year period in comparison to that of other comparable countries'. On a microeconomic level, focus will be on the development in economic inequality. This will include an analysis of net wealth for homeowners and renters and will focus on wealth inequality through use of the Gini coefficient and its breakdown on assets and age. First, econometric methods of counterfactual analysis are employed to decompose mean differences in the level of net wealth from the distribution of homeowners and renters in terms of demographic, socioeconomic and locational characteristics into a) the composition

---

[1] www.statbank.dk/NAS02

of the pool of homeowners and renters according to characteristics, and b) the contribution of these characteristics to net wealth levels. Second, a decomposition analysis of the Gini-coefficient is undertaken to get a better understanding of the main factors underlying wealth inequality. In particular, focus is on the contribution of the main net wealth components to overall wealth inequality and the contribution of different population subgroups divided according to homeownership, age and education. This study also considers international differences in the levels of net wealth.

The study on the FDWS shows that, apart from being more unequally distributed than income, wealth is also highly concentrated among wealthiest households – the top 10 percent households in Denmark hold 50 percent of total net wealth and 21 percent of income. The estimates from the FDWS correspond to those of Bezrukovs (2013) that studied distribution of wealth in Eurozone countries using HFCS data and came to the conclusion that on average 50 percent of wealth is concentrated among top 10 percent of wealthiest households, however they hold 31 percent of income. Thus, while Denmark is one of the more equal countries according to the distribution of income, this does not seem to be the case when looking at the distribution of net wealth.

The paper proceeds as follows. Section 2 presents data while the following two sections 3 and 4 provides, respectively, an overview of the development of household net wealth according to national accounts, and a distributional analysis of the FDWS. The final section 5 provides concluding remarks.

2. Data and methods

2.1. Methodology and concepts

For the sake of facilitating international comparison, this paper will throughout the analysis follow the methodology and concepts of the European System of Accounts 2010 manual (ESA 2010) in defining the fundamental statistical units and groupings of this analysis and in the definition of the components that constitute a household's financial net wealth. In the definition of a household's non-financial wealth we will however allow for certain degrees of freedom.

From the perspective of each individual country, the world economy can be divided into two parts: *resident institutional units* and *the rest of the world*. Broadly spoken, the first are those whose predominant economic centre is placed within the borders of the country, while the second is everything else. The resident institutional units can be subdivide into five sectors, Non-financial corporations (S.11), Financial corporations (s.12), General government (s.13), Households (S.14), and Non-profit institutions serving household (s.15). These sectors can be further subdivided into subsectors, but as this is of no relevance to our further analysis, we will only use this aggregated level of sector delimitation.

The focus of this analysis is on the household sector. Following the sector delimitation prescribed by ESA2010, the household sector is the sum of all the households in the economy. A household is defined as a family composed of either a single person, or a couple either married or living together as a registered couple including resident children no older than 25 years, the main idea being collective consumption of goods and services such as housing, holidays, and food. In line with the HFCS, this study will ignore economies of scale within a household, which basically means that there will not be applied an equivalence scales to household wealth data, that takes into account the number of adults and children within a given household. The main reason for this is that whereas income refers to a household's current consumption opportunities, wealth refers to a household's future consumption. Current composition of the household will most likely be of less importance, than is

the case with household income. As such, the household will be the unit of analysis in the distributions under consideration, and the potential connection between wealth and household size, beyond including them in the set of controls in regression analysis, will thus be ignored.

The main focus of this analysis will be on household net wealth, calculated according to the principals of ESA2010, thus enabling international comparisons. The key notion common to all definitions of "net worth" or "net wealth" is the difference between assets and liabilities; however, a range of asset types and methods of valuation provides a variety of definitions of net wealth. In this study, the Danish household sector's net wealth is defined as the sum of all its financial and non-financial assets minus debt for all members of the household sector. We wish to distinguish between financial and non-financial assets: In theory, non-financial assets include the value of the household's wealth in real estate property, vehicles, jewellery, paintings etc., however we will only include the two first mentioned due to availability of data. Financial assets include deposits on current or savings accounts, employment related and voluntary private pensions and life insurance, mutual funds, bonds, shares, and other financial assets. Debt include home-secured debts (principal residence mortgage primarily), vehicle loans, educational loans, lines of credit and credit card balance, trade credits, prepayments, and other financial debt. The net worth of households is, for most purposes, the standard wealth concept considered most appropriate for empirical analysis. The income of households mainly results from salaries, pensions and benefits, property income, and sale of goods and services. Income is used either for consumption or savings, all of which is mirrored in the household net wealth.

This paper employs two statistics on household wealth. First, the financial accounts (FA) in the Danish System of National Accounts provides data on the financial net wealth for the household sector as a whole. The FA is a comprehensive macro statistic with an estimate of all the wealth components described in ESA 2010. These data will serve as the cornerstone of this analysis. Second, Statistics Denmark has most recently compiled a wide-ranging individual based data set containing detailed information on households' assets and liabilities. This statistic provides comprehensives information on the value of real estate, cars, pension schemes, and financial assets and liabilities. The data are mainly collected via the tax authorities using the personal identification number. This micro statistics, which we refer to as the family distributed wealth statistics (FDWS), will be used to analyse the distribution of household wealth across the population and to compare levels of wealth between various population subgroups. The following subsections provide details on the two statistics, how they differ from one another and how we combine the two in order to stay within the ESA 2010 framework and still take advantage of the many features of the newly compiled micro statistics.

2.2. Financial accounts for the household sector (FA)

When looking at households in a macroeconomic perspective, focus is on the household sector as a whole. How does households as a sector place their net savings, what kind of debt is favoured by households, how does their net wealth change in comparison to that of other countries and during crises and upturns?

Compilation of national accounts in Denmark closely follows the rules put forth by ESA 2010, which provides a framework for the compilation of data in an internationally compatible form. This entails, when compiling the net wealth for any sector within the national accounts framework, that only financial assets and liabilities are included. Financial assets and liabilities are in the ESA 2010 framework divided into: Monetary gold and special drawing rights (AF.1), Currency and deposits (F.2), Debt securities (F.3), Loans (F.4), Equity and investment fund shares (F.5), Insurance, pension and standardised guarantees (F.6) Financial derivatives and employee stock options (F.7), and Other accounts receivable/payable (F.8). The net finan-

cial wealth is calculated as the financial liabilities subtracted from the financial assets.

Even though the financial net wealth, due to comparison purposes, will be the main focus of this part of the analyses, including real assets has the advantage of providing a more accurate picture of the actual level of net wealth the household sector holds. Real assets are a recent addition to the Danish household sector data, and we will reserve part of the analysis to describe how this affects the results of our analysis.

2.3. Family distributed wealth statistics (FDWS)

While the primary focus of the financial accounts is on measuring the performance of the economy as a whole and of its sectors through an integrated system of accounts, the primary focus of the family distributed wealth statistics is on measuring the level and composition of the wealth held by individual households and its distribution across households with different demographic, socioeconomic, and locational characteristics.

The FDWS builds on administrative tax data from the Danish tax authorities which provides detailed information on financial assets and liabilities held by individual households. The data is combined via the Danish unique personal identification number, making it possible to combine all information on the individual data available through administrative registers. The tax data also provides official real estate valuation of all Danish owner occupied dwellings and cooperative dwellings on a yearly basis.

Quality issues related to using tax data is first of all systematic errors in the official real estate valuation of dwellings, which is based on an actual valuation often carried out in the rather distant past. The official valuation builds on a formula that has only a rough connection with one of the variety of market prices that might apply. Furthermore, as the tax data are maintained for tax purposes, there is an incentive for households to act in ways that cause the value recorded to be minimised.

In order to correct for possible systematic errors in the tax value of dwellings, Statistics Denmark has adjusted the official real restate valuation from the tax authorities, by linking the actual real estate sales with the official real estate valuations. As such, it becomes possible to calculate an adjustment factor equal to the average relationship between the actual market price and the official real estate valuation for dwellings sold in a given year. In the model it is assumed that the adjustment factor between the actual purchase price (the market value) and the official real estate valuation is the same for the same types of real estate (e.g. one-family houses) within the same geographical area (e.g. a postal code) and, if possible, also the same price range. The market values of the dwellings that have not been sold are estimated by multiplying the adjustment factor with the official real estate valuation.

The statistical definition of a household in the FDWS is all families in Denmark at the end of the year, except for families where no family member has been taxable for the whole year. The definition differs from the definition put forth by ESA 2010 as it, in addition to sole proprietorships, also includes both general and limited partnerships. Persons living in collective households and institutions such as nursing homes for elderly are excluded from the population. No weights are provided as there is full coverage of the target population. No imputations have been made.

The advantage of using administrative tax data, compared to e.g. surveys such as the HFCS[2], is that they cover the whole population and have a high degree of accuracy, especially on the liability side. As a result, the dataset comes very close to cover the full range of the wealth distribution and can thus describe well the wealth of the households who hold the bulk of the net wealth of Danish households. Moreover, the personal identification number allows us to match this dataset with the body of individual based datasets available through Statistics Denmark. This gives information on a variety of household demographic, socioeconomic and locational characteristics that we control for in this study when making judgements on the distribution of household wealth. Note that the FDWS data does not contain information on wealth held in bank accounts abroad or other types of financial assets not accounted for by the Danish tax authorities.

2.4. Differences between FA and FDWS

As the FA and FDWS on household wealth are compiled for two very different purposes, there are a number of differences in the resulting estimates of wealth. In order to get a better understanding of the differences between the FA and the FDWS items, appendix 7.1 compares wealth data from the two statistics by describing and quantifying some of the main definitional and methodological differences between the wealth components in the two statistics. The following table presents a comparison of the amounts of every wealth component, while explanatory notes are left in appendix 7.2 for the thorough reader.

---

[2] The Household Finance and Consumption Survey (HFCS) is a new micro-level survey of households in 15 Eurozone countries coordinated by the ECB. The survey offers the most recent and comprehensive data on Eurozone households.

Table 1   Relationship between components in FA on household wealth and FDWS. 2014

FDWS			FA	
Family distributed wealth statistics			ESA 2010 Financial accounts for households	
Non-financial assets, total	**3 932 484**	**Notes**		**3 812 464**
Principal residence	2 660 830		Real assets (b), (c)	3 476 569
Cooperative dwellings	246 609	(a)		
Holiday cottages	248 158	(b)		
Other real estate	585 283	(c)		
Vehicles	191 604		Vehicles, boats and planes	192 835
			Other fixed capital	144 280
Financial assets, total	**5 242 626**			**5 438 513**
Deposits	609 058		F.2 Currency and deposits (f)	908 440
Bonds and other debt securities (incl. mortgage deeds)	53 188		F.3 Debt securities	66 328
Equity shares	423 565	(d)	F.5 Equity and investment fund shares (a), (b), (e)	1 552 473
Shares in investment funds	237 375	(e)		
			F.7 Financial derivatives and employee stock options	1 008
			F.8 Other accounts receivable	33 213
Pensions, total	**3 834 482**			**2 877 052**
			F.61 Non-life insurance technical reserves	79 039
Pensions in insurance funds	1 477 287		F.62 Life insurance and annuity entitlements	1 585 045
Pensions in pension funds (incl. ATP)	1 219 572		F.63+F.64+F.65 Pension entitlements, claims of pension funds on pension managers and entitlements to non-pension benefits	1 212 967
Pension in banks (incl. LD)	483 483	(f)		
Civil servant pension	600 826	(g)		
Liabilities, total	**2 485 156**	**(h)**		**2 633 441**
Mortgage deed loans	8 250		F.3 Debt securities	9 025
Mortgage loans	1 763 280		F.4 Loans	2 552 250
Other real estate loans	70 251			
Other loans in banks	549 013			
Credit card debt, student loans, etc.	85 177			
			Other accounts payable	72 166
Net wealth	**6 498 350**		**Net wealth**	**6 618 756**
Net financial assets	2 757 470		Net financial assets	2 805 072

FDWS: www.statbank.dk/FORMUE1
FA: www.statbank.dk/NATFORM

In this part of the analysis, the FDWS the statistics is adjusted to accommodate the ESA 2010 framework in order to eliminate discrepancies between the two statistics that are due to classification differences. The changes made concern the classification of the cooperative dwellings, pensions in banks, and the civil servant pension. According to ESA 2010, cooperative dwellings should be treated as a financial assets and not a non-financial asset, pensions in banks are a bank deposit, and the civil servant pensions are left out, as it is not a funded pension scheme. No adjustments are made on the liability side. Owners of a cooperative dwelling are however still characterized as homeowners and not renters in analysing the role of housing in section 4.1.

## 3. The financial accounts for the household sector

Compared to most other countries in the world, the Danish households enjoys high material living standards and a very high level of social welfare, and lies significantly above average in almost dimensions of OECD's Better life index. This is especially the case in the social dimensions but Danish households lie also very high on the

dimensions education, jobs and earnings. The Danish economy is by 2015 finally set to recover upon the financial crisis, and households are enjoying rising financial wealth, increases in the value of real estate due to accommodative conditions in the loan market and in general higher real incomes due to growth in the creation of private sector jobs and a decline in the unemployment rate since 2011 (OECD, 2016).

3.1. Household net wealth 2004-2015

The financial assets of the Danish households are comprised of *currency and deposits*, *equity and investment fund shares*, *pension and life insurance* (or just *pensions*) and *other financial assets*[3]. When non-financial assets or *real assets*, i.e. the household's wealth held in real estate and vehicles, are added to the financial accounts of the household sector we obtain the net wealth of the household sector. Total net wealth, which includes real assets, is calculated as assets minus liabilities, whereas total financial net wealth excludes the real assets and is thus at a much lower level than the total net wealth including real assets.

Figure 1   Development in household net wealth. 2004-2015
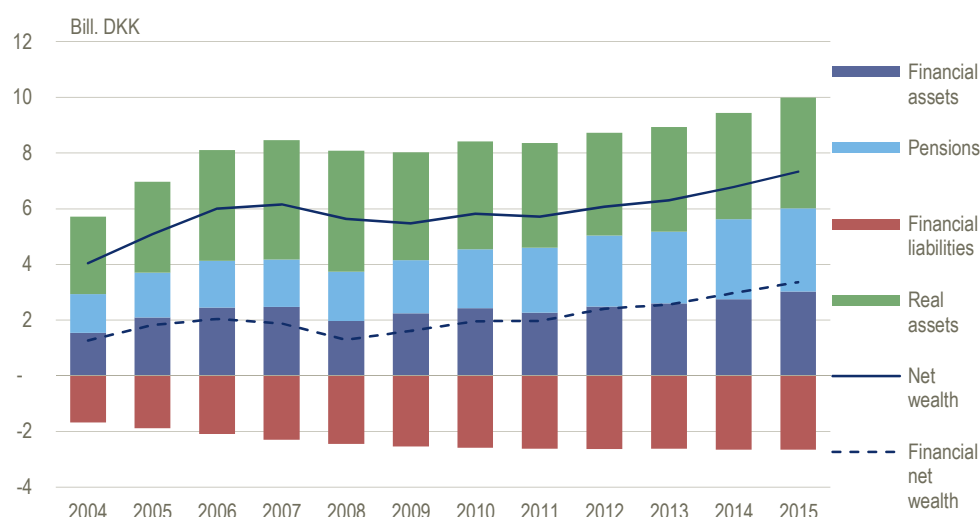
Source: Own calculations based on FA data

The main wealth components of the Danish households are the real assets, of which wealth in real estate constitutes the primary part with a net wealth share of 40 percent. By 2015, currency and deposits accounted for 9 percent of total assets, 20 percent was equity and investment fund shares, while pensions constituted a total of 30 percent. The last 1 percent is due to other financial assets. Household debt is comprised by loans and other debt[4], of which loans constitutes 97 percent. The main proportion of household liabilities is comprised of loans, either mortgage loans or other loans from the banking sector and consumer credit. See appendix 7.1 for 2015 figures.

That wealth in pension and insurance schemes by 2015 make up half of total financial assets held by Danish households, are due to the fact that in Denmark it is custom to pay a large part of the individual salary into pension schemes. The minimum levels to be paid in are collectively agreed upon by the different unions and then paid into the chosen scheme accordingly before the remaining salary is paid out by the employer to the employee. The result is a high participation rate and a high accumulation rate of financial assets for Danish households. The value of the pension

---

[3] Other financial assets include debt securities, financial derivatives, employee stock options, and other accounts receivable.

[4] Other debt includes trade credits, advances for work, and financial claims due to timing differences between accrued transactions and payments made, e.g. wages, taxes, dividends etc.

schemes have increased significantly throughout the past decade and is partly due to high increases in the value of the financial assets the pension funds have invested in.

Figure 2   Annual change of per capita net wealth, by components. 2005-2015
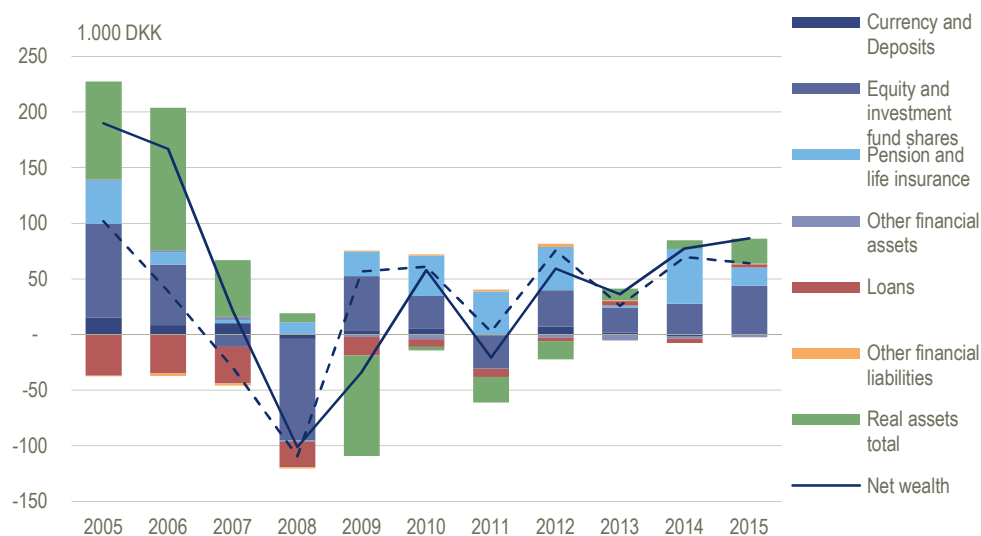
Source: Own calculations based on FA data

The onset of the financial crisis in 2007 brought about large changes to the net wealth of Danish households. For many families, the crisis, became both nationally and internationally, most visible, after the so-called housing bubble burst, which happened after a long period of soaring housing prices. It started in USA, but the housing crisis had soon spread to a number of other countries, including Denmark. In Denmark this induced, among other things, about 60 banks to crack, merge or dissolve. Most homeowners saw the value of their houses increase sharply in the years up to mid-2008. Prices of single-family homes rose by no less than 63 percent between 2003 and 2007. Encouraged by declining interest rates and expectations of gains from rising housing values still more loans in housing were recorded. These loans went both to buy everyday goods, but also consumer durables and settlement of other liabilities. This was reflected in the private consumption which rose while savings fell correspondingly (Statistics Denmark, 2015).

However, the largest and most immediate reaction to the crisis was seen in equities and investment fund shares, where large positive revaluations of previous years were replaced by a decrease in 2007. While the decrease in 2007 was minor, 2008 showed the largest drop at 52 percent in the value of household equity since this statistics was first reported in 1994.

The liabilities of households steadily increased throughout the period 2004-2015, mainly as a result of increasing housing prices and a liberal loan and mortgage market. This increase was especially pronounced in the period up to 2009 with an increase amounting to 52 percent. By 2010 the loans were stagnating and had by 2015 only increased by further 7 percentage point in total. Mortgage loans, constituting the main proportion of household liabilities, is the cheapest way of borrowing money in Denmark, using real estate as collateral, whereas consumer credit is the most expensive type of loan. In 2015 household loans supplied by mortgage banks comprised 76 percent[5] of all loans provided by the financial sector to households. Access to bank loans was restricted during the crisis, but did however not result in an increased use of consumer credit, as otherwise might have been expected. Consumer credit has generally followed the trend of the other loan types until 2008 after

5 www.statbank.dk/DNMUD and www.statbank.dk/DNRUDDKI

which they decreased until 2012[6]. Recent research shows that consumer credit actually increases during an upturn, where people tend to focus less on large repayments on housing loans. The opposite is the case during a downturn. The breakdown throughout the financial markets caused by the financial crisis made it more difficult to obtain loans, which in turn affected the housing prices. As such, 2009 brought significant decreases to the housing values, which would decrease even further over the coming years, before finally showing signs of recovery in 2012.

Figure 3   Price index for sales (2006=100) by category of real estate. 2004-2015
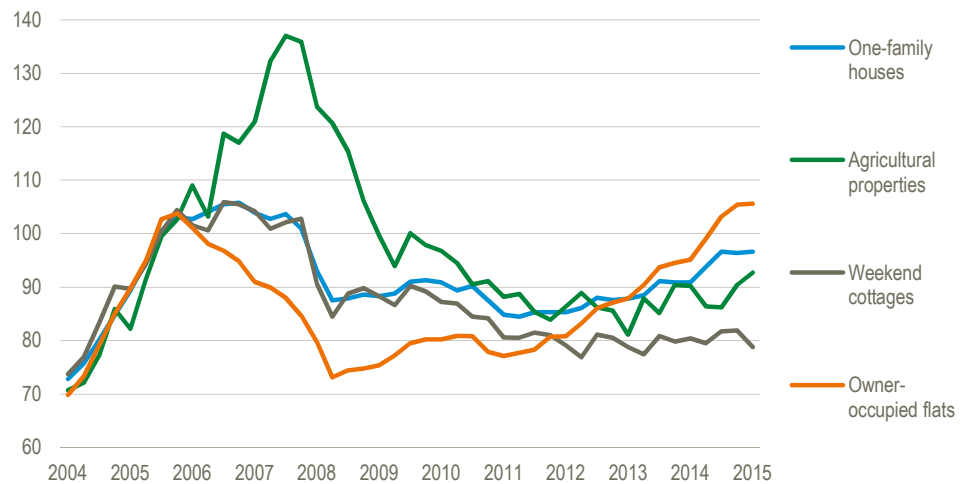
Source: www.statbank.dk/EJEN5

The market value of real estate in general increased rapidly between 2004 and 2007, stagnated in 2008 after which it decreased with considerable momentum following the onset of the financial crisis. By 2012, the total value of real estate had decreased by 17 percent and was by 2015 still 9 percent below the peak in 2008. This in turn had a direct effect on the households' level of net wealth which also started to decrease. However, due to the consistently increasing wealth households hold in pension funds combined with a significant increase in their stock of shares and equity in the last four consecutive years, the level of net wealth reached pre-crisis levels already by 2013.

The metro area, especially the area surrounding the capital, took the hardest hit, but was also the first to recover from the financial crisis, whereas the market in many rural and remote areas is still struggling. Though starting to recover, markets are still below the pre-crisis level, and only the real estate market in the capital had by 2015 recovered to pre-crisis level. See figure 11 in section 4.1.1 for the development of the mean value of real estate 2004-2015. The most recent price index for sales of property predict that 2016 will be a record setting year for housing prices in and around the metro area[7].

The effects of the financial crisis had a large impact on the net wealth of the household sector in many countries, as can be seen in figure 4, picturing the change in financial net worth of Denmark, Germany, Greece, France, Finland, and Sweden, indexed with basis year 2004.

---

[6] www. statbank.dk/MPK30
[7] www.statbank.dk/ejen55

Figure 4   Development in household financial net wealth. 2004-2014
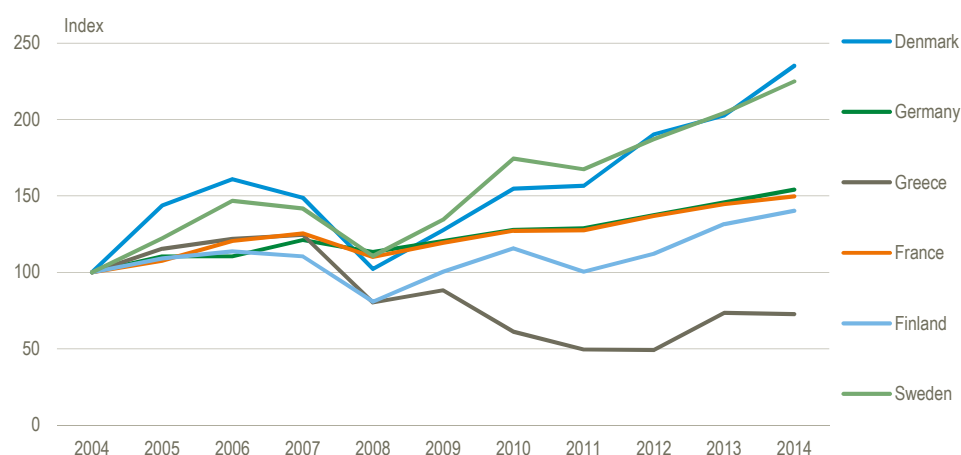
Source: Eurostat database

All depicted countries took a significant hit in 2008, where the financial net wealth decreased by between 6 percent and 36 percent. In general, the households were however quick to recover, and only Greece was in 2014 still below its pre-crisis level.

The value of the Danish household assets has in general increased over the past 20 years, as is the case for most developed countries since the beginning of the report-ing period in 1995[8]. Though not as clear-cut as was the case for assets, liabilities have also increased for the household sector of most developed countries. An excep-tion is the first years succeeding the crisis, where gross debt of many households decreased, presumably due to more restricted access to the financial markets[9].

The Danish household sector had the highest gross debt to income ratio in the EU, following naturally from having the highest debt level of the EU countries. This ob-servation must however be coupled with the fact that Denmark has a very high level of assets, both financial and non-financial in comparison to other EU countries.

Figure 5   Household financial net wealth. 2014
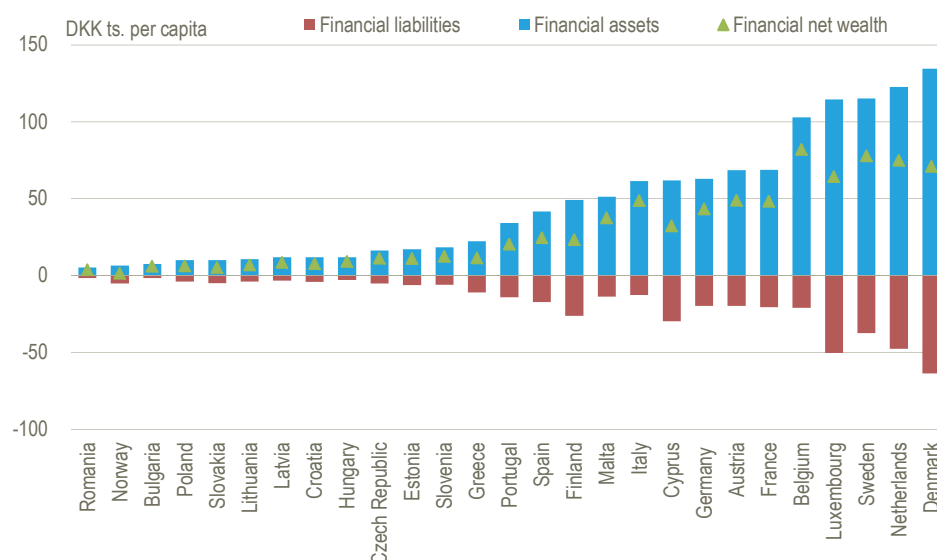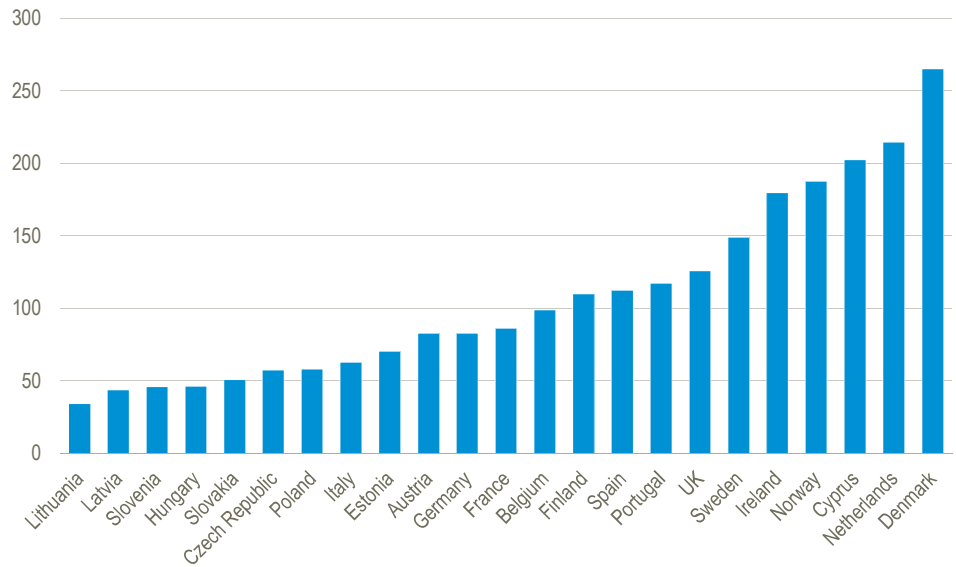

Source: Eurostat database

The Danish household sector is set apart from most household sectors of other EU countries due to the high levels of assets and liabilities. The explanation is the well-

[8] https://data.oecd.org/hha/household-financial-assets.htm
[9] https://data.oecd.org/hha/household-debt.htm#indicator-chart

functioning and liberal loan market for housing loans, based on the Danish mortgage model. Loans are easily accessible to Danish households and the transparency of the system also makes it less susceptible to financial turmoil, which plays a significant part in Denmark's quick recovery from the financial crisis[10].

Figure 6   Gross debt-to-income ratio of households. 2014

Furthermore, Danish households have the largest gross debt to income ratio. OECD expressed concerns in the latest economic survey on Denmark (OECD, 2016) due to the potential risk of having the highest gross household debt in the OECD. However, the households have, also by international comparison, very large assets in both real estate and pension schemes. Pensions are nevertheless an illiquid asset which cannot be used to bring down the household debt. Recent studies by the Danish Central Bank also indicate that households with amortization have a higher savings rate compared to households with interest only loans. Furthermore, when looking at the loan to value rate, the study also shows that households with high loans compared to their housing wealth also have relatively low savings. In essence the most vulnerable households are also the most exposed (Kuchler, 2015). This will be further analysed in the section 4.

Figure 7   Household disposable income. 2004-2015

---
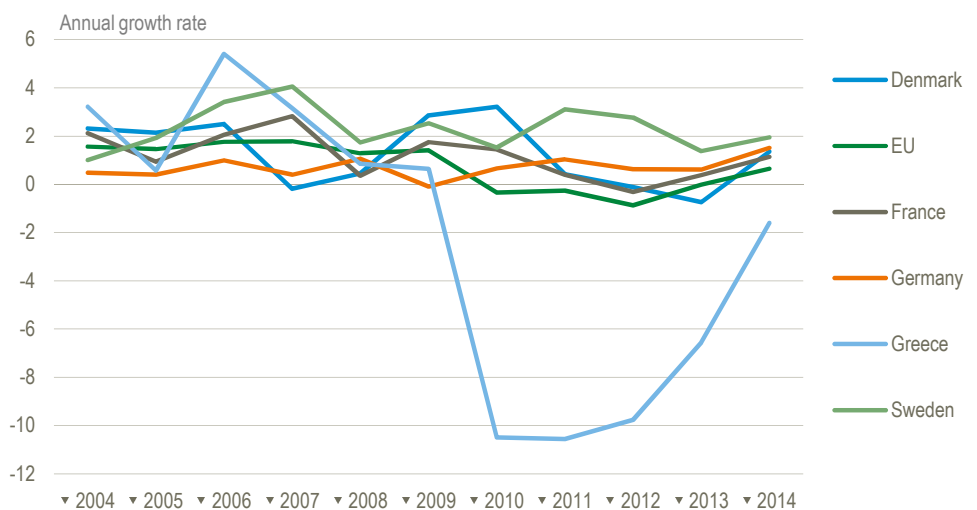
[10] www.rkr.dk: The Danish Mortgage Model

15/36

In general, Danish households weathered the financial crisis well and 2009 and 2010 brought increases to the disposable income (see appendix 7.2 for definition an accumulation of household wealth 2004-2015) where the annual growth rate of Danish households' disposable income became amongst the highest in Europe. Figure 8 depicts the annual percentage change in household disposable income and its main uses.
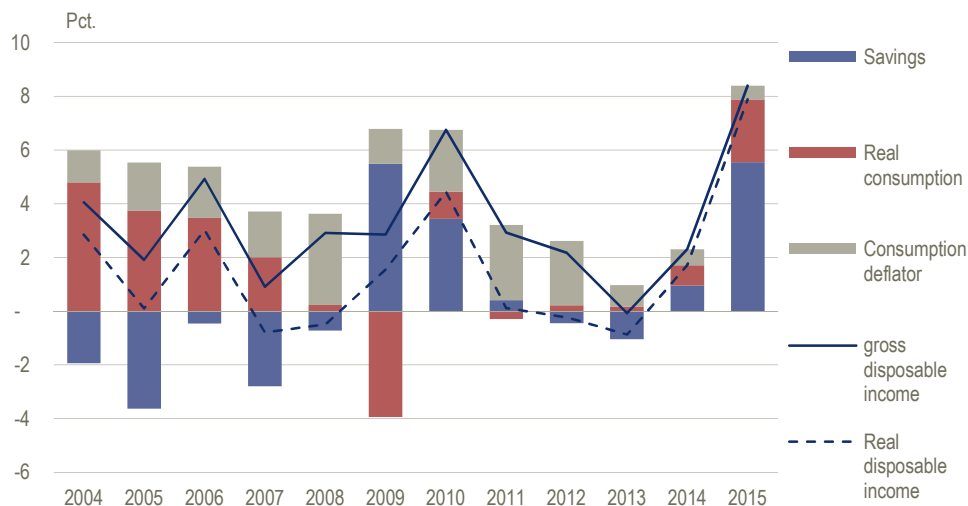
Figure 8   Household gross disposable income and its uses. 2004-2015

Note: The bars represent the annual percentage change of gross and real disposable income and its uses in percentage of total gross disposable income.
Source: www.statbank.dk/NASD23

When looking at private consumption relative to disposable income, one can observe that by 2008 the households significantly changed consumption patterns. The households became more cautious in their consumption and savings patterns, and the most distinct change in savings was in 2009-2010 where the savings rate of Danish household grew significantly. Currency and bank deposits increased by 25 billion DKK in 2009 and 35 billion DKK in 2010, or 3 and 4 percent of net wealth, respectively. The change in savings behaviour seems driven by a wish to have an economic buffer rather than making investments, as the interest rate on bank deposits was quite low and would be neutralized by the inflation rate, making it a poor investment choice ("Danskernes bankbøger bugner", 2016). Consumption decreased drastically in 2009, which is a further indication of the crisis awareness marking the behaviour of the Danish households in the post crisis years. By 2015, the Danish households still maintained a high gross savings rate, due to low investment and consumption ratios (OECD, 2016).

The increase in savings rates in Denmark followed the general increase in saving rates observed across the EU, though the Danish savings rate is generally in the bottom part of savings rates amongst the EU countries, explainable by the lesser need of Danish households for high savings, as for example healthcare, schools, and unemployment support is paid for via taxes.

Figure 9   Household savings rate
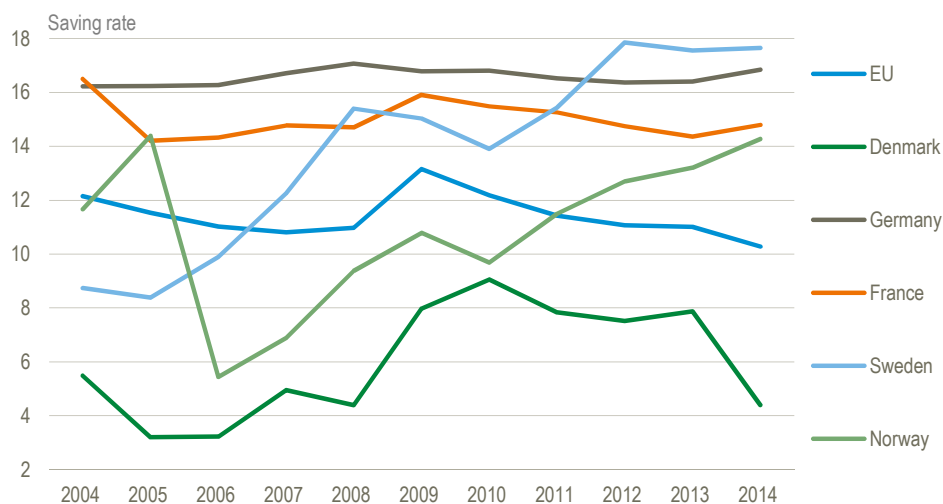
Whereas an analysis of household net wealth on a macroeconomic level allows for international comparisons due to consistent use of the same rulesets set up by ESA2010, it does not enable an examination of what actually drives the accumulation of net wealth, differences arising from demographic, socioeconomic and locational factors in the underlying households, something which will be examined in the following section. We know that Denmark, despite of a growing wage dispersion, have one of the most equal income distribution among OECD countries. Whether this is the case for the distribution of wealth among Danish households will also be analysed (Statistics Denmark, 2015).

4. The distribution of households' net wealth

While the overall levels of household wealth do provide some insights into the levels and sustainability of the Danish households' economic situation, they do not provide any information on the distributional features of the net wealth levels. This part of the analysis is based on the feasible breakdowns of net wealth according to the design of the FDWS while staying within the framework of ESA 2010. Thus, the definition of household net wealth does not change, but the value of the underlying wealth components will, due to discrepancies between FA and FDWS and limitations of FDWS outlined in section 2.4. The analysis of the FDWS nature has several distinct advantages over macro analysis in situations when the underlying population is not homogenous.

The primary aim of this section is to determine the main features of the distribution of net wealth among Danish households using the role of homeownership as the pivot of the analysis. In particular, an important goal of this section is to measure the contribution of housing wealth to overall wealth inequality. International comparison shows that wealth inequality is lower in countries with higher homeownership rates and higher shares of wealth invested in primary residence. In Denmark and in many other countries housing wealth constitutes the main component of household net wealth portfolios (Bezrukovs, 2013) and, as stated above, in Denmark the share of total assets that is due to wealth in real estate amounts to 40 percent in 2015.

We apply the main instruments and techniques from wealth distribution analysis to study in detail how wealth and its main components are distributed among Danish households. In addition, we study the role of the different wealth components in wealth inequality using Gini coefficient decomposition techniques, in order to de-

termine the contribution of the different wealth components and the different population subgroups to total inequality.

4.1. Descriptive statistics

Table 2 presents summary statistics on the four main wealth components that make up total net wealth. These figures provide a first impression of the distribution of household wealth and the share of households with negative net wealth levels representing over-indebtedness. In 2014 the average net wealth of households was about DKK 2.1 million, while the real wealth and financial net wealth were around DKK 1.3 and 0.8 million, respectively. In Denmark 8.6 percent of the households have zero or negative net wealth, which is a relatively high figure compared to the Euro-zone average provided by Bezrukovs (2013) of 4.8 percent, only surpassed by Finland (10.7) and the Netherlands (11.7). I.e., while the over-all net wealth of the Danish households places the Danes in a leading position, individual households are relatively more indebted and are thus more likely to be subject to idiosyncratic shocks.

Table 2   Mean and median household wealth, by component. 2014

	Net wealth	Real wealth	Financial Wealth ex. pensions	Pension wealth	Loans
	Thousand DKK				
Mean	2,113	1,279	760	936	862
Median	942	228	150	471	202
Mean-median ratio	2.2	5.6	5.1	2.0	4.3
Percentage share of lowest net wealth decile	-1.8	4.2	0.9	1.7	13.2
Percentage share of highest net wealth decile	50.3	39.2	56.0	36.0	23.2
Percent of households with negative or zero value	8.6	33.0	1.3	4.2	24.2

Source: Own calculations based on FDWS data

The median net wealth of the Danish households (i.e. the mid-point when all households are ranked in ascending order of net worth) was DKK 0.9 million DKK and thus substantially lower than the mean value, directly reflected in the mean-median ratio. The difference reflects the asymmetric distribution of wealth between households, where a relatively small number of households have high net worth and a relatively large number of households has low net worth. Further, it is worth noting that when we consider a more liquid financial wealth concept, the median value decreases much more than the mean does, reflecting the existence of households that accumulate a disproportionate amount of this type of wealth. This is supported by the high share of financial wealth held by the 10 percent wealthiest households, holding 56 percent of financial wealth excluding pensions. A substantial fraction of the Danish households have a wealth in real estate equal to zero (33 percent), thus contributing to a high mean-median ratio.

Furthermore, the percentage share held by the 10 percent of the households with lowest and highest levels of net wealth provides some insights about the distribution of net wealth and its components. Another measure of wealth distribution is provided by the net worth shares of groups of households at different points in the wealth distribution.

Figure 10   Distribution of household net wealth by net wealth deciles. 2014
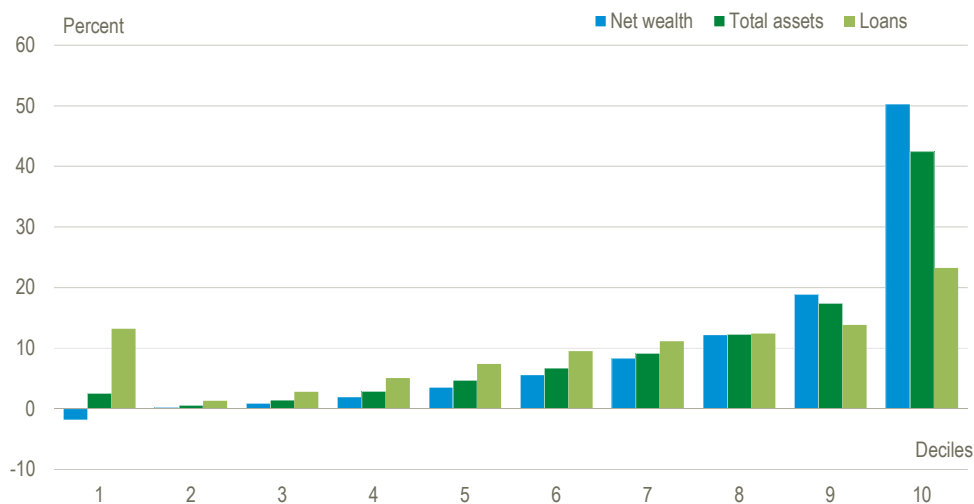
Source: Own calculations based on FDWS data

In 2014, households in the highest net worth decile (i.e. the 10 percent richest households) held 50 percent of the total net worth of all households, which is in line with the OECD average, still above the majority of OECD countries. A further 19 percent was held by households in the 9th decile. By comparison, the lowest six deciles (i.e. the 60 percent of the households with lowest net wealth) held, in total, 10 percent of total net worth combined. The OECD average is 13 percent (OECD, 2015). In essence, while the Danish households are on the most equal according to the distribution of income, this does not seem to be the case when looking at the distribution of wealth.

4.1.1.   The role of housing

In Denmark 57 percent of the population are homeowners[11]. While most homeowners own their main residence, some do live in a rented accommodation, but own a vacation house in the countryside or an apartment purchased by parents for their children[12]. Table 7 in appendix 7.4 reports summary statistics for the two groups, homeowners and renters separately, against different factors often considered key for characterizing households. These statistics show notable differences between the composition of households in the homeowner pool and the pool of households renting their homes.

Specifically, while the share of households with negative net wealth in Denmark was 8.6 percent in 2014, for homeowners as a group this rate was only 3.0 percent. Consistent with existing literature, we find that homeowners generally have a higher income, and are more affluent and educated than renters. These results imply that certain characteristics contribute to the probability of being a homeowner, as the share of college graduates among homeowners was equal to 38 percent against 18 percent among renters, the mean disposable income of homeowners was 2.2 times higher than renters, the amount of unemployed was 2 percent against 12 percent for renters, and lastly the share of married or couples in a registered partnership are 56 percent for homeowners while only 17 percent for renters.

Table 8 in appendix 7.4 presents summary statistics on home equity for homeowners. For the Danish homeowners, the share who owed more on their homes than

---

[11] In this study we classify owners of cooperative dwellings as homeowners even though the asset is classified as a financial assets and not a non-financial asset such as real estate. In an analytical setting, owners of cooperative dwellings have more in common with owners of real estate than with renters, with regard to levels of income, educational background, and other characteristics.

[12] In Denmark it is very common for parents to buy apartments years in advance to ensure their children have student housing when the time comes.

they were worth i.e. had a negative loan-to-value rate, stood at 20.4 percent in 2014. Though that rate remained flat from the previous year, we found that a homeowner was much more likely to owe more on their homes than they are worth if their home was outside a city area. For people living outside the metro area the rate was 25.5 percent, while for families living in a metro area this was only 14.4 percent. Grouping households according to the area in which they live into metro-, rural-, and remote areas[13] reveals a high level of dispersion in the value of real estate between the different areas of Denmark. See figure 11. Copenhagen is highlighted, as it stands out being the only city where the value of real estate is above its pre-crisis level.

Figure 11   Development of the mean value of real estate by area. 2004-2015
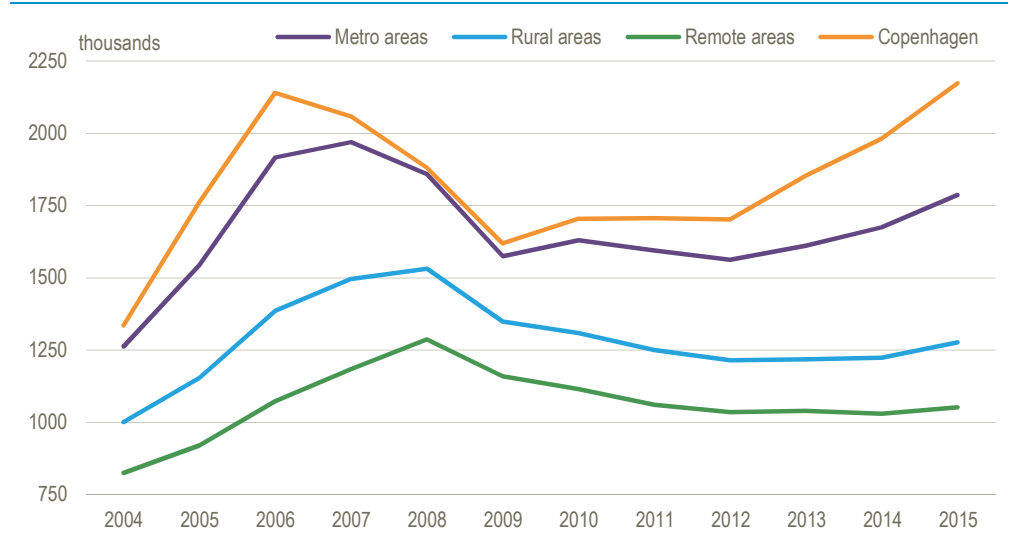
Furthermore, when grouping homeowners according to the value of their wealth in real estate, we find that homeowners are much more likely to have a negative home equity, the lower the decile of which they belong, by value. These findings suggest that homeownership is not the best way to climb up the economic ladder. This is because the lower income group can often only afford to buy real estate in neighbourhoods where home values are less likely to increase, due to the gradual increase in the proportion of people living in rural areas. The mean wealth in real estate for a household living in the metro area of Copenhagen is twice the size of households living outside the metro area and almost three times the value of households living in rural areas. Investing in such homes can thus make you financially less stable rather than the opposite.

4.2. Twofold decomposition

We employ the Blinder-Oaxaca decomposition to decompose mean differences in net wealth, based on linear regression models in a counterfactual manner. The model divides differences in net wealth between two groups, in our case homeowners and renters, into an explained and unexplained part. The explained part, also referred to as the "endowment effect", can be accounted for by group differences in productivity characteristics, such as income, education, household size, age etc. As such, the endowment effect accounts for the expected change in renters mean net wealth if renters where given the characteristics of homeowners. The unexplained part consists of differences in net wealth that cannot be explained by these productivity characteristics, but is explained by differences in the relationship between productivity characteristics and net wealth between the two groups or by unobserved differences in characteristics between groups, i.e. unobserved variables. The unexplained part will thus cover factors not measured directly by the model, such as

---

[13] This is not an official grouping of Statistics Denmark, but performed for the purpose of analyses only. See Statistics Denmark (2015b) for a description of the classifications.

the effect of increasing certain characteristics like e.g. income, moving to a metro area, and having children. The effect on the levels of net wealth from changing these characteristics will differ for homeowners and renters and will be discussed throughout this section.

4.2.1. Data and variables

In accordance with the conceptual framework and research questions that guide this study, three broad dimensions are keys to this analysis. *Demographic factors* include the characteristics of the head of the household - namely age and marital status - while the *socioeconomic attributes* include the years of education of the household head, employment status, (log of) number of children, (log of) household income, and ethnic origin. Lastly we have the *locational characteristics* accounting for whether the household is located in a metro area or not. Thus, this part of the analysis studies the extent to which these sets of variables shape the trajectories to homeownership, by using the decomposition method described above.

Empirical work on life-cycle accumulation models show that a household's net wealth tends to be hump-shaped over a person's lifetime. Typically assets will accumulate and debt incurred when young will be paid down over the working age. It is clear when looking at data, that the age effect is not constant throughout the life-cycle, therefore the age variable is split into three parts, before working age (below 30), working age (between 30 and 64), and pensioners (65 or older)[14].

4.2.2. Results

The Blinder-Oaxaca decomposition in terms of the full model-setup described above identifies a positive relationship between net wealth levels and homeownership, income, metro area, age, and education and is thus consistent with the descriptive assessment of data. Table 3 reports the main results of the decomposition analysis, while the full output is presented in appendix 7.5. The two columns in table 3 report the total gab in mean net wealth between homeowners and renters and the share of the gab that can be explained by differences in endowments (48 percent) and an unexplained part (52 percent). In the appendix these results are presented in the first two columns of table 9, reported in absolute numbers with associated standard errors, while the last three columns report results from the standard ordinary least squares (OLS) regression with the set of explanatory variables on net wealth for homeowners and renters separately in column three and four, and lastly are the OLS results for the household sector as a whole (pooled model) in column five.

Table 3   Blinder-Oaxaca decomposition results

	Explained "Endowment effect"	Unexplained
Total gab in mean net wealth (1000 DKK)	2 999	
Share of gab explained/unexplained	0.48	0.52
Log(income)	0.29	14.54
Metro area	-0.02	0.10
Age<30	-0.27	-14.94
30<Age<65	0.35	1.07
65<Age	0.00	0.01
Immigrant from advanced economies	-0.00	0.01
Immigrant from other countries	-0.00	0.01
Married	0.04	-0.11
Divorced	0.01	-0.02
Widowed	0.00	-0.01

---

[14] We have constructed a linear spline with nots at age 30 and age 65. Looking at data 30 is the age households start to accumulate wealth rather than consume savings while studying or being a first time buyer in the housing market, and 65 is the retiring age in Denmark for the year of the analysis.

Log(# of children)	-0.02	-0.03
Post-secondary education	0.00	-0.03
Upper-secondary education	0.02	-0.01
Third level education	0.06	0.02
Unemployed	-0.00	0.02
Self-employed	-0.00	-0.03
pensioner	0.01	-0.08
student	-0.00	0.02

Source: Own calculations based on FDWS data

Foremost are the mean predictions of the two groups and their differences in net wealth levels reported, and according to the model, the net wealth of homeowners far exceeds the levels reported for renters. The mean net wealth is 3.4m DKK for homeowners and 0.5m DKK for renters, yielding a mean net wealth gap of 3.0m DKK. In the first column of the table 3, presenting the share of the wealth gap is explained by group differences. The explained part, or the endowment effect, reflects the mean increase in the renter's net wealth if they had the same demographic factors, socio-economic attributes, and locational characteristics as homeowners. The endowment effect explains 1.4m DKK or 48 percent of the difference in mean net wealth between homeowners and renters, i.e. if renters had the same demographic, socioeconomic and locational characteristics as homeowners, the average gab in net wealth to homeowners would be reduced by half. Meanwhile, 52 percent of the gab in net wealth remains unexplained.

The decomposition in terms of the characteristics confirms the high impact of household income, age, and education that we also found in the descriptive part of the analysis. We know from the descriptive analysis that in the pool of renters there is an overrepresentation of the low income groups, and the results imply that had the group of renters had the same income as homeowners, this would on average remove 29 percent of the total net wealth gab (or 59 percent of explained difference) between the two groups.

The OLS results predict a decrease in net wealth for households under 30, which apply to both renters and homeowners, however significantly more pronounced for homeowners. This probably reflects the initial high level of loan-to-value, i.e. low or even negative home equity, of first time buyers. Similarly, the positive wealth accumulation in the second age group, representing the households in the working age, is much higher for homeowners than renters. This amounts to a positive endowment effect, which probably reflects the general increase in the market value of real estate and the forced savings in form of mortgage payment associated with having a loan, as opposed to the renters, spending money on rent with no effect on their net wealth levels. While the OLS results suggest that retirement has a negative effect on the accumulation of net wealth, the homeowners are the only ones with an asset less likely to be consumed during retirement and more likely to increase in value over time, which explains why this age effect is insignificant for homeowners. This amounts to a positive endowment effect for renters, as the age effect from the OLS regression is accordingly more negative for renters than for homeowners.

Education plays a lesser role in explaining the wealth gap, compared to e.g. income. This could be due to endogeneity of the education variable, i.e. the fact that the increase in income resulting from taking on investments in human capital is already directly accounted for in the model. The OLS results however suggest, that the effect of having an education is most pronounced for third level education, less so for post-secondary, and even negative for individuals holding a secondary education. The positive effect of having a third level education, which is high also after accounting for higher income and locational characteristics, might be due to factors such as social inheritance or the willingness to undertake risky investments (Campbell, 2006). These factors both points towards the often postulated relationship that

high educated children often have high educated parents who impose their willingness to invest onto their children (Dohmen et al., 2006). Since previous studies have found that more education leads households to become more prone to make investments in stocks and other risky financial assets, increasing their net wealth compared to households less prone to or credit constrained from undertaking such investments (Black et. al, 2015). Tough the payoff from taking a third level education is high for both groups, the renters have a small education disadvantage, and the endowment effect becomes positive, explaining 6 percentage points (or 13 percent) of the explained part.

As expected, the number of children in a household has a negative effect on net wealth. This is especially the case for homeowners, presumably mirroring the fact that parents have a smaller disposable income when accounting for the extra expenses associated with having children and in turn have fewer resources to make payments on a mortgage loan. Home-owning parents will thus be able to invest in a less costly home than had they not had children, which places them on a less profitable path with regard to the accumulation of housing wealth. As such, we find a negative endowment effect on number of children, as the cost of having children are higher for homeowners when they not only have the direct cost associated with having children but also surpasses the higher payoff there is on costly dwellings relative to cheaper ones. Furthermore, as homeowners generally are of higher education, the cost in the career path is higher with regard to maternity leave or other day to day foregone career opportunities associated with having children, as this effect is more pronounced for high skilled employees where loss of flexibility and hours invested is most costly.

Factors explaining the marital status of a household give ambiguous results, however, it comes as no surprise that being married or in general living together as a couple makes the day to day expenses smaller and therefore has a positive effect on net wealth for renters in the OLS model. However, the OLS model for homeowners predicts a negative effect. Being divorced infects negatively on net wealth for both homeowners and renters. This is not surprising as divorces are costly especially in the sense that it effectively forces the formation of two separate households previously enjoying the merits of being a collective household. The effect is most pronounced for homeowners mirroring the fact that all assets must be divided. Finally, the ethnicity factors play a minor role in the net wealth differences. The majority of the explanatory power is in the unexplained part, presumably due to discrimination effects. Factors explaining attachment to the labour market gives ambiguous results.

Especially in the labour market literature, the unexplained part is often attributed to discrimination, because it reflects different degrees to which the same variables are rewarded in the market, e.g. wages differentials between men and woman not explained by group differences. However discrimination does probably not explain the difference in return to variables such as income, age, education or other variables between homeowners and renters. For example, the majority of the wealth gab that can be attributed to locational characteristics (living in a metro area or not) are contained in the unexplained part. As predicted by the OLS results (see appendix 7.5), the effect on net wealth from living in a metro area is positive for both homeowners and renters, with homeowners enjoying the greatest advantages from living in the city. Regardless of homeownership status, there are many derived effects from the urban life, including better job opportunities, less travel time, and in general higher salaries. In addition, there could very well be a reverse causal effect between the level of net wealth and living in a metro area, as households with a higher level of net wealth are more likely able to afford living in the city. That homeowners enjoy a higher payoff from living in the city than renters do, is probably due to urbanization causing house prices to increase with a higher pace than the rest of the country and not discrimination of renters. According to the Blinder-Oaxaca model

the endowment effect is negative (-0.02), while the unexplained part is positive (0.10). Recalling the interpretation of the endowment effect, it predicts that moving the renters into the city, all things being equal, would leave the renters at a disadvantage, which may well be explained by increased living costs, in particular higher rent. Meanwhile, the unexplained part is significantly positive, which most likely covers the difference in the relationship between living in the metro area for homeowners and for renters, namely the fact that homeowners enjoy a high return on an investment bypassed by renters.

It is important to note that we have not accounted for model issues such as endogeneity and multicollinearity. Endogeneity issues arise when the explained (net wealth) and explanatory (e.g. income) variables are subject to reverse causality in the sense that each affects the other. For example property income, which is income received from holding financial assets, is directly contained in the income variable, which causes a direct reverse causality in the model between net wealth and income. Multicollinearity arises when the explanatory variables are highly correlated (e.g. education and income), which challenge the liability of the estimated coefficients. Confronting these issues is beyond the scope of this analysis; however we invite the reader to take these issues into account when drawing conclusions based on the results of the estimated model.

4.3. The Gini coefficient and its decompositions

The distributional assessment on household wealth in this study, based on the FDWS, will - beyond exploring the relationship between household characteristics and their wealth levels as we did in the previous section - also examine the distribution of total net wealth amongst the Danish households. When assessing inequality in an analytical setting, it is important to take a stance on what the appropriate measure of inequality is. The most well-known measure of income inequality is the Gini coefficient, which is defined from the Lorenz curve.

> **Box 1: The Gini coefficient**
>
> The Lorenz curve is a graphical tool that plots the accumulations of wealth against proportions of the population based on the actual distribution of wealth in society, and thus includes the entire shape of the distribution of wealth, compared to e.g. a standard mean-to-median measure. The Lorenz curve is depicted in figure 12. The diagonal line represents a situation of perfect equality where all households have the same level of net wealth. The Gini coefficient is calculated as the area between the Lorenz curve and the 45-degree line, indicating a perfectly equal distribution of wealth divided by the total area under the 45–degree line. As such, a Gini coefficient equal to 1 corresponds to one single person being in possession of the total wealth of society, and likewise, a Gini coefficient of 0, corresponding to a Lorenz curve coinciding with the 45-degree line, is a situation in which total net wealth is completely evenly distributed among the entire population.
>
> A challenge when calculating an inequality measure from data on household wealth rather than income is the fact that some household will, opposed to their levels of income, have negative net wealth, i.e. the Lorenz curve will pass below the horizontal axis. Luckily the Gini coefficient has the property that it is well defined for distributions that incorporate negative values, as long as the Lorenz ordinates are well-defined (Cowell and Kerm, 2015). As negative values of net wealth are present, the Gini coefficient can theoretically be higher than 1, which we will actually see a case of when decomposing the Gini by age group in sub-section 4.4.2. As such, adopting the Gini as the main measure of inequality, this paper takes into account the presence of negative values of net wealth as well as other measurement issues related to inequality of wealth, such as skewness and fat tails of the typical wealth distribution.

In this part of the analysis we employ the Gini coefficient in analysing the degree of inequality. The Lorenz curves for the main components of net wealth are depicted in figure 12. The Lorenz curved for housing wealth and financial wealth lies significantly below the other Lorenz curves and can be regarded as having a more unequal distribution than the other components of household wealth. Since 8 percent of the households have a negative level of net wealth, the first part of the Lorenz curve will drop below the horizontal axis and have a negative slope and not before summarizing the net wealth levels for the 35 percent of the households with lowest wealth levels, does the Lorenz curve surface above zero. For housing wealth, over 50 per-

cent of the households have zero wealth[15] and the Lorenz curve is horizontal for the first half of the population.

Figure 12   Lorenz curves for household net wealth and components
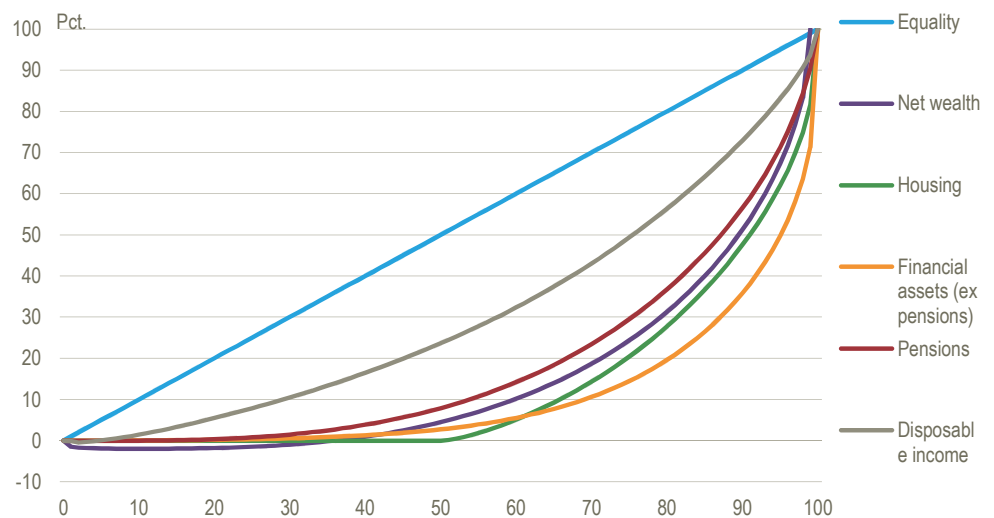
As illustrated by the Lorenz curves in figure 12, net wealth is much more unequally distributed than household disposable income. While household income is a measure of how much a household earns during a single year, household wealth is an accumulation of household savings, bequests, and rent on investments throughout the lifetime of the household members. I.e. age is again an important factor because it contributes to wealth inequality, due to the fact that individuals will save during their working years to provide for consumption during retirement, as we saw in the precious section. Even if every individual was completely equal with regard to income throughout their working life, there would still be inequality of wealth purely from intergenerational heterogeneity in wealth holdings, due to the age structure of society. It seems therefore fruitful to consider inter- and intragenerational distribution of wealth both jointly and separately, which can be done by connecting the overall Gini to the Gini coefficient within age groups. First, however, we will decompose the Gini coefficient by the main net wealth components, and then we will analyse the relationship between the Gini and age by making adjustments to measured inequality according to the distinctive lifetime pattern of personal wealth holdings.

4.3.1.   Decomposition by asset contribution

Decomposing inequality indices across household groups or components of net wealth is widely used in estimating the contribution of wealth sources, for example housing wealth, to total inequality in household net wealth. In this section we decompose net wealth into the superordinate components of net wealth according to the classification of ESA 2010.

---

[15] Recall, wealth in cooperative dwellings is classified as a financial asset, which means that households can be homeowners and still have zero wealth in real assets.

Box 2: Decomposition by asset contribution

The idea behind the decomposition is that the Gini coefficient can be represented as a sum of the contributions from each wealth component. This approach was provided by Pyatt, Chen, and Fei (1980), and refined by Lerman and Yitzhaki (1985). The contributions are defined as the product of the wealth component's own Gini G_k, its share in total net wealth S_k, and the correlation between the wealth component and total net wealth R_k.

$$G = \sum_k G_k S_k R_k$$

This decomposition allows us to assess the distribution of each wealth component as measured by the Gini coefficient, the importance of the wealth component measured in terms of its share on total net wealth, and how it is correlated with the distribution of total net wealth. The decomposition shows that, even if the magnitude of a wealth components is large (high S_k), it can still have mitigating effects on the overall Gini if it is equally distributed (low G_k). However, if the wealth component is unequally distributed and flows disproportionally towards those at the top (high R_k), its contribution to inequality will be positive.

Lastly this decomposition exercise allows us to determine the *marginal effect* on the overall Gini of a small percentage change e_k in a wealth component. Lerman and Yitzhaki (1985) have shown that the percentage change in inequality resulting from a small percentage change in a wealth component k equals the total contribution of component k to overall wealth inequality minus component k's share of total net wealth:

$$\frac{\partial G / \partial e_k}{G} = \frac{G_k S_k R_k}{G} - S_k$$

With the decomposition approach we are able to trace how contributions are formed according to the four estimates: G_k, S_k, R_k, and G. In this study we employ the STATA programming exercise of Lopez-Feldman (2006). Results are presented in table 4.

Table 4   Gini decomposition by wealth components

	Component Gini G_k	Wealth share S_k	Rank correlation R_k	Share of overall Gini	Marginal effect	Contribution to overall Gini
Housing wealth	0.73	0.57	0.74	0.44	-0.13	0.31
Vehicles	0.67	0.03	0.52	0.02	-0.02	0.01
F.2 Currency and deposits	0.76	0.20	0.86	0.19	-0.01	0.13
F.3 Debt securities, assets	1.00	0.01	0.92	0.01	0.00	0.01
F.5 Equity and inv. fund shares	0.92	0.15	0.78	0.15	0.00	0.11
F.6 Insurance and pension schemes	0.63	0.44	0.84	0.33	-0.11	0.23
F.3 Debt securities, liabilities	-1.00	0.00	0.10	0.00	0.00	0.00
F.4 Loans	-0.73	-0.41	-0.34	-0.14	0.26	-0.10
Total net wealth (Overall Gini)	0.70	1.00	1.00	1.00		0.70

Source: Own calculations based on FDWS data

In line with many other European countries, we see again that housing wealth constitutes the dominating wealth factor with a wealth share S_k equal to 57 percent. As was also illustrated by the Lorenz curves in figure 12, housing wealth is, together with pension wealth, more equally distributed than the financial instruments of the asset portfolio of Danish households. However, compared to other European countries, the Gini coefficient of housing wealth is relatively high, at 0.73, only exceeded by Germany, whereas the Eurozone average is 0.62 (see Bezrukovs, 2013)[16]. Furthermore, looking at the overall contribution in the last column of table 4, housing wealth is by far the most important contributor to inequality in total net wealth, accounting for 44 percent of the overall Gini coefficient. Of course, the relatively high inequality in housing wealth of Danish households is largely influenced by the low rate of homeownership among Danish households compared to other EU countries: The average homeownership rate in the euro area is 60%. Only Germany,

---

[16] The study by Bezrukovs (2013) is based on the HFCS data, which challenge direct comparisons.

Austria, the Netherlands and France is below the Danish ownership rate of 57 percent (ECB, 2013).

Pension wealth exhibits the lowest degree of inequality with a Gini equal to 0.63 and is the factor with the second greatest proportional contribution to net wealth inequality. Meanwhile, pension wealth displays one of the highest rank correlation ratios with net wealth, indicating that pension wealth favours the rich more than any other wealth component, besides currency and deposits which partly consists of pensions in banks (44 percent). As such, pension wealth becomes the second highest contributor to inequality in net wealth with a contribution estimated to 0.23. Disregarding debt securities held as both assets and liabilities, both constituting minor shares of the overall net wealth, equity and investment fund shares are the most unequally distributed components of net wealth. Both assets are infrequently held by the average citizen, compared to e.g. homeownership, with only 38 percent of the population holding an amount greater than zero. As such, the Gini of equity and investment fund shares is equal to 0.92, indicating that shares favour the rich more than any other wealth component.

Wealth in housing and pension schemes have equalizing effect on the distribution of net wealth, as the marginal effects on the overall Gini coefficient from 1 percent increase are negative. The same applies to vehicles and currency and deposits, however only to a minor degree. The marginal effect on housing wealth is equal to -0.13 which means that a 1 percent increase in housing wealth decreases the overall Gini coefficient by 13 percent, and thus constitutes the most equalizing asset in the household wealth portfolio. Pension wealth has a marginal effect equal to -0.11. As one could predict, loans are not equalizing wealth factors but serve as a highly significant contributor to overall inequality. This is due to a high share in total net wealth (41 percent) and a low rank correlation (in absolute value), which implies a higher importance of low net wealth households in the distribution. Thus, while low wealth households are under-represented as holders of real and financial wealth they are well represented as holders of debt.

4.3.2. Decomposition by group contribution

Wealth and income inequality are typically jointly determined and interact with each other, and the FDWS on Danish households shows the same pattern as other OECD countries, i.e. that households in the lower part of the wealth distribution are typically also in the lower part of the income distribution and vice versa for households in the upper part of the wealth distribution. Still, and in line with other OECD countries (OECD, 2016), we find that wealth inequality is much larger than income inequality. However, as wealth is the accumulation of a household's savings throughout time and thus represents a cumulated excess of income over expenditure over time, inequality in net wealth levels among households will indirectly be a result of accumulated differences in levels of savings and i.e. inequality in levels of income. This suggests that wealth inequality will exceed income inequality. In this section we analyse the contribution to inequality of the different population subgroups. The relationship between homeownership, age, educational attainment, and levels of net wealth is discussed and confirmed in section 4.1 and further in the Blinder-Oaxaca decomposition performed in the previous section.

We employ a STATA module developed by Jenkins (2006) to calculate inequality indices with decomposition by sub-groups and a module developed by Aliaga and Montoya (1999) to decompose the Gini into between, within, and overlap parts based on an algorithm proposed by Pyatt (1976). The purpose is to gain a better understanding of the correlation between the Gini coefficient and for age, the age-wealth profile by taking into account the distinctive lifetime pattern of personal wealth holdings. In essence, we analyse how the sub-groups contributes to overall wealth inequality as measured by the Gini coefficient. When decomposing inequality measures it requires a consistent relation between overall inequality and its parts

– specifically we distinguish between *Within Inequality (G_W)* and *Between Inequality (G_B)*. The terms capture the inequality due to variability of wealth within age groups and across age groups, respectively.

<div style="background:#dbe6f0;padding:1em">

Box 2: Decomposition by sub-group

Assuming K age groups, the mathematical expression for the decomposition of the Gini coefficient can be expressed by the following formulas:

$$G = G_B + G_W + R$$

$$G_W = \sum_k \frac{N_k}{N} S_k G_k$$

Where N is the size of the population, N_k is the size of the population in age group k, S_k is the share of total net wealth of age group k, and G_k is the Gini coefficient for net wealth in age group k. According to the formula, total inequality can be written as the weighted sum of inequality within each age group G_W plus inequality between groups G_B. The latter is calculated as the Gini coefficient of a fictitious distribution of net wealth where the actual levels of net wealth of each age group member is replaced by their subgroup means. R is a residual which is zero if the age group wealth ranges do not overlap. Obviously, wealth ranges will overlap in this case.

</div>

First, the advantage of using the Jenkins (2006) approach is that negative values of net wealth are used in the calculation of the Gini coefficient on each subgroup whereas the decomposition into between, within, and overlap components by Aliaga and Montoyas (1999) does not. Thus the results in table 5 of the wealth inequality decompositions have shares explained by the three components expressed in percentages, indicating the share of the inequality index that is explained by the three components of the Gini. The Gini for each subgroup using the Jenkins (2006) approach can be found in appendix 7.6.

Table 5   Inequality decomposition by population subgroups, in shares

Inequality component	Net wealth			Disposable income		
	Homeowner-ship	Age	Education	Homeowner-ship	Age	Education
Between: G_B	0.54	0.54	0.39	0.47	0.45	0.47
Within: G_W	0.46	0.33	0.40	0.45	0.42	0.37
Overlap: R	0.00	0.13	0.21	0.08	0.14	0.15
Overall Gini: G	0.70			0.38		

Note: The estimates of the overall Gini coefficients refer to the entire wealth distribution while the estimation of inequality component's shares refers to non-negative wealth levels only.
Source: Own calculations based on FDWS data

The first column shows the results of the decomposition of the Gini coefficient which accounts for the contributions of the subgroups of homeowners and renters. Recall that the between-group inequality component is the Gini-coefficient of the households after replacing their actual levels of net wealth by the group average. This Gini component accounts for 54 percent of the total inequality in net wealth, which is larger than for income. Thus, these findings confirm the role of homeownership as an important contributor to the disparity in the distribution of net wealth. Further, the estimation of Gini coefficient for each subgroup (see appendix 7.6) shows that net wealth is more equally distributed among homeowners (0.56) compared to renters (0.84), which in line with the study of the Eurozone countries by Bezrukovs (2013), points to renters as one of the most socially unsecure parts of the society.

The second column shows the results when instead decomposing inequality by age group. The main part of inequality in net wealth among the Danish households thus comes from between age group inequality. Further, the between group inequality accounts for a larger share of wealth inequality than for income inequality. Azpitarte (2010) finds the opposite to be true in Spain and points at the high share of individuals aged between 25-29 still living with their parents. In Denmark it is on the contrary tradition for young people to move out of home at a younger age (Danish aver-

age age is 21) compared to other EU countries (EU average is 26), which may enhance the role of age when explaining net wealth inequality (Eurostat, 2015). Also, when estimating the Gini coefficient separately for each age group, the Gini actually exceeds 1 for households where the head of the household is under the 25 years old. This is due to the large share of young households with negative levels of net wealth.

When decomposing by education group, the share of inequality explained by the between group component is smaller for wealth than for income, indicating that education are more directly linked with obtaining a higher wage than it is with obtaining a higher level of net wealth. The figures suggest homeownership to be the superior factor in explaining why wealth is more unevenly distributed than income, however only to a small degree. However, the between-group inequality in wealth by homeownership and age is of course not sufficient enough to explain why wealth is so much more unequally distributed than income, even though the between group inequality accounts for a larger share of wealth inequality than income inequality. It has to be seen in combination with a range of household characteristics and the tendency of rich to accumulate wealth faster than low-income households (Morissette & Zhang, 2007).

Meanwhile, it has been argued that the Gini coefficient is not the best inequality measure to be decomposed into between-group and within-group, because of the overlap term, which is a residual term that is due to overlap of wealth groups. This term would not be present had we employed a different inequality measure such as the Theil index or other members of the GE class of inequality indexes[17] (Foster and Shneyerov, 1999). The reason we still employ the Gini index is due to its prevalence and treatment of negative levels of net wealth along the wealth distribution.

5. Concluding remarks

This paper presented a number of stylized facts regarding household net wealth based on the two statistics FA and FDWS, both covering the household net wealth portfolio on at a macro- and micro-level, respectively. The family distributed FDWS data is a newly developed comprehensive statistics we adjust according to the classification of financial instruments set out by the accounting rules of ESA 2010. In post-crisis years the Danish households where quick to recover, and had by 2015 reached beyond pre-crisis levels of net wealth. This is in spite of a continuous increase in the level of household debt, caused by a supportive monetary policy and interest rates that lies below ECB rates. The housing market has almost recovered, however with significant regional differences, favouring the homeowners living in a metro area.

The distributional analysis on the basis of the FDWS data shows that homeownership status, income level and age are the main drivers behind the accumulation of net wealth, together contributing to a high level of inequality in net wealth. First we employ a decomposition technique that allows separating the effect of observable differences in characteristics between homeowners and renters in analysing differences in mean net wealth between the two groups. We find that homeowners together hold 91 percent of total net wealth and their mean level is 8 times higher than renters. Around half of the net-wealth gap between homeowners and renters can be "explained" by group differences, i.e. the endowment effects that quantifies the change in net wealth for renters had they had the same characteristics as homeowners. Most of the explained part could be attributed to income, age, and high level education. Note, however, that an explained component accounting for only half of the wealth gab, i.e. only half of the gab are due to group differences, may

---

[17] The generalized entropy index (GE index) is a measure of income inequality, which has the property of the Atkinson index and is additive decomposable, removing the overlap term in the decomposition exercise. A popular case of the GE index is the Theil index. The Gini coefficient is not a GE index.

indicate a disadvantage in the market at the expense of renters, in the sense that homeowners enjoy a higher return from 1) getting older, as they pay of debt while collecting rent on their investment in real estate, 2) living in the city, as house prices increase with a higher pace than the rest of the country, making it very difficult for renters to catch-up with households who own real estate. Second, we investigate the degree of contribution of housing wealth and the other major wealth components to overall wealth inequality, measured by the Gini-coefficient, using inequality decomposition techniques. We find that financial wealth is the most unequal distributed component of the household's wealth portfolio; however, we find that inequality in housing wealth is the most important factor contributing to wealth inequality, while pension is second. This is mainly due to their high share of total wealth and rank correlation, i.e. the amount to which the rich is favoured in the distribution of the wealth component. Lastly, by decomposing inequality into a part within- and between group inequalities according to different subgroups, we find that homeownership and age is the superior factors in explaining why wealth is more unevenly distributed than income. In essence, the findings suggest that the role of housing is essential when addressing societal challenges such as inequality in wealth among the Danish households.

6. References

Azpitarte, F (2010). "Household wealth distribution in spain: The role of housing and financial wealth", Hacienda Publica Española/Revista de Economia Publica, vol. 94, no. 3, pp. 65-90.

Bezrukovs, Deniss (2013): The role of housing in wealth inequality in eurozone countries. Mimeo.

Bilias, Yannis, Dimitris Georgarakos and Michae Haliassos (2015). "Has Greater Sotck Market Participation Increased Wealth Inequality in the US?", Review of income and wealth 2015, January 2016?

Black, Sandra E., Paul J. Devereux, Petter Lundborg, Kaveh Majlesi (2015): Learning to Take Risks? The Effect of Education on Risk-Taking in Financial Markets, NBER Working Paper No. 21043.

Campbell, John Y. (2006). "Household Finance", Journal of Finance, 61, 1553-604.

Cowell, F. A. and P. V. Kerm (2015): "Wealth Inequality: A Survey", Journal of Economic Surveys, September 2015, 29(4): 671-710.

"Danskernes bankbøger bugner" (2013, september 2.). Retrieved from: http://www.finansraadet.dk/nyheder/Pages/artikler-fra-finansraadets-nyhedsbrev/2013/Danskernes-bankb%C3%B8ger-bugner.aspx.

Dohmen, Thomas, Armin Falk, David Huffman and Uwe Sunde (2006): "The intergenerational transmission og risk and trust attitudes", IZA discussion paper series, October 2006 No. 2380.

ECB (2013). "The Eurosystem Household Finance and Consumption Survey Results from the first wave", Statistics Paper Series no 2.

Eurostat (2015): "Being young in Europe today", Eurostat Statistical books, 2015 edition

Foster, James E. and Shneyerov Artyom (1999). "A general class of additively decomposable inequality measures", Economic Theory, 14, 89–111.

Jenkins, Stephen P. (1999). "INEQDEC0: Stata module to calculate inequality indices with decomposition by subgroup," Statistical Software Components S366007, Boston College Department of Economics, revised 22 Jan 2015

Kuchler, Andreas (2015): "Loan types, leverage, and savings behaviour of Danish households", Danmarks Nationalbank Working paper, no 97, September

Lerman, R. I. and Yitzhaki, S. (1985), "Income inequality effects by income source: A new approach and applications to the United States", Review of Economics and Statistics, 67(1): 151-156.

Lopez-Feldman, A. (2006): Decomposing inequality and obtaining marginal effects", Stata Journal, 6(1): 106-111.

OECD (2013): OECD Guidelines for Micro Statistics on Household Wealth, OECD Publishing. http://dx.doi.org/10.1787/9789264194878-en

OECD (2015): Household wealth inequality across OECD countries: new OECD evidence, OECD Statistics brief, No 21, June 2015

OECD (2016): "OECD Economic Surveys: Denmark 2016", OECD Publishing, Paris. http://dx.doi.org/10.1787/eco_surveys-dnk-2016-en

http://dx.doi.org/10.1787/eco_surveys-dnk-2016-enPyatt, G., C.-N. Chen and J. Fei. (1980): The distribution of Income by Factor Components", Quarterly Journal of Economics, 95: 451-473.

Realkreditrådet: The Danish Mortgage Model. http://rkr.dk/n/1298

Stark, O., J. E. Taylor, and S. Yitzhaki (1986): "Remittances and inequality. Economic Journal 96: 722-740.

Statistics Denmark (2015a): "Statistical ten-year review 2015". http://www.dst.dk/da/Statistik/Publikationer/VisPub?cid=19684

Statistics Denmark (2015b): "Husholdningernes formue i fast ejendom", http://www.dst.dk/Site/Dst/Udgivelser/nyt/GetAnalyse.aspx?cid=27146

Eurostat Database

Annual sector accounts: Financial balance sheets (table: nasa_10_f_bs)

Gross debt to income ratio og households (table: tec00104)

Households savings rate (table: tsdec240)

OECD database

Household disposable income: https://data.oecd.org/chart/4A03

Household financial assets: https://data.oecd.org/hha/household-financial-assets.htm

Household debt: https://data.oecd.org/hha/household-debt.htm#indicator-chart

Top statutory personal income tax rate and top marginal tax rates for employees: http://stats.oecd.org/index.aspx?DataSetCode=TABLE_I7

Statistics Denmark's Database (www.statbank.dk)

AKU200: Employed (in thousands) by industry (10-grouping), region and sex.

DNMUD: Loans in total from the consolidated MFI sector, excl. Danmarks Nationalbank by data type, sector and currency.

EJEN5: Price index for sales of property (2006=100) by category of real property (quarter).

MPK30: Consumer credit, end of quarter by type.

NASD23: Use of disposable income (full sequence) by transaction and sector.

NASF: Financial accounts and balance sheet by balance sheets, financial instrument, assets/liabilities, sector and consolidated/unconsolidated.

NASO2: Allocation and use of income (summary table) by sector, transaction and time.

7. Appendices

7.1. Household wealth by components

Table 6   Household wealth divided by components, 2015

Total household assets, mill. DKK	2015
Real assets	**3.973.430**
Financial wealth	**6.020.061**
F.1 Monetary gold and special drawing rights (SDRs)	0
F.2 Currency and deposits	930.881
F.3 Debt securities	54.755
F.4 Loans	0
F.5 Equity and investment fund shares	2.007.261
F.6 Insurance, pension and standardised guarantee schemes	2.993.965
F.7 Financial derivatives and employee stock options	1.107
F.8 Other accounts receivable/payable	31.813
Total wealth	**9.993.491**

Source: Own calculations based on FA data.

7.2. Definition and development of household income

Household gross disposable income is the amount of money the household sector has available either for spending or saving after any payments related to income has been made. It consists of all income sources of households: Compensation (salaries before taxes and social contributions have been paid), social transfers received, property income (interest, dividends etc.) and operating surplus/mixed income (surplus on production activities and remuneration of the owner) reduced by expenses due to payments on financial liabilities, taxes, social transfers, and interest. Gross disposable income is not corrected for capital consumption.

Figure 13   Household disposable income by components. 2004-2015
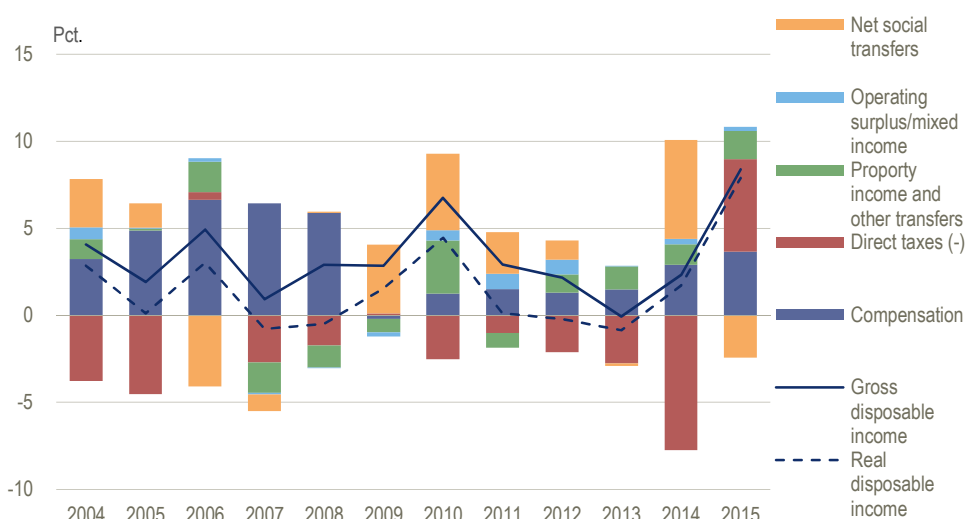
Note: Annual percentage change of gross and real disposable income by contribution of components.
Source: www.statbank.dk/NASO2

Household real disposable income is the gross disposable income adjusted for inflation, which provides a more accurate picture of what the disposable income of households actually is, as well as the development in this over time. Figure 13 provides a view of the annual percentage change of both gross and real disposable income as well as the subcomponents of the change in gross disposable income.

7.3. Differences between FA and FF items on household wealth

This appendix provides a comprehensive list of the differences between the two statistics on household assets and. The relationship between the macro statistics wealth components of household wealth as defined by the ESA 2010 and the micro statistics components is presented in table 1.

The table presents each of the components in the two statistics along with the amount recorded in each statistics. The components of each statistics are placed besides each other in matching order. A selection of components in the micro statistic is explained below. The letters used as bullet points corresponds to the letters in the notes column in table 1.

(a) Corporative dwellings are not considered a non-financial asset in FA in line with owner occupied dwellings, but is instead characterized as a financial asset under other equity.

(b) Holiday cottages in FDWS are the sum of holiday cottages in Denmark and abroad owned by Danish households. In FA holiday cottages in Denmark is contained in fixed assets, while holiday cottages abroad is a financial asset in line with corporative dwellings.

(c) Other real estate is contained in fixed assets.

(d) Equity shares in FDWS consist only of quoted shares, due to lack of information on unquoted share, other equity and investment fund shares. The FA is able to estimate figures on these instruments on an aggregated level, however these are still only estimates.

(e) The FDWS assets component "Shares in investment funds" corresponds to part of the FA component "Equity and investment fund shares".

(f) The FDWS component "Pension in banks" is included in "currency and deposits" in FA.

(g) Civil servant pension is a pay-as-you-go pension scheme and is only included in FDWS. The ESA 2010 only recognises pension entitlements held by insurance corporations or pension funds as pensions.

(h) Mortgage loans, other real estate loans, other loans in banks, credit card debt, student loans and other liabilities in FDWS together make up the entire FA component "loans". There is no information on other accounts payable on a micro level.

7.4. Descriptive statistics

Table 7   Descriptive statistics for homeowners and renters. 2014

		Total	Homeowners	Renters
Number of households		2 882 246	1 629 591	1 252 655
Total net wealth (1000 DKK)		2 113	3 398	441
Wealth components	Real estate	1 212	2 144	0
	Vehicles	67	98	26
	Deposits	427	330	123
	Debt securities	18	30	4
	Equity and investment fund shares	315	515	55
	Pensions	936	1 392	342
Loan components	Debt securities	3	5	0
	Loans	859	1 437	108
Marital status	Married	0.39	0.56	0.17
	Divorced	0.15	0.12	0.17
	Widowed	0.10	0.10	0.11
	Never married	0.36	0.22	0.54
Number of children		0.48	0.61	0.30
Education	Secondary or less	0.33	0.18	0.52
	Post-secondary (2 years of college)	0.38	0.44	0.31
	Upper-secondary (3-4 years of college)	0.19	0.24	0.12
	Tertiary (5+ years of college)	0.10	0.14	0.05
Household disposable income (1000 DKK)		481	628	289
Employment status	Employed	0.55	0.67	0.40
	- Self-employed	0.03	0.05	0.01
	Unemployed	0.06	0.02	0.12
	Not in labour force	0.39	0.31	0.48
	- Students	0.09	0.02	0.17
	- Pensioners	0.30	0.29	0.31

Table 8   Descriptive statistics for owners of one-family houses or apartments. 2014

			Total	Metro area	Outside metro area
Number of households			1 144 408	490 103	654 305
Mean wealth in real estate (1000 DKK)			2 110	2 918	1 504
Share with home equity < 0			0.23	0.16	0.28
- By real wealth decile	1.	decile	0.40	0.40	0.40
	2.	decile	0.35	0.35	0.35
	3.	decile	0.32	0.32	0.31
	4.	decile	0.28	0.28	0.26
	5.	decile	0.24	0.24	0.23
	6.	decile	0.21	0.21	0.20
	7.	decile	0.17	0.19	0.16
	8.	decile	0.14	0.15	0.13
	9.	decile	0.10	0.13	0.09
	10.	decile	0.07	0.12	0.06

Source: Own calculations based on FDWS data

7.5. Oaxaca decomposition

Table 9   Summary of Blinder-Oaxaca decomposition

	Blinder-Oaxaca decomposition results		Ordinary least squares (OLS) results		
	Explained	Unexplained	Homeowners	Renters	Pooled model
Mean net wealth (1000 DKK)			3 415	453	2 146
Total gab (1000 DKK)	2 999				
Share of gab explained/unexplained	1 442	1 557			
Log(income)	876 (101)***	43 600 (6 216)***	3 545 (44)***	88 (2)***	1 044 (16)***
Metro area	-48 (2)***	314 (14)***	650 (54)***	59 (6)***	443 (31)***
Age<30	-805 (86)***	-44 800 (6 225)***	-1 568 (19)***	-37 (1)***	-500 (7)***
30<Age<65	1 042 (40)***	3 196 (146)***	219 (4)***	39 (0)***	150 (2)***
65<Age	4 (0)***	30 (12)**	-4 (7)	-17 (1)***	-30 (4)***
Immigrant from advanced economies	-7 (2)***	23 (7)***	330 (152)**	-104 (12)***	226 (74)***
Immigrant from other countries	-3 (3)	21 (6)***	20 (171)	-152 (9)***	34 (65)
Married	124 (7)***	-343 (54)***	-353 (78)***	129 (10)***	315 (46)***
Divorced	38 (2)***	-64 (10)***	-475 (98)*	-167 (9)***	-565 (52)***
Widowed	4 (0)***	-18 (5)***	-225 (122)***	-71 (13)***	-364 (70)***
Log(# of children)	-56 (5)***	-98 (26)***	-470 (68)	-20 (8)**	-335 (40)***
Post-secondary education	5925 (4)	-97 (42)**	-99 (76)***	152 (7)***	46 (39)
Upper-secondary education	68 (6)***	-25 (16)*	324 (87)***	280 (9)***	590 (47)***
Third level education	192 (6)***	55 (23)**	1 960 (106)***	467 (14)***	2 214 (63)***
Unemployed	-8 (3)***	58 (7)***	880 (187)***	-282 (10)***	77 (66)
Self-employed	-14 (10)	-95 (16)***	-508 (78)***	243 (14)***	-104 (52)*
pensioner	39 (2)***	-254 (16)***	-1 231 (90)***	-452 (10)***	-1367 (51)***
student	-10 (10)	52 (14)***	1 092 (189)***	-125 (9)***	72 (61)
# observations	2 797 851		1 598 888	1 198 963	2 797 851

Standard errors are given in parentheses. ***, **, and * denote statistical significance at the 1 pct., 5 pct., and 10 pct. levels, respectively.
Source: Own calculations based on FDWS data

7.6. Decomposition by group contribution

Table 10   Contributions of subgroups to the overall Gini-coefficient of net wealth and income

	Population share	Share with negative net wealth	Net wealth			Disposable income		
			Gini-coefficient	wealth share	within-group inequality	Gini-coefficient	Income share	Contribution to within-group inequality
Homeowners	0.57	0.03	0.56	0.91	0.41	0.33	0.74	0.36
Renters	0.43	0.15	0.84	0.09	0.05	0.32	0.26	0.09
Under 25	0.12	0.22	1.02	0.02	0.00	0.42	0.06	0.01
25-34	0.15	0.19	0.85	0.03	0.00	0.35	0.13	0.02
35-44	0.16	0.08	0.64	0.12	0.01	0.33	0.21	0.03
45-54	0.18	0.04	0.59	0.22	0.02	0.36	0.24	0.04
55-64	0.16	0.03	0.55	0.28	0.02	0.35	0.18	0.03
65-74	0.13	0.03	0.62	0.23	0.02	0.32	0.12	0.01
75+	0.10	0.02	0.66	0.10	0.01	0.25	0.07	0.00
Secondary education or lower	0.33	0.13	0.79	0.14	0.05	0.34	0.19	0.1
Post-secondary education	0.57	0.06	0.63	0.64	0.33	0.32	0.63	0.3
Tertiary education	0.10	0.06	0.64	0.22	0.02	0.35	0.18	0.0

Note: The estimates of within-group inequality are based on non-negative wealth levels only.
Source: Own calculations based on FDWS data