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Wealth Distribution in Norway
Evidence from a New Register-Based Data Source

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Abstract

It is widely recognised that in order to have a fuller picture of the economic well-being of households, one needs to take into account the wealth of households as well as income and consumption (e.g. OECD 2008, Stiglitz *et al*. 2009, Atkinson *et al*. 2010). Robust data on wealth are, however, difficult to collect due to non-response and sampling errors in household surveys. Statistics Norway's strategy has been to make extensive use of administrative data in the collection of income and wealth data. A milestone was passed in 2004 when the official data source for household income statistics shifted from a sample survey to a totally register-based data source covering all households in the country. A new milestone was passed in 2010 when even wealth data was available for the same households.

The aim of the paper is to give a description on the build-up of a new register-based wealth statistics. All information on financial wealth is collected from tax registers, while data on non-financial wealth (private dwellings) are estimated on the basis of a model where information on characteristics of the dwelling is used to calculate the market value. Estimates from the new micro data source on household wealth will then be compared with external sources, e.g. the National Accounts. In addition, some preliminary results will be presented on the composition and distribution of wealth among private households.

1.   Introduction

Wealth is today recognised as an important dimension of household economic resources, and it is recommended that one considers income and wealth together when assessing the economic well-being of households (OECD 2008, Stiglitz *et al.* 2009). It is, however, a challenging task to collect robust micro data on household wealth. Due to the specific nature of wealth data, e.g. the collection of information that many respondents consider sensitive, non-response is much more common in wealth surveys than in for example surveys that collect income data. According to Perez-Duarte *et al.* (2010), non-response rates in several European wealth surveys vary from 40 per cent to around 70 per cent. In addition, the negative implications of non-response may be larger in respect to wealth surveys than other surveys due to the particularly skewed distribution of wealth in most countries.

An alternative to sample survey is to use register data on wealth, where such data is available. Norway is one of the few countries that still collect wealth tax. Tax registers thus includes detailed information on most financial assets held by Norwegian households, as well as total liabilities. Tax data even includes information on non-financial assets, like the private dwelling. However, unlike financial assets the assed tax value of private homes grossly underestimate the real market value. In order to have appropriate market values even for private homes, a new model has been developed. The model uses information on characteristics of all private dwellings in Norway from a Building Register, to estimate market values. This new register data on wealth is thereupon linked to Statistics Norway's Household Income Statistics that covers all private households in the country.

The rest of the paper is structured as follows. Section 2 presents the build-up of a totally register-based income and wealth statistics for households. We first describe the statistical sources and methods used to provide a register of all private households in Norway, and then which administrative sources are used to compile income and wealth data for the very same households. The new model for estimating market value of the private dwelling is also described in this section. In section 3, some comparisons are made between the new wealth statistics and National Accounts aggregates. Section 4 presents the first results based on this

new source of wealth statistics. We focus on composition of wealth as well as distribution. In addition, we look at the combination of income and wealth for households. Section 5 concludes.

2.   The build-up of a totally register-based household income and wealth statistics

2.1 Household definition

Up until 2004, household income statistics for Norway was based on a household survey. Information on household composition was collected through the survey while income and wealth data was collected from various administrative registers. The possibility to replace the survey with a totally register-based household income statistics was facilitated by Statistics Norway's decision to move from a questionnaire-based census (2001) to a totally register-based census (2011). In order to do so, a household register would have to be established. In 2005 the first population figures were published based on this new register.

In this new household register, household composition is based on the legal address of each individual. All persons that according to the Central Population Register (CPR) are registered at the same address are considered members of the same household. This may be referred to as a 'formal' household definition. However, it has been recognized that this 'formal' household definition in some cases may deviate from what is the 'actual' household composition. In particular students and other adult children often have a household situation that is different from what is registered in the CPR, or more precise: They have moved out of their parent's household to establish their own household but without this (yet) being registered in the CPR. There are also other groups where the 'formal' household definition differs from what is the actual household situation, for instance people actually living in institutions.

In respect to household income statistics it is important to have information on the income sharing unit. Thus, it has been necessary to improve on the formal household definition in order to come closer to the actual household composition. There are several strategies that

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have been used to identify people that probably regularly live in a household that is different from the formal definition. In respect to *students*, the main administrative source used to identify those that *de facto* live away from their parents is the State Educational Loan Fund. One of the criteria for being eligible to receive a student grant (administered by the Loan Fund) is that you actually live by your own away from your parents. Students receiving this type of grant are therefore removed from their parents' household. However, not all students are entitled to a student grant. For example, "working" students with a substantial employee income are disqualified from receiving a grant. In order to identify these working students, register information on the employer (location of the work place) is used. If the place of work is situated at a distance far away from the parental dwelling it is presumed that the student *de facto* no longer belong to the parents' household. The same strategy is even used to identify and remove other young adults that, despite being formally registered as living with their parents, have a place of work located far away from their parental home. As can be seen from table 1, these two adjustments identified 103 000 new households in 2004, increasing the total number of households by 5 per cent.

The next adjustment is to identify people no longer living in private households. Many people living in institutions have already been excluded in the formal household definition. However, more people can be identified from administrative data. From the Labour and Welfare Administration there exist a register of the residents of old-age homes and long-stay hospitals. Other people living in institutions (e.g. child welfare institutions, prisons etc.) are identified by combining information on addresses, number of residents etc. The most visible effect of omitting the institutional population from the household register is a reduction in the number of older people.

Even other methods of identifying more *de facto* households are applied. One group that is particularly difficult to identify in registers are couples living in a consensual union, but without having common children. In Norway, as well as in many other countries, this is a common living arrangement, particularly among the young.[1] There is reason to believe that many adult children that according to the population register live with their parents actually

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[1] In Norway 49 per cent of all firstborns have parents living in a consensual union
http://www.ssb.no/english/subjects/02/02/10/fodte_en/

live in a separate household as part of a consensual union. When a cohabiting couple is having their first common child they are immediately recorded as a couple household in the population registers. This information can be used to make presumption about previous household composition. When a couple has a common child, there is a strong reason to presume that they were in fact already living as a couple even before the birth of the child. By using this information an additional number of *de facto* household can be identified.

Even information from tax-records can be used to identify couples living together but without being married. Couples that are co-owners of a dwelling or who share a mortgage often report this to the Tax Authorities so that both partners may benefit from a tax deduction.

As can be seen from table 1, these adjustment reduce the number of households with 16 000, or 0.8 per cent. The reduction in the number of households is mainly explained by the 'merger' of many 'formal' single person household into 'actual' couple households.

Table 1. Changes in the number of household after certain adjustments. 2004

	No. of households	Per cent
Formal household definition	2 010 000	100.0
students	87 000	4.3
young adult workers	16 000	0.8
people in institutions	-8 000	-0.4
cohabiting couples without children	-16 000	-0.8
Adjusted 'de facto' household definition	2 089 000	103.9

Source: Statistics Norway

An important question to be addressed is how well this new household definition compares with the household definition where information on household composition is collected from a survey? For the income year 2004 we are in the privileged position to have available both survey data from the Income Distribution Survey and the new totally register-based household

income statistics. Table 2 compares the household distribution of these two sources. In addition, the table shows the distribution based on the initial 'formal' household definition.

Table 2. The distribution of households by household types in Norway. 2004. Register data and survey estimates. Per cent

| | Register data | | | 95% confidence interval | |
	'Formal' household definition	'de facto' household definition	Survey Estimates[1]	Lowest	Highest
All households	100	100	100		
Singles < 30 years	7.0	10.7	9.9	9.1	10.7
Singles 30-44 years	8.6	8.0	8.5	7.7	9.3
Singles 45-66 years	10.7	10.5	10.1	9.3	10.9
Singles 67+ years	11.9	11.4	12.3	11.3	13.3
Couples without children < 30 years[2]	1.4	1.7	2.4	2.0	2.8
Couples without children 30-44 years	2.2	2.3	2.5	2.1	2.9
Couples without children 45-66 years	9.6	10.8	12.0	11.0	13.0
Couples without children 67+ years	7.8	7.5	7.7	6.9	8.5
Couples with children 0-5 years[3]	11.0	10.8	10.5	9.7	11.3
Couples with children 6-17 years	11.9	11.6	11.3	10.5	12.1
Couples with children 18+ years	6.3	4.5	3.6	3.0	4.2
Single with children 0-5 years[3]	1.6	1.3	1.8	1.4	2.2
Single with children 6-17 years	4.1	3.8	3.8	3.2	4.4
Single with children 18+ years	2.7	2.1	1.7	1.3	2.1
Other household types	3.1	2.8	2.1	1.7	2.5
Total number of households (1 000)	2 010	2 089	2 135*		

Source: Törmälehto and Epland (2007)

[1] The Income Distribution Survey 2004 (N = 13 000)

[2] Age of the oldest person in the household
[3] Age of youngest child in the household
* Weighted numbers

As the table shows, there is in general good overlap between the distribution of households types based on register data and the survey estimates. It is, however, apparent that the transformation from the 'formal' to the 'de facto' household definition improves comparability to the survey estimates. This is particularly noticeable in respect to the

distribution of young singles and couples with adult children. When students and other young people have been removed from their 'formal' parental household to their 'de facto' household, we find a substantial rise in the proportion of single person household under 30 years of age. At the same time there is a clear reduction in the proportion of couples with adult children, many of which now turn up in the category 'couples without children, 45-66 years'.

2.2 Income data

Statistics Norway has a long tradition of collecting income data from registers. Even the earliest Income Distribution Surveys from the 1970s and 1980s were based on register data, primarily data from tax registers. With the computerization of public administration, increasingly more income data has become available in recent years.

Table 3 gives a crude overview of all the inputs of the register-based income statistics, in respect to income data. The main data providers are the Tax Authorities and the Norwegian Labour and Welfare Administration. The single most important source is the *Tax Return Register*. This register gives detailed information on all kinds of taxable income, e. g. wages and salaries, self-employment income, income from property and taxable pensions. Another important source is the *Tax Register*, where information on personal income taxes and social security contributions are collected. From the *Labour and Welfare Administration*, all types of tax-free transfers (e.g. family allowance, support to single parents) are collected as well as different types of pension income (e.g. old age and disability). In addition to tax registers and social security registers some minor income items are collected from other administrative registers, for example dwelling support (The State Housing Bank) and scholarships (The State Educational Loan Fund). It should also be noted that register data are even used to collect some biographical data for individuals, such as highest level of completed education, formal marital status, citizenship, immigrant status and municipality of residence.

All income data from these registers are thereupon linked to each individual in the population by the use of the unique Personal Identification Number.

Table 3. Overview of income concepts and corresponding administrative data sources in the Norwegian Income and Wealth Statistics for households.

Income concept	Administrative register
Employee income *'fringe benefits'*	*Tax-return register,* *The Register for End-of-the-Year Certificates*
Self-employment income	*Tax-return register*
Income from property	*Tax-return register*
Transfers received	
family related allowances	*The Labour and Welfare Administration*
housing allowances	*The State Housing Bank*
unemployment benefits	*The Register for End-of-the-Year Certificates*
sickness benefits	*The Labour and Welfare Administration*
student grants	*The State Educational Loan Fund*
old-age, survivor and disability benefits	*The Labour and Welfare Administration*
social assistance	*Kostra (Municipality-State-Reporting)*
child support received	*The Labour and Welfare Administration*
private pensions	*Tax-return register*
Taxes paid and social security contributions	*Tax registers*
Child support paid	*The Register for End-of the-Year Certificates*

2.3 Wealth data

In the same way as for income data, Statistics Norway publishes annual wealth statistics based on administrative records. In respect to wealth data, more or less the only administrative source is the Directorate of Taxes (the exception being Student Loans collected from the State Educational Loan Fund). Again, just like for income data, the statistics cover all Norwegian private households and give detailed information about taxable real capital, taxable gross financial capital and debt. However, Norwegian wealth statistics have one considerable weakness; the lack of information about market values on dwellings. The taxpayer's dwelling(s) are reported in the Tax Return, but at tax values which are considerable lower than the real market value. A number of studies of dwellings sold on the free market,

show that reported tax values on average constitute only 20 per cent of the market values. In addition, the studies show that expensive dwellings have lower relative assessed tax values than less expensive dwellings. This is generally the case for all types of housing throughout Norway (Statistics Norway 2006, 2007 and 2009).

Statistics Norway has transferred micro data to Luxembourg Wealth Study (LWS), but Norwegian wealth data are often left out in cross-national studies of net wealth because of the inconsistency between the value of dwellings reported at tax values and debt reported at market prices (e.g. Sierminska, Brandolini and Smeeding 2006).

In an effort to include even market values on private homes, Statistics Norway has developed a model that estimate a market value to all dwellings in the country based on information from about 390 000 sold properties in the period 2004-2009. This number corresponds to roughly one fifth of the total number of dwellings in the country in 2009. The parameters used in the model are type of dwelling, size of living floor space, location and age of the dwelling. The dwellings are divided into three categories: detached houses, row houses and multi-dwelling houses. Price functions are done separately for these three categories of dwellings in different regions in Norway (for further information on the model see Kostøl and Holiløkk 2010).

Figure 1 shows to what extent the model is able to estimate a market price that correspond to the observed selling price of all dwellings sold in the period 2004-2009. About 74 per cent of the dwellings have an assessed market value, according to the model, that differs +/- 20 per cent of what the dwelling actually was sold for in the market, and 94 per cent of the dwellings have been given a market value by the model in the interval 60-140 per cent of the observed selling price. Wealth statistics for Norwegian private households including assessed market value on own dwellings, are shown in Chapter 4 (results).

Figure 1. The proportion of dwellings sold in the period 2004-2009. Assessed market value compared with actual selling price. Norway. 2009
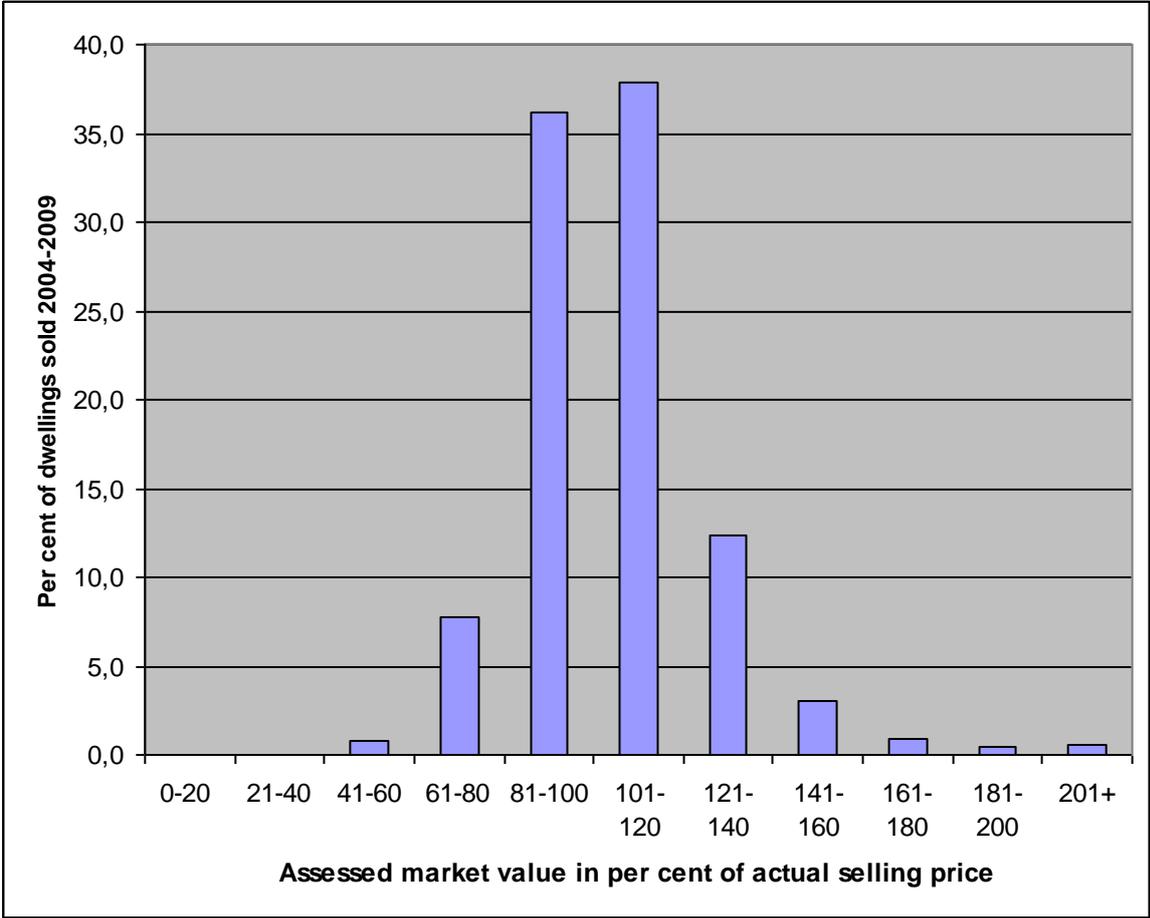
Source: Kostøl and Holiløkk (2010)

The price model will be further developed with updated data about sold dwellings on the free market (after 2009), as well as information about their dwellings (size of living floor space and age) reported by taxpayers to the Directorate of Taxes. Statistics Norway also plans to extend the model to include market values on holiday houses in the future.

An overview of all the wealth concepts available from register data, including the new estimation on the market value of dwellings, is given in table 4.

Table 4. Overview of wealth concepts and corresponding administrative data sources in the Norwegian Income and Wealth Statistics for households.

Wealth concept	Administrative register
Non-financial wealth	
private dwelling	*Estimated values based on new model*
holiday houses	*Tax-return register*
boats, cars and other vehicles	*Tax-return register*
forests, farms, plots and other real capital	*Tax-return register*
machinery and equipment	*Tax-return register*
house contents and movables	*Tax-return register*
real property owned abroad	*Tax-return register*
Financial wealth	
bank deposits and cash	*Tax-return register*
share of unit trusts	*Tax-return register*
shares, bonds and other securities	*Tax-return register*
private pension fund and value of repurchase of life insurance policy	*Tax-return register*
outstanding debit	*Tax-return register*
bank deposits in foreign banks	*Tax-return register*
Liabilities	
total debt	*Tax-return register*
student loans	*The State Educational Loan Fund*
debt to foreign banks	*Tax-return register*

3.   Comparison with external sources

In order to assess the robustness of the micro data it is common practice to compare the estimates with their aggregated counterpart in the National Accounts. However, it is well documented that in respect to wealth data this is a challenging task. Several studies have pointed at the fact that such comparisons are difficult to make because of conceptual differences (e.g. Jantti, Sierminska and Smeeding 2008, Kavonius and Törmäletho 2010).

Nevertheless, in table 5 we make an effort to confront the wealth data from the new register-based dataset (IWS) with National Accounts data. As can be seen from the table, the estimated value of non-financial assets is about 55 per cent higher in the new micro dataset, compared to the NA aggregates. Much of the difference is, however, explained by conceptual differences. The dominant wealth holding in this category is the value of dwellings, where the new estimated market values in the IWS lies about 51 per cent above the NA figures. In the NA the valuation of the dwelling is based on a definition that do not include the market value of the plot or the land on which the building is situated. Furthermore, the assessed value is based on the 'replacement value', where the original price, minus the "wear and tear" over the period, has been indexed using the production cost index. In a country with steep rise in housing prices, such as Norway, this method will not reflect actual market values.

Another conceptual difference concerns the wealth accumulated from ownership of for instance boats, cars and other vehicles. In the NA these items are not considered wealth but rather consumer durables. In the IWS these are included, but at assessed tax value, which in many cases are well below the market value.

The category 'other non-financial wealth' is in the NA mainly machinery and vehicles related to own business. In the IWS 'other non-financial wealth' includes a much wider portfolio of wealth items such as plots, farms, forests and other fixed capital related to business. Again, despite being based on below-market tax values, the IWS data shows an aggregated sum about 19 per cent above the NA.

Turning next to financial assets, the table shows that the total sum of financial wealth in the IWS only corresponds to two-thirds of the NA aggregates. Again, much can be explained by conceptual differences. As expected, the amount of bank deposits compares well, where there is a 97 per cent overlap between the two sources.[2] Life insurance and pension wealth is a substantial part of the households' financial wealth, according to the NA. However, this item is not included in the wealth definition in the IWS, as it is not recorded in any tax registers. It might even be questioned whether insurance reserves should be part of a household wealth definition in micro data, since it is not liquid before old-age and cannot be bequeathed

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2 It should be noted that all information on the values of bank deposits, shares, bonds and other securities are reported from banks and other financial institutions and to the Tax Authorises for all people who owns a bank account, shares, bonds etc.

(Karvonius and Törmäletho 2010). In the IWS, only the value of some private premium funds is considered taxable wealth, but they do not constitute a substantial part of the households' net equity in life insurance or pension insurance reserves. 'Other financial wealth' on the other hand, compares well, where the micro data from tax registers is about 12 per cent higher than the NA figure. This item includes the market value of shares and other financial assets. In total, if pension wealth is excluded, there are only minor differences in the aggregates of financial wealth between the micro and macro data.

In respect to liabilities there is again relatively good overlap between the two sources, where the IWS reports about 93 percent of the NA figures. One explanation for why the NA aggregates report higher liabilities than the IWS is that the NA figures includes tax debt. This is not considered deductible debt for tax payers in the Tax Return, and thus not reported in the IWS.

Table 5. Comparison of Income and Wealth Statistics with National Accounts. Households.[1] Billon NOK. 2009

	National Accounts	Income and Wealth Statistics	IWS as a % of NA
Non-financial wealth	2 536	3 923	155
Dwellings	2 408	3 636	151
cars, other vehicles, boats etc.	-	135	
other non-financial wealth	128	152	119
Financial wealth	2 411	1 586	66
bank deposits etc.	732	710	97
insurance technical reserves	936	42	4
other financial assets	744	835	112
Financial wealth excluding insurance technical reserves	1 476	1 545	105
Debt	2204	2 051	93
Net wealth	2 743	3 459	126

[1] The NA figures for non-financial wealth include NPISH, while the figures for financial wealth excludes NPISH.

Source: Statistics Norway

To sum up table 5, there is a substantial difference in the aggregates of net wealth between NA and the corresponding micro data source. In respect to net wealth the IWS reports a value that is 26 per cent higher than the NA. It may come as a surprise that the micro data source report the largest amounts in household net worth. However, much can be explained by the difference in the assessment of private dwellings, where NA fails to report values close to the market values.

4.   Some results

The wealth composition of Norwegian households: An overview

In 2009, the approx. 2.2 million private households in Norway possessed an estimated gross wealth of NOK 5 478 billion (about USD 917 billion). These numbers exclude people living in institutions and people in student households, i.e. households where the main income source is student loans. The single most important asset is the value of own dwelling which is estimated at a market value of NOK 3 534 billion - almost 65 per cent of gross wealth (see table 7). The tax-assessed value of own dwelling reported in the Tax Return, on the other hand, was 'only' NOK 664 billion in 2009. Thus, the model for assessing market value on dwellings (see chapter 2) increases the "visible" wealth of Norwegian households by NOK 2 870 billion this year. Almost 73 per cent of Norwegian households are homeowners.

Households' gross financial capital amounted to NOK 1 555 billion in 2009. Bank deposits alone constitute more than 44 per cent of total financial capital, while the part of shares and other securities was 37 per cent. Every fifth Norwegian household possessed shares and other securities in 2009. More than one third of all households had investments in unit trusts, bond and money market funds, but these financial assets only constitute 6 per cent of total gross financial capital.

Total debt of Norwegian private households was NOK 2 021 billion in 2009. Total net wealth amounted to NOK 3 457 billion (approx. USD 579 billion). About 78 per cent of Norwegian

households have a positive net wealth with an average of NOK 2.178 million (approx. USD 365 000). For households with debt exceeding total assets – average net wealth was minus NOK 491 000 in 2009 (approx. minus USD 82 000).

Table 6. Composition of household wealth. Private households[1]. Norway. NOK. 2009

	NOK million	Share of gross wealth	Share of households with different property holdings	Average for households with different property holdings (NOK 1000)
Real capital	3 923 207	72	82.7	2 206
Own dwelling	3 534 527	65	72.7	2 260
Other real properties	211 783	4	30.3	325
Production capital and other properties	37 626	1	5.9	296
House contents and movables	139 272	3	56.9	114
Gross financial capital	1 555 075	28	98.7	732
Thereof:				
Bank deposits	688 445	13	98.5	325
Share of unit trusts, bond and money market funds	92 191	2	35.0	123
Foreign taxable wealth	35 504	1	5.8	287
Shares and other securities	570 139	10	21.7	1 218
Gross wealth	5 478 282	100	98.8	2 576
Debt	2 021 197	37	83.2	1 129
Thereof:				
Study debt	83 586	2	23.0	169
Net wealth	3 457 086	63	99.5	1 615
Positive net wealth	3 678 861	67	78.4	2 178
Negative net wealth	-221 775	-4	21.0	-491
Property taxes	11 535	0.2	23.2	23
Number of households	2 152 031		100.0	

[1] Students not included.
Source: Statistics Norway. Income statistics for households.

Distribution of net wealth

In most countries, household net wealth have a very uneven distribution (see Jantti, Sierminska and Smeeding 2008 for an overview of wealth distribution for countries participating in the Luxembourg Wealth Study). Norway is not an exception. Table 7 shows the distribution of household net wealth by deciles for all 2.2 million private households in Norway in 2009. Households in the lower part of the distribution (deciles 1 and 2) have a negative net wealth. Average net wealth in decile 1 is minus NOK 921 000, mainly due to high debt among these households. Deciles 3 and 4 have an insignificant portions of total net wealth. In fact, if we colaps deciles 1-5, we find that these 1.1 million households had on average a negative net wealth in 2009.

Table 7. Distribution of net wealth for private households[1]. 2009. Per cent and NOK (1 000)

	Per cent	Mean values (NOK 1 000)	Pecentile cut-offs (NOK 1 000)
Total	100	1 606	
Decile 1	-5.7	-921	-257
Decile 2	-0.7	-109	-8
Decile 3	0.2	28	100
Decile 4	1.7	268	463
Decile 5	4.2	675	887
Decile 6	6.9	1 102	1 318
Decile 7	9.7	1 551	1 797
Decile 8	13.0	2 088	2 420
Decile 9	18.3	2 938	3 644
Decile 10	52.6	8 445	
Top 5 per cent	39.2	12 581	5 225
Top 1 per cent	21.2	34 074	11 806
Top 0.1 per cent	10.2	163 404	49 999
Gini	0.777		
Gini[2]	0.674		
Number of observations	2 152 031		

[1] Students not included.

[2] Negative amounts = 0

Source: Statistics Norway. Income and wealth statistics for households.

Among households in decile 10 we find more than half of total net wealth. The upper two deciles possess more than 70 per cent of household net wealth in Norway. Average net wealth in decile 10 was NOK 8.4 million in 2009 (approx. USD 1.4 million).

The table, furthermore, confirms the skewed distribution of net wealth. There is a clear difference between the median and the mean value for net wealth, where the former only corresponds to 55 per cent of the latter.

As would be expected, summary meassures like for instance the Gini-coefficient also reflects the highly skewed distribution of net wealth in Norway. The Gini-coefficient is, however, strongly influenced by the large amount of negative net wealth at the bottom of the distribution. If one neutrilises the effect of negative net worth (negative amount set to 0), the Gini for household net wealth is reduced from 0.777 to 0.674.

The availability of register data for the entire population, gives us the possibility to examine in detail the distribution at the top end of the wealth distribution. If we take a closer look at the very top of the net wealth distribution, we find that the top 1 per cent own 21 per cent of total net wealth (see table 7). The top 0.1 per cent, covering just about 2 000 households, possessed about 10 per cent of total net wealth in Norway in 2009. As can be seen from table 7, average net wealth among these very rich households was NOK 163 million (approx. USD 27 million).

Figures 2 and 3 show the composition of total wealth for households in various part of the wealth distribution. In figure 2 it is confirmed that households in the lowest decile for net wealth have liabilities that substantially exceeds their assets. For household in deciles 3-9 the dominant asset is non-financial wealth, while the wealth portfolio for households in decile 10 seem to be more mixed where financial wealth account for roughly 47 per cent of total wealth.

The importance of financial assets increases with the size of net wealth, as is shown in figure 3. For households belonging to the top 1 per cent in respect to net wealth, financial capital make up more than 70 per cent of total wealth, while this proportion increases to 86 per cent for households belonging to the top 0.1 per cent.

Figure 2. Average wealth and debt for households, by deciles for net wealth. NOK. 2009
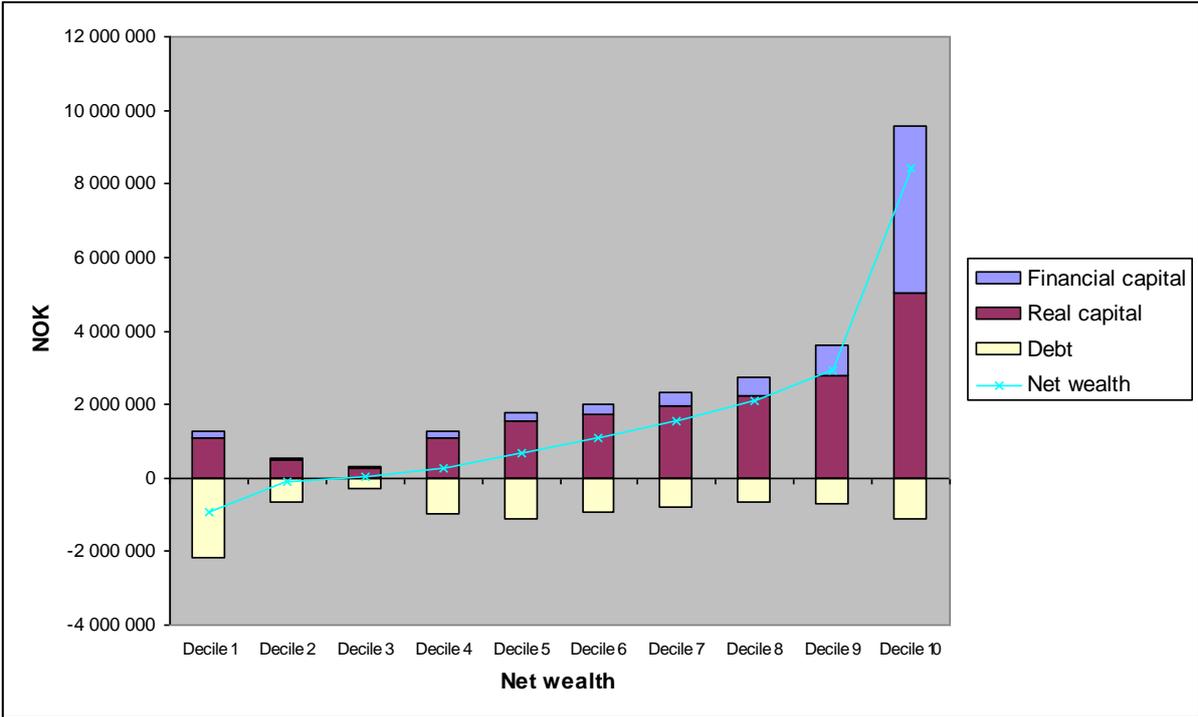
Source: Statistics Norway. Income and wealth statistics for households.

Figure 3. Average wealth and debt for households at the top of the net wealth distribution. NOK. 2009
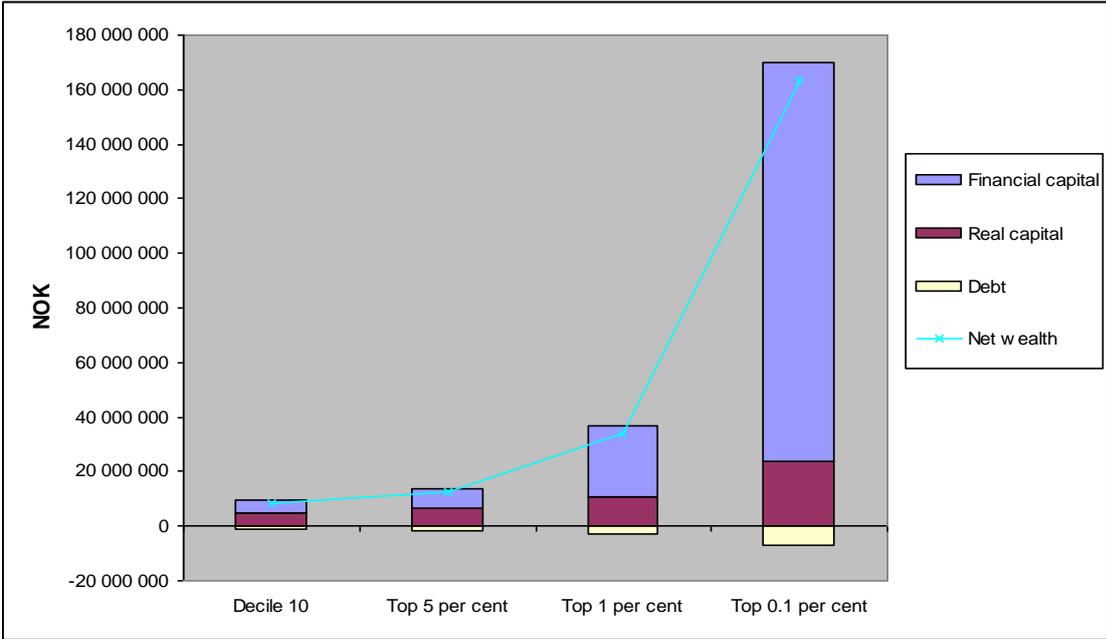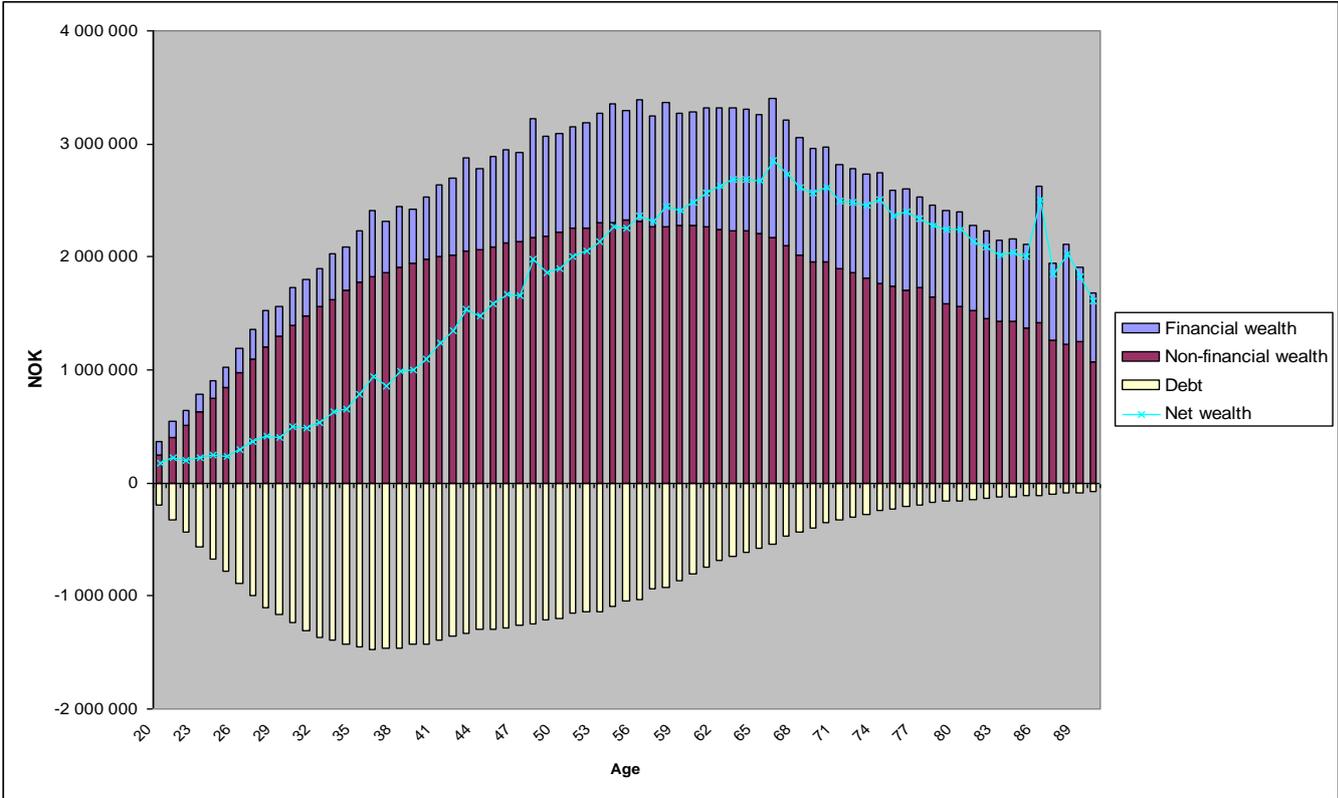

Source: Statistics Norway. Income and wealth statistics for households.

Net wealth by age groups

Figure 4 shows average financial and non-financial wealth, debt and net wealth of households, by the age of the main income earner in the household. Again, register data allow us to present fairly detailed statistics, for instance the wealth composition for each single age-group between the age of 20 and 90 years or more.

Figure 4. Average wealth and debt by age of household head. NOK. 2009

Source: Statistics Norway. Income and wealth statistics for households.

As would be expected, the level of average net wealth is relatively modest among the youngest households. The main asset for the young is their dwelling, and many still have a substantial mortgage, reducing their net worth. By age, however, there is a sharp increase in net wealth. Average financial and non-financial wealth increases for each older age-group, while average debt is reduced. This trend continues till one reaches households where the head is in the late 60s. The highest average net wealth is found within households headed by

someone aged 66 in 2009. This particular age-group had an average net wealth worth 2.8 million NOK (roughly 475 000 USD). For older households there is a moderate decline in net wealth for each additional age-group.[3] The level of average net wealth is, nevertheless, substantial even for the oldest households.

The joint distribution of income and wealth

To which extent do wealth and income coincide? In table 8, the population (students not included) is sorted by deciles after household equivalent income after tax and household equivalent net wealth. The equivalence scale used is the 'modified' OECD-scale. The figures show, to some extent, that wealth and income do correlate, but there is no clear picture. People in the upper wealth-deciles (8-10) are overrepresented in the upper income-deciles (8-10), but at the same time people in the lowest wealth-decile are to some degree also overrepresented in the top income-deciles.

Table 8. The proportion of the population in different deciles. Equivalent after-tax income and equivalent net wealth. Norway. 2009. Per cent

Equivalent net wealth	Total	Equivalent income after tax									
		Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10
Decile 1	100	7.7	7.2	8.4	9.7	10.4	11.0	11.2	11.5	11.6	11.3
Decile 2	100	16.1	14.8	12.8	11.6	10.5	9.6	8.4	7.1	5.7	3.6
Decile 3	100	32.4	16.3	10.7	8.8	7.5	6.6	5.9	5.0	4.1	2.7
Decile 4	100	8.1	11.2	11.6	12.3	12.3	11.5	10.6	9.6	7.9	5.1
Decile 5	100	6.0	9.3	11.1	12.0	12.3	12.1	11.5	10.5	9.1	6.1
Decile 6	100	5.3	8.5	10.4	11.3	11.7	11.9	11.9	11.5	10.4	7.2
Decile 7	100	5.4	9.0	10.1	10.2	10.6	11.1	11.6	11.8	11.5	8.7
Decile 8	100	6.1	9.4	10.0	9.4	9.5	10.0	10.7	11.7	12.4	10.8
Decile 9	100	6.8	8.8	9.1	8.6	8.5	9.0	9.9	11.2	13.3	14.8
Decile 10	100	6.2	5.4	5.9	6.2	6.6	7.2	8.5	10.2	14.0	29.9
Total		100	100	100	100	100	100	100	100	100	100

Source: Statistics Norway. Income and wealth statistics for households.

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[3] There is one notable exception to this trend. Household where the head is 86 years old have an average net wealth that is on

If we take a closer look at the outer edges in table 8, we find that 7.7 per cent of the population belongs to decile 1 both in respect to income and wealth. Here we find an overrepresentation of young people and often singles. Nearly 60 per cent are under 35 years of age (see Appendix A for details). Every fifth person has an immigrant background in this group, compared to every tenth person in the total population. There is also an overrepresentation of self-employed (main income earners) among those with both low wealth and low income.

Nearly 30 per cent of the population belongs to decile 10 in respect to both net wealth and income. Not surprisingly, we find that this group is characterized by being middle-aged (36 per cent are in the age-group 55-66), having a non-immigrant background and belonging to household types like 'couples with older children' or 'couples without children'. The probability of belonging to a household headed by someone who is self-employed, is almost three times higher in this group compared to the population as a whole.

What characterize people in households that are 'net wealth-poor' (decile 1) and 'income-rich' (decile 10)? Compared to the general population, we find an overrepresentation of people of working age, i.e. the age 25-55 years, with a non-immigrant background and often belonging to a household where the main income earner is self-employed. But people with socio-economic status as "employed' are also more likely to having low net wealth but high income, compared to the population as a whole. Young couples without children are particularly overrepresented in this group.

Among those who are 'net wealth-rich' (decile 10) and 'income-poor' (decile 1), we find an overrepresentation of middle-aged and older people. More than six out of ten are aged 55 or higher. Almost four out of ten are 67 years or older. Looking at socio-economic status we find that more than half belong to a household with a pensioner as the main income earner. People with an immigrant background are also underrepresented by those with high wealth and low income, compared to the general population (see Appendix A).

a par with those in their late 60s. This is due to an extreme observation.

Poor people with assets

The availability of both income and wealth data for the same individuals offers the possibility to have a fuller picture of the financial resources of those traditionally defined as poor. It is common practice, in Europe at least, to define those with a household income below a certain threshold, e.g. below 60 % of median equivalent income, to be at risk of poverty. It is, however, a well known fact that some of those who are income poor may be in a financially better position when wealth is considered. For several of the countries included in the Luxembourg Wealth Study, including Norway, there was a substantially drop in poverty rates when financial wealth was taken into consideration (Brandolini, Margri and Smeeding 2010).

These results are confirmed in our national data. Depending on where one wishes to draw the line in respect to the size of wealth, there is a substantial reduction in the number of poor people when either financial wealth or net wealth is included in the definition of poverty. In figure 5 we use an equivalent household income below 60 % of the national median as a low-income threshold. In addition, we use this threshold as a reference point in order to assess the impact of financial wealth and net wealth in the number of people below the poverty line. Our first definition combines the income-based poverty definition with different thresholds of financial wealth. The first definition considers all people to be poor if their equivalent income is below 60 % of the median and their financial wealth is less than two times the income-based poverty line. Both income and wealth is once more equalised using the 'modified' OECD-scale. The second definition reduces the wealth threshold to equal the poverty line, the third to 75 per cent of the poverty line, while the last threshold only requires a financial wealth less than 25 per cent of the poverty line to be considered poor. The same thresholds also apply to net wealth.

From figure 5 it is apparent that many income poor are in a position where they own some assets. When the strictest wealth threshold is applied, i.e. wealth at least 2 times the poverty line, the proportion of poor is reduced from 9.5 per cent (income-poor only) to about 8 per cent (financial wealth) and 6 per cent (net wealth). The number of poor is then successively reduced by falling wealth requirements. When the most lenient wealth threshold is used, i.e. wealth less than 25 per cent of the poverty line, the proportion of poor is just 5 per cent in respect to net wealth and 5.7 per cent in respect to financial wealth.

Figure 5. Reduction in the share of income and wealth poor, when different thresholds for wealth are used. 2009
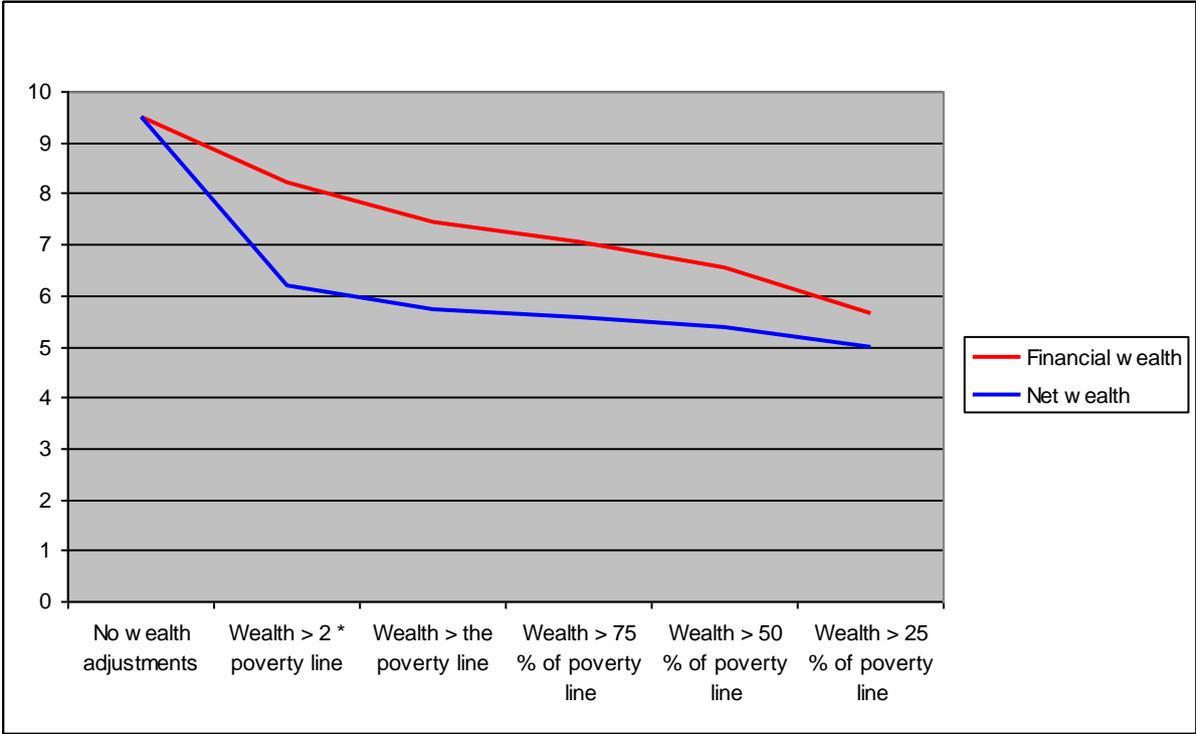
The importance of combining wealth with income is further investigated in figure 6. This graph shows the proportion of people in different age groups that are below the poverty line, when the poverty line is either income-based only or also includes financial wealth and net wealth. Any choice made in respect to picking the size of wealth that the income-poor should own, in order to be 'non-poor', is of course arbitrary. In this graph we have chosen a threshold for wealth that is equal to the income-based poverty line (i.e. the amount that corresponds to 60 % of median equivalent income).

The graph shows that, based on income only, the poverty rate among children drops with the age of the child. However, when children turn 18 or 19 years old there is a dramatic increase in the poverty rate that culminates at age 20 and 21. These are the ages when most Norwegians adult children leave home to establish themselves in their own households. Obviously, this increases the risk of poverty. From the early 20s onwards, there is moderate

reduction in the poverty rate all the way up to those that are in the late 50s, the age-group with the lowest income-based poverty rate. For older age-groups there is sharp increase in poverty, particularly for those in their 80s. The oldest age-group had for instance an income-based poverty rate as high as 40 per cent. The majority of the oldest population consists of single, elderly women with only a small pension income.

Turning next to financial wealth, there is a drop in poverty rates in all ages. The greatest reduction, however, takes place among those that are 60 years or older. It is now those in the mid-60s that have the lowest poverty rate, and the oldest age-group have now a poverty rate of only 15 per cent. This clearly suggests that many of the old with low income, in fact have financial assets that exceeds the poverty line.

Figure 6. Share of income poor and income and wealth poor. Age-groups. 2009
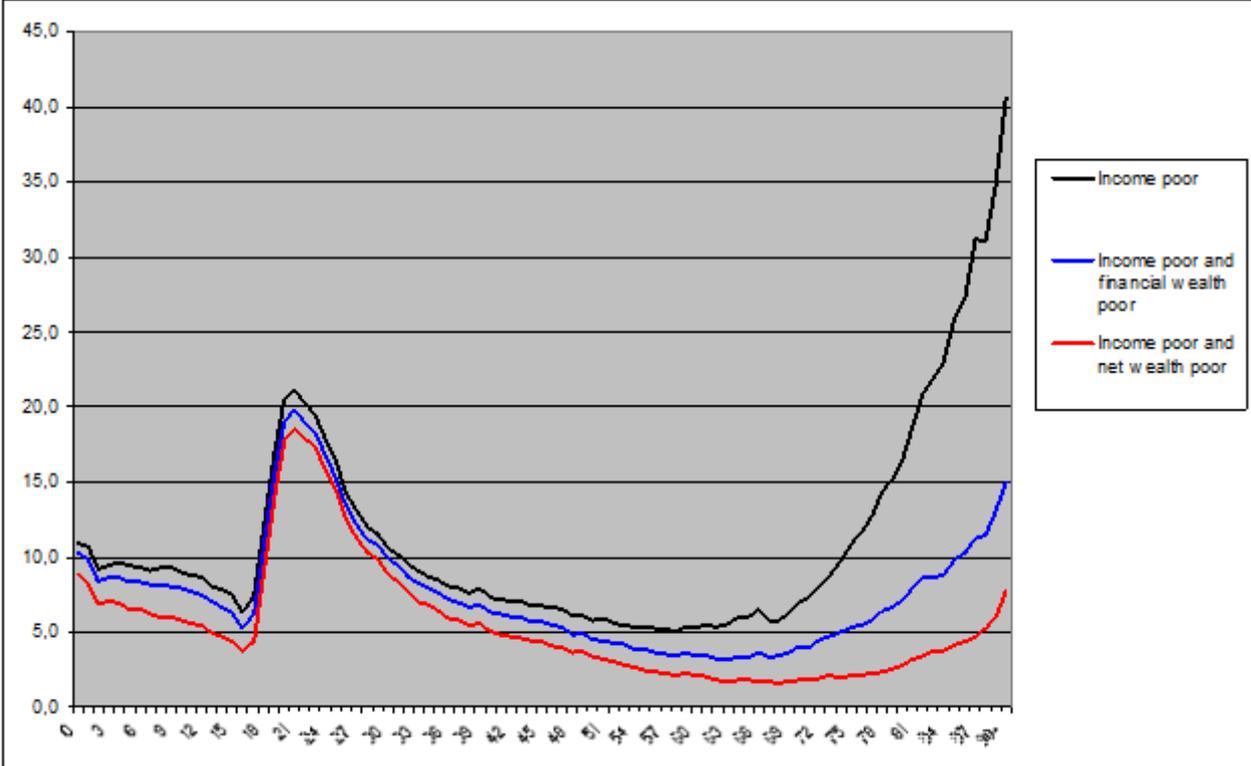
Source: Statistics Norway. Income and wealth statistics for households.

Our last definition, based on net wealth, shows that even low-income households with children have a substantial net wealth. This can most likely be explained by the high frequency of home-ownership in Norway. It is, however, once more in the older age groups that we find the strongest reduction in the poverty rate, based on this definition. The lowest

poverty rate is now found among those in their late 60s, and even those in their 80s now have a smaller proportion below the poverty line than households with young children.

5.   Conclusions

The aim of the paper has been to present a new totally register-based dataset that combines information on income and wealth for the entire resident population of Norway. While totally register-based data on income has been used in official household income statistics since 2004, comprehensive wealth data only became available from the year 2009, and only after the introduction of a model that substitutes below-market tax-values on housing wealth with values closer to the actual market price.

This new data source of income and wealth opens up new possibilities, particularly for users with greater demand for accuracy, small domain analyses, and geographical data. In addition, the data benefit from being without non-response errors and the fact that it covers all households, even those at the very top of the wealth distribution. It will also – in the years to come - be a unique data source for longitudinal analyses, for instance in respect to studying trends in household savings or dissavings over the years. The new data set also fills a gap. An apparent weakness of older Norwegian wealth data transmitted to the Luxembourg Wealth Study, was the lack of realistic market values on non-financial assets. Consequently, Norwegian data has been left out of several cross-national studies on the distribution of (net) wealth. The new dataset should therefore make Norwegian data more comparable to other countries participating in LWS and other international studies that focus on wealth distribution.

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Appendix A

Persons in different deciles of equivalent after-tax income and equivalent net wealth, by various characteristics. ('Modified' OECD-scale). Norway. 2009. Per cent

	Total	Persons belonging to			
		Decile 1 net wealth and decile 1 income	Decile 10 Net wealth and decile 10 income	Decile 1 net wealth and decile 10 income	Decile 10 net wealth and decile 1 Income
Age	*100*	*100*	*100*	*100*	*100*
Under 25 years	31.0	32.0	18.0	25.2	15.0
25-34 years	12.8	24.9	4.7	20.2	3.9
35-44 years	15.4	19.7	10.2	22.7	7.3
45-54 years	13.8	14.0	21.2	19.5	11.7
55-66 years	14.5	7.8	35.8	11.4	22.4
67-79 years	8.5	1.4	9.1	1.0	17.8
80 years and older	4.0	0.3	1.1	0.1	22.0
Type of household	*100*	*100*	*100*	*100*	*100*
Singles under 30 years	3.6	14.6	0.2	1.7	1.5
Singles 30-44 years	3.9	14.9	2.0	6.1	2.5
Singles 45-66 years	5.6	13.2	5.7	4.5	14.0
Singles 67 years and older	5.0	1.1	1.7	0.2	33.8
Couples under 30 years without children	1.6	2.4	0.2	2.8	0.3
Couples 30-44 years without children	2.2	2.1	1.8	10.9	0.5
Couples 45-66 years without children	10.1	3.0	32.8	14.8	10.3
Couples 67 years and over without children	7.3	0.3	9.7	0.9	5.7
Couples with children 0-5 years	19.4	19.5	8.3	21.8	7.0
Couples with children 6-17 years	21.4	11.6	21.1	21.9	12.0
Single parent with children 0-5 years	1.6	3.6	0.1	0.3	0.7
Single parent with children 6-17 years	4.6	6.4	1.0	1.7	3.3
Couples with children 18 years and older	6.3	1.6	10.6	7.4	3.5
Single parent with children 18 years+	2.1	1.7	1.3	1.0	2.4
Other	5.2	3.8	3.4	4.3	2.6
Immigrant background	*100*	*100*	*100*	*100*	*100*
First and second generation immigrants	11.4	19.2	4.6	7.2	6.3
Non-immigrant background	88.6	80.8	95.4	92.8	93.7
Socio-economic status (main income earner)	*100*	*100*	*100*	*100*	*100*
Self-employed	4.9	8.9	12.2	14.0	5.2
Employed	71.3	43.6	76.7	84.5	26.6
Pensioners	21.4	23.4	10.3	1.3	53.5
Other	2.4	24.1	0.8	0.2	14.7
Number of observations	4704961	36 412	140 508	53 106	28 985

Source: Statistics Norway. Income and wealth statistics for households.