

Measurement of property income in EU-SILC¹

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Abstract: The results from the EU-SILC 2004 indicate that property income is an important component of households' primary income in some countries. The present paper explores some conceptual and practical issues related to the measurement of income derived from ownership of financial and non-financial assets. The concept of property income in EU-SILC is reviewed and contrasted to National Accounts' concepts and international recommendations. Evidence from the 2004 EU-SILC data as well as from the Finnish national database is utilised to assess potential comparability problems in measurement of property income.

1. Introduction

This paper discusses some conceptual and practical issues related to the measurement of income derived from ownership of assets in EU-SILC. The evidence from the fourteen EU-SILC 2004 countries shows that the share of property income ranged from 1 to 10 percent of disposable income². This variation seems to indicate that for some countries, income from property is an important income source. The variation of the shares also may of course partly be a result of the differences in the data generating processes. Despite standardisation of procedures and concepts, quite a bit of variation still exists between the countries in the potential error sources of the EU-SILC implementations.

The EU-SILC data will be used to rank countries according to level of income inequality and to monitor changes in inequality. A reasonable degree of comparability in measurement of property income is desirable for indicators such as share ratios and Gini -coefficients where errors in the upper tail matter. It must be noted, however, that EU-SILC (and household sample surveys in general) may not be the best source to study the tails of income distributions; other alternatives, such as total income statistics or taxation statistics, where available, may prove more useful e.g. in studies of "top incomes", including property income, capital gains, stock options, or CEO pay.

The paper is organised as follows. First, the EU-SILC definition of property income is contrasted to the National Accounts' definition and international guidelines for micro statistics. Next, some results from the EU-SILC 2004 cross-sectional user data are presented and comparability issues specific to property income discussed. An extended definition of property income is then constructed by adding realised capital gains and imputed rents of owner-occupiers to disposable income of the Finnish EU-SILC data. The significance of these components for main income-based indicators is briefly assessed. The paper concludes with summary and recommendations.

2. The concept of property income

A definition of property income is provided in each of the following three standard references on household income statistics: National Accounts (SNA93/ESA95), the Canberra Expert Group recommendations (2001), and the ILO report on household income and expenditure statistics (2003). National Accounts is a natural benchmark for EU-SILC because one of its objectives is international comparability and the EU-SILC income definition is very closely related to National Accounts

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² Before 2007, countries may record property income gross or net of taxes and/or social contributions so the shares are *not* comparable, but there is considerable variation within gross and net countries as well. The figures refer to equivalent incomes.

definitions. Table 1 highlights this by stating the property income definitions in the ESA95 and the EU-SILC regulation. The EU-SILC definition is a modified version of the ESA95 definition, with some additions such as stating explicitly the income reference period, and adding "less expenses" to the definition.

Table 1. Definitions of property income in ESA95 and EU-SILC regulation.

Quote from the ESA95 manual:	Quote from the EU-SILC regulation:
<i>(4.41) Property income (D.4) is the income receivable by the owner of a financial asset or a tangible non-produced asset in return for providing funds to, or putting the tangible non-produced asset at the disposal of, another institutional unit</i>	<i>(2.4) Property income is defined as the income received less expenses accruing, during the income reference period, by the owner of a financial asset or a tangible non-produced asset (land) in return for providing funds to or putting the tangible non-produced asset at the disposal of another institutional unit.</i>

Since property income is derived from ownership of assets³, a typology of assets is a natural framework for property income components. Table 2 maps the National Accounts' asset types to income components in NA and their rough equivalents in the EU-SILC. The components which are considered as property income are shown in italics.

The definitions of property income state that property income is derived from ownership of a) financial assets and b) tangible non-produced assets. Consequently, excluded are intangible assets, such as copyrights and patents, and produced non-financial assets, such as dwellings. In EU-SILC, dwellings nevertheless yield property income (income from rentals). While the practice itself may be justified it makes the definition given in Table 1 and the sub-components of EU-SILC property income in Table 2 inconsistent. National Accounts is consistent because asset type "dwellings" yield entrepreneurial income/mixed income for households, not property income.

An important conceptual and practical difference is that the EU-SILC definition includes only interest received but the National Accounts definition covers both interest received and paid, i.e. net interest payments. This also is the recommendation of the Canberra Group while the ILO gives preference to only counting interest received. The real conceptual difference is, however, only interest paid on consumer debt which in EU-SILC is treated as household final consumption expenditure⁴. Interest paid on "producer loans" should be deducted from the corresponding income received, i.e. interest paid on business or investment loans from self-employment income (PY050) or rentals (HY040), and interest paid on mortgage on the main residence (HY100) from imputed rents (HY030) from 2007 onwards.

As a practical matter, separating different types of interest payments from each other may be difficult in some countries, e.g. if debts are bundled together irrespective of their intended use. It may also be difficult to separate total repayments to interest payments and loan instalments. For the EU-SILC, these kind of problems could be solved by imputation or modelling. Deducting also interest paid on consumer debt could lead to negative property incomes.

Distributed income of corporations (dividends, withdrawals) are conceptually equivalent in NA and EU-SILC. Profits from capital investment in an unincorporated business is taken to be the EU-SILC counterpart to withdrawals in the National Accounts definition. In practice, distinguishing profits withdrawn by working owners from those of non-working owners may be difficult in EU-SILC⁵. This

³ Property income received from business assets, i.e. in connection with financial and other assets belonging to the enterprise, is defined to be part of self-employment income in EU-SILC (section 2.2 of the regulation).

⁴ Neglecting here the effects of FISIM in National Accounts (separating total interest to service charge and pure interest elements).

⁵ For example, in Finland profit sharing by "sleeping partners" is included in self-employment income.

adds to the "grey area" of what is recorded as self-employment income (which may be different from income of the self-employed) and what as income from capital in the EU-SILC.

Table 2. Assets and incomes in National Accounts and EU-SILC. (Non-financial asset AN, financial asset AF).

<i>Asset type (ESA95 asset classification)</i>	<i>National Accounts primary income</i>	<i>EU-SILC target variable</i>
AF2 Currency and deposits AF3 Securities other than shares AF4 Loans (assets)	<i>a) interest received (D.41);</i>	<i>1. Interest, dividends, profits from capital investment in an unincorporated business (HY090);</i>
AF5 Shares and other equity	<i>b) distributed income of corporations (D.42):</i>	
	<i>(1) dividends (D.421);</i>	
	<i>(2) withdrawals from income of quasi-corporations (D.422).</i>	
	<i>c) reinvested earnings on direct foreign investment (D.43)</i>	(Not relevant for household sector)
AF611 Net equity of households in life insurance reserves AF612 Net equity of households in pension funds reserves	<i>d) property income attributed to insurance policy holders (D.44);</i>	Excluded from income ⁶ (PY080 Regular pensions and annuities from individual private plans)
AN2111 Land	<i>e) rents (D.45).</i>	<i>2. Income from rental of a property or land (HY040)</i>
AN1111 Dwellings (+ other AN111 Tangible fixed assets)	(Mixed income/entrepreneurial income) (Operating surplus/entrepreneurial income)	
AF4 Loans (liabilities)	<i>(1) Interest paid on:</i> <i>- mortgage loans</i> <i>- business loans</i> <i>- consumer loans</i>	Interest paid on mortgage, main residence (HY100) Self-employment income (PY050) Excluded
AN1123 Entertainment, literary or artistic originals (AN112 Intangible fixed assets)	(Mixed income/entrepreneurial income)	(PY050 Self-employment income: royalties)

Asset type "Land" yields rental income both in NA and EU-SILC. In contrast, as already noted, rental incomes from dwellings⁷ are treated differently. Rental income may be actual (monetary) or implicit

⁶ The table relates to the existing EU-SILC regulation. Following the recommendation of the EU-SILC methodological Task Force, it has been decided that PY080 should be added to disposable income.

⁷ And from other buildings and structures.

(imputed, in-kind). Actual rents from property leased to others are property income (HY040) in EU-SILC. In National Accounts they are seen as payments for services produced by the owners of the property and thus generate mixed income/entrepreneurial income. The EU-SILC treatment of actual rents is in accordance with the ILO guidelines, while the Canberra Group avoids the decision between self-employment income and property income by treating them as a separate (unspecified) component.

Implicit or imputed rents from owner-occupied dwellings are in EU-SILC grouped together in the same target variable (HY030) with imputed rents from subsidised or free rented dwellings, apparently on the basis of the valuation method or because imputed rent is seen as a general device to take into account housing costs⁸. In National Accounts, implicit rents are again reward for own-account production of housing services and generate operating surplus/entrepreneurial income. A logical and feasible solution for EU-SILC might be to treat actual rents and implicit rents of owner-occupiers as property income received from ownership of a dwelling, i.e. as income from capital. The "income from employment" treatment of National Accounts may not be very realistic.

Royalties are self-employment income in both EU-SILC and NA as well as in the Canberra recommendations. The ILO resolution, however, notes that royalties could be conceived as property income derived from intangible produced assets. Royalties are not necessarily earned from activity during the income reference period and some royalties may be based on inherited ownership of patented or copyrighted materials. Because the receipts are not necessarily tied to labour input, at least within the income reference period, the ILO recommendation is that royalties should be property income, not income from employment.

Two of the National Accounts components which do not appear in the EU-SILC definition are "Reinvested earnings on direct foreign investment" and "Property income attributed to insurance policy holders". The first one does not in practice add to household sector income but the second one does. Property income is in this case investment income from insurance technical reserves held by households in life insurance and pension funds reserves. In the EU-SILC context, this item can be seen as related (but not equivalent) to profits from life insurance savings, including regular pensions and annuities from voluntary individual private pension plans. The Canberra Group and the ILO suggest that these should be property income while in EU-SILC it is at the moment unclear whether they should be a part of primary income, social insurance, or something else.

A notable omission from both EU-SILC and National Accounts definitions are capital gains, or holding gains in the SNA terminology, i.e. gains and losses made by households solely because relative prices of the assets they own change. Such gains can be neutral or real, depending on inflation; and unrealised or realised, depending on whether the assets are actually sold or not. In addition, a distinction must be made between gains made during the entire holding period and during the income reference period. Including capital gains in income would be important at the top of the income distribution, and for studies covering a long period of time (Franz et. al., 1998).

It can be argued that *real* (inflation adjusted) and *realised* (from assets sold) holding gains made *within the income reference period* can be used to finance consumption or saving without reducing the value of net worth. Therefore these kind of gains could be part of EU-SILC disposable income. While unrealised capital gains may change consumption behaviour (wealth effect), they are not immediately at household's disposal and cannot be consumed to satisfy everyday needs. Their inclusion is therefore more controversial.

⁸ For owner-occupiers, the EU-SILC target variable HY030 is conceptually equivalent to National Accounts' net operating surplus from own-account production less interest paid on mortgage. Imputed rents from social housing are not included in disposable income in National Accounts because they are social transfers in kind and therefore a part of adjusted disposable income.

Following the recommendation of the Canberra Group, EU-SILC regulation does not include capital gains in disposable income⁹. This is in accordance with the treatment in National Accounts. The justification for doing so probably is not the same: the EU-SILC income concept is not tied to income derived from production while the National Accounts' concept is. The effect of including realised capital gains in income is discussed in section 4.

Finally, it must be noted that the Luxembourg Income Study has taken the Canberra recommendations into account in its operational income definition. The definition of LIS property income (variable V8 cash property income) includes cash interest, rent, dividends, annuities, royalties and excludes capital gains, lottery winnings, inheritances, insurance settlements, and all other forms of one-off lump sum payments. Interest paid is deducted from interest received (V8X). In other words, the definition is more consistent with the ILO definition in that it adds royalties to property income but follows Canberra Group in that interest paid is deducted.

3. Evidence from the EU-SILC cross sectional UDB 2004

The intermediate quality reports prepared by the countries give an assessment about the applied income concepts and deviations from the EU-SILC definitions. There are only few remarks on property income in these reports. This would suggest that in principle an attempt has been made to measure rents, interests, and distributed profits as stated in the regulation; the question should then be how good has the measurement been. Several, but not all, countries note that property incomes are under-estimated in their implementation of EU-SILC.

3.1 The recipients and the distribution of property income

The SILC data only distinguishes rents (HY040) from interest and distributed profits (HY090). Because at this stage countries may provide data net or gross of taxes and/or social contributions, net and gross countries are compared separately when necessary. Gross recorded variables are used when available¹⁰.

Basic data on recipients and allocation of property income into the two target variables, and concentration to disposable income distribution is shown in Table 3. There is considerable variation between the countries. In the Nordic countries, distributed profits and interest received are relatively more significant than income from rentals. In Norway, Sweden, and Denmark the share of HY090 was more than 90 percent of total property income. All these countries measure incomes completely from registers and record them gross¹¹. In Austria, Luxembourg, Portugal and especially Greece the case is the opposite: 75 percent or more of property income consists of rental income HY040.

The highest shares of households with non-zero property incomes are recorded in the pure register countries Norway, Denmark, and Sweden. In Estonia, Portugal, Ireland, Greece, Luxembourg, Austria, and Spain less than 40 percent of all households received property income. The share of households with property income is positively correlated with the share of interest and distributed profits. One might speculate that there could be underreporting of interest received because most households presumably have a bank account and get at least small interest on their deposits.

⁹ Despite excluding gains/losses from income, the EU-SILC regulation states that taxes paid on capital gains should be included in taxes (definition of target variable HY140). This follows the convention of National Accounts (at least in Finland) but does not make sense in practice on micro statistics and results in negative incomes if capital gains taxes are properly measured.

¹⁰ Net to gross conversion is thus an additional error source. It is not discussed in this paper.

¹¹ Finland collects interest received from interviews and other sub-components from registers.

Some interesting variation between the countries can be observed in the concentration of property income. In Finland and Norway, property income, as defined in EU-SILC¹², is particularly concentrated to the top quintile: more than 80 percent of property income goes to the richest quintile. Sweden is at the other extreme with about half of property income going to the top quintile. In many countries the share going to top quintile is around 40 percent of total property income and the share going to those above median is around 80 percent. The concentration of property income to population above median income indicates that inequality indicators, such as Gini-coefficient and income share ratio, are more vulnerable to errors in measurement of property income than at-risk-of-poverty indicators.

Table 3. Recipients and concentration of property income.

	% of households who received:			% of total property income		Concentration of property income by equivalent disposable income			
	Property income	Rents	Interest and distributed profits	Rents	Interest and distributed profits	Below at-risk-of-poverty threshold	Above threshold, below median	Deciles VI-VIII	Deciles IX-X
Austria	29	6	25	74	26	6	19	19	62
Belgium	71	7	69	37	63	5	23	24	53
Denmark	98	2	98	7	93
Estonia	6	2	5	50	50	5	16	17	68
Finland	63	7	62	14	86	1	7	10	84
Ireland	18	4	15	60	40	6	18	19	63
Luxembourg	27	9	20	74	26	1	9	20	71
Norway	99	2	99	3	97	2	8	8	84
Sweden	80	2	80	5	95	4	24	24	52
Spain (net)	35	5	33	55	45	5	18	22	60
France (net)	75	6	74	31	69	4	18	25	58
Greece (net)	19	17	2	97	3	5	19	28	54
Italy (net)	50	7	48	42	58	4	16	25	60
Portugal (net)	17	5	14	75	25	5	18	19	63

Figure 1 depicts Kernel density estimates of non-zero property income in Denmark, Finland, Norway, and Sweden in the SILC 2004 data¹³. Extensive use of register data and other similarities would suggest that the degree of comparability between these countries could be quite high. Figure 1 does not quite support this. The most obvious difference is the bimodal distribution of Denmark due to negative property incomes. Finland has a spike at around 10 euro¹⁴. Similar concentration of recipients at certain levels of property income is a notable feature in some other countries as well. This may be a feature of data collection (e.g. incomes asked in categories or in exact amounts, rounding, imputations, measurement from registers) or a reflection of real situation.

There should be no negative values in property income target variables because the only deducted item, expenses, are not likely to exceed the receipts¹⁵. Property income paid should not be deducted if there is no corresponding income component (self-employment income, imputed rent). In the data, both HY090 and HY040 indeed are always positive for all countries except Denmark, where more

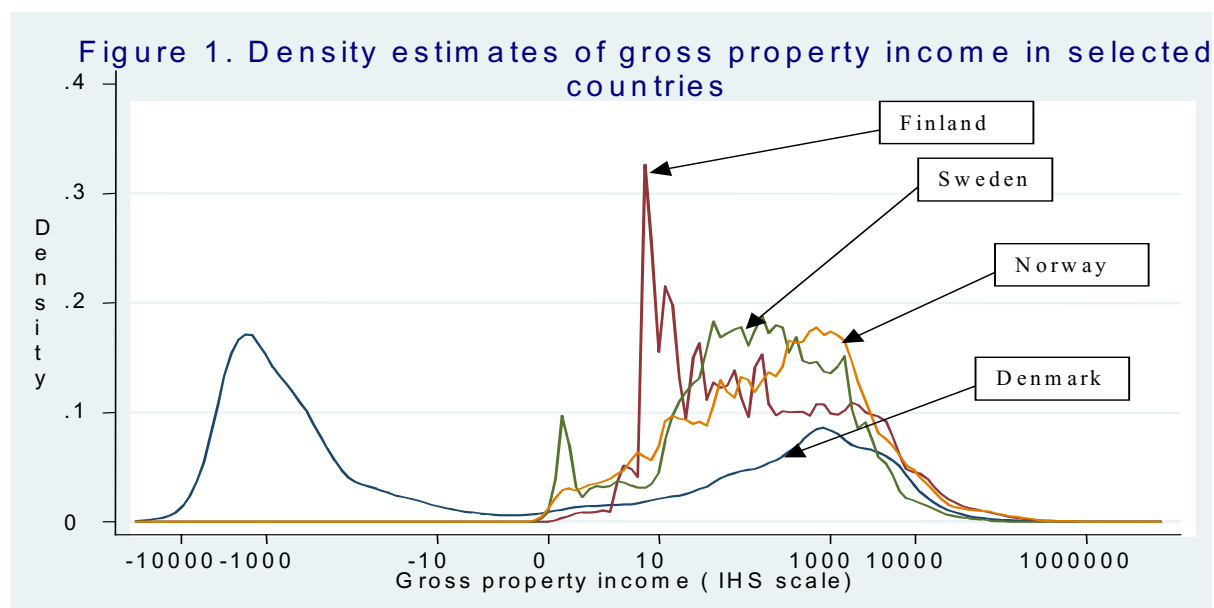
¹² Realised capital gains are included in the national income distribution statistics of these countries.

¹³ Logarithmic transformation is approximated with inverse hyperbolic sine transformation to retain negative values. Stata add-on "akdensity" is used for adaptive kernel density estimation (Van Kerm, 2003).

¹⁴ More specifically, 8.5 percent of all property income recipients received exactly the same amount, 7 euros.

¹⁵ If they do, it is unlikely that negative values are reported or registered. In case of rents from dwellings, there may be occasions when e.g. leasing an apartment is not temporarily profitable because of deductions (e.g. repair costs) and so negative values might occur. Unlike with self-employment income, there is no target variable for negative rental income.

than half of the households have negative values in interest and distributed profits variable HY090. The reason for this is that interest paid has been deducted from interest received in the Danish SILC. Negative values are retained in the data to show the effect on indicators.



The contribution of property income to overall inequality can be described by decomposing Gini-coefficient of equivalent disposable income G_y by income source. In Table 4, the contribution of property income to income inequality is broken down to the share of property income from disposable income S_i (column 2), the inequality of property income itself among the population G_i (column 3, within-source Gini of property income), and the correlation between property income and rank of disposable income R_i (column 4, Gini correlation). All of these may be affected by taxation. The contribution is higher for gross incomes and therefore net and gross recording countries have to be considered separately.

Table 4. Contribution of property income to disposable income Gini (equivalised incomes, person weights). Sorted by absolute contributions.

	(1) Disposable income Gini	(2) Share of property income	(3) Property income Gini	(4) Gini correlation	(5) Concentration	(6) Absolute contribution	(7) Elasticity
	$G(y)$	$S(i)$	$G(i)$	$R(i,y)$	$R(i,y) * G_i$	$R(i,y) * G(i) * S(i)$	$S^*[(R*G_i/G_y)-1]$
Finland	0.253	9 %	0.95	0.84	0.794	0.071	0.190
Norway	0.252	10 %	0.91	0.80	0.728	0.070	0.180
Denmark	0.239	2 %	2.95	0.38	1.115	0.024	0.081
Luxembourg	0.256	4 %	0.94	0.68	0.634	0.024	0.057
Belgium	0.264	3 %	0.86	0.50	0.426	0.015	0.021
Sweden	0.228	3 %	0.86	0.46	0.395	0.011	0.021
Austria	0.258	2 %	0.95	0.52	0.488	0.010	0.018
Ireland	0.316	2 %	0.97	0.63	0.605	0.009	0.014
Estonia	0.374	1 %	0.98	0.58	0.567	0.003	0.003
Greece (net)	0.331	5 %	0.91	0.53	0.489	0.022	0.022
France (net)	0.283	3 %	0.84	0.58	0.481	0.016	0.024
Italy (net)	0.329	3 %	0.88	0.62	0.543	0.016	0.019
Spain (net)	0.307	2 %	0.95	0.59	0.563	0.012	0.017
Portugal (net)	0.377	2 %	0.97	0.53	0.509	0.009	0.006

Because under-estimation is suspected by several countries in their quality reports, income share may be the most decisive factor in explaining the variation between countries in the contribution to overall

inequality (column 6). If the distribution of property income is uneven, as expected, this should show up as high within-source Gini -coefficient. If property income is concentrated to high income household, this should show up in high Gini -correlation with disposable income. An index of concentration is obtained by multiplying correlation with within-source Gini (pseudo-Gini).

It comes as no surprise after Table 3 that Norway and Finland stand out as countries with the highest contributions of property income. The shares and correlations in these countries are high whereas the within-source Ginis reach high values in other countries as well. The lowest contributions are found in Estonia (gross recorded) and Portugal (net recorded). Because of negative values resulting from deducted interest paid, the within-source Gini in Denmark is higher than one and this results in high index of concentration and low income share.

3.2. Issues in comparability

To assess the quality of the results, it is necessary to consider how the data on property incomes are actually generated in different countries, and to benchmark the results with alternative sources. Regarding measurement and estimation, we restrict to some comments relevant for measuring property income: register versus interview data, non-response, sample allocation, and estimation.

In EU-SILC, income data is collected directly from households, from administrative and statistical registers, or from both. Norway, Denmark, and Sweden take all property income data from registers while Finland collects interest received from interviews and other components from registers. The other countries in EU-SILC 2004 collected income data mainly from interviews.

Register data should suffer less from observational errors than interviewed data. In register-based measurement, errors related to interviewer, instrument (questionnaire design) and mode of collection (telephone/visit/mail) are eliminated. The respondent error is dependent on whether the registered data is self-declared or provided by the institution/individual paying the amount. In Finland, the latter is mostly the case with dividends while rental incomes are largely self-declared to tax authorities. The only interviewed component, interest received, is known to be under-reported and consequently severely under-estimated with respect to macro figures.

Item non-response rates of property income range from 70 percent in some countries to zero in the pure register countries. The countries implement their own imputation procedures and methods. The comparability of the results of imputations, and a need for more standardisation among countries are issues which should be examined. Certain question types may help to reduce unintentional item non-response: making non-response more "visible" with question-and-answer-design using screening questions may be a better alternative than tabular design type of questions when asking about incomes (Timm, 2004). Eurostat also suggests asking about incomes directly and in income categories (Eurostat, 2004) and this practice is followed by some countries.

In the design stage, measurement of property incomes could be improved by stratification and allocation of the sample into the strata in such a way that it results in higher chance of selection of high-income households. This would yield more efficient property income estimates. In addition, it would reduce the problem of influential observations (weighted outliers) because smaller sampling weights would be associated with high incomes. Over-sampling of this kind is not common in the EU-SILC implementations, and indeed such procedure might be in conflict with the primary aim of the instrument, measuring poverty and social exclusion¹⁶.

The achieved sample is always substantially smaller than the selected sample because of unit non-response: response rates ranged from about 50 percent to 90 percent in 2004. In the estimation stage,

¹⁶ Finland seems to be the only country which intentionally over-samples high-income households in EU-SILC. The reason for this is integration of EU-SILC with an existing national survey.

unit non-response is compensated by adjusting, or re-weighting the design weights of the respondents using sample-level information (direct non-response correction), external data (calibration) or both. Calibration to external sources eliminates sampling variance of certain statistics of selected variables, e.g. total sums or shares of low-income persons. Register data, in particular, offers the possibility to create "strong" calibration models because it is essential that the survey variables correspond to the auxiliary information used (cf. Lundström & Särndal, 2001, p. 29).

Countries can choose themselves the kind of auxiliary information they use in their calibration models. The choice is dictated by and large by the availability of auxiliary data but also by the objectives set by the statisticians responsible for the survey. As an example of different objectives, certain total income sums are fixed in the Finnish EU-SILC calibration model, among them dividends and realised capital gains¹⁷, while in Denmark the calibration model includes external information on register-based income poverty and equivalent incomes. In the Finnish case, the calibration variables are highly correlated with Gini coefficient, income shares, and income totals whereas in the Danish case they are highly correlated with the characteristics of low-income population. The Danish calibration model improves accuracy of poverty rates; while the Finnish model has substantial impact on inequality indicators such as share ratio S80/S20 and Gini-coefficient (Museux & Osier, 2006). Calibration models which use demographic and geographical information but no income data may have much smaller impact on precision of income-based indicators.

Of the above mentioned issues, data source is certainly the most crucial point as it affects directly or indirectly all the other issues mentioned above. Quality of income data from registers and interviews has been studied in great depth in a more general context e.g. within the Chintex -project. For example, ranking of Finland in terms of poverty rate may change substantially if interviewed data is used instead of register data (Rendtel et. al., 2004; Epland, 2006). A lesson one might want to draw from the EU-SILC 2004 property income tabulations presented before is that the use of registers in itself is not a guarantee for a high degree of comparability.

Different calibration models may not be the most crucial aspect of international comparability but it is certainly good to be aware of the variables used when benchmarking the results. It is possible to get almost exact match with external sources using register data and a suitable calibration model (e.g. income totals or number of register-based poor individuals). The traditional way to benchmark survey results is to compare the estimates of total amounts to those of some external source, such as National Accounts. If the sources are independent and the adjustment of concepts is done carefully, the amount of under-estimation of survey data could be quantified by comparing interval estimates to "true" values. Property income has been found to suffer from more serious under-estimation than other income components (Moore et. al., 2000; Atkinson et. al., 1995, p. 34).

In the EU-SILC quality reports, several countries comment on severe under-estimation of property incomes, but coherence of total sums with National Accounts totals are rarely presented¹⁸. Data on National Accounts by institutional sector are, however, published in the Eurostat web site and may be used to compare the figures on interest received and distributed profits to their conceptual equivalence in EU-SILC. Rents cannot be compared because they are "hidden" in mixed income in National Accounts.

¹⁷ This has been considered necessary in order to maintain coherence with register-based total income statistics which covers the whole population. When total sums are compared to e.g. National Accounts, the discrepancies are not explained by sampling error but by conceptual differences and coverage and sector delineation issues.

¹⁸ Austria is the only country which provides assessment of the under-estimation of property income with respect to National Accounts. With property income included, difference between SILC 2004 gross income and NA adjusted gross income is 15.4 % and excluding property income 5.9 %. This indicates significant underreporting of property income.

Several reservations are in order before making the comparison. Despite considerable effort, household sector accounts in NA are not strictly comparable and problems exist in crucial points such as what is included in household sector and how consumer and producer households are defined. The recent allocation of indirectly measured financial intermediate services (FISIM) to institutional sectors in NA complicates even comparison of "simple" components such as interest received and paid. Data on withdrawals from quasi-corporations (analogous to profit sharing by sleeping partners in EU-SILC) is probably the most unreliable component as direct information is often lacking. Dividends, in contrast, are often known from tax sources in National Accounts (OEE, 2005). Gross and net measurement in EU-SILC, again, complicates the situation.

Despite the problems, we dare to present Table 5 which compares the EU-SILC data with National Accounts data published by Eurostat. The share of interest and distributed profits (HY090G/N) from disposable income (HY020) in EU-SILC is contrasted to the share of interest and distributed profits received (D41+D42) from net disposable income (B6N) in National Accounts. While the exact numbers are not important and may equally well tell about problems with NA figures rather than with EU-SILC figures, the overall variation in coherence between countries suggest that under-estimation may not be uniform across countries. The results indicate that countries with the highest contributions of property income to inequality, Finland and Norway, may have reasonably coherent estimates in EU-SILC and National Accounts. For the other countries, there is considerable discrepancy, and the EU-SILC shares are always lower than the National Accounts shares.

Table 5. Interest and distributed profits in NA and EU-SILC, % of disposable income

	Austria	Belgium	Denmark	Finland	Norway	Estonia	Greece (net)	Spain (net)	France (net)	Italy (net)	Portugal (net)
National Accounts	12 %	9 %	7 %	9 %	10 %	7 %	5 %	6 %	9 %	24 %	6 %
EU-SILC	1 %	2 %	2 %	8 %	9 %	0 %	0 %	1 %	3 %	2 %	0 %

Source: EU-SILC XUIDB 2004: (HY090G/HY020 or HY090N/HY020); Eurostat: National Accounts by Institutional Sector (D41+D42/B6N for sectors S14 or S14_S15). Ireland, Luxembourg, Sweden: no NA data available.

4. An extended definition of property income

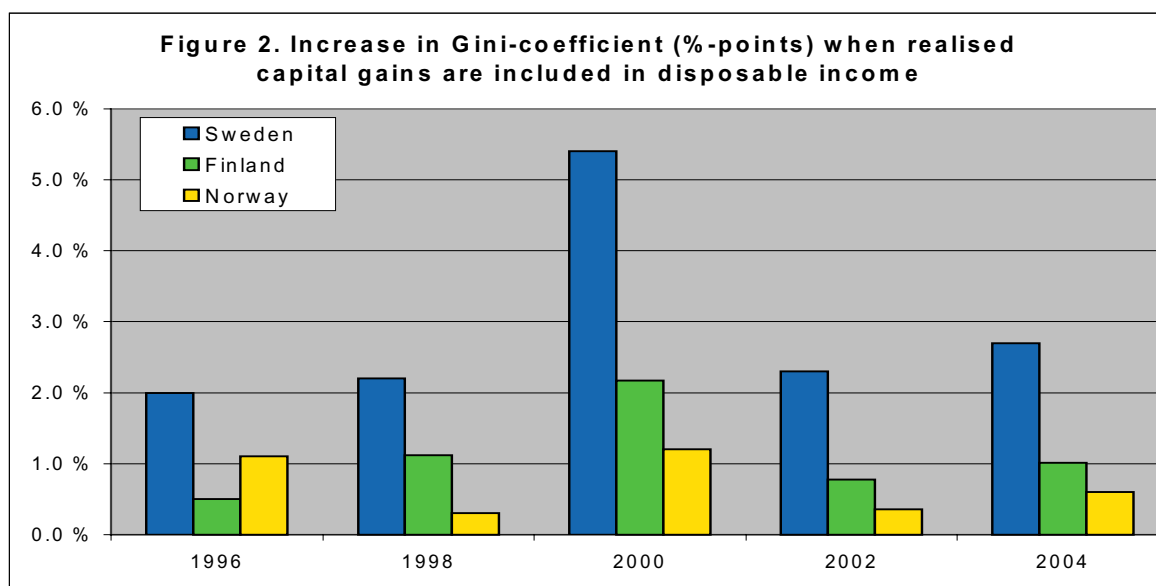
In this section, national data are used to extend the definition of property income to include net gains from owner-occupied dwellings and realised capital gains/losses. Net imputed rent will be added to the EU-SILC definition in any case, so the examination serves to illustrate the kinds of effects of this will have in one country. Realised capital gains, on the other hand, are likely to remain outside of the income concept. Whether this has any bearing for the indicators or for comparability is an issue we try to empirically assess in this section.

4.1 Realised capital gains

Realised capital gains/losses typically accrue to households from sale of own dwelling or financial instruments such as shares or mutual funds. Realised capital gains can be measured from registers and are included in the national income concept at least in three Nordic countries; Finland, Norway, and Sweden. In all three countries, capital gains have a visible effect on both the level and inter-temporal changes of measured income inequality. This can be seen from Figure 2 which presents the increase in Gini-coefficients in Finland, Norway and Sweden when realised capital gains (and taxes paid on them) are included in the income concept¹⁹. The effect of realised gains has been particularly strong in Sweden, at maximum 5,4 percentage points in 2000. In all three countries, the effect is different at different time points. In addition to pro-cyclical effect due to development of prices, from time to time

¹⁹ The data are based on national Income Distribution Surveys conducted by Statistics Norway, Statistics Sweden, and Statistics Finland. Income concepts according to national definitions. Modified OECD-scale was used for Norway and Finland; national scale for Sweden.

the tax rules may change and have an effect on the volume of sales and, consequently, on income level and dispersion measures.



The fact that indicators of income inequality become more volatile with realised capital gains can be considered a reflection of reality and not a reason for rejecting gains from income. Two more serious objections are that even with register based measurement, the problems of conceptual validity and comparability remain. First, measurement of realised capital gains from tax files may not be in accordance with the Canberra Group recommendation of measuring real gains made within the income reference period. For example, in Finland the gains in fact refer to nominal gains within the holding period, i.e. they include both neutral and real holding gains made during the entire period of ownership of the asset. Second, the measurement of realised capital gains is not comparable between the three countries in Figure 2. In Sweden, all gains are measured, whether they are subject to tax or not. In Finland and Norway, a majority of capital gains from sale of own dwelling is not taxed and is not recorded in the tax files²⁰. This probably explains the larger effect of realised gains in Sweden.

In the absence of register data, measurement of capital gains would be very difficult. Some variants of imputing all (not just realised) holding gains exist, e.g. imputing long run change in value of assets owned (cf. the 1st meeting of Canberra Group, p 145) but they are not likely to be feasible for producing annual comparable data for EU-SILC.

4.2. Net imputed rent from owner-occupied dwellings

It would be easy to conceive that imputed rents of owner-occupied dwellings stem from ownership of assets and should be considered as property income. This would be consistent with the asset classification and treatment of actual rents received as property income in EU-SILC. The recommendations, however, take different standpoints on the issue. The Canberra Group gives preference to following National Accounts and considering imputed rents of owner-occupiers self-employment income. The ILO suggests treating imputed rent as income from household production of services and neither as property income nor as income from self-employment.

The EU-SILC definition takes yet another approach by taking the valuation method as the guiding principle. In EU-SILC, all kinds of imputed rents are added up to target variable HY030, irrespective

²⁰ In Finland, profits from selling main residence are not taxed if the residence has been owned and occupied for more than two years during the ownership period.

of the reason for the difference between cost of renting similar accommodation from competitive market and actual housing costs paid by household. The difference may be related to ownership of assets (owner-occupied dwellings), to employment (dwelling provided by employer), and to redistribution of income (subsidised rented dwelling owned by government or NPISH). It would be essential to be able to distinguish imputed rents related to employment, ownership, and redistribution from each other. This can be dealt by specifying reason for tenure status "accommodation rented at a reduced rate" and "accommodation is provided free" (target variable HH020).²¹

4.3. The extended income concept

In this section we describe what kind of effects realised capital gains and net imputed rent may have on income inequality and poverty indicators using the Finnish SILC 2004 data augmented with variables available in the national database. The two income components are simply added to EU-SILC definition of disposable income (HY020) and selected key indicators are then compared before and after²². Both added components are significant in terms of the total amounts. The share of current EU-SILC property income definition out of disposable income is 9 percent. Adding realised capital gains would increase the share of property income to 10.7 percent and adding net imputed rent to 16.7 percent. Adding both would increase the share to 18 percent.

Table 6. Sensitivity of selected indicators to alternative income concepts: the Finnish EU-SILC 2004.

	EU-SILC concept (HY020)	With realised capital gains	With imputed rent	With capital gains and imputed rent
Gini coefficient	0.253	0.264	0.250	0.260
S80/S20	3.5	3.7	3.5	3.6
At-risk-of-poverty rate, %	11.0	10.9	11.2	11.5
age 0-15	9.5	9.6	11.4	11.8
age 16-34	14.2	14.2	17.2	17.5
age 35-64	7.8	7.7	7.8	7.8
age 65+	16.6	16.4	11.5	11.9
Threshold, 60 % of median, euro	9984	10016	10925	10972
Poverty gap	19.4	19.4	19.5	19.2
Inequality (Gini among the poor)	0.12	0.12	0.11	0.11

Realised capital gains concentrate largely to people above median and consequently have a negligible effect on poverty indicators. The Gini-coefficient increased by one percentage point. Given the sensitivity of capital gains to stock market prices and the ensuing volatility and cyclical patterns, an increase of this magnitude bears some significance in inter-temporal comparison of inequality in one country. In terms of comparability across countries, the difference in inequality indicators may not significantly change the interpretation of the results. Given this, and the comparability and validity problems even with register-based measurement referred to before, the advice of the Canberra Group to consider capital gains as an optional memorandum item seems to be justified. Countries where

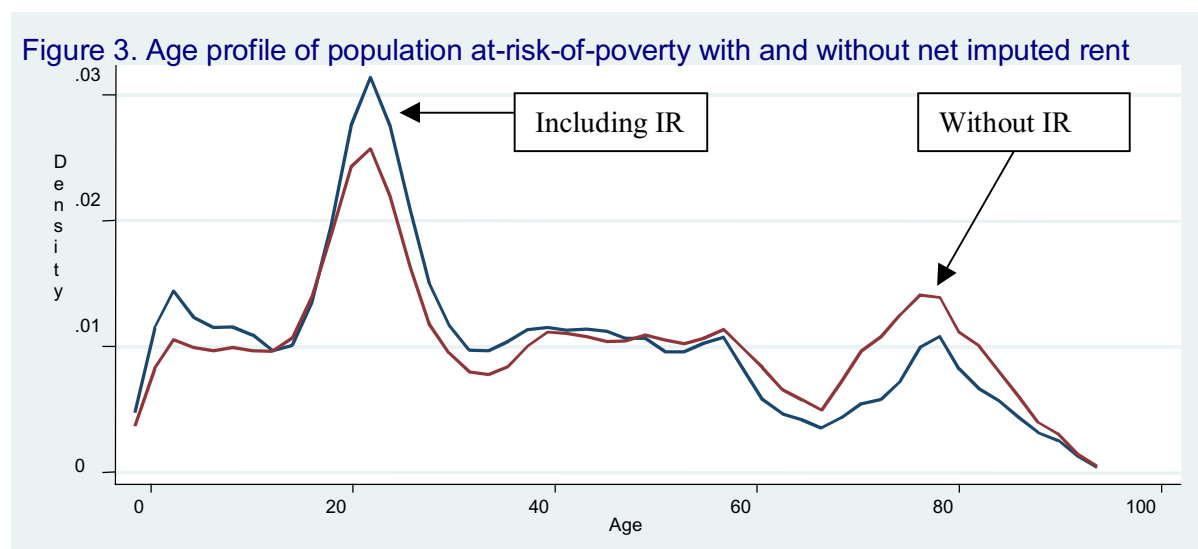
²¹ Annual measurement of benefits from subsidised housing in a way that is comparable inter-temporally within and across countries may be even more difficult than imputing rents for owner-occupiers. The share of households in subsidised rented accommodation (tenure status HH020=3) ranges from zero in Denmark to 15,3 percent in France and 18,4 percent in Finland. The comparability of this variable should be examined if the aim truly is to calculate imputed rents for social housing as part of disposable income. Moreover, user cost is a suitable estimation method only for owner-occupied housing so countries with small but existing subsidised rental markets need to find a different estimation method.

²² Net imputed rent is estimated with rental equivalence method using external rent statistics for the valuation of housing consumption and deducting relevant housing costs, depreciation, and interest paid on mortgage. The data are available in the SILC 2004 UDB in target variables HY030G and HY100G for Finland.

capital gains are available from registers should naturally remove taxes on capital gains from their EU-SILC taxes as well and the regulation should be corrected at this point (i.e. definition of taxes paid HY140).

When net imputed rent is added to income, low income cut-off increases by 10 percent. Indicators do not change drastically on the aggregate: inequality decreases and at-risk-of-poverty increases only slightly, and poverty gap and inequality among the poor remain almost unchanged. The aggregate figures, however, mask considerable flows in and out of poverty because of net imputed rent. Adding imputed rent causes re-ranking depending on how household's income has changed with respect to increased at-risk-of-poverty threshold.

Imputed rent changes most visibly the age profile of people at risk of income poverty. In Finland, addition of imputed rent puts more people under 40 years at risk of income poverty and leaves less people over 55 under poverty line (Figure 3). At-risk-of-poverty rate of the elderly (over 65) would be reduced almost one third from 16.6 to 11.5 percent, that of those aged 16 to 34 would increase from 14.2 to 17.2 percent, and that of children (0-15 years) from 9.5 to 11.4 percent. Similar kind of effects by age have been found in other studies (e.g. Frick & Grabka, 2003).



The age profile differences can be explained mostly by tenure status differences between age groups and by reduced housing costs by age. On the average, interest paid on mortgage decreases by age because the share of outright owners increases. The share of other deducted expenses and the imputed annualised value put to "wear and tear" (depreciation, consumption of fixed capital) are related to characteristics of the dwelling and are more or less constant across the age groups in this model.²³

The different methods, assumptions, and the underlying data used in measuring imputed rent may yield very different poverty rates and profiles. Tentative experiments with the Finnish data (not reported here) using different ways to estimate rental equivalence (stratification from external sources, hedonic regression and Heckman regression with EU-SILC sample data) indicate that the methods and the underlying data are of crucial importance. In any case, it is easy to conclude that imputed rent changes our view of who are the poor. Comprehensive study on the effects of different estimation methods should be conducted to find out whether its addition increases or decreases international comparability of the EU-SILC income data.

²³ In this data, 45 percent of home-owners paid interest on mortgage. In the rental equivalence method, net imputed rent can be negative if expenses exceed imputed gross rental equivalence. In the Finnish data, 2.3 percent of home-owners had negative net imputed rents, half of them were less than 35 years old and they were all paying off mortgage.

5. Summary and recommendations

The current concept of property income in EU-SILC is adapted from international recommendations and is closely related to the definition in National Accounts. Some small refinements could be made to the current EU-SILC definitions, such as making the definition of property income consistent with the sub-components, and the definition of taxes coherent with the definition of income (i.e. capital gains taxes should not be included in taxes).

The operational income concept should at minimum distinguish between income from employment, income from capital, and redistribution of income. With this regard, some of the adaptations, such as treating actual rents received as property income instead of self-employment income, seem sensible. Some choices are less transparent, such as treating net imputed rent of owner-occupiers together with all other types of imputed rent. A logical and feasible solution would be to treat imputed rent of owner-occupiers as a separate sub-component of property income, imputed rent from dwelling provided by employer as non-cash employee income, and imputed rents from free or subsidised dwellings as transfers received. Issues such as whether royalties are self-employment or property income, or whether regular income from voluntary life and pension insurance savings should be property income or something else, may be empirically less important. It also seems evident that while realised capital gains may have significant effect on inequality indicators, their exclusion from the international income concept is justified on feasibility grounds.

The results on property income in the EU-SILC 2004 varied between countries in such a way that it casts doubt on the degree of comparability. The interview vs. register issue does not explain the differences; the differences in concentration and income shares among the register countries suggest that all aspects, beginning from conceptual validity and ending at different calibration models, may come into play. The standardisation of some aspects could be controlled more, e.g. by further monitoring the validity of the income concepts and not accepting deviations unless it can be demonstrated that they are empirically insignificant. Measurement errors related to interview data collection could be reduced by examining and sharing information on questionnaire designs and proposing standards for imputation methods. The flexibility aspect of EU-SILC naturally puts limits to strict standardisation in measurement, but also in design and estimation stages of the survey process.

The apparent under-estimation of property incomes in EU-SILC 2004 would be less serious if all countries under-estimated in a comparable way. This does not seem to be the case. Since the EU-SILC income concept is closely related to National Accounts income definition, it would be useful to have a standardised comparison of adjusted and unadjusted income aggregates with National Accounts totals from every country in their quality reports. Minimum requirement would be to present such comparison for main aggregates such as wages and salaries, self-employment income, property income, transfers received, and transfers paid.

Income advantage derived from the most common asset of households, own apartment or house, may be seen as old-age provision which has strong effects on indicators such as at-risk-of-poverty rate by age. The magnitude of these effects may depend on the methodological choices (rental equivalence, user cost), the underlying data used (external rent statistics, EU-SILC sub-sample etc.), the estimation techniques (e.g. hedonic regression or the Heckman method), and comparability of the EU-SILC target variable on tenure status (HH020). More methodological and substantive studies are needed on this topic. In view of the methodological problems, and to ensure consistent time series of indicators in the coming years, the safest strategy would be to produce the imputed rent variable but to postpone the inclusion of it in disposable income until feasibility studies can confirm a reasonable degree of comparability.

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