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HOUSEHOLD FINANCIAL WEALTH AND VULNERABILITIES: THE EURO AREA FINANCIAL ACCOUNTS AND THE EUROSYSTEM FINANCE AND CONSUMPTION SURVEY

BACKGROUND DOCUMENT: THE LINKAGE BETWEEN FINANCIAL ACCOUNTS AND HOUSEHOLD FINANCE AND CONSUMPTION SURVEY

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Juha Honkkila
Ilja Kristian Kavonius

Abstract

The report on the Measurement of Economic Performance and Social Progress by Stiglitz, Sen and Fitoussi concludes that in the measurement of household welfare all material components should be covered, i.e. consumption, income and wealth, from both the micro as well as the macro perspective. Additionally, several other initiatives like the IMF/FSB report on data gabs to the G-20 Finance Ministers and Central Bank Governors have emphasised to have an integrated micro-macro framework where consumption, income and wealth can be analysed.

Current researches linking macro and micro information for the households have focused so far on income and consumption as these are the areas where most data sources are available. The purpose of this paper is to extend the focus to household wealth using both household survey data and national financial accounts. Finally, this paper shows a comparison and actual linkage between the Household Finance and Consumption Survey (HFCS) and financial accounts data for all available euro area countries.

1.   Introduction

This paper examines the linkages between **Household Finance and Consumption Survey (HFCS)** and **National Accounts' (NA) household balance sheets**. The used national accounts data are national financial accounts data which are consistent with the Euro Area Accounts (EAA). This paper aims to build a bridge between the macro balance sheets and the survey results. This linkage could be used to break macro wealth aggregates down by using survey data.

There is a strong analytical interest of having these kinds of breakdowns.[1] First of all, there is an overall increasing interest in breaking down the household sector figures from NAs using distributional information, and the distributional aspects of wealth, consumption and income (Stiglitz, Sen & Fitoussi, 2009; IMF/FSB, 2009)[2]. For instance the OECD and the European Commission has currently an Expert

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[1]   There are several researches investigating micro-macro linkage in income and even exercises breaking down income accounts by household types. On the wealth side, these kinds of studies are rare, and as far as we know this is among the first attempts to break down macroeconomic balance sheets. A similar analysis has recently been conducted with the French data by Durier and Richet-Mastain (2012). From the papers investigating micro-macro wealth linkage can be mentioned: Antoniewicz., Bonci, Generale, Marchese, Neri, Maser and O'Hagan (2005).

[2]   IMF/FSB report to the G-20 Finance Ministers and Central Bank Governors (http://www.financialstabilityboard.org/publications/r_091107e.pdf). Recommendation 16 reads as follows: "*As*

Group which examines the linkage between NA and survey data and aims to break down NA by household types by using survey data. The OECD and European Commission work focuses at this stage only on breaking down consumption and income items.

Second, the conventional motivation for making comparisons of wealth survey estimates with balance sheet counterparts is to assess the quality of the survey estimates. Third and finally, the current financial crisis has emphasised the need of household data and preferably, data with clear links between micro and macro level as for instance the financial stability analysis focuses increasingly on the transmission mechanism of shocks and risks between and across the different agents in the economy (see: Castrén and Kavonius 2009). This kind of breakdown would further allow analysing for instance leverage of different household types. This paper is a step towards building and investigating a link between these two data sets.

From a conceptual point of view, it does not matter whether the data analysis is done at the euro area level or at the country level as the data use same concepts. However, in order to understand the differences between the macro and micro data sets, it is essential to make this bridge as detailed level as possible, i.e. in this case at the country level. This paper analyses all available euro area countries, i.e. Austria, Belgium, Germany, Greece, Spain, France, Italy, Cyprus, Malta, the Netherlands, Portugal, Slovenia, Slovakia and Finland.

This paper has been organised as follows: the second chapter of the paper builds the conceptual framework for this analysis, i.e. the linkage between micro and macro financial wealth items is created. Due to limitations in national accounts coverage, this paper does not discuss non-financial assets. The linkage is based broadly on the paper by Kavonius and Törmälehto (2010) where the conceptual link between the EAA/NA and the HFCS definitions of assets and liabilities has already been created. Additionally, this section discusses the applied data and their constraints. The third chapter discusses the potential errors and differences between the two data sets. The fourth chapter of the paper shows the actual results of the comparison. The final chapter summarises the main conclusions.

2.   The data and applied link in the analysis

The purpose of this section is to present a practical linkage between the definitions of micro and macro data sources. The framework for the micro definitions is HFCS and for the macro definitions EAA. For the wealth items this linkage was already presented in the paper by Kavonius and Törmälehto (2010) and this section summarises and partly revises the conclusions. Additionally, in the annex of this paper the relationships between the income items are discussed.

One of the problems is that the nature of these two data sources is different and therefore, it is not straight forward to build a linkage between these two data sources. The **HFCS** has been set up as a decentralised ex-ante harmonised multi-national survey to collect micro data on household finances in the euro area. The survey focuses on household finances, including detailed information on assets and liabilities. The survey also covers income, few variables on consumption, demographics, inheritances/gifts and employment. Each euro area country (National Central Bank together with a survey agency or National Statistical Institute) is expected to conduct its own survey. The survey is output harmonised, having a common set of target variables rather than questions, with a blueprint questionnaire available. In addition, to maximise data comparability, survey methodologies across different HFCS countries have

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the recommended improvements to data sources and categories are implemented, statistical experts to seek to compile distributional information (such as ranges and quartile information) alongside aggregate figures, wherever this is relevant. The IAG is encouraged to promote production and dissemination of these data in a frequent and timely manner. The OECD is encouraged to continue in its efforts to link national accounts data with distributional information."

been a priori harmonised to a large degree by introducing common recommendations on issues like survey mode, sampling, weighting, imputation and variance estimation.

The **EAA** constitute a quarterly integrated accounting system, which encompasses non-financial accounts and financial accounts, including financial balance sheets covering other changes (i.e. price changes and in some rare cases classification changes). Additionally, the dataset covers currently on experimental basis non-financial assets which are unfortunately not available at country level. The accounts are integrated, encompassing the transaction accounts and the balance sheet including other changes. The EAA is compiled according the European System of Accounts (ESA95), which is the European application of the System of National Accounts 1993 (SNA93). The underlying data are a combination of national contributions, i.e. sector accounts data compiled at the level of euro area countries, and euro area aggregate statistics. The country data used in this paper is consistent with the data used in the compilation of the euro area aggregate. The euro area data are produced in collaboration with the National Central Banks, Eurostat and National Statistical Institutes, and start from the first quarter of 1999.

The analysis in this paper is done at country level rather than at euro area level and by the HFCS data and annual financial accounts which are consistent with the EAA inputs. There are two reasons for this. First, the analysis of differences and actual linkage is more accurate at the country level than at the euro area level. The euro area aggregate hides the conceptual differences which are caused by the different data collection methods or the estimation methods used in the estimation of the euro area aggregate. Second, the annual data are more detailed than quarterly data and this helps to make these comparisons.

The classification and concepts of the income and wealth items in the NA and household survey data are considerably different. Therefore, it is essential to look which balance sheet items are essential for the households and which are not. The largest item in the household balance sheet is non-financial assets which according to the NA represent around 57 per cent of total assets (Kavonius and Törmälehto 2010). However, the focus of this paper is on the financial assets as the non-financial assets are available only for few countries. Additionally, the non-financial data which are available cover often only dwellings and not the underlying land. As the HFCS does not separate dwelling and land, the comparison of non-financial assets would be difficult.

The largest financial assets are deposits, insurance technical reserves, quoted and unquoted shares, long-term debt securities and mutual fund shares. If these items are captured correctly, then practically more than 90 per cent of the household financial wealth is captured. Liabilities covered by the NA can be to a very large extent identified with debt items in the HFCS. Additionally, in the annex of this paper the linkage between the income items are presented. The consumption expenditures have been left out of this analysis as the surveys cover only the consumption of food and not the whole consumption.

The practical linkage is done by using a kind of hybrid concepts, i.e. neither the income nor wealth concept is fully the one applied in the NA or household survey. It is almost impossible to apply a standardised concept as the wealth as well as income concept applied in both statistics are considerable different.

Furthermore, the household sector in the NA covers much more than what is defined as households in survey data. Most household surveys exclude persons living in institutions (such as prisons or military installations) from their target population. And more importantly, the household sector of NA is then aggregated with the non-profit institutions serving households, which are not part of the household sector in surveys. The impact of different household definitions is examined in detail in chapter 3.2.

Table 2.1 shows the linkage between the financial assets in the HFCS and the NA/EAA. For some asset types there is a direct linkage. Deposits, bonds and other debt securities, mutual funds and publicly

traded shares are included in both sources with identical or very similar definitions. These items cover roughly 30% of all assets and 65 % of financial assets in the NA.

In the HFCS **deposits** are separated into sight and savings accounts, while the EAA does not distinguish different kinds of deposits. The HFCS sight accounts are equivalent to transferable deposits as defined by ESA95 (ESA95 5.42-5.45, ECB, 2010). The HFCS target variable on savings accounts covers non-transferable savings and time deposits and certificates of deposit.

The HFCS concept of bonds and other debt securities corresponds to **securities other than shares excluding financial derivatives** in the NA. In the NA, securities other than shares excluding financial derivatives can additionally be divided to long- and short-term securities. The HFCS concept of mutual funds corresponds to the **mutual fund shares** in the EAA (ESA95, 5.09). In the HFCS this item can be disaggregated into mutual funds investing predominantly in money market instruments, bonds and shares. The concept of publicly traded shares in the HFCS covers shares owned by households which are publicly traded in a stock exchange. This corresponds to the concept of **quoted shares** in the NA.

For other types of financial assets, either the item does not exist in the HFCS or there are several items in the HFCS corresponding to one item in NA or the item in HFCS does not even theoretically fully correspond to the asset in NA. These kinds of cases are briefly explained in the column "comment". A more detailed description on the conceptual differences between HFCS and EAA has been provided by Kavonius and Törmälehto (2010).

The concept of **managed accounts** does not exist in the NA. Managed accounts are typically arrangements where a household trusts e.g. an investment company to manage the household's investments. In the NA, the essential criterion is based on the legal ownership. In managed accounts the money is typically invested by the investment bank in the name of the investor, who only pays a service fee to the investment bank. The investor (household) is also the owner of the corresponding instruments.

The money owed to the household is included as an asset in both statistics, in the case of NA in loans on the asset rather than liability side. However, loans between the households are recorded in the HFCS, but not in the NA.

In the EAA, **financial derivatives** are financial assets based on or derived from a different underlying instrument and financial derivatives owned by households. In the HFCS, the variable on any other financial assets should cover also financial derivatives such as options, futures or index certificates, among other assets not included elsewhere.

In the national accounts, asset category "**other accounts**" is a similar type of residual category as "**any other financial assets**" in the HFCS, albeit with different content. It is included mainly for accounting reasons. In the case of the household sector, these are mainly interest accruals.

Table 2.1: Financial assets in the HFCS and in the NA

HFCS/household survey	EAA/financial accounts	Comment
Identical or very similar definition		
Sight accounts	F2M Deposits	In the EAA, there is no further breakdown for deposits available.
Saving accounts		
Bonds and other debt securities	F33 Securities other than shares except financial derivatives	
Mutual funds	F52 Mutual fund shares	
Shares, publicly traded	F511 Quoted shares	
Several items corresponding to one item		
Public or social security account	F61 Accumulated assets of life insurance and pension funds	
Occupational pension plans		
Voluntary pension/whole life insurance schemes		
Net wealth in business, non-self-employment and not publicly traded; part of self-employed business wealth	F51M Unquoted equity	In HFCS, the total value of non-self-employment business wealth is treated as financial assets of the household sector. Self-employment business wealth is usually classified as real wealth, but a delineation between real and financial wealth can be made, for example, according to the legal form of the business.
Other financial assets	F34 Financial derivatives	Financial derivatives in EAA are always netted and by convention recorded on the liability side. Therefore financial derivatives owned by the households are recorded as a negative liability. These link only partially to the EAA concepts (for instance options, futures and index certificates).
Items not existing or very weakly corresponding with each other		
Amount owed to household	F4 Loans	In the EAA, these are practically loans to non-financial corporations. These are usually from households to small family business.
Assets in managed accounts	F2-F5,F7 Corresponding financial instruments (risk is carried by the investor)	
Other financial assets	F7 Other accounts	In the EAA, these include interest accruals and other accounts payable/receivable. These items are mainly counter-parts of the other liabilities/transitory items of corporations. In the HFCS, this item includes miscellaneous assets not reported elsewhere, some of which are in the EAA included in F34.
	F21 Currency	Currency not explicitly included in the HFCS.

Pension wealth is a major component of household wealth. The HFCS aims at measuring current termination value ("accrued-to-date liability") of pension and whole life insurance assets. Entitlements to

non-life insurance, including term life insurance, are not considered as household wealth. The HFCS target variables on pension wealth are broken down into public pension plans, public or social security account with account balance, occupational pension plans, and voluntary non-occupational pension/whole life insurance schemes, this breakdown being in line with the National Accounts classification (see: ECB, 2008, for details).

In the NA, the concept of **insurance technical reserves** may be interpreted as the functional equivalent of the HFCS pensions and whole life insurance variables. It covers the accumulated claims vis-à-vis life insurance and pension funds and the prepayment of insurance payments. The treatment of pension depends in the SNA93/SNA2008 on the type of pension plan. The current system includes defined contribution pension plans and individual defined benefit plans.

To some extent, pension wealth is different from other wealth components as it by and large is not liquid before old-age and cannot be bequeathed[3]. Besides, the measurement of pension wealth in household surveys is highly complicated and prone to measurement errors. The difficulty of collecting data on pension wealth from households has been fully recognised and the data on pensions from the first wave of survey are best viewed as experimental.

Unquoted equity in the NA consist of all transactions in unquoted shares which represent property rights on limited liability corporations and share their net assets in the event of liquidation. **Other equity** is the equity of incorporated partnerships, limited companies and quasi-corporations whose partners or owners are not shareholders (ESA95 5.90 and 5.95). The value of unquoted shares and other equity is not a separate asset type in the HFCS. It is covered under **private wealth in businesses not publicly traded**, including both participations in self-employment businesses (when at least one member of the household works in the business) and other passive investments in businesses in which household members are just silent partners. The self-employment concept is defined as net of liabilities rather than gross, in contrast to non-corporate business equity of investors and sleeping partners and other asset types.

The treatment of the items related to the HFCS concept "**private business wealth**"[4] in the NA depends on the type of enterprise.[5] The wealth items of an enterprise can be recorded to the balance sheets of households or of financial or non-financial corporations. Furthermore, for some enterprise types other equity or unquoted shares that are recorded in the liability side of enterprises' balance sheets are recorded as assets of the household sector. In HFCS, investments in non-self-employment private business wealth are classified as financial wealth, while self-employment business assets are classified as real wealth. However, the legal form of the self-employment enterprise is collected and this information is used to break down self-employment business wealth between real and financial assets of the household sector, to better match the NA definition. In this analysis we classify self-employment limited liability companies and cooperative societies as financial wealth and sole proprietorships and partnerships as real wealth.

The measurement of business wealth will, however, result in differences between the two sources because of the difficulties to divide the survey definition of "business wealth" to different sectors of NA. Also, self-employment business wealth is a net concept in the HFCS. It should be noted that these differences do not affect the concept of net wealth, only its components.

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[3]   At least this is the case for most public pension schemes, private and occupational pension wealth can often be liquidised before old age.

[4]   Business wealth in the HFCS includes also properties used for business purposes. This item is clearly not included in financial wealth of NA and is included in real wealth in this paper.

[5]   The differences related to the treatment of financial wealth are very relevant and additionally, complicated to explain. This issue is explained more in detail in: Kavonius and Törmälehto 2010.

2.1. Liabilities

Table 2.2 shows the linkage between liabilities in the HFCS and NA/EAA. In the HFCS, liabilities consist of mortgages and loans, credit lines, overdraft balances, and outstanding credit card balances. The NA covers also these balance sheet items and on top of this some other small balance sheet items which are either related to accounting conventions or in some country-specific cases.

Table 2.2 Typology of liabilities in the HFCS and NA

Household wealth survey	EAA/financial accounts	Comment
Included in NA and HFCS		
Mortgages or loans using HMR as collateral	F41 Loans, short-term F42 Loans, long-term	In the EAA, loans are split into short and long term loans. The short-term loans do not necessary in practice include any mortgages. In the HFCS, the split is based on collateral but maturity of loan can be determined.
Mortgages or loans using other properties as collateral	F41 Loans, short-term F42 Loans, long-term	
Non-collaterised loans	F41 Loans, short-term F42 Loans, long-term	
Outstanding credit line/overdraft balance	F41 Loans, short-term	
Outstanding credit cards balance		
Not included in HFCS		
NOT INCLUDED	F34 Derivatives	In EAA negative balances may be generated out of options and futures sold by entities included in the household sector, but typically the HH sector will tend to hold a total positive balance in financial derivatives (i.e. a negative liability).
	F51 Quoted and unquoted shares and equity	
	F61 Net equity of households in life insurance reserves and in pension fund reserves	Small enterprises in Italy, which are classified to the household sector, have direct pension commitments and this item covers only those.
	F7 Other accounts receivable/payable	This can be for instance late payments of households. This can also be counterpart for the other assets of financial corporations.

To minimise recall bias, loans in the HFCS are broken down by its collateral (i.e. the household's main residence (HMR), other real estate properties and other / non-collaterised) as shown table 2.2. However, breakdowns by type of interest, purpose of loan or by maturity are also included in the survey. The NA splits the loans according to their maturity, i.e. to short-term loans and long-term loans. The borderline between these two maturities is one year.[6] Loans are created when creditors lend funds to

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[6]   This could also be broken down by credit for consumption, lending for house purchase and other lending by using the money and banking statistics. The financial corporations in the EAA, which is counter-part sector for these transaction in national accounts, is consistent with the money and banking statistics. See further:

debtors, either directly or through brokers, which are either evidenced by non-negotiable documents or not evidenced documents.[7] The concept corresponds to the concept of the HFCS.

3. Potential differences in the two statistics

There are many reasons why sample survey estimates and corresponding NA totals might differ. In this paper, we classify the differences to following three groups: (1.) Macro versus micro point of view; (2.) Errors in estimation: population coverage and sampling; and finally, (3.) Errors in measurement: timing and differences in data collection methods. This list might not be comprehensive but it covers the most of the differences between these two sources.

3.1. *Macro versus micro point of view*

The different aspects of the statistics might cause differences from three points of view: first from the conceptual point of view, i.e. some concepts do not necessarily make sense at balanced macro level system as they do at micro level. Second, the valuation of some instruments might be easier at macro than at micro level. Finally, the balancing framework might lead to the situation that some data is estimated by using accounting rules or counterpart information.

Concerning the conceptual issues, the micro survey focuses only on one individual household which forces one to define the concepts from the household point of view. In the NA, the concepts are defined at total economy level and are also counter-parted to the other sectors. This might lead to conceptual differences. On the wealth side, business wealth can be mentioned as an example. As explained earlier, business wealth is one accumulated stock of wealth from the household point of view, as in the NA the different parts of business wealth are distributed to different instruments of the NA.

The different aspects affect the valuation of different wealth components. The non-financial assets, i.e. predominantly housing wealth, are relatively easy to estimate at the micro level. The source data of total financial wealth are, however, more complete and reliable than in micro statistics and therefore, the financial flows at macro level are more reliable than in the surveys. Consequently, in wealth surveys the share of non-financial assets in total wealth has been recorded as significantly higher compared to the NA.

The data collection and the balancing framework, i.e. the process which aims to reach this consistency in the accounting system, have a twofold effect on the accounts. On the one hand, the accounting system forces to cross-check different data sources and gets them as comparable and consistent as possible before the balancing.[8] From this point of view, it can be argued that NA data at total household levels provide more reliable estimates than data retrieved from an individual data source. On the other hand, as in this

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Regulation (EC) No 25/2009 of the European Central Bank of December 2008 concerning the balance sheet of monetary financial institutions sector (Recast), ECB/2008/32).

[7]   ESA95 5.69.

[8]   The national household sector balance sheets are generally compiled using counterpart information and residual estimations as there are not many direct sources concerning households available. The accounting data are typically balanced at the level of the whole economy. In the balancing three dimensions can be found: First, total financial assets equal total financial liabilities for each financial balance sheet category, when summed over all institutional sectors and rest of the world. This is so called horizontal consistency. Second, the change in financial balance sheet for each balance sheet category equal to the sum of the financial transactions and other changes, like revaluation of assets. This is called stock-flow consistency. Similarly, total non-financial assets equal to the sum of non-financial transaction and consumption of fixed capital. Third, for each sector and rest of the world, the balance of all current and capital transactions should be equal to the balance of financial transactions and this is called vertical consistency.

balancing process the inconsistencies or discrepancies are distributed through the accounts according to relative weights of the items, it is possible that errors in measurement from other sources or sectors balance out and eventually contribute to "correct the data" to a certain extent (if one relies on simplified processes or uninformed integrators). Moreover, it should be emphasised that these kinds of balancing adjustments are typically very small. Typically, if the size of total balancing adjustment is known, it can be considered as an error margin for the estimations.

NA may need to allow some bias in the household sector to satisfy the balancing constraints, i.e. the ultimate aim is not to minimize bias in the household sector; rather there is the dual objective to minimize bias in the estimates for the economy as a whole and to minimize statistical discrepancies within the system. The latter may result in bias within sectors, for instance, certain economic transactions for the household sector may be derived as residual, by subtracting from the estimated total the estimates of other institutional sectors.

NA are typically based on other statistical sources and the validation of the used sources. The possible other errors are inherited from source statistics. The errors in estimation can be of course caused by two reasons: either statistics used in the NA estimation are compiled according to a different methodology than the NA (and this is not corrected when they are incorporated to the NA) or there is a measurement error in the source statistics.

3.2. *Errors in estimation: population coverage and sampling*

The quality of the estimates based on a household sample survey may be thought of in terms of **errors in estimation** and **errors in measurement**. Errors in measurement occur when the value that is recorded for a household in the sample departs from the actual true value for the household. Errors in estimation are errors in the extrapolation from the households enumerated in the survey to the entire population of private households for which estimates are required. **Item non-response** can be classified as a mixed category between measurement and estimation error (Verma and Betti, 2010).

The first group of estimation errors are **coverage errors**. This arises if the target population is different from the sampling frame or if all units in the frame do not have a random non-zero probability of being selected. In the wealth surveys analysed in this paper probability sampling is used, meaning that the second case would never occur.

Persons living collective households and institutions are generally excluded from the target population of household surveys as these included in the NA. The share of persons living in collective households and institutions vary from country to country. The data presented is this paper has been corrected by using population census data. Unfortunately, there is no information what share of assets and liabilities can be attributed to this group; it seems that the population share is the only available proxy.

The second coverage issue is that household sector is often compiled together with the non-profit institutions serving households (NPISHs) sector. The size of household sector typically varies considerably from country to county. Table 3.1 shows the share of NPISHs by instruments in the European countries where the breakdown is available for disposable income, financial assets or financial liabilities.

Table 3.1: The share of NPISH of the total disposable income, financial assets and financial liabilities of households and NPISH in 2010

	Disposable income	Financial assets	Financial liabilities
AT	…	7,91%	1,85%
BE	2,30%	…	…
BG	0,51%	1,23%	4,14%
CY	0,01%	1,58%	0,98%
CZ	1,30%	1,06%	1,52%
EE	2,77%	1,02%	3,63%
ES	1,54%	…	…
FI	4,71%	7,16%	2,03%
FR	3,03%	…	…
GR	0,52%	…	…
HU	2,67%	1,14%	0,95%
IT	0,59%	…	…
LT	0,30%	0,83%	0,28%
LV	1,79%	2,01%	1,46%
NL	1,39%	…	…
PL	2,01%	…	…
RO	4,00%	2,95%	8,47%
SI	1,82%	1,29%	1,30%
SK	1,06%	3,31%	7,81%

Source: ECB calculations

Table 3.2 shows some indicators related to **unit non-response and sampling errors**. Unit non-response is the failure to contact a household or to persuade a respondent to participate in the survey. Sampling error is the measure of variability between estimates from different samples. Since sampling errors might be dominant in surveys using smaller samples, the number of achieved interviews is an important determinant of estimation errors.

In sample surveys the bias caused by unit non-response should be reduced with **weight** adjustment (Pérez-Duarte, Sanchez-Muñoz and Törmälehto 2010). In household surveys on wealth design weights are adjusted for over-coverage, multiple selection probabilities and non-response, and finally weights are calibrated using external sources. As a result of weighting, the population estimates of the household survey data used for this paper are very close to population statistics which is natural since figures from the population statistics are frequently used in the calibration of final weights.

It is known that the distribution of wealth items is quite skewed. It has been recognised that household surveys measure aggregate wealth relatively well for the vast majority of households, but the main problem is selective non-response among the very rich households. However, for the survey to adequately represent the full distribution of wealth in the population obtaining data from the wealthier households is extremely important (Kennickell 2007). **Oversampling of the wealthy** households is necessary to improve the wealth measures at the very top of the distribution (Juster et al. 1999). This will lead to both a better coverage of the wealthiest households and correct for the selective unit non-response.

3.3. Errors in measurement due to item non-response, timing and differences in data collection methods

Item non-response occurs when the respondent is not able or is unwilling to provide an answer to a specific question. Given the difficulties in the concepts of some balance sheet variables, a non-ignorable degree of item non-response can be expected in wealth surveys.

The scope for measurement errors due to differences in the definition of variables was described in chapter two. Another basic conceptual difference between HFCS and NA is **timing**. For all the countries analysed in this paper, the HFCS reference year is 2010 except for Greece, the Netherlands and Finland 2009 and for Spain 2008. In the annual NA data used in this analysis the reference date of the stock is the last day of the year.

Survey design literature and further empirical evidence show that the **survey mode** is an important determinant of measurement error. It has been argued that Computer Assisted Personal Interview is the most reliable method for data collection. The use of a computer allows a smooth and error-free administration of the routing of the questions, the application of consistency checks during the interview and the automatic storage of the data. Personal contact with respondents is needed to persuade respondents to participate in the survey and complete the questionnaire by building up trust vis-à-vis respondents and to provide additional assistance and information during the interview if required (ECB 2008).

4.   The linkage between the two statistics

The purpose of this section is to show the practical linkage of financial accounts data and HFCS data. This analysis uses the linkage presented in section 2. Tables 4.1—4.3 show the coverage of HFCS comparing to the national financial accounts by instrument. Table 4.1 comperes the HFCS to the household sector which includes NPISHs. The financial accounts used in Table 4.2 exclude NPISHs. There are only limited number of countries which transmit the data excluding the NPISHs, i.e. Austria, Cyprus, Finland, Slovakia and Slovenia. For the rest of the countries the shares of NPISHs have been estimated by using the weights of the countries which have reported NPISHs.

Overall, the HFCS data cover around 50 per cent of the financial accounts' household data. In section 3 potential reasons for these differences have been discussed. The one of the main reasons for the large differences is the unequal distribution of the wealth, i.e. as a considerable share of the wealth is accumulated to a small number of households it is difficult to capture the total wealth.

Table 4.1: The coverage by instrument of the HFCS vis-à-vis to the national financial accounts. The financial accounts include NPISHs

	F22+F29 Deposits	F33 Bonds	F511 Quoted shares	F52 Mutual Funds	Comparable items total	F61 Private pensions	F4 Liabilities
AT	52.7	29.4	23.1	44.2	46.0	18.6	38.9
BE	72.8	79.1	114.4	60.1	75.0	38.5	75.7
DE	49.9	41.2	62.1	44.6	49.1	32.3	70.5
GR	18.2	6.2	7.4	19.0	16.3	41.5	39.9
ES	41.0	28.6	61.9	29.1	40.5	38.3	60.8
FR	42.9	30.9	97.8	27.9	45.3	38.6	64.1
IT	32.0	19.9	35.9	23.9	27.0	9.4	40.1
CY	26.3	58.3	66.5	…	31.6	130.6	94.5
MT	50.5	49.6	49.7	27.8	48.3	102.1	45.5
NL	46.3	47.5	20.8	64.5	44.2	25.9	82.4
PT	40.9	7.2	72.5	21.5	36.6	11.9	42.1
SI	26.7	6.5	11.8	21.3	24.1	30.3	37.4
SK	42.0	3.4	655.6	12.1	37.9	17.7	37.8
FI	52.1	12.3	68.3	51.8	53.9	20.2	86.3

Table 4.2: The coverage by instrument of the HFCS vis-à-vis to the national financial accounts. The financial accounts exclude NPISHs. The countries indicated in bold are countries where the share NPISHs are estimated

	F22+F29 Deposits	F33 Bonds	F511 Quoted shares	F52 Mutual Funds	Comparable items total	F61 Private pensions	F4 Liabilities
AT	54.3	32.8	29.7	50.9	49.5	18.6	39.6
BE	**74.6**	**88.9**	**142.2**	**70.4**	**81.6**	**38.5**	**77.1**
DE	**51.6**	**46.3**	**77.3**	**52.2**	**52.9**	**32.3**	**71.8**
GR	**18.6**	**7.0**	**9.1**	**22.2**	**17.2**	**41.5**	**40.6**
ES	**42.5**	**31.9**	**75.9**	**34.3**	**43.4**	**38.3**	**62.0**
FR	**44.2**	**34.7**	**121.7**	**32.7**	**48.8**	**38.6**	**65.3**
IT	**33.2**	**22.4**	**44.7**	**28.1**	**29.4**	**9.4**	**40.8**
CY	26.8	63.7	71.0	…	32.3	130.6	95.5
MT	**52.2**	**55.8**	**61.8**	**32.6**	**52.1**	**102.1**	**46.3**
NL	**47.6**	**53.7**	**25.9**	**75.5**	**47.6**	**25.9**	**83.9**
PT	42.1	8.1	90.1	25.2	38.7	11.9	42.9
SI	27.3	7.2	11.8	21.4	24.6	30.3	37.8
SK	43.2	3.5	655.6	12.1	38.8	17.7	38.4
FI	54.4	14.7	85.2	67.8	60.5	20.2	87.8

Table 4.3: The coverage by instrument of the HFCS vis-à-vis to the national financial accounts. The financial accounts exclude NPISHs and the population has been adjusted

	F22+F29 Deposits	F33 Bonds	F511 Quoted shares	F52 Mutual Funds	Comparable items total	F61 Private pensions	F4 Liabilities
AT	54.9	33.2	30.0	51.5	50.0	18.8	40.0
BE	75.7	90.1	144.2	71.4	82.7	39.0	78.2
DE	52.2	46.8	78.1	52.8	53.5	32.6	72.6
GR	19.3	7.3	9.4	22.9	17.8	42.9	42.0
ES	42.7	32.1	76.4	34.5	43.7	38.5	62.4
FR	45.1	35.5	124.3	33.4	49.8	39.4	66.8
IT	33.4	22.5	45.0	28.3	29.6	9.4	41.1
CY	27.0	64.1	71.5	…	32.5	131.4	96.1
MT	52.2	55.8	61.8	32.6	52.1	102.1	46.3
NL	48.3	54.4	26.2	76.5	48.2	26.2	85.0
PT	42.5	8.2	91.0	25.4	39.1	12.0	43.3
SI	27.5	7.3	11.9	21.5	24.8	30.5	38.1
SK	43.5	3.5	682.4	12.2	39.1	17.8	38.7
FI	54.8	14.8	85.8	68.2	60.9	20.3	88.5

Table 4.4 shows the asset distribution of the financial assets. As can be seen in the table, the asset distribution of the two statistics is similar. The financial accounts estimates include NPISHs because the most of countries do not report households and NPISHs separately. As the NPISHs do not have large

impact on the actual distribution, it has been preferred to use comparable reported from all the countries. Practically, this indicates that the distributional data of the HFCS can be considered to be reliable.

Table 4.4: The distribution of the financial portfolio in the HFCS and financial accounts

		F22+F29	F33	F4	F511	F52	F61
		Deposits	Bonds	Money owed to household	Quoted shares	Mutual Funds	Private pensions
AT	na	51.11	11.28	0.05	5.67	11.46	20.42
	survey	64.25	7.91	3.57	3.12	12.10	9.04
BE	na	36.63	12.79	0.01	6.22	14.70	29.65
	survey	40.96	15.52	1.54	10.92	13.55	17.50
DE	na	40.51	6.19	-	4.80	10.61	37.88
	survey	46.03	5.81	2.79	6.79	10.76	27.81
GR	na	78.55	7.36	-	8.51	2.32	3.26
	survey	81.13	2.61	2.51	3.55	2.50	7.70
ES	na	59.01	3.07	-	6.93	12.39	18.59
	survey	56.16	2.03	6.98	9.95	8.36	16.51
FR	na	35.94	2.05	0.90	5.40	9.54	46.18
	survey	36.50	1.50	1.03	12.52	6.30	42.16
IT	na	36.93	25.78	0.51	3.18	10.09	23.51
	survey	51.74	22.48	0.52	5.00	10.58	9.66
CY	na	78.62	2.91	-	6.86	-	11.60
	survey	46.31	3.80	3.64	10.21	2.14	33.90
MT	na	55.80	16.64	2.50	8.37	7.64	9.05
	survey	53.23	15.59	1.86	7.85	4.02	17.45
NL	na	24.37	3.05	0.23	5.52	3.30	63.53
	survey	34.20	4.39	1.70	3.48	6.45	49.77
PT	na	49.49	7.67	9.55	2.64	5.54	25.10
	survey	70.79	1.94	5.98	6.69	4.16	10.44
SI	na	61.88	1.93	3.77	7.88	10.36	14.18
	survey	62.68	0.47	8.68	3.51	8.36	16.29
SK	na	65.89	1.95	0.41	0.02	8.42	23.31
	survey	79.93	0.19	4.67	0.37	2.94	11.90
FI	na	46.38	3.60	0.10	17.78	10.37	21.78
	survey	51.95	0.95	-	26.10	11.55	9.46

5. Conclusions

This paper compares and explores potential for linkages between micro and macro sources in regard to household balance sheets. Household wealth accounts broken down by different household subpopulations permit a differentiated analysis of their vulnerability, thus broadening and providing an invaluable input into financial stability analysis. Besides, this kind of approach permits to cross-check the results of both statistics. Finally, it also provides important value added to the analysis of welfare, in line with the recommendations of the Stiglitz, Sen and Fitoussi report.

The different composition/methodology underlying the two sets of statistics may require that comparisons of household wealth and income be undertaken with proper care. However, the definitions of some individual items are identical or similar, and this paper concentrates on the comparative analysis of such items. This paper has analysed the linkage in all the available euro area countries. The macro data are taken from national accounts (consistent with the euro area accounts) and the micro data has been taken form the HFCS.

Finally, it can be concluded that this is a useful first step in building linkage between wealth surveys and national accounts. However, there is still much to improve. For instance, there is room for

development in the area of measuring household real assets in national accounts and improving the conceptual analysis of pensions and business wealth between the two sources. Additionally, the analytical use of this linkage should be further developed, i.e. it should be investigate how this could be applied for instance in the analysis of household indebtedness and leverage. The benefit of using this kind of linkage data is that it possibly allows the combination of benefits of the both statistics, i.e. the timeliness of national accounts and the distribution of survey.

6.   References:

Antoniewicz, R., Bonci R., Generale A., Marchese G., Neri A., Maser K. and O'Hagan P. (2005): "Household Wealth: Comparing Micro and Macro Data in Cyprus, Canada, Italy and United States", paperi, joka on esitetty: LWS Workshop: "Construction and Usage of Comparable Microdata on Wealth: the LWS", Banca d'Italia, Perugia, Italy, 27-29 January 2005.

Castrén, Olli and Kavonius, Ilja Kristian (2009): Balance Sheet Interlinkages and Macro-Financial Risk Analysis in the Euro Area, Working Papers 1124, European Central Bank, Frankfurt am Main 2009.

Durier, Sébastien and Lucile Richet-Mastain (2012): Distributional Information on Income and Wealth Using French Households Micro Data and National Accounts. Paper Prepared for the 32nd General Conference of The International Association for Research in Income and Wealth, Boston, August 5 – 12. 2012.

European System of Accounts 1995 (ESA95), Council (EC) Regulation No 2223/96 of 25 June 1996 on the European system of national and regional accounts in the Community, Official Journal of the European Union L 310/1-469.

HFCN (2008): Household Finance and Consumption Survey: Modalities for Implementation. Household Finance and Consumption Network, European Central Bank.

HFCNECB (2008): Estimating entitlements in retirement plans. Household Finance and Consumption Network, European Central Bank.

HFCNECB (2010). List of Core Output Variables, Household Finance and Consumption Survey. ECB & Household Finance and Consumption Network.

Johansson, Fredrik and Andres Klevmarken (2007): Comparing Register and Survey Wealth Data. In: "Essays on Measurement Error and Nonresponse". *Uppsala University Economic Studies* 103, pp. 47 – 76.

Juster, F. Thomas, James P. Smith and Frank Stafford (1999): The Measurement and Structure of Household Wealth. *Labour Economics,* Vol. 6,pp. 253 – 275.

Kavonius, Ilja Kristian (2006): "The Implication of Employee Stock Options and Holding Gains for Disposable Income and Household Saving Rates in Finland", *Journal of Official Statistics*, 3/ Volume 22, 2006, pp. 585–597, Statistics Sweden.

Kavonius, Ilja Kristian & Törmälehto, V-M (2010): "Integrating Micro and Macro Accounts – The Linkages Between Euro Area Household Wealth Survey and Aggregate Balance Sheets for Households", IARIW 31st General Conference, St-Gallen, Switzerland, August 22-28, 2010.

Kennickell, A. (2007), "The Role of Over-sampling of the Wealthy in the Survey of Consumer Finances", Federal Reserve Board, Survey of Consumer Finances Working Papers, July 2007.

Martin, Peter and Peter Lynn (2011): The Effects of Mixed Mode Survey Designson Simple and Complex Analyses. Centre for Comparative Social Surveys Working Paper Series, No 4.

Pérez-Duarte S., Sánchez-Muñoz C., Törmälehto V-M: "Re-weighting to reduce unit non-response bias in household wealth surveys: a cross-country comparative perspective illustrated by a case study." *Paper prepared for the Conference on European Quality in Statistics, Helsinki, May 4-6 2010*.

Revilla, Melanie (2010): Quality in Unimode and Mixed-Mode Designs: A Multitrait-Multimethod Approach. Survey Research Methods, Vol 4, No 3, pp. 151-164.

System of National Accounts 1993 (SNA93), Commission of the European Communities, International Monetary Fund, United Nations, World Bank, Brussels/Luxembourg, New York, Paris, Washington D.C., 1993.

System of National Accounts 2008 (SNA2008), Commission of the European Communities, International Monetary Fund, United Nations, World Bank, Brussels/Luxembourg, unpublished.

Stiglitz, J.E & Sen, A. & Fitoussi, J-P (2009): Report by the Commission on the Measurement of EconomicPerformance and Social Progress, www.stiglitz-sen-fitoussi.fr.

Van den Heede, Aaron, Tim Goedemé, Karel van den Bosch and Josefine Vanhille (2012): What Difference Does a Survey Make? Comparing Incomes of the 65+ in Europe Between SILC and SHARE. Paper Prepared for the 32nd General Conference of The International Association for Research in Income and Wealth, Boston, August 5 – 12. 2012.

Verma, Vijay & Betti, Gianni (2010): "Data Accuracy in EU-SILC". In Atkinson, Anthony B. and Marlier, Eric (ed.): Income and Living Conditions in Europe. Eurostat 2010.

Annex: Income link

Income in the HFCS is collected for ten different concepts and additionally, for a mop-up category "**Other income received**". Part of the income components are collected at the personal level from all household members aged 16 or older, others are collected at the household level only. The collection of personal level income from all household members is essential in order to capture total household income (Van den Heede et al. 2012). However, some income items, such as public transfers and rental income, cannot necessarily be attributed to individual persons, but can be collected at the household level only. Only gross income variables are compulsory, but for some countries, like Finland and Italy, disposable income can also be constructed.

In the NA/EAA, i.e. also in the sector accounts, income concept covers all the income received/paid in the accounting period. The income concept is based on the European System of Accounts 1995 (ESA95). The most common concept used in the context of households in national accounting is disposable income. However, disposable income as well as other balancing items is calculated from its components. In this paper we build from the individual transactions an income concept which is as near as possible to the concept applied in the HFCS.

In the HFCS, **employee income** is the sum of remuneration received from an employer in cash. This includes some near-cash components, such as stock options. This concept corresponds to **wages and salaries** in the NA. Wages and salaries are the remuneration paid in cash or *in kind* for work done during the accounting period. Employee stock options are not covered by the wages and salaries as realised and unrealised holding gains, which employee stock options are by nature, are classified as other changes, i.e. price changes, of stocks.[9] This component does not cover social contributions payable by the employer in neither source.

Income from self-employment is the net operating profit or loss that a self-employed person makes out of his or her unincorporated enterprise. This is defined as gross revenue (including subsidies) minus operating costs, wages and salaries paid to employees, including social contributions, taxes paid on production and imports, interest paid on business loans, and depreciation of fixed assets. The business of a self-employed person may make a loss which is regarded as negative income. In NA for income from quasi-corporations would be theoretically possible to estimate **entrepreneurial income**. Unincorporated enterprises are included in the households sector and those refer to enterprises which cannot be separated from a household. This kind of business do not necessarily have own book-keeping and household wealth is at risk if the enterprise goes bankrupt.

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[9]   See more on the employee stock options and the income concept of NA: Kavonius 2006.

Table 2.3 Typology of income in the HFCS and NA

Household wealth survey	EAA/sector accounts	Comment
Employee income	D11 Wages and salaries	The NA concept does not include employee stock options. Additionally, wages and salaries in kind are included in the NA.
Self-employment income	B4 Entrepreneurial income B4 Mixed income	Theoretically, the best correspondence is to the entrepreneurial income. This is, however, available only for few countries and thus, the most comparable item is mixed income. However, this does not include the property income items. Therefore, the most appropriate way of comparing these income types is to compare the aggregate of entrepreneurial income and property income.
Rental income from real estate property	B4 Entrepreneurial income B3 Mixed income	Rental income in NA cannot be separated from the other entrepreneurial income/mixed income.
Income from public pensions Income from occupational and private pensions Income from unemployment benefits Income from regular social transfers	D62 Social benefits	Theoretically, social benefits are available in NA broken down by social security benefits in cash, private funded social benefits, unfunded employee social benefits and social assistance benefits in cash. However, this detail of data is not available in international sources.
Income from private transfers	D75 Miscellaneous current transfers	This NA item covers transfers from the other sectors. However, the transfers between different households are often consolidated.
Income from financial investments	D41, D421 Interest, dividends	It should be noted that the NA concept covers also interest and dividends received/paid by unincorporated enterprises. Additionally, in the standards national accounts the interest flows exclude FISIM. However, the interest flows are in many countries available also without FISIM-correction.
Income from private business other than self-employment	D422 Withdrawals from income of quasi-corporations	This might have borderline cases with self-employment income/entrepreneurial income depending how the businesses are defined in the two statistics.
Other income	No corresponding item	Holding gains, which are the major part of this item, are price changes in the NA

However, entrepreneurial income is available only for few countries. It is defined as mixed income plus property income receivable in the financial or other assets own by the enterprise, minus interest payable on the liabilities of the enterprise and rents payable on land or other tangible non-produced assets rented by the enterprise. The problem for several countries is that they are not able to distinguish property income which is related to unincorporated enterprise from the property income which is related to households overall activities.

Income from private business other than self-employment refers to the amount of profits from capital investment in unincorporated and incorporated not publicly traded private businesses received less expenses incurred. This roughly corresponds to the **withdrawals from the income of quasi-corporations**. These are in practice withdrawals from quasi-corporations or incorporated partnerships, i.e. corporations which are not allocated in household sector. The practical problem in this case as well in the case of entrepreneurial income is the delineation of the household sector, that is to distinguish which corporations are unincorporated, incorporated or quasi-corporations and whether this borderline is consistent between the two statistics.

Rental income from real estate property includes income received from renting a property or land, after deducting costs such as mortgage interest repayments, minor repairs, maintenance, insurance and other charges. If renting of the property is part of an unincorporated business, the income should be part of the self-employment income. In the case of NA, rental income is **mixed income** of households, i.e. the rental business is classified as a business of unincorporated enterprise. The rental income of the HFCS is equivalent to the concept of entrepreneurial income (from rental activities) in the NA but as indicated earlier, this cannot be calculated for all the countries. Additionally, it is not possible to separate in NA rental income from the other entrepreneurial income. Therefore, the most correct way to compare these items is to aggregate rents from land items and mixed income or entrepreneurial income items and to compare this aggregated item.

Income from financial investments includes interest received from assets such as bank accounts, certificates of deposit, bonds, publicly traded shares etc. less expenses incurred, plus dividends received. This item corresponds to **interest and dividends** in the national accounts. Additionally, NA classify withdrawals from quasi-corporations, property income attributed to insurance policy holders and rents from land. The property income attributed to insurance policy holders is not covered by the HFCS-concept. As mentioned earlier, withdrawals correspond to the income from private business other than self-employment although many countries do not report this item.

In NA, the concept **social benefits other than social transfers in kind** includes all items classified as (public) transfer income in household surveys. According the SNA93 and ESA95 there is further detail for social transfers where they are broken down by private funded benefits and unfunded employee benefits. This detail, however, is not transmitted by countries and therefore, the comparison must be done at the level of social benefits.

There are three items for public transfers in the HFCS. **Income from public pensions** includes old age pensions, anticipated old age pensions (periodic payments intended to maintain the income of beneficiaries who retire before the standard age), partial retirement pensions, survivor's pension and disability pension. **Unemployment income** includes full and partial unemployment benefits, benefits for early retirement for labour market reasons, vocational training allowances and mobility and resettlement payments by social security funds or public agencies, and other unemployment financial assistance, particularly payments to the long-term unemployed. **Income from regular social transfers** includes any regular transfers to individuals, families or households from social security or other governmental agencies (excluding items reported under pensions or unemployment benefits) such as illness subsidies, maternity leave, family protection, child benefits, student grants and other educational assistance, tax credits etc.

Pensions received from occupational and private pension plans are collected as a separate category. In the national accounts this item is covered by **insurance technical reserves**. The pensions received are classified as social transfers. **Income from private transfers** refers to any regular transfers from private entities or other households, for example alimony and child support. The recording of these items depend on who is paying these transfers. In the all of the cases, these are classified as **current transfers** but these are additionally broken down by payer sector. In the case of transfers paid by the other

households, the manuals recognise transfers paid by the other households but in practice several countries do not have those figures. NA treat households as a joint sector, at the aggregate level countries produce in a sense consolidated figures and the transfers "cancel out" within the sector.

The mop-up category **other income received** in HFCS refers to any income source not classified earlier. This might include such items as capital gains or losses from the sale of assets, severance and termination payments, lump sum payments upon retirement or premature withdrawals from private pension schemes, prize winnings or insurance settlements.