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in SHARE Wave 1

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Abstract

The availability of harmonized income measures across countries and over time is important to analyse income distributions in a cross-country perspective, and to assess the redistributive role of fiscal systems. In this paper we derive harmonized net income measures in SHARE Wave 1, using the tax-benefit micro-simulation model EUROMOD, primarily designed to run on EU-SILC data. In Wave 1 SHARE income variables have been collected before taxes and social contributions, while they were collected after taxes and social contributions in the following waves. Therefore, we derive net income measures for SHARE Wave 1 by running EUROMOD on properly adjusted gross income variables. We validate the gross-to-net conversion procedure by comparing the generated income distributions in SHARE with the ones computed from EU-SILC and other household survey data.

Keywords: income distribution, micro-simulation models

JEL Classification: C81, D31, H24

1. Introduction

Income is a key measure of access to economic resources and having access to reliable micro-data about income that are comparable across countries is crucial for studying the welfare of elderly Europeans.

In spite of this need, eliciting high-quality income information in multi-purpose surveys is notoriously difficult: respondents are typically reluctant to provide income information on moonlighting activities, causing a downward bias especially in reported self-employment income, and recall problems are pervasive, affecting all but the major components of income.

The best practice in eliciting income questions is to ask for take-home pay or pension in the relevant period, as this is the item the respondent is most likely to remember. It tends to coincide with net-of-tax earnings or pension income in those countries where taxes and contributions are withheld at the source, at least for those individuals who do not have other major sources of income. However, in some countries there may be a substantial extra tax amount to be paid at the end of the year, and in France no tax is withheld at source – only contributions. Because of these national differences, in Wave 1 of SHARE income variables have been collected before taxes and social insurance contributions. On the contrary, income variables in the following waves have been collected after taxes and social contributions, in an attempt to capture the notion of take-home pay. This implies that a comparison of income across different waves requires the computation of notional taxes and social contributions in Wave 1.

This paper illustrates the derivation of net income measures from reported gross incomes, harmonized across countries, by simulating tax and social contribution policies for the European countries participating in SHARE Wave 1. The instrument chosen to carry out this task is EUROMOD, the EU tax-benefit micro-simulation model (Sutherland and Figari, 2013) developed by the Institute for Social and Economic Research (ISER) at the University of Essex, which provides harmonized information on direct taxes and benefits in 27 European countries. Since EUROMOD is based on data from the European Union Statistics of Income and Living Conditions (EU-SILC), which differs from SHARE along several dimensions, this task has required an adaptation of SHARE data so that EUROMOD could be run on them.

As a result of the gross-to-net income conversion procedure, a set of net income aggregates for SHARE Wave 1 are derived and the generated income distributions in SHARE are compared with the ones computed from EU-SILC and other survey data, in order to validate our imputation procedure.

The paper is structured as follows. Section 2 compares our two main data sources, SHARE and EU-SILC, while Section 3 describes how SHARE data are prepared for use in EUROMOD. The simulation of taxes and social contributions and the construction of net income measures are illustrated in Section 4 and Section 5, respectively. Finally, Section 6 presents

summary results of the validation of the generated income measures and Section 7 provides some concluding remarks.

2. A comparison of SHARE and EU-SILC as input databases for EUROMOD

A major structural difference between SHARE and EU-SILC[1] is the target population: while EU-SILC aims at representing the overall population, SHARE collects information only on households where at least one individual is aged 50+. As a consequence, while EU-SILC covers all individual household members aged 16 or above, personal level income information in SHARE is obtained only for people aged 50+ and their younger partners. Information on other household members' income is collected mainly through a 'catch all' question concerning the aggregated income of other household members (i.e. those not to be interviewed).

Focusing on income variables, there are differences in the type of unit (individual, couple, household) questions are asked to, while there is substantial homogeneity with respect to the types of income covered.

In EU-SILC, income information at personal level covers employees' earnings (both cash and non-cash, including lump-sum payments), self-employment earnings (or losses), old age, survivor, sickness, disability and unemployment benefits, education-related allowances, private pensions, non-cash incomes such as the value of goods produced for home consumption. Income information collected at household level includes imputed rent from owner occupation, rental income from property, income from investment (interests, dividends, profit), family/children related allowances, housing allowances, other social exclusion benefits and regular inter-household cash transfers. Information on taxes and social insurance contributions paid is also collected at the household level in most countries.

In SHARE, income information collected at personal level includes employment and self-employment earnings, old age, survivor, early retirement and war pensions, sickness, invalidity and disability benefits, unemployment benefits and regular payments from alimony and charities. Income collected at household level includes property income, the total amount of social welfare benefits (children related, housing allowances, poverty relief, etc.), asked in EU-SILC in a more disaggregate fashion, and also the value of goods produced for home consumption. The figurative rent for homeowners is not collected in SHARE. A further difference with respect to EU-SILC data is that income from investment (bank accounts, bonds, stocks and mutual funds) and private transfers is asked at the couple level.

Finally, although currently EU-SILC generally provides both gross and net income measures, with reference to the 2004 cross section, which collects 2003 yearly income and

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[1] The European Union Statistics on Income and Living Conditions (EU-SILC) collects comparable cross-sectional and longitudinal micro data on income, poverty, social exclusion and living conditions. See http://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions.

thus represents the closest term of comparison for the first wave of SHARE, income was collected net of taxes and social insurance contributions in Italy, Spain and Greece, gross in Denmark and both net and gross in Austria, Belgium, France and Sweden.[2] SHARE collected income variables in a consistent fashion across countries, but while they were gross of taxes and social insurance contributions in Wave 1, the net version of the same variables was collected in the following waves.

3. Preparing SHARE data for EUROMOD

The main data source used to construct the harmonized income measures is given by the SHARE imputations dataset, which allows addressing the item non-response problems affecting income variables.[3] The structure of imputations in Wave 1 is well suited to be used in a tax-benefit model, as the level of aggregation of income components, especially pensions and other social benefits, allows to deal with the different fiscal treatment of these items in most fiscal systems.[4] A summary of taxable income components is provided by country in Table 1.

In order to simulate social insurance contributions, several pieces of information are used along with the income variables: the economic status (*empstat1*), the sector of activity (*nace_1job*) and the occupational status (*isco_1job*), which allow to establish whether an individual is a retiree, employee or self-employed, whether he is a blue or white collar worker or a civil servant. The number of months during which the labour or replacement income has been received, or the weekly hours worked, are instead retrieved from the SHARE EP module.

Social contributions cannot be simulated in EUROMOD for non-responding partners, for whom only demographic variables and an estimate of total income are available, nor individual taxes, which typically require subtracting social contributions and tax allowances from gross income to get a measure of taxable income to which the tax schedule is applied. Nonetheless, since the information on partner's income is relevant also in systems with individual taxation, as some partial transfer of tax bases between spouses is usually allowed, the records for NRPs are kept in the EUROMOD input database.

The taxes simulated in EUROMOD are typically final personal income tax liabilities. Therefore, in addition to including taxes often not withheld at source on certain income sources, such as rental income from property, they also account for deductions and tax

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[2] Data for Germany and the Netherlands is not available as they joined the EU-SILC project in 2005.

[3] The first implicate of the imputations dataset is used. For details on the new imputation strategy, see De Luca, Celidoni and Trevisan (2015) and SHARE Release Guide 5.0.0 (2016).

[4] Only in a few cases the level of aggregation does not allow a precise implementation of the fiscal rules simulated in EUROMOD, for instance the early retirement scheme in Germany, as this benefit is jointly imputed with old age, survivor and war pensions. An ad-hoc imputation has been carried out for interests on bank accounts, aggregated with other investment income from bonds, stocks and mutual funds *(ybabsmf)*, but to which a different tax rate applies in some countries.

credits that are granted based on the composition or certain expenditures borne at the level of the fiscal unit. Such expenditures usually include the amount of rent paid *(rhre)* or imputed exploiting information on house value *(home),* and interests paid on mortgages, computed using data on ownership *(otrf)* and debt service outlays *(mort).*

A preliminary adjustment concerns the variables collected in SHARE either at the couple or household level, such as investment or property income, which have to be converted to individual level in order to be used in EUROMOD.

Table 1. Taxable income components by country.

	AT	BE	DK	FR	DE	EL	IT	NL	ES	SE	CH
Original income											
Labour income *(ydip, yind)*	✓[a]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Property income *(yrent)*	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Investment income *(ybabsmf)*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Private pensions *(yreg1)*	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Private transfers *(yreg2, aftrec)*		✓	✓			✓		✓			✓
Replacement income											
Public old-age, early retirement, survivor, war pensions *(ypen1)*	✓	✓	✓	✓[d]	✓[e]	✓	✓	✓	✓	✓	✓
Occupational pensions *(ypen2)*	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Disability benefits *(ypen3)*	✓	✓[c]	✓	✓	✓	✓		✓	✓	✓	✓[c]
Unemployment benefits *(ypen4)*	✓[b]	✓	✓	✓			✓	✓	✓	✓	✓
Social assistance benefits *(ypen5)*	✓					✓					✓
Sickness benefits *(ypen6)*		✓[c]	✓	✓		✓	✓	✓	✓	✓	✓[c]

Notes: a) excluding extra payments; b) do not affect the gross tax rate (progression adjustment); c) included in *ypen3* aggregate with disability benefits; d) survivor pensions are not taxable; e) early retirement, unemployment and sickness benefits only enter the progression clause.

4. Simulating taxes and social contributions

SHARE Wave 1 interviews have been almost entirely conducted in 2004 and the income questions refer to the year 2003. Since fiscal systems for the year 2003 are not available in EUROMOD, a preliminary operation has entailed implementing the relevant tax policies for eleven out of the twelve countries that took part in the first wave of SHARE (Denmark, Sweden, Austria, France, Germany, Switzerland, Belgium, Netherlands, Spain, Italy and Greece).[5,6]

EUROMOD country reports, offering detailed descriptions of national tax-benefit systems in given policy years, provide useful information on tax and social contributions parameters, which have been retrieved, for the fiscal year 2003, from other sources, namely the EU's Mutual Information System on Social Protection (MISSOC) and the OECD Benefits and Wages database, or provided by EUROMOD national experts.

For the sake of tax simulation, an important distinction is between systems with individual taxation and systems where incomes of the relevant fiscal unit are jointly taxed. The fiscal unit is the individual in seven out of the eleven SHARE Wave 1 countries, while it is a subgroup of the household in the other countries, namely: the cohabiting couple, either married or not, in Germany, the married couple in Switzerland, the couple (either married or in civil partnership) and some dependent relatives (children and disabled) in France, the couple (only one member if not married) and cohabiting children under 18 (any age if disabled) in Spain.[7] In countries with a joint taxation system, incomes of the members of the fiscal unit are jointly assessed. For instance, in a full income splitting system - as in Germany - the couple's income is divided by two before applying the tax schedule, so that the overall tax burden is lower, as the partner with higher income is taxed at a lower marginal tax rate.[8]

In some countries (i.e. Spain), taxpayers can opt for the individual or joint taxation system, in order to minimize the overall tax burden. In these cases, whenever individual taxation yields a lower tax burden, EUROMOD computes tax liabilities separately for the members of the fiscal unit. Otherwise, if the joint taxation turns out to be more

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[5] Since Switzerland is not present in EUROMOD, the simulation was performed using the model provided by the Swiss Household Panel (SHP). Also Israel is not implemented in EUROMOD and, as a national tax-benefit model is not available to us, harmonized income measures are not provided for this country.

[6] The following EUROMOD versions have been used to implement missing fiscal systems: Belgium (F3.0+), Greece, Italy, Netherlands, Spain, Sweden (F5.0+), Austria, Denmark, Germany (F6.0) and France (F6.0++).

[7] In Belgium an income sharing up to a certain limit is allowed for married couples where one on the spouses earn less than 30% of the couple's total net taxable income. After the income sharing the tax schedule is applied to both individuals.

[8] Due to lack of information on household members other than those aged 50 or above and their younger partners in SHARE, fiscal rules are applied as if each respondent, if single, or set of responding partners, if in a couple, form a separate household unit.

advantageous, the overall tax burden is assigned to the head of the fiscal unit.[9] Therefore, whenever a joint taxation is applied, we derive an individual measure by splitting the overall tax liability between partners proportionally to their share of the cumulated tax base.

A detailed description of the fiscal policies simulated by country is beyond the scope of this paper, and we invite the user to refer to EUROMOD country reports for available years.[10] Table 2 provides a summary of some relevant features of fiscal systems, namely whether in a country joint taxation is applied, investment (or property) income is taxed separately from other incomes sources (typically with a flat tax rate), a negative income tax is possible because of refundable tax credits and whether special social contributions, applying to different or broader income bases other than just labour or pension income, exist.

Table 2. Main characteristics of fiscal systems by country.

	AT	BE	DK	FR	DE	EL	IT	NL	ES	SE	CH
Joint taxation				✓	✓				✓		✓
Separate tax on investment income	✓	✓[a]		✓		✓	✓	✓		✓[b]	
Tax refund	✓	✓		✓				✓			
Special social contributions		✓	✓	✓				✓			

Notes: a) separately taxed in EUROMOD but taxpayers can choose to cumulate it with other incomes if more advantageous; b) property income is also separately taxed.

5. Harmonized income measures

A measure of net total individual income *(ytotn)* is obtained by subtracting the sum of taxes *(tax)* and social insurance contributions *(sic)* simulated in EUROMOD to the gross total individual income measure *(ytotg)*, which is computed as the sum of all personal income components (income from employee and self-employed work, pension and replacement income, including public old age, early retirement, survivor and war pensions, private and occupational pensions, other individual benefits, such as unemployment, sickness and disability benefits, and regular payments from alimonies and charities) and the individual share of income from investment, property and private transfers *(aftrec)*, collected in SHARE either at the couple or household level.

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[9] According to EUROMOD definition, the head is the richest member of the fiscal unit. If there are two or more equally rich persons, the oldest is the head; if there are two or more equally rich and equally old persons, the one with the lowest identifier is selected.

[10] See https://www.iser.essex.ac.uk/euromod/using-euromod/country-reports.

Gross total household income *(hhytotg)* is given by the sum at household level of individual incomes of respondents *(ytotg)*, the gross income of non-responding partners *(ynrpg)*, the cumulated gross income of other household members and other benefits, such as child and education benefits, housing allowances and other social assistance benefits, that are usually not taxed *(hhyotg)*.

In order to obtain a measure of total disposable household income *(hhytotn)*, we derive net incomes for non-responding partners and other household members not included in the interview, assuming that other household level benefits are all tax exempt. Due to missing information on relevant variables, a simulation of individual taxes and social insurance contributions for NRPs is not feasible in EUROMOD. Therefore, we exploit the available estimate of total gross NRP's income *(ynrpg)* and demographic variables (gender and age) to derive an approximate measure of net income for NRPs *(ynrpn)*, as follows:[11]

> 1. Derive average effective tax and social contribution rates (ATR) for respondents, dividing the sum of tax liabilities *(tax)* and social contributions *(sic)* by total individual gross income *(ytotg)* (a symmetric 1 or 5 percent trimming of the tails of the resulting ATR distribution is performed);

> 2. Define an occupational status for NRPs, based on statutory retirement ages for men and women, assuming that a NRP with positive total income is: a) "occupied" if non-eligible for old-age pension; b) "pensioner" if eligible for pension;

> 3. Assign ATR of respondents to NRPs, matching total gross incomes at individual level within strata defined by the occupational status;

> 4. Compute net total incomes *(ytotn)* for NRPs by applying the ATR donated at point 3) to gross total incomes.

For countries with joint taxation, the net NRP's income is instead computed by deducting the individual tax liability, derived by splitting the overall tax burden simulated in EUROMOD among the members of the fiscal unit proportionally to their share of the total tax base.

The net measure of other household members' income *(hhyotn)* - and other household benefits, when both components are present[12] - is obtained by applying to the gross variable the country average of the effective tax and social contribution rates derived at point 1), whereas only ATR of respondents classified as "occupied" are used in the computation, as we assume that all pensioners in the household should have been interviewed according to SHARE eligibility rules for Wave 1.

Table 3 reports the output variables generated as a result of the gross-to-net income conversion procedure applied to SHARE data for Wave 1.

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[11] For details on the estimation of NRPs' income, see De Luca, Celidoni and Trevisan (2015).

[12] Other household members' income and household level benefits are jointly imputed *(yaohm)*, but using ownership variables it is possible to know which of the income components are included in the aggregate (the information is provided with the flag variables *hhyotg_f* and *hhyotn_f*).

Table 3. SHARE Wave 1 harmonized income measures.

Variable name	Variable label	Description
sic	Social insurance contributions	It is the sum of all social insurance contributions paid on employee, self-employed and pension income. It may include also contributions on capital income, where applicable.
tax	Personal income tax	It is the sum of personal income taxes paid on original and replacement income. It may include local taxes and some special contributions applying to the personal income tax base.
ytotg	Gross total individual income	It includes labour income, pension and replacement income, capital income and private transfers (at individual level), GROSS of taxes and social insurance contributions.
ytotn	Net total individual income	It includes labour income, pension and replacement income, capital income and private transfers (at individual level), NET of taxes and social insurance contributions.
ynrpg	Gross income of NRP	It is the income of the NRP, GROSS of tax and social contributions.
ynrpn	Net income of NRP	It is given by gross NRPs' income *(ynrpg)*, NET of tax and social contributions.
hhyotg	Gross other household incomes	It is the sum of other household members' income and household level benefits, GROSS of taxes and social contributions.
hhyotn	Net other household incomes	It is the sum of other household members' income and household level benefits *(hhyotg)*, NET of taxes and social contributions.
hhytotg	Gross total household income	It is the sum of respondents' labour income, pension and replacement income, capital income and private transfers, GROSS of taxes and social contributions, plus gross income of NRPs and other household members, and other household level benefits.
hhytotn	Net total household income	It is the sum of respondents' labour income, pension and replacement income, capital income and private transfers, NET of taxes and social contributions, plus NET income of NRPs and other household members, and household level benefits.
hhyotg_f	Gross other household incomes - Flag	It indicates whether the gross aggregate *hhyotg* includes only gross other household members' income or household level benefits or both.
hhyotn_f	Net other household incomes - Flag	It indicates whether the net aggregate *hhyotn* includes only net other household members' income or household level benefits or both.

6. Validation of results

This section provides some validation evidence on our gross-to-net income conversion procedure by comparing the generated income distributions in SHARE with the ones computed from EU-SILC[13] or other surveys data, bearing in mind differences between surveys.

For the sake of comparability, we consider only EU-SILC individuals who would be eligible to take part in the SHARE survey, that is individuals aged 50 and over or younger but living with a partner aged 50+.[14] Yet, even when we condition on the same eligibility criteria, differences in sampling schemes may lead to unbalancing in the demographic composition of the samples between the two surveys. Moreover, lump-sum payments for pensions and social benefits are not imputed in SHARE Wave 1, whereas they are included in EU-SILC variables, thereby possibly slightly downward biasing SHARE gross income aggregates. Furthermore, because of the different eligibility rules, income of household members other than designed respondents is collected differently in SHARE. Hence, finding differences in the income distributions between the two samples can be due to reasons other than the validity of the gross-to-net imputation strategy.

The income aggregates we use to validate results are the following: 1) net income from work (*yincn*), which includes individual income from employment and self-employment (variables PY010 and PY050 in EU-SILC, respectively), old age (PY100) and survivor pensions (PY110), unemployment (PY090), sickness (PY120) and disability benefits (PY130); 2) net total personal income (*ypern*), which adds capital income at individual level (HY040 + HY090 / household size) to the *yincn* aggregate; 3) total disposable household income (*hhytotn*), which is computed for EU-SILC by adding up the personal income components and household level incomes, namely family and housing allowances (HY050 and HY070), social exclusion benefits (HY060), private transfers (HY080), income of people aged under 16 (HY110) and capital income, either in the net version or subtracting household taxes and social contributions (HY140) to the total gross amount, depending on available data by country.

The comparison of net income aggregates derived in SHARE and EU-SILC is carried for Austria, Belgium, Denmark, France, Greece, Italy, Spain and Sweden, as only for these countries it was possible to compute the net incomes measures defined above using EU-SILC data.[15] Other national household surveys have been used to construct comparable income

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[13] EU-SILC cross-section 2004 (Rev.3) is used for the validation.

[14] In EU-SILC the age of individuals is censored at 80 years and therefore we do the same in the SHARE sample.

[15] Net individual income components are not available in EU-SILC 2004 (Rev.3) for Denmark. Therefore, we derive the individual aggregates by first allocating the overall tax and social contributions (HY140G) to household members proportionally to their share of total household gross income, and then subtracting the individual tax liabilities thus computed to the sum of gross income components at individual level.

aggregates for the remaining countries, namely: the German Socio-Economic Panel (SOEP) for Germany, the DNB Household Survey (DHS) for the Netherlands and the Swiss Household Panel for Switzerland.

Detailed results of the validation are presented by country in the Annex. The first table in each country profile (and subsection) presents the mean differences between SHARE and EU-SILC (or another national survey) in terms of demographics, namely household size, gender *(female)*, age, proportion of people living as a couple, economic status (whether currently employed or not) and home ownership, while mean differences in the net income aggregates, *yincn*, *ypern* and *hhytotn* are reported in the second table.[16] The figures in each country profile show kernel density estimates of the aggregates across the two surveys. In all tables and figures we only consider individuals or households with positive income values below the 99th (or 95th) percentile of the distribution of each variable by country. Comparisons are carried out both with and without calibrated cross-sectional individual or household weights for income variables computed at individual or household level, respectively.[17] A summary of the results of the validation is reported in Tables 4 and 5, for unweighted and weighted mean differences, respectively.

Table 4. SHARE-SILC unweighted mean differences in net income aggregates by country.

Country	SHARE-SILC mean difference in *yincn* (%)	SHARE-SILC mean difference in *ypern* (%)	SHARE-SILC mean difference in *hhytotn* (%)
Austria	-0.66	-4.58**	-21.78***
Belgium	3.77**	6.71***	11.91***
Denmark	-6.95***	-14.93***	-23.65***
France	-	-	-6.54***
Germany	-	-	0.38
Greece	4.09**	-3.58**	-17.27***
Italy	-31.36***	-32.71***	-22.75***
Netherlands	-	-2.77	64.66***
Spain	-	-	9.86***
Sweden	-2.62***	-3.38***	-3.28**
Switzerland	-	-	1.65

Notes: Results of t-test for unweighted mean differences in net income aggregates between SHARE and EU-SILC. For Germany, Netherlands and Switzerland, the comparison is with SOEP, DHS and SHP, respectively. The comparison is Significance: *** 1%, ** 5%, * 10%.

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[16] For countries with joint taxation only differences in net total household income are reported.

[17] For details on the construction of calibrated weights in SHARE, see De Luca, Rossetti and Malter (2015).

Table 5. SHARE-SILC weighted mean differences in net income aggregates by country.

Country	SHARE-SILC mean difference in *yincn* (%)	SHARE-SILC mean difference in *ypern* (%)	SHARE-SILC mean difference in *hhytotn* (%)
Austria	-1.29	-5.25**	-16.43***
Belgium	3.49*	6.59***	16.81***
Denmark	1.99	-7.39***	-0.40
France	-	-	2.23
Germany	-	-	20.09***
Greece	-2.63	-7.23***	-19.99***
Italy	-30.36***	-30.31***	-22.22***
Netherlands	11.71***	-	70.72***
Spain	-	-	10.03***
Sweden	0.83	0.15	10.28***
Switzerland	-	-	9.12**

Notes: Results of t-test for weighted mean differences in net income aggregates between SHARE and EU-SILC. For Germany, Netherlands and Switzerland, the comparison is with SOEP, DHS and SHP, respectively. Significance: *** 1%, ** 5%, * 10%.

7. Conclusion

This paper describes the procedure used to derive net income measures, both at individual and household level, from collected gross income variables in SHARE Wave 1. The construction of net income measures requires the application of stylized models of the different tax and social insurance systems applying in the countries involved in SHARE. The cross-country tax benefit micro-simulation model EUROMOD has proved crucial in this respect, as it covers almost all the countries involved in SHARE Wave 1 (with the only exception of Switzerland and Israel) and offers detailed fiscal year specific information and implementation tools for the different tax and contributions instruments. While SHARE data have been collected with other primary aims than being used in EUROMOD, Wave 1 data could indeed be adapted and used as an input database in EUROMOD. The results of the validation exercise, while highlighting a few country specific issues and bearing in mind the structural differences between SHARE and EU-SILC or the other household surveys used in the comparison of net income aggregates, are reassuring as to the general accuracy of the conversion procedure.

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Swiss Household Panel (SHP):
http://forscenter.ch/en/our-surveys/swiss-household-panel/

DNB Household Survey (DHS):
http://www.centerdata.nl/en/databank/dhs-data-access

German Socio-Economic Panel (SOEP):
https://www.diw.de/en/soep

ANNEX
Country tables

1 Austria

1.1 SHARE-SILC comparisons without sample weights

Table 1.1.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	1.78	2.29	-0.51***
female	0.59	0.57	0.02
age	64.62	62.96	1.66***
couple	0.61	0.72	-0.11***
employed	0.18	0.30	-0.12***
home owner	0.59	0.65	-0.06***

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 1.1.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	16365.96	16475.01	-0.66
ypern	15193.56	15923.25	-4.58**
hhytotn	24381.45	31168.48	-21.78***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
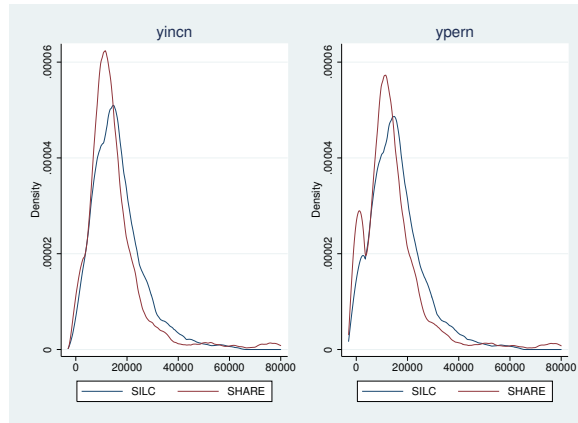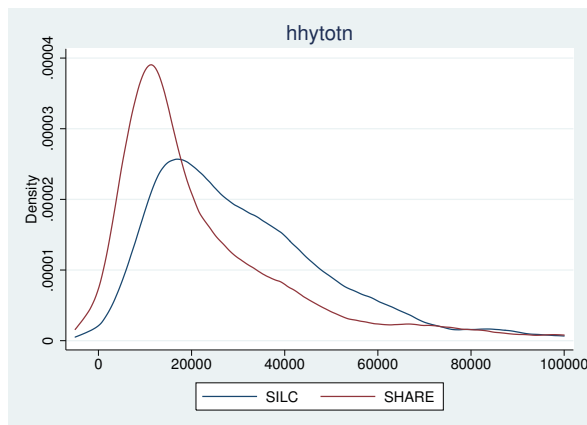
Figure 1.1.1: Kernel densities, YINC and YPERN

Figure 1.1.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

1.2 SHARE-SILC comparisons with sample weights

Table 1.2.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	1.84	2.11	-0.27***
female	0.56	0.57	-0.02
age	65.09	63.40	1.69***
couple	0.60	0.66	-0.06***
employed	0.20	0.29	-0.09***
home owner	0.59	0.62	-0.03**

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 1.2.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	16305.91	16519.07	-1.29
ypern	15183.12	16025.20	-5.25*
hhytotn	24612.41	29452.18	-16.43***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
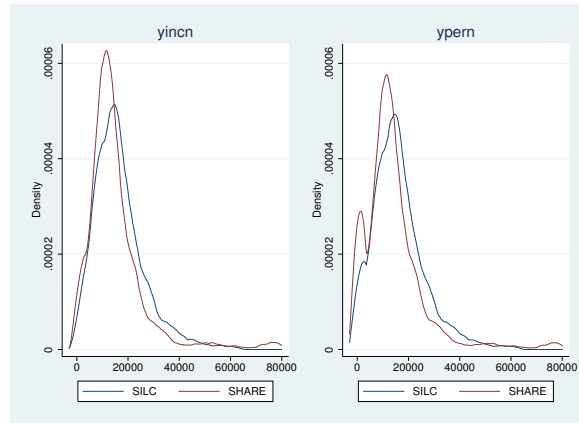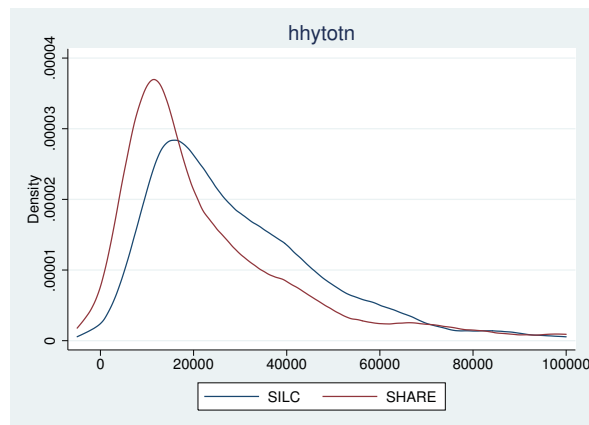
Figure 1.2.1: Kernel densities, YINC and YPERN

Figure 1.2.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

2 Belgium

2.1 SHARE-SILC comparisons without sample weights

Table 2.1.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	2.00	2.08	-0.08***
female	0.54	0.54	0.00
age	63.99	62.82	1.17***
couple	0.75	0.72	0.03***
employed	0.26	0.27	-0.01
home owner	0.82	0.77	0.05***

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 2.1.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	15440.76	14879.67	3.77**
ypern	14301.13	13402.13	6.71***
hhytotn	27018.26	24142.25	11.91***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
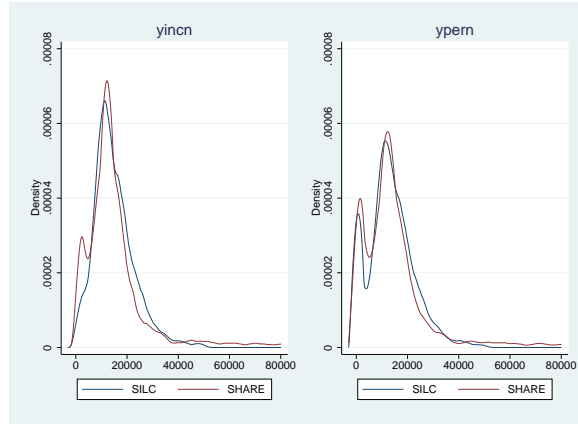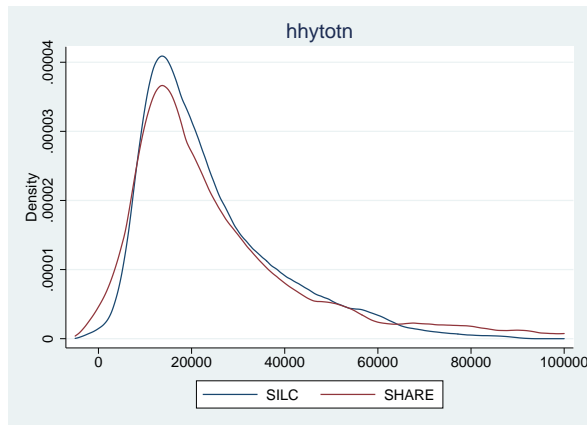
Figure 2.1.1: Kernel densities, YINC and YPERN

Figure 2.1.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

2.2 SHARE-SILC comparisons with sample weights

Table 2.2.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	2.04	2.00	0.03
female	0.54	0.55	-0.01
age	65.06	63.50	1.56***
couple	0.72	0.69	0.03**
employed	0.24	0.26	-0.02*
home owner	0.80	0.77	0.04***

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 2.2.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	15262.58	14747.65	3.49*
ypern	14243.93	13363.20	6.59***
hhytotn	27397.60	23455.82	16.81***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
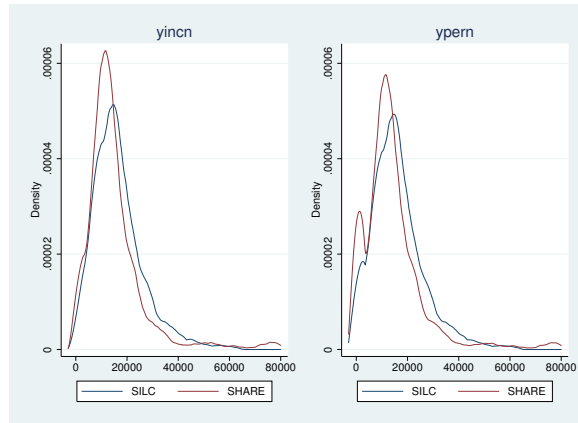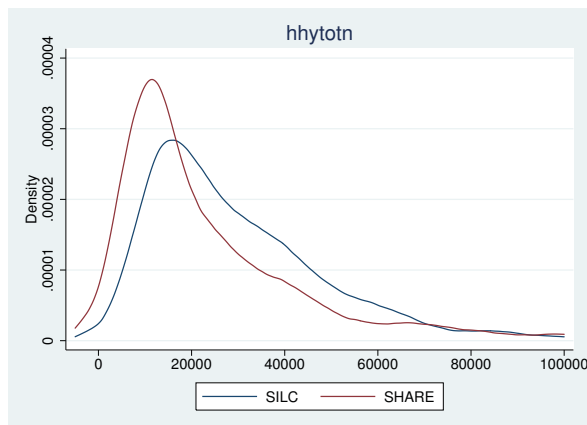
Figure 2.2.1: Kernel densities, YINC and YPERN

Figure 2.2.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

3 Denmark

3.1 SHARE-SILC comparisons without sample weights

Table 3.1.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	1.72	2.12	-0.40***
female	0.55	0.52	0.03*
age	63.12	60.94	2.18***
couple	0.69	0.84	-0.15***
employed	0.40	0.52	-0.12***
home owner	0.74	0.79	-0.05***

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 3.1.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	19095.13	20520.50	-6.95***
ypern	17959.91	21112.93	-14.93***
hhytotn	29839.62	39085.05	-23.65***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

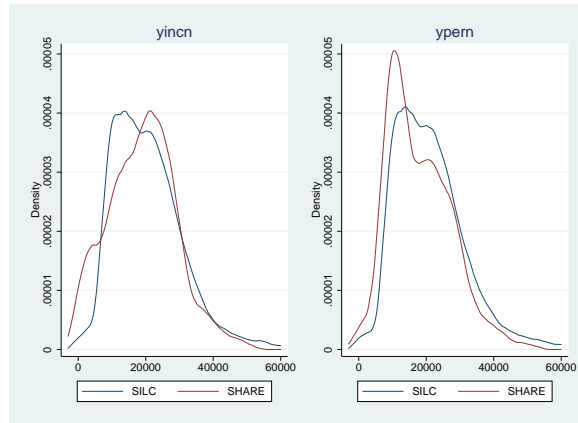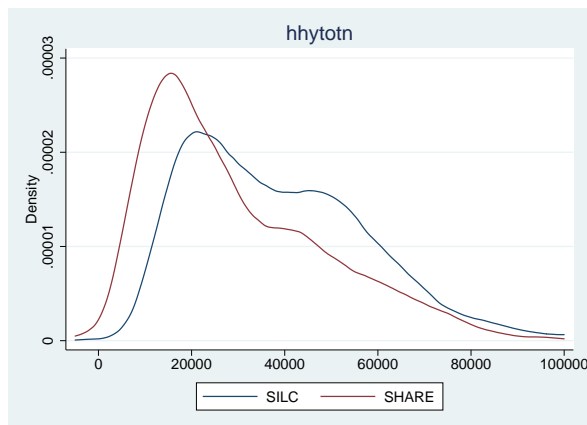Figure 3.1.1: Kernel densities, YINC and YPERN

Figure 3.1.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

3.2 SHARE-SILC comparisons with sample weights

Table 3.2.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	1.75	1.69	0.05*
female	0.53	0.54	-0.01
age	63.94	63.31	0.63**
couple	0.67	0.66	0.00
employed	0.38	0.41	-0.03**
home owner	0.73	0.72	0.02

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 3.2.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	18978.47	18608.59	1.99
ypern	17813.14	19233.55	-7.39***
hhytotn	30384.30	30507.34	-0.40

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

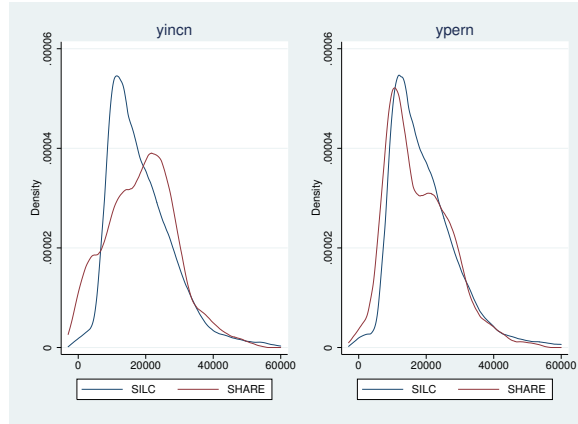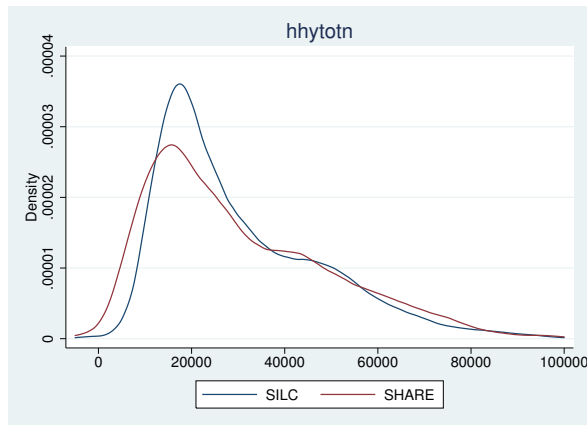Figure 3.2.1: Kernel densities, YINC and YPERN

Figure 3.2.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

4 France

4.1 SHARE-SILC comparisons without sample weights

Table 4.1.1: Mean differences, demographic variables

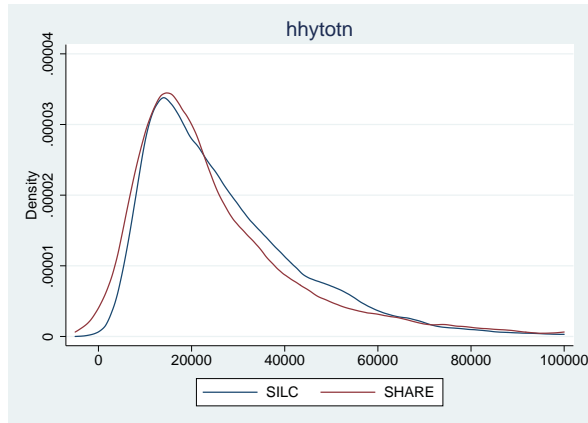|	SHARE	SILC	Difference
household size	2.01	2.02	-0.01
female	0.57	0.56	0.01
age	63.59	62.82	0.77***
couple	0.71	0.73	-0.02*
employed	0.31	0.34	-0.03***
home owner	0.75	0.75	0.00

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 4.1.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
hhytotn	25541.80	27330.48	-6.54***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Figure 4.1.1: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

4.2 SHARE-SILC comparisons with sample weights

Table 4.2.1: Mean differences, demographic variables

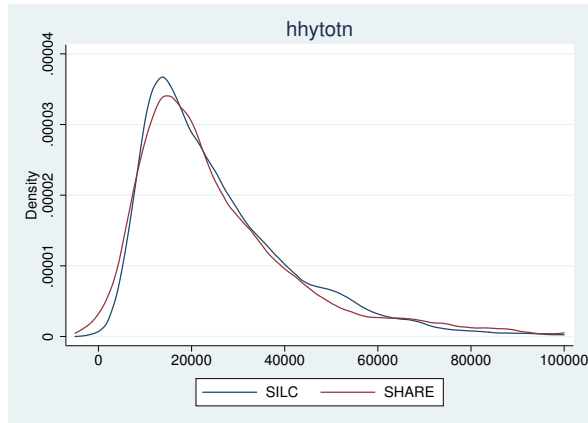|	SHARE	SILC	Difference
household size	2.04	1.93	0.10***
female	0.55	0.56	-0.01
age	64.79	63.67	1.11***
couple	0.69	0.70	-0.01
employed	0.29	0.30	-0.02*
home owner	0.75	0.73	0.02**

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 4.2.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
hhytotn	26447.15	25869.40	2.23

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Figure 4.2.1: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

5 Germany

5.1 SHARE-SOEP comparisons without sample weights

Table 5.1.1: Mean differences, demographic variables

	SHARE	SOEP	Difference
household size	1.97	2.08	-0.11***
female	0.54	0.54	0.00
age	63.95	62.58	1.37***
couple	0.79	0.57	0.22***
employed	0.38	0.43	-0.05***

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 5.1.2: Mean differences, net income aggregates

	SHARE	SOEP	Difference (%)
hhytotn	31328.67	31209.32	0.38

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SOEP sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Figure 5.1.1: Kernel densities, HHYTOTN
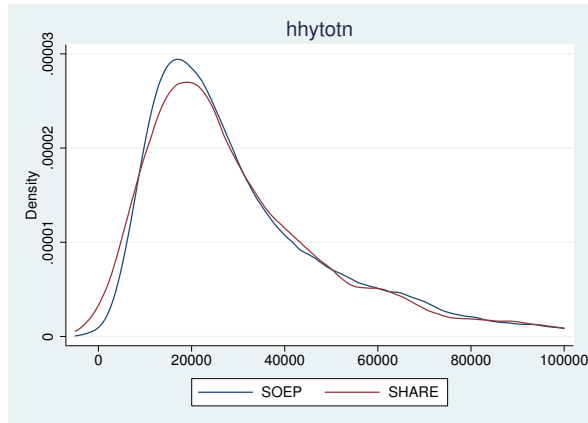
Notes: Top one percent income values are excluded from each sample.

5.2 SHARE-SOEP comparisons with sample weights

Table 5.2.1: Mean differences, demographic variables

	SHARE	SOEP	Difference
household size	1.91	1.79	0.12***
female	0.55	0.55	-0.00
age	65.38	64.63	0.75***
couple	0.65	0.54	0.11***
employed	0.36	0.38	-0.02

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 5.2.2: Mean differences, net income aggregates

	SHARE	SOEP	Difference (%)
hhytotn	29708.32	24739.22	20.09***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SOEP sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Figure 5.2.1: Kernel densities, HHYTOTN
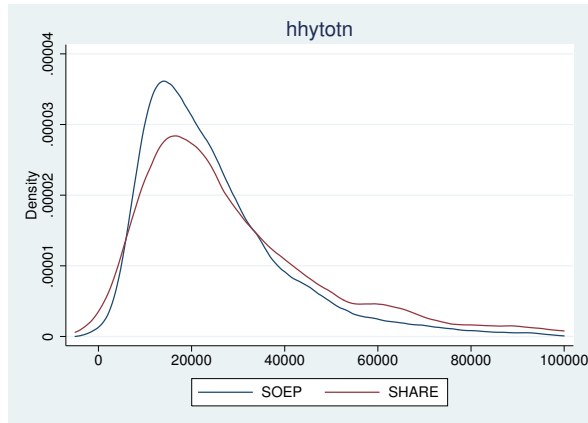
Notes: Top one percent income values are excluded from each sample.

6 Greece

6.1 SHARE-SILC comparisons without sample weights

Table 6.1.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	2.17	2.52	-0.35***
female	0.57	0.56	0.01
age	62.77	63.77	-1.00***
couple	0.70	0.77	-0.07***
employed	0.29	0.29	0.00
home owner	0.85	0.88	-0.03***

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 6.1.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	9298.23	8932.82	4.09**
ypern	8556.89	8874.37	-3.58**
hhytotn	13813.86	16697.96	-17.27***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

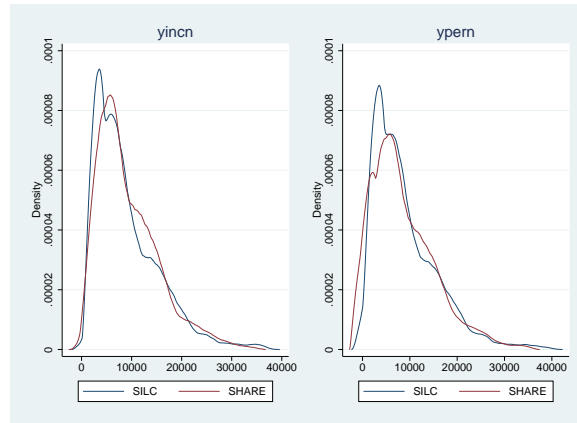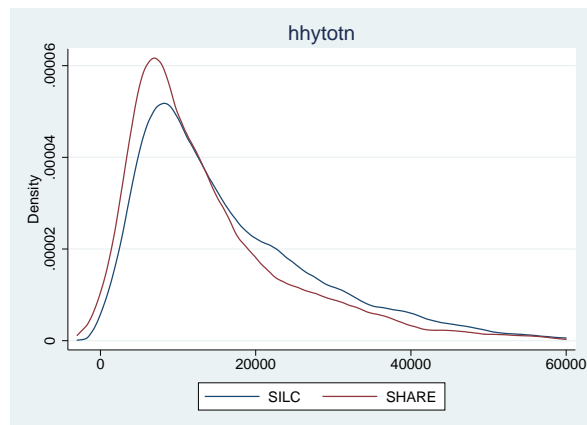Figure 6.1.1: Kernel densities, YINC and YPERN

Figure 6.1.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

6.2 SHARE-SILC comparisons with sample weights

Table 6.2.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	2.18	2.47	-0.29***
female	0.53	0.57	-0.04***
age	64.84	63.50	1.33***
couple	0.67	0.77	-0.10***
employed	0.25	0.29	-0.04***
home owner	0.86	0.87	-0.01

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 6.2.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	9005.56	9248.37	-2.63
ypern	8494.64	9156.27	-7.23***
hhytotn	13667.76	17082.02	-19.99***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
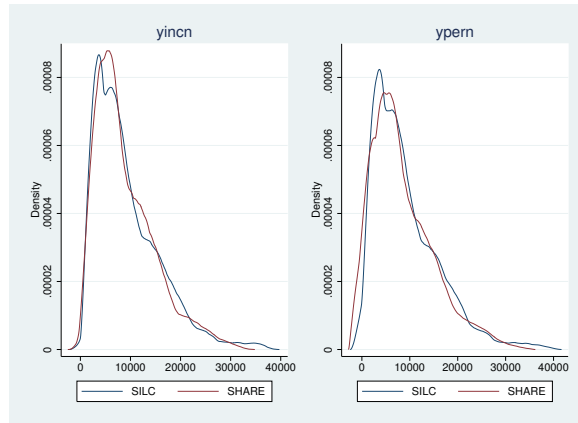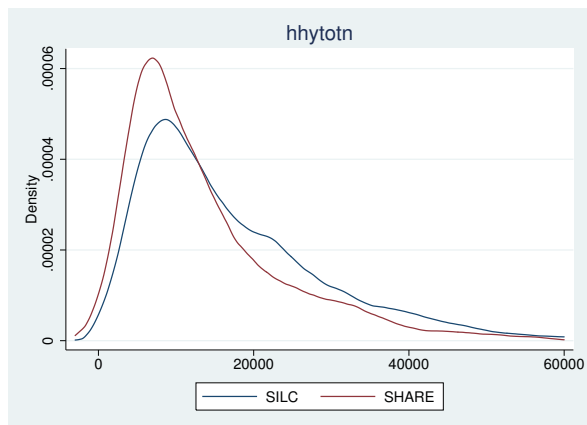
Figure 6.2.1: Kernel densities, YINC and YPERN

Figure 6.2.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

7 Italy

7.1 SHARE-SILC comparisons without sample weights

Table 7.1.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	2.49	2.37	0.12***
female	0.56	0.57	-0.01
age	64.11	64.13	-0.02
couple	0.78	0.69	0.09***
employed	0.19	0.23	-0.04***
home owner	0.80	0.82	-0.02***

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 7.1.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	9694.17	14122.57	-31.36***
ypern	9059.16	13461.89	-32.71***
hhytotn	20781.10	26900.05	-22.75***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

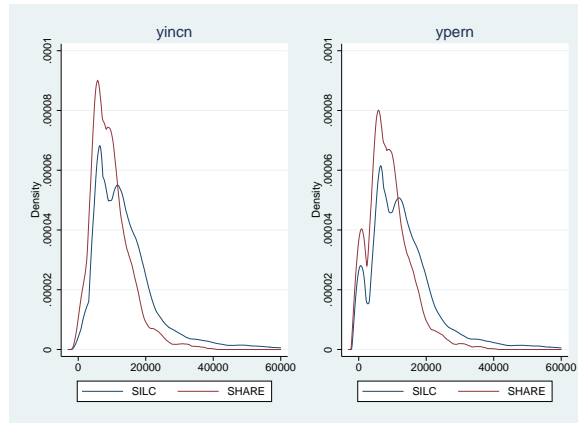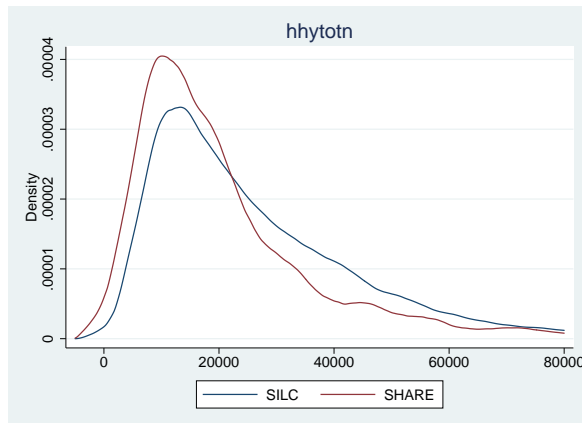Figure 7.1.1: Kernel densities, YINC and YPERN

Figure 7.1.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

7.2 SHARE-SILC comparisons with sample weights

Table 7.2.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	2.43	2.31	0.12***
female	0.55	0.57	-0.02
age	65.39	64.45	0.94***
couple	0.65	0.68	-0.02*
employed	0.19	0.23	-0.04***
home owner	0.77	0.81	-0.04***

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 7.2.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	9793.87	14064.40	-30.36***
ypern	9376.94	13454.93	-30.31***
hhytotn	20198.68	25967.41	-22.22***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

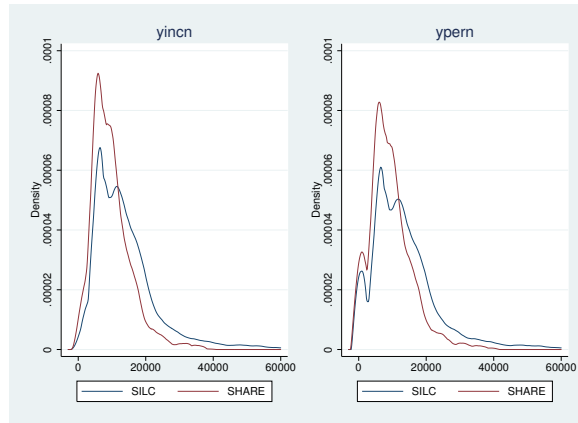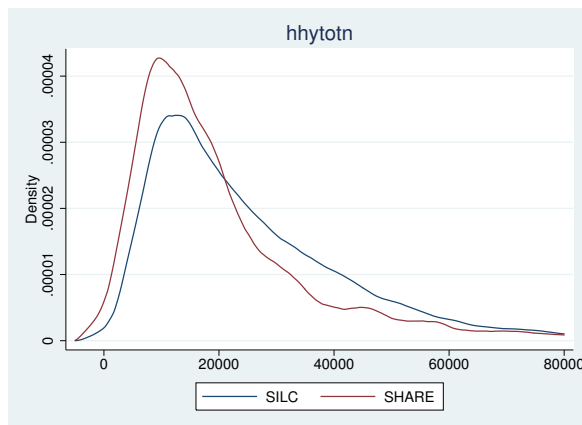Figure 7.2.1: Kernel densities, YINC and YPERN

Figure 7.2.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

8 Netherlands

8.1 SHARE-DHS comparisons without sample weights

Table 8.1.1: Mean differences, demographic variables

	SHARE	DHS	Difference
household size	2.03	2.09	-0.06
female	0.54	0.44	0.10***
age	63.08	61.17	1.91***
couple	0.81	0.78	0.03**
employed	0.39	0.44	-0.05***
home owner	0.61	0.72	-0.11***

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 8.1.2: Mean differences, net income aggregates

	SHARE	DHS	Difference (%)
ypern	19744.46	20306.77	-2.77
hhytotn	45126.88	27405.31	64.66***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top five percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
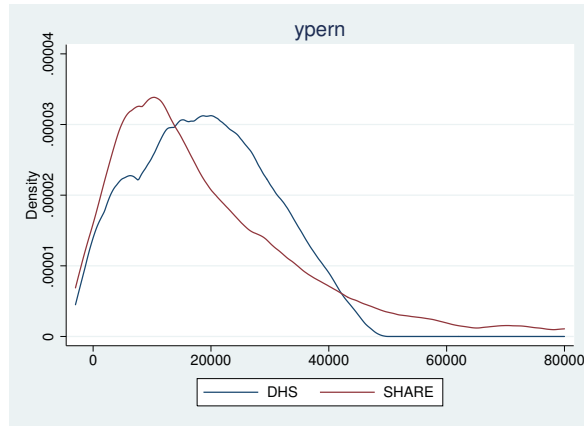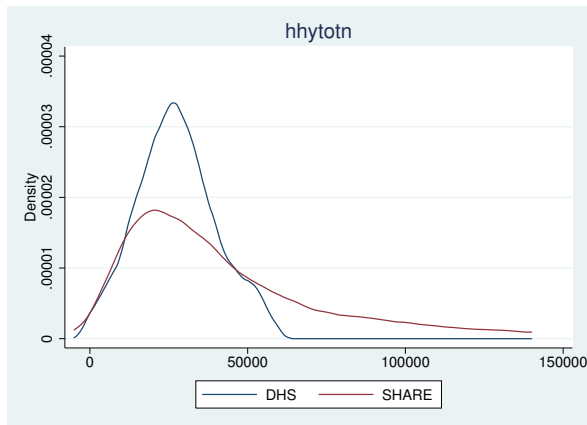
Figure 8.1.1: Kernel densities, YPERN

Figure 8.1.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

8.2 SHARE-DHS comparisons with sample weights

Table 8.2.1: Mean differences, demographic variables

	SHARE	DHS	Difference
household size	1.98	2.01	-0.03
female	0.53	0.46	0.07***
age	64.22	61.33	2.89***
couple	0.69	0.73	-0.04**
employed	0.38	0.41	-0.04*
home owner	0.57	0.59	-0.02

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 8.2.2: Mean differences, net income aggregates

	SHARE	DHS	Difference (%)
ypern	21296.36	19064.39	11.71***
hhytotn	42889.42	25123.39	70.72***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top five percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
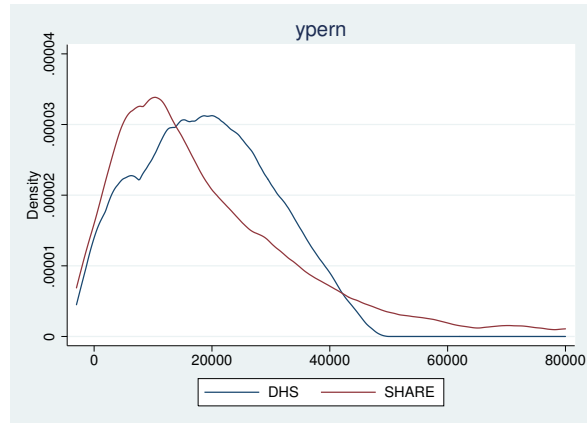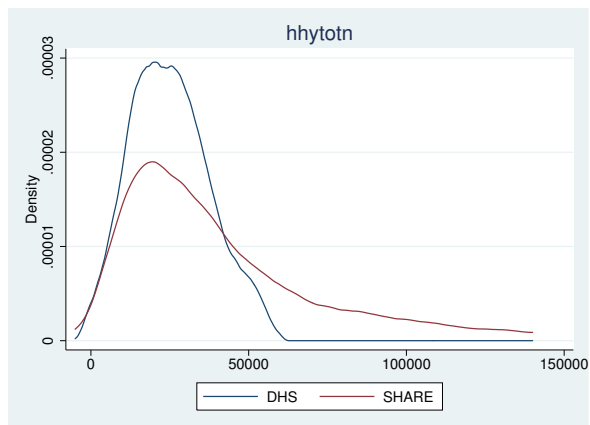
Figure 8.2.1: Kernel densities, YPERN

ypern

Figure 8.2.2: Kernel densities, HHYTOTN

hhytotn

Notes: Top one percent income values are excluded from each sample.

47

9 Spain

9.1 SHARE-SILC comparisons without sample weights

Table 9.1.1: Mean differences, demographic variables

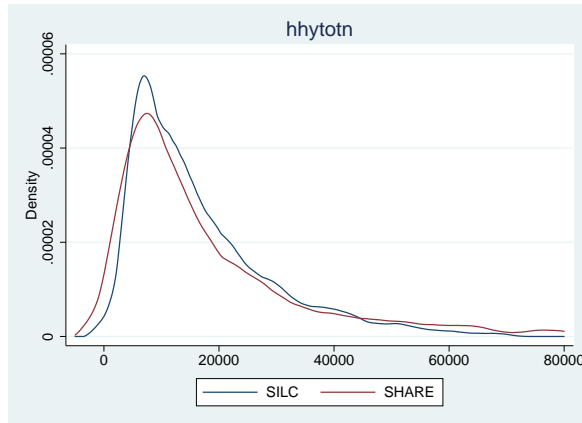|	SHARE	SILC	Difference
household size	2.63	2.68	-0.05
female	0.58	0.56	0.02*
age	65.68	64.38	1.30***
couple	0.74	0.68	0.06***
employed	0.20	0.25	-0.05***
home owner	0.87	0.88	-0.01

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 9.1.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
hhytotn	18634.44	16962.52	9.86***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Figure 9.1.1: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

9.2 SHARE-SILC comparisons with sample weights

Table 9.2.1: Mean differences, demographic variables

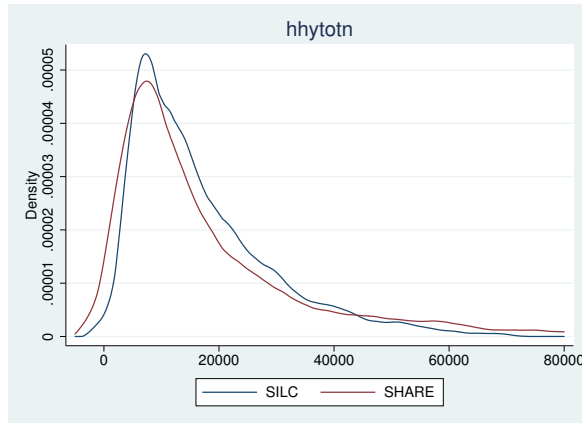|	SHARE	SILC	Difference
household size	2.59	2.70	-0.11***
female	0.55	0.57	-0.02
age	65.35	64.67	0.69***
couple	0.66	0.67	-0.01
employed	0.23	0.25	-0.02
home owner	0.86	0.89	-0.02**

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 9.2.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
hhytotn	18689.82	16985.35	10.03***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Figure 9.2.1: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

10 Sweden

10.1 SHARE-SILC comparisons without sample weights

Table 10.1.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	1.87	2.11	-0.24***
female	0.54	0.53	0.01
age	64.29	62.49	1.80***
couple	0.77	0.81	-0.04***
employed	0.41	0.50	-0.09***
home owner	0.76	0.77	-0.01

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 10.1.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	15813.98	16238.95	-2.62**
ypern	15918.54	16475.49	-3.38***
hhytotn	29672.81	30677.80	-3.28**

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
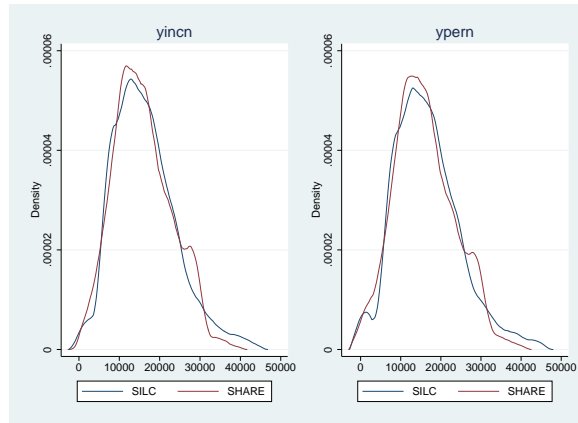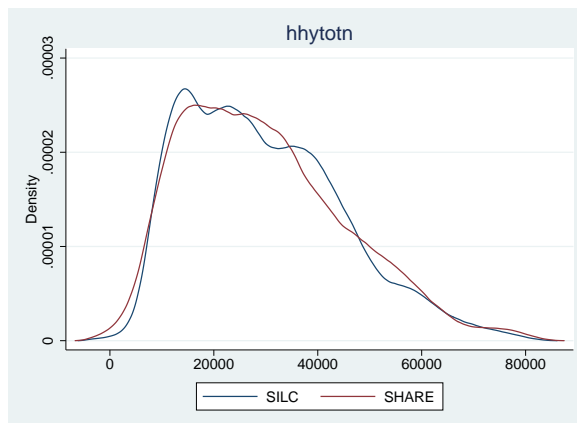
Figure 10.1.1: Kernel densities, YINC and YPERN

Figure 10.1.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

10.2 SHARE-SILC comparisons with sample weights

Table 10.2.1: Mean differences, demographic variables

	SHARE	SILC	Difference
household size	1.84	1.74	0.10***
female	0.53	0.55	-0.02
age	64.95	64.25	0.70***
couple	0.63	0.67	-0.04***
employed	0.40	0.43	-0.03***
home owner	0.72	0.72	0.00

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 10.2.2: Mean differences, net income aggregates

	SHARE	SILC	Difference (%)
yincn	15676.53	15547.16	0.83
ypern	15834.51	15811.11	0.15
hhytotn	28602.15	25936.63	10.28***

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top one percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.
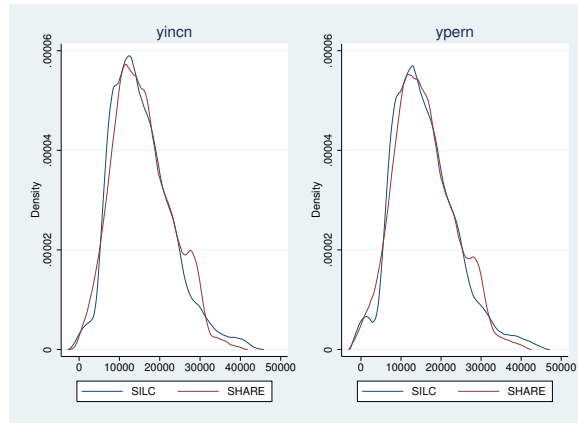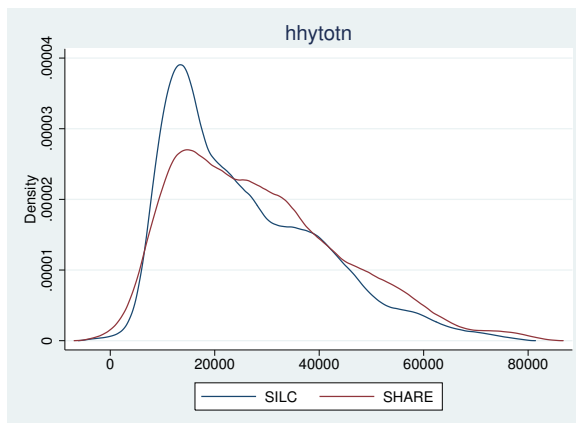
Figure 10.2.1: Kernel densities, YINC and YPERN

Figure 10.2.2: Kernel densities, HHYTOTN

Notes: Top one percent income values are excluded from each sample.

11 Switzerland

11.1 SHARE-SHP comparisons without sample weights

Table 11.1.1: Mean differences, demographic variables

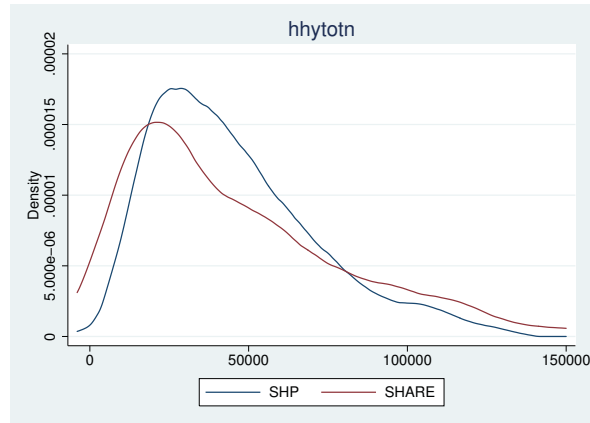|	SHARE	SHP	Difference
household size	1.85	2.20	-0.35***
female	0.55	0.55	0.00
age	64.27	60.47	3.80***
couple	0.71	0.76	-0.05***
employed	0.40	0.42	-0.02

Notes: One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 11.1.2: Mean differences, net income aggregates

	SHARE	SHP	Difference (%)
hhytotn	46125.77	45379.16	1.65

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Top five percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Figure 11.1.1: Kernel densities, HHYTOTN

Notes: Top five percent income values are excluded from each sample.

11.2 SHARE-SHP comparisons with sample weights

Table 11.2.1: Mean differences, demographic variables

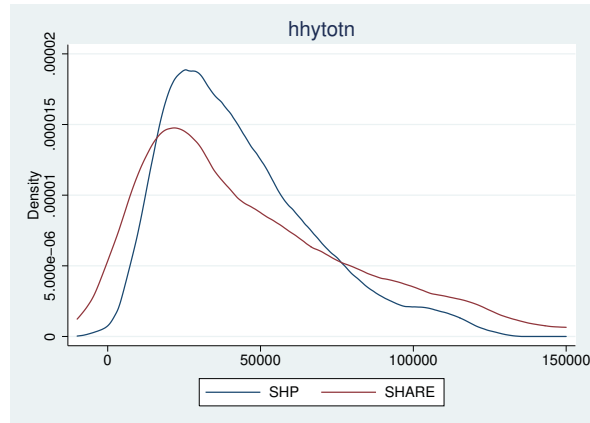|	SHARE	SHP	Difference
household size	1.92	2.14	-0.22***
female	0.54	0.56	-0.02
age	65.16	60.89	4.27***
couple	0.68	0.74	-0.06***
employed	0.40	0.52	-0.12***

Notes: Calibrated individual or household weights are used. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Table 11.2.2: Mean differences, net income aggregates

	SHARE	SHP	Difference (%)
hhytotn	47557.80	43581.47	9.12**

Notes: All values are expressed in Euros. Differences are expressed as percentages of the mean in the SILC sample. Calibrated individual or household weights are used. Top five percent income values are excluded from each sample. One, two and three stars for statistical significance at the 10, 5, 1 percent level of confidence.

Figure 11.2.1: Kernel densities, HHYTOTN

Notes: Top five percent income values are excluded from each sample.