FP7 - Design Study

Deliverable 8: Report on existing wellbeing indices in the GGS

Report on existing wellbeing indices in the GGS

Arnstein Aassve

Bocconi University

Work Package 7
Measuring economic wellbeing

Contents

1   Introduction and premise[1]

This report represents the first deliverable of WP7: Report on existing wellbeing indices in the GGS. Its aim is to assess existing Generations and Gender Programme/Survey (GGP/GGS) measures and develop indices that can be used by researchers in their analysis. Examples are: measures of income, poverty indicators, subjective indicators that illuminate economic wellbeing and deprivation indices. Thus, the work of this work package entails:

1. Creation of indicators of economic wellbeing and provision of comparisons with other comparative surveys and official statistics, where applicable,

2. An evaluation of the usefulness of GGP/GGS indicators of economic wellbeing in the explanation of the relationships between genders and generations by analysing data and reviewing existing research, and

3. An evaluation of the usefulness of the indicators on the relationships between genders and generations in the explanation of wellbeing, and finally

4. Suggestions for the improvement and the expansion of measures of economic wellbeing in an updated GGS questionnaire.

Point 4) will be discussed and presented in a later report of WP7.

The difference between points 2) and 3) is subtle but important. On the one hand, interest lies in understanding how variation in economic wellbeing might have an impact on gender and generational relationships. On the other hand, variations in those very relationships may affect outcomes of economic wellbeing. Thus, points 2) and 3) refer to mechanisms of causality, in which the GGS may provide answers in the future as further waves are becoming available. It should be noted already here that disentangling these relationships requires longitudinal information that we do not have available yet. Thus, the discussion of points 2) and 3) will necessarily overlap to some extent. That said, the way in which economic wellbeing is measured will have critical implications for how one can derive causality statements as further

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waves are becoming available and appropriate statistical techniques can be developed and applied. In this report, we assess the various measures by age and family constellations. There are clear differences in economic wellbeing depending on the demographic status of the household - independent of how economic wellbeing is measured. The GGS offers a range of measures of economic wellbeing. It is important to bear in mind that these are complementary (e.g. poverty and deprivation). In applied analysis, it is always useful to use more than one measure.

The report is structured in the following way. We start by assessing the most traditional measure of economic wellbeing, which is household income. Here we point to the way household income is measured and the way in which missing income information is imputed. The content builds largely on Francesco Figari's report on income imputation for the GGS (Figari, 2010), which the Bocconi team initiated with the help of Viola Spinelli and Francesco Lovecchio. We analyse differences in household income for different household constellations for the countries considered. The GGS also includes information about individuals' income sources. Our analysis shows differences between genders in the countries considered. Benefits and drawbacks of the GGS income measures are discussed in light of how income is typically measured in other surveys. From the household income, we apply the Modified OECD equivalence scale to generate equivalised household income, from which we in turn derive individuals' poverty status. Again potential drawbacks and caveats about the use of poverty as an economic wellbeing measure are discussed. The GGS includes several subjective measures that allude to individuals' economic situation. We discuss these variables and analyse how they as outcome variables differ by different family constellations. Finally we consider variables in the GGS that can be used to construct deprivation indices. We present a general approach for its construction and provide applications from the GGS surveys. In the following part, based on the measures discussed, we make a comparison with what information other mainstream household surveys provide. Our focus is mainly on the ECHP and EU-SILC. Though the former is discontinued, it does provide an important yardstick for how economic wellbeing measures are constructed - especially with regard to deprivation indices. The EU-SILC is the continuation of the ECHP, and though very different in format to both the ECHP and GGS, it does provide the key data source for providing information about economic wellbeing across Europe. As will be clear, this comparison is of a "qualitative" nature in the sense that the components used for measuring economic wellbeing in the GGS are different from the others. That said, some of measures are comparable, in particular for the measures of relative poverty and depriva-

tion - we do provide comparisons. The issues raised under 2) and 3) above are considered for each of the items and are embedded in the text where the different measures are presented. As already mentioned, point 4) will be discussed in a later report, in part derived from the findings of this report. In the concluding part, we discuss the usefulness of the GGS measures.

It is worthwhile bearing in mind that apart from household and individual income, the various measures of economic wellbeing presented in this report, are at this point not meant to be embedded in the harmonization procedure of the GGS surveys. The key aim of this report is to generate a basis for improving questionnaires in future waves of the GGS (hence ensuring that longitudinal analysis can be done safely) and to inform the users of GGS on how measures of economic wellbeing can be constructed in an easy way, and to bring to light the key issues one needs to be aware of when demographic life-course events are analysed in conjunction with economic wellbeing.

The analysis comprises Bulgaria, France, Georgia, Germany, Hungary, Romania and the Russian Federation.

2   Income

Income is the most common measure of economic wellbeing. The GGS questionnaire asks respondents to report her/his income and that of the partner. The variables included in the data refer to the income types received during the last 12 months, the number of times each income type was received, the average net amount of each income type (per time unit) and the approximate range of each income type (per time unit). Moreover, the respondent reports also information about household's income, in terms of average income over the last 12 months, the period to which the income refers to (month or year) and the approximate range of household income. In the case the respondent does not know or is unable to report the household income, the interviewer prompts the respondent for which income band he or she believes the household belongs to. This is different to most mainstream surveys and offers important benefits. First, it does reduce the number of missing values (though the value is less exact when income simply refers to a discrete income band). Secondly, it improves the precision of income imputation in the sense that we do know to which income interval the respondent belongs to. Thus, imputation is based on income information of similar households in the relevant income band (as opposed to comparable households over the whole

income distribution). However, there are a number of countries' specificities and exceptions (see Table 1 and 2) which need to be taken into account in order to derive harmonised variables. For instance, in the German GGS, respondents are not offered to answer the exact household income; instead only the income band is available.

As shown in Table 1, the number of income variables ranges from 3 in Georgia to 13 in Bulgaria for the respondent and from 2 to 13 for the partner. However, in Hungary there is neither the indication of number of payments received by the respondent nor the distinction between different income sources for the partner for whom only the total amount is reported.

The other relevant difference across countries is the number and type of income sources (e.g. earnings from job, retirement pension, survivor benefit, unemployment benefit, social assistance, etc.), potentially reported: from 7 in Germany to 14 in Russia. Given the differences in the average amount of each income source and the characteristics of the recipients and the family associated with each type, the imputation of missing values needs to be done separately for each income source.

Table 1: *Individual income variables in GGS data*

	Respondent				Partner				
Country	Type of income	Number of payments	Net amount	Band	Type of income	Number of payments	Net amount	Band	Income sources
Variable	a864_x	a865_x	a866_x	a867_x	a864_x	a865_x	a866_x	a867_x	
BG	13	13	13	13	13	13	13	13	13
FR	4	4	4	4	4	4	4	4	9
GE	3	3	3	3	2	2	2	2	10
DE	4	No	No	4	3	No	No	3	7
HU	9	No	a866_1601	a867_1601	No	No	a938_1601	a939_1601	9
RO	4	4	4	4	3	3	3	3	11
RU	6	6	6	6	5	5	5	5	14

Notes: The figures in each cell represent the number of times each variable is repeated at most in the questionnaire. In Hungary the name of the variables reporting the net amount and the bands is different as indicated in the table. Respondent's income: *a864_x*: income type during the last 12 months, *a865_x*: number of times received each income type, *a866_x*: average net amount of each income type (per time), *a867_x*: approximate range of each income type (per time). Partner's income: *a936_x*: income type during the last 12 months, *a937_x*: number of times received each income type, *a938_x*: average net amount of each income type (per time), *a939_x*: approximate range of each income type (per time).

Table 2 gives an overview of the variables on household income. The net amount of total income (variable *a1008*) and its reference unit (i.e. month or year, variable *a1008u*) is provided in all countries but France and Germany where only the income band is reported (variable *a1009*). An indication of

secondary sources of income for the household (from 3 sources in France and Germany to 7 in Georgia and Romania) is given in all countries but without specifying the income values for these specific sources (variables *a1006_x*). The same applies to the income sources (from 5 in Germany and Romania to 11 in Bulgaria, none in France and Hungary) of members of the household other than the respondent and the partner (variables *a1007_x*). In all countries but Hungary there is also an indication of the receipt of transfers from outside the household, but again without its amount. The lack of amount of these income sources does not enable us to take them into account in the imputation of household income for those who do not report the total amount, but the information can be used as controls in the imputation procedure.

Table 2: *Household income variables in GGS data*

	Type of income	Type of income (other HH member)	Net amount	Unit	Band	Transfer from outside HH
Variable	a1006_x	a1007_x	a1008	a1008u	a1009	a1010
BG	6	11	Yes(*)	Yes	Yes	Yes
FR	3	No	No	No	Yes	Yes
GE	7	10	Yes	Yes	Yes	Yes
DE	3	5	No	No	Yes	Yes
HU	5	No	Yes	Yes	Yes	No
RO	4	5	Yes	Yes	Yes	Yes
RU	7	6	Yes	Yes	Yes	Yes

Notes: (*) In Bulgaria the names of the variables reporting the net amount and the unit is different: *a1008_1101* and *a1008_1102*. *a1006_x*: types of income received by household, *a1007_x*: Types of income received by other members of household, except respondent and partner, *a1008*: average household income over the last 12 months, *a1008u*: period related to the household income: month/year, *a1009*: approximate range of household income, *a1010*: Any transfer (money etc.) received from person outside household.

The countries specificities highlighted above, in terms of number of income sources, type of income sources, and variables omitted, imply that each country needs to be treated separately, analysing each source of income for both respondent and partner at time.

2.1 Income imputation

An aspect which most surveys have in common, is the lack of information for a specific variable due to non-response. Within a given survey, the non-response may be related to the whole unit (unit non-response) or to a specific variable (item non-response). The harmonisation of income variables neces-

sarily needs to deal with the item non-response which affects to a different extent income variables across countries. The imputation of missing values is useful in order to avoid a loss of valuable information at the analysis stage (i.e. if only completed observed units were analysed) and to minimise the mean squared error of survey estimates, in particular the non-response bias component that arises when the pattern of missing data is not random. For the GGS we have applied single imputation consistent with the approach proposed by EUROSTAT (EUROSTAT, 2001). Here we summarize the key issues concerning income imputation for the GGS. See Figari (2010) for a detailed exposition of income imputation for the GGS.

Single imputation is the preferred method in the context of large public surveys such as the European Community Household Panel - ECHP (EUROSTAT, 2001) and the European Union Survey on Income and Living Conditions - EU-SILC (EUROSTAT, 2010). In particular EUROSTAT, in order to limit the complexity or the computational work involved in the construction of the imputations, rules out special techniques such as multiple imputation or methods using neural networks, despite certain desirable statistical properties they may have (EUROSTAT, 2010). A large public survey which provides imputed values using multiple imputation is SHARE - Survey of Health, Ageing and Retirement in Europe - for which there are five different datasets that differ with respect to the missing values and are identical with respect to the non-missing ones (SHARE, 2009).

A univariate imputation procedure is used to impute, separately, respondent's, partner's and household income. In order to preserve the main characteristics of the observed data, in the imputation an appropriate number of predictors (related to individual and family characteristics) has been used, in order to avoid imposing incorrect assumptions on the relationships between the variables. Given the continuous nature of the income variables to be imputed a predictive mean matching procedure has been applied. The main difference between predictive mean matching and linear regression is that the latter is a fully parametric method which relies on the normality of the model. Predictive mean matching is a partially parametric method that matches the missing value to the observed value with the closest predicted mean (Little, 1988), using linear regression to obtain linear predictions. The linear predictions are then used as a distance measure to create the set of nearest neighbours which act as possible donors with complete observation. From this set an imputed value is randomly drawn, preserving the distribution of the observed values in the missing data, which makes the approach more robust than the one based on a fully parametric linear regression. The

use of prediction matching ensures that values are imputed only within the observed distribution of the variable of interest (Schenker and Taylor, 1996). The parameters of the regressions are estimated within a bootstrap sample. The bootstrap method has the advantage of robustness since it is not necessary to assume that the coefficients are normally distributed (Royston, 2004).

For the GGS two different strategies were adopted in order to impute income variables which may contain missing values both at household and individual level. The first strategy is used to impute household income while the second strategy is used to impute income at the individual level, referring to the respondent, her/his partner and the couple.

2.1.1 Imputation of household income (1st strategy)

The variable *HHincome* (with *HHincome_f* as correspondent flag) contains the Household's annual income, imputed by multivariate regression (predictive mean matching) i) by band if band reported or ii) on the overall sample if band is not reported. The covariates included in the regressions refer to household (being a couple, number of household members, number of dependent children, number of adults working, number of adults retired, number of disabled people) and respondent characteristics (gender, age, age square, high level of education).

The flag takes 3 values (i.e. 0, 1 and 2) related to the value of the variable reported in the original dataset:

- *HHincome_f = 0* if the respondent declares the continuous value of his household income. The reported value is kept in the final dataset and the set of complete observations forms the sample (a) used for matching regressions.

- *HHincome_f = 1* if the respondent declares the band of his household income but not the continuous value. The continuous value is predicted using sample (a) restricted to those reporting the same income band.

- *HHincome_f = 2* if the respondent does not declare his household income (neither the continuous value nor the band). The continuous value is predicted using sample (a).

2.1.2 Imputation of individual incomes (2$^{\text{nd}}$ strategy)

The variables *Rincome* (with *Rincome_f* as correspondent flag) and *Pincome* (*Pincome_f*) contain respectively the annual income of the respondent and her/his partner. Missing values for each income source (e.g. earnings from job, retirement pension, survivor benefit, unemployment benefit, social assistance, etc.), have been imputed by multivariate regression (predictive mean matching) i) by band if band reported or ii) on the overall sample if band is not reported.[2] The covariates included in the regressions refer to individual characteristics (gender, age, age square, high level of education, disable, number of dependent children and being in a couple (only for the "respondent"). Moreover, if the dependent variable refers to labour income, other covariates are included: being employee (rather than self-employed), working part-time (rather than full-time), partner works, dependent children interacted with being a woman. If the dependent variable refers to a non-labour income, dummies reporting whether the respondent (partner) works or not are included. The total individual income for both respondent and partner is given by the sum of each reported or imputed income source.

The flags take 3 values (i.e. 0, 1 and 2) taking the maximum value (i.e. value corresponding to the worst case) between the flags constructed for each source of individual income. The detailed procedures explained below have been implemented in order to maximise the use of available information. At each step, the imputation makes use of the smallest subset of observations with missing values as possible.

2.2 Descriptive statistics of income

Relevant cross-country specificities in the collected data make the imputation of income variables a country-specific exercise, in order to guarantee harmonized final income variables. This section provides descriptive statistics on original variables included in the survey, in order to highlight the most critical cases in terms of number of observations reporting missing values. Moreover we show the pattern, in terms of mean and median, of imputed variables (by different subsets identified by different flag values) in comparison with the subset of complete observations (i.e. flag equal to 0, cases not subject to any imputation). Finally, we report descriptive statistics on individual

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[2]If the number of potential donors is smaller than 30, the average value by income source (and band) is imputed.

incomes (by gender, age, education and labour force status) and household income (by household structure) following the template of the GGS Wave 1 Standard Tables.

2.2.1 Original data

The following Tables 3 - 9 show, for each country separately, the extent to which missing information affects the overall reliability of the individual income variables. For each country the total number of households is indicated (ranging from around 10,000 in France, Georgia and Germany to 13,540 in Hungary) and for each income source the number of observations with an expected value and those with a missing value are reported. For such a descriptive purpose, the number of missing values refers to observations with income values provided neither continuous nor in bands. Those reporting income only in band are not included in this count although, as explained in the section above, these observations have been imputed accordingly.[3]

The pattern of missing values in individual income variables is quite different across countries with France, Georgia, Hungary, Romania and Russia showing a share of missing values for each income source well below 10%, with only some limited exceptions. Bulgaria reports a high number of income sources (i.e. 13) and some of them show slightly higher percentages of missing values but with a relative low incidence in terms of absolute numbers. In case of Germany the percentages of missing values are a bit higher with values between 14% and 24% for the main income sources.

The following Table 10 reports the incidence of missing values in the household income variables, referring to the number of cases with income values not provided neither continuous nor in bands.[4] The share of households with household income missing ranges from below or around 5% in Romania, Russia, France and Georgia to 17% in Bulgaria and Germany and 21% in Hungary.

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[3]The rationale for providing such more restricted statistic relies on the fact that the imputation of continuous values for those reporting the band is less problematic.

[4]As in the case of individual incomes, those reporting income only in band are not included in this count although, as explained in the section above, these observations have been imputed. The rationale for providing such more restricted statistic relies on the fact that the imputation of continuous values for those reporting the band is less problematic.

Table 3: *Descriptive statistics - original data - individual incomes - Bulgaria*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	7,117	653	5,322	765
Other job	667	106	341	87
Pension	2,533	79	1,735	71
Widow/survivor's pension	423	21	26	4
Disability benefit	491	27	284	16
Unemployment benefit	280	12	168	18
Social assistance	343	30	189	23
Education related benefit	174	10	29	6
Parental leave benefit	277	18	174	13
Social pension	83	7	35	4
Childbirth benefit	86	14	51	6
Children allowance	1,716	40	909	28
Other	96	26	22	12
Number of Households (N)	12,858			

Table 4: *Descriptive statistics - original data - individual incomes - France*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	5,878	117	4,512	305
Other job	287	15	142	27
Pension	2,399	101	1,524	142
Widow/survivor's pension	545	36	39	8
Disability benefit	468	12	199	17
Unemployment benefit	638	15	303	27
Social assistance	267	1	66	6
Education related benefit	254	5	85	14
Parental leave benefit	235	4	129	3
Number of Households (N)	10,079			

Table 5: *Descriptive statistics - original data - individual incomes - Georgia*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	3,959	106	2,814	121
Other job	547	19	315	7
Pension	1671	0	923	0
Widow/survivor's pension	106	0	33	0
Disability benefit	478	1	271	1
Unemployment benefit	9	0	5	0
Social assistance	316	2	121	0
Education related benefit	48	0	3	0
Parental leave benefit	9	0	11	1
Social pension	0	0	0	0
Number of Households (N)	10,000			

Table 6: *Descriptive statistics - original data - individual incomes - Germany*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	5,841	892	3,846	761
Pension	2,198	370	1,291	264
Widow/survivor's pension	375	53	25	6
Disability benefit	190	36	112	12
Unemployment benefit	667	87	301	51
Education related benefit	171	12	41	5
Parental leave benefit	1,473	156	594	70
Number of Households (N)	10,017			

2.3 Imputed incomes

Following the description of the imputation approaches adopted (section 2.1) in order to provide harmonised income variables, Tables 11 - 17 show the proportion of cases falling into the three different categories corresponding to a flag value equal to 0 (i.e. no imputation), 1 (i.e. imputation of continuous value from bands for household income; imputation of individual incomes using partial information recorded in the data) or 2 (i.e. imputation of information completely missing in the data). The share of most serious cases (i.e. flag = 2) ranges from 1% in Georgia to 14% in Germany when considering individual incomes and from null in France, Georgia and Germany to 21% in

Table 7: *Descriptive statistics - original data - individual incomes - Hungary*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	9,189	604	0	0
Other job	1,978	123	0	0
Pension	4,751	189	0	0
Widow/survivor's pension	852	30	0	0
Disability benefit	2,568	85	0	0
Unemployment benefit	703	31	0	0
Social assistance	175	8	0	0
Education related benefit	507	35	0	0
Parental leave benefit	1,284	58	0	0
Number of Households (N)	13,540			

Table 8: *Descriptive statistics - original data - individual incomes - Romania*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	4,384	168	3478	174
Other job	228	9	93	5
Pension	3,573	117	2,358	85
Widow/survivor's pension	61	0	19	1
Disability benefit	1,009	17	575	16
Unemployment benefit	157	7	114	5
Social assistance	85	3	37	1
Education related benefit	30	2	7	1
Parental leave benefit	105	1	113	4
Self Employment	1,380	66	946	53
Other	553	31	267	16
Number of Households (N)	11,986			

Table 9: *Descriptive statistics - original data - individual incomes - Russian Federation*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	6,583	331	5,081	501
Other job	920	57	466	74
Pension	3195	36	1,488	40
Widow/survivor's pension	174	4	26	1
Disability benefit	511	9	220	5
Unemployment benefit	115	2	61	7
Education related benefit	0	0	0	0
Parental leave benefit	232	2	108	11
Service pension	187	6	124	14
Social pension	236	5	137	6
Military pension	39	0	21	2
Employment pension	78	3	85	7
Social Assistance	17	0	12	0
Other	175	5	50	5
Number of Households (N)	11,261			

Table 10: *Descriptive statistics - original data - household income*

	No. obs	No. missing
Bulgaria	12,858	2,115
France	10,079	508
Georgia	10,000	605
Germany	10,017	1,698
Hungary	13,540	2,868
Romania	11,986	334
Russian Federation	11,261	481

Hungary. In case of individual incomes, the figures are derived considering all income sources together for each individual.

Tables 11 - 17 also report mean and median of each income variable, by imputation-flag category. It emerges that mean and median of subsets of imputed values are larger than those fully recorded in the data in all countries, highlighting a selection issue in the pattern of missing values. Average income values in the sample as a whole are larger than in the original data, but the difference is not so big due to the relative small size of imputed subsets.

Average household income is larger than couple income in all countries but

France, where the continuous household income is not recorded in the data and it is imputed from income bands without any additional information on the within band distribution. The difference between average household income and couple income is particularly large in Georgia and Romania suggesting that a within household consistency check of information recorded in the data should be performed together with an analysis of the household composition that might explain at least part of the differences.

Table 11: *Descriptive statistics - imputed data - Bulgaria*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	87%	1,006	780	6%	2,187	1,524	7%	1,532	1,224	1,117	840
Pincome	83%	695	360	8%	2,058	1,536	9%	1,434	1,224	812	492
Cincome	78%	1,720	1,332	10%	3,205	2,364	12%	2,528	2,161	1,928	1,476
HHincome	80%	2,599	2,086	4%	3,804	3,927	16%	2,814	2,454	2,683	2,147

Note: *Annual incomes in euro. % are share of cases in each imputation-flag category. Flag = 0: no imputation; Flag = 1: imputation of continuous value from bands for household income; imputation of individual income using partial information recorded in the data. Flag = 2: imputation of information completely missing in the data.*

Table 12: *Descriptive statistics - imputed data - France*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	89%	16,166	13,800	8%	20,009	14,400	2%	20,811	14,400	16,593	13,896
Pincome	86%	11,491	6,000	10%	24,981	16,800	4%	21,287	13,785	12,652	8,000
Cincome	82%	28,522	22,800	13%	33,735	25,662	5%	31,868	21,948	29,245	22,950
HHincome	95%	25,127	26,994	5%	24,797	26,994	- - -	- - -	- - -	25,110	26,994

Note: *see Table 11*

Table 13: *Descriptive statistics - imputed data - Georgia*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	96%	392	144	3%	1,294	792	1%	877	528	424	144
Pincome	94%	307	0	4%	1,629	1,056	2%	782	420	345	0
Cincome	91%	709	288	6%	1,741	1,175	3%	1,173	752	768	288
HHincome	70%	1,415	877	30%	4,936	1,320	- - -	- - -	- - -	2,465	964

Note: *see Table 11*

2.4   Final incomes

Tables 18 - 24 report the annual personal income by gender, age, education and labour force status as suggested in the template of the GGS Wave 1 Stan-

Table 14: *Descriptive statistics - imputed data - Germany*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	86%	14,555	14,994	- - -	- - -	- - -	14%	16,637	14,994	14,850	14,994
Pincome	87%	8,711	0	- - -	- - -	- - -	13%	21,684	20,994	9,735	2,994
Cincome	81%	24,247	20,994	- - -	- - -	- - -	19%	26,328	23,988	24,585	20,994
HHincome	83%	24,489	20,994	17%	26,231	26,994	- - -	- - -	- - -	24,784	26,994

Note: *see Table 11*

Table 15: *Descriptive statistics - imputed data - Hungary*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	69%	3,212	2,784	25%	4,109	3,420	5%	3,888	3,228	3,474	2,940
Pincome	69%	1,894	1,080	24%	4,315	3,672	7%	4,585	3,420	2,393	2,052
Cincome	65%	5,343	4,608	28%	6,819	5,868	8%	7,272	6,012	5,867	4,896
HHincome	53%	7,317	6,359	26%	8,641	7,337	21%	522	448	6,225	5,869

Note: *see Table 11*

Table 16: *Descriptive statistics - imputed data - Romania*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	89%	1,347	1,020	8%	2,758	1,404	3%	1,788	1,248	1,476	1,039
Pincome	89%	946	492	8%	2,986	1,644	3%	1,890	1,344	1,081	636
Cincome	84%	2,344	1,644	11%	4,122	2,208	6%	3,046	2,364	2,557	1,704
HHincome	81%	10,071	7,920	17%	3,881	2,940	3%	11,773	9,852	9,092	6,840

Note: *see Table 11*

Table 17: *Descriptive statistics - imputed data - Russian Federation*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	90%	1,366	768	6%	3,043	1,713	4%	1,974	1,083	1,489	792
Pincome	87%	840	324	8%	2,694	1,704	4%	1,414	912	952	408
Cincome	83%	2,218	1,404	10%	4,122	2,724	6%	3,288	2,027	2,441	1,524
HHincome	92%	2,549	1,849	4%	4,298	3,414	4%	1,064	284	2,555	1,832

Note: *see Table 11*

dard Tables. Monetary values are expressed in Euro. Along with the number of unweighted observations in each cell, the tables report mean, median and quintile points. The total number of observations might be different from the sum of the observations in each age, education and labour force status category due to the presence of individual the younger (older) than 18 (79) years old or missing values in the education and labour force status variables in the original data. Finally, Tables 25 - 31 report mean, median and quintile points of the annual household income (expressed in Euro) by household structure.

Table 18: *Annual personal income - Bulgaria*

| | | ALL | AGE | | | | | | EDUCATION | | | LABOUR FORCE STATUS | | | | |
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	10,910	2,398	2,739	2,039	1,662	1,275	754	848	7,414	2,472	5,610	1,948	422	2,481	416
	Mean	932	732	1,114	1,164	1,009	676	577	425	818	1,485	1,366	286	246	674	354
	Median	732	522	1,020	1,044	789	552	516	396	720	1,321	1,224	108	0	552	216
	1st quintile	216	0	216	336	336	396	385	108	216	671	732	0	0	396	0
	2nd quintile	588	255	840	920	648	504	492	362	552	1,104	1,033	0	0	492	108
	3rd quintile	924	732	1,224	1,224	947	612	564	456	840	1,536	1,332	216	62	612	336
	4th quintile	1,416	1,212	1,596	1,716	1,536	792	732	652	1,224	1,968	1,836	444	279	768	552
MEN	n	10,491	1,877	2,591	2,287	1,617	1,247	828	598	8,036	1,750	5,839	1,844	289	2,278	216
	Mean	1,358	1,026	1,600	1,600	1,433	1,086	977	506	1,258	2,167	1,871	294	304	1,062	1,059
	Median	1,104	726	1,284	1,224	1,224	924	792	456	1,044	1,836	1,536	0	0	864	552
	1st quintile	372	0	426	492	492	611	552	0	360	924	924	0	0	588	360
	2nd quintile	863	325	1,104	1,104	924	792	724	339	804	1,530	1,232	0	0	744	492
	3rd quintile	1,224	1,024	1,596	1,536	1,407	1,044	876	552	1,224	2,088	1,836	10	26	984	645
	4th quintile	1,956	1,721	2,328	2,299	1,968	1,436	1,104	768	1,836	2,918	2,460	492	360	1,343	972

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

2.5 Concluding remarks concerning income in GGS

This section describes the procedures involved in providing GGS users with *harmonised*, *complete* and *user-ready* income variables and their flags. A major imputation process has been necessary in order to provide complete dataset across countries. As a result, a user can exploit the availability of individual (i.e. partner and respondent), couple and household income variables according to her own needs and research questions.

A general issue concerns the consistency between couple annual income (i.e. the sum of income of respondent and partner available in the data) and household annual income. As noted above, in a couple of countries the average

Table 19: *Annual personal income - France*

		ALL	AGE 18-29	30-39	40-49	50-59	60-69	70-79	EDUCATION primary	secondary	higher	LABOUR FORCE STATUS employed	unemployed	student	retired	other non-active
WOMEN	n	8,494	1,381	1,772	1,633	1,637	1,174	864	2,972	3,244	2,258	4,493	554	402	1,801	1,244
	Mean	12,472	8,280	13,755	15,399	13,745	11,262	10,456	8,887	11,694	18,307	16,653	6,478	2,318	12,081	3,885
	Median	11,160	7,200	13,200	13,800	12,000	9,144	9,000	7,800	11,340	17,400	14,400	5,472	165	10,260	0
	1st quintile	2,550	0	5,674	5,032	322	2,744	3,600	581	2,840	6,650	9,000	0	0	5,232	0
	2nd quintile	8,640	4,500	11,000	12,000	9,600	7,200	7,200	6,000	9,000	14,634	13,200	4,080	0	8,640	0
	3rd quintile	13,200	10,200	14,400	15,600	14,400	11,340	10,636	9,600	13,200	19,200	16,800	7,440	1,000	12,000	0
	4th quintile	18,288	14,400	19,200	22,200	20,747	17,760	15,000	14,400	17,400	25,608	21,600	10,800	3,840	18,000	6,684
MEN	n	7,614	987	1,604	1,553	1,528	1,069	800	2,243	3,419	1,925	4,687	419	218	2,041	249
	Mean	23,325	12,578	22,776	26,148	28,813	25,271	19,694	16,158	20,090	37,365	26,642	14,385	2,789	21,307	10,457
	Median	16,910	13,200	18,000	18,600	19,200	16,800	14,640	14,400	16,800	25,608	18,600	8,160	425	15,732	8,016
	1st quintile	10,980	2,000	13,200	13,200	12,756	10,200	9,439	8,868	11,892	15,600	14,400	0	0	9,706	2,500
	2nd quintile	15,360	10,800	16,200	16,800	17,205	14,640	12,804	12,804	15,240	21,948	17,040	5,400	0	14,400	7,188
	3rd quintile	19,200	14,400	19,200	21,600	22,038	19,200	17,347	15,600	18,000	30,000	21,600	10,200	1,800	18,000	9,336
	4th quintile	27,444	18,000	26,400	30,000	32,400	29,736	24,000	20,400	24,000	42,185	30,000	14,220	5,568	25,200	14,400

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 20: *Annual personal income - Georgia*

		ALL	AGE 18-29	30-39	40-49	50-59	60-69	70-79	EDUCATION primary	secondary	higher	LABOUR FORCE STATUS employed	unemployed	student	retired	other non-active
WOMEN	n	8,618	1,642	1,732	1,888	1,449	1,093	799	357	5,979	2,277	2,668	1,217	291	1,621	2,821
	Mean	245	131	266	345	282	218	168	143	163	475	642	44	36	156	29
	Median	63	0	0	0	88	144	144	144	0	144	420	0	0	144	0
	1st quintile	0	0	0	0	0	144	144	144	0	0	108	0	0	144	0
	2nd quintile	0	0	0	0	0	144	144	144	0	72	276	0	0	144	0
	3rd quintile	144	0	0	144	144	144	144	144	144	307	528	0	0	144	0
	4th quintile	303	44	420	528	468	168	144	144	168	780	948	0	0	144	0
MEN	n	7,804	1,331	1,546	1,830	1,382	987	692	256	5,307	2,233	4,484	1,610	249	1,154	307
	Mean	693	497	1,026	896	727	357	224	195	510	1,188	1,088	141	62	196	192
	Median	225	0	528	528	372	144	144	144	168	684	768	0	0	144	144
	1st quintile	0	0	0	0	0	132	144	144	0	42	182	0	0	144	144
	2nd quintile	144	0	307	269	193	144	144	144	144	372	528	0	0	144	144
	3rd quintile	440	177	840	780	538	144	144	144	312	953	948	0	0	144	144
	4th quintile	1,056	840	1,572	1,438	1,124	527	168	173	876	1,836	1,572	59	0	168	180

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 21: *Annual personal income - Germany*

		ALL	AGE						EDUCATION			LABOUR FORCE STATUS				
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	8,285	1,143	1,661	1,887	1,381	1,339	781	1,419	6,417	3,262	4,114	526	319	1,779	1,509
	Mean	10,766	8,340	10,336	12,011	11,977	10,155	11,663	7,271	11,564	9,521	14,466	5,983	4,932	11,241	3,134
	Median	8,994	8,994	8,994	8,994	8,994	8,994	8,994	5,988	8,994	8,994	14,994	2,994	2,994	8,994	0
	1st quintile	2,994	2,994	2,994	2,994	2,994	2,994	2,994	0	2,994	0	8,994	0	0	2,994	0
	2nd quintile	8,994	2,994	5,988	8,994	8,994	8,994	8,994	2,994	8,994	2,994	8,994	2,994	2,994	8,994	0
	3rd quintile	11,988	8,994	11,988	14,994	14,994	8,994	11,988	8,994	14,994	8,994	14,994	5,988	2,994	8,994	2,994
	4th quintile	14,994	14,994	17,988	20,987	20,994	14,994	14,994	11,988	17,988	14,994	20,994	8,994	8,994	14,994	2,994
MEN	n	7,931	1,061	1,440	1,836	1,398	1,333	725	608	6,723	3,776	4,890	599	350	1,928	110
	Mean	19,619	11,700	21,545	23,286	21,625	18,869	17,320	13,395	20,163	20,187	23,598	7,512	5,395	16,710	10,060
	Median	20,994	11,988	20,994	20,994	20,994	14,994	14,994	14,994	20,994	20,994	20,994	5,988	2,994	14,994	2,994
	1st quintile	8,994	2,994	14,994	14,994	8,994	8,994	8,994	2,994	8,994	8,994	14,994	0	0	8,994	0
	2nd quintile	14,994	8,994	20,994	20,994	14,994	14,994	14,994	8,994	14,994	14,994	20,994	2,994	2,994	14,994	1,198
	3rd quintile	20,994	14,994	20,994	26,994	22,192	20,994	14,994	14,994	20,994	20,994	26,994	8,994	5,988	14,994	8,994
	4th quintile	26,994	19,792	29,988	32,994	32,994	26,994	20,994	20,994	26,994	32,994	32,994	11,988	8,994	20,994	20,994

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 22: *Annual personal income - Hungary*

		ALL	AGE						EDUCATION			LABOUR FORCE STATUS				
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	11,723	2,001	2,123	2,208	2,410	1,890	1,067	760	9,005	1,956	6,195	488	245	3,113	1,645
	Mean	2,999	2,781	3,216	3,372	3,212	2,594	2,474	1,911	2,666	4,956	3,735	1,270	1,365	2,707	1,543
	Median	2,592	2,448	2,880	2,940	2,688	2,352	2,448	1,956	2,448	4,404	3,276	1,032	1,176	2,448	1,320
	1st quintile	1,560	1,176	1,464	1,658	1,560	1,764	1,956	1,080	1,464	2,940	2,304	780	598	1,908	876
	2nd quintile	2,352	2,100	2,448	2,592	2,352	2,119	2,304	1,764	2,244	3,912	2,940	924	780	2,304	1,080
	3rd quintile	2,940	2,940	3,199	3,420	3,036	2,544	2,592	2,100	2,736	4,896	3,672	1,320	1,464	2,640	1,620
	4th quintile	3,912	3,912	4,164	4,644	4,250	3,180	3,036	2,496	3,516	6,360	4,896	1,860	1,464	3,276	2,148
MEN	n	10,694	1,763	2,111	1,983	2,198	1,622	927	404	8,522	1,768	6,316	492	203	2,499	1,157
	Mean	4,138	3,883	4,785	4,286	4,419	3,578	3,266	2,442	3,674	6,760	5,044	1,404	1,593	3,454	2,302
	Median	3,420	3,420	3,912	3,420	3,420	2,940	3,036	2,352	3,180	5,376	3,912	984	876	3,036	2,196
	1st quintile	2,244	1,860	2,448	2,244	2,196	2,196	2,400	1,716	2,196	3,672	2,784	780	770	2,352	1,224
	2nd quintile	2,940	2,940	3,420	3,084	2,940	2,688	2,832	2,196	2,940	4,896	3,672	780	780	2,832	1,956
	3rd quintile	3,912	3,912	4,404	3,912	3,912	3,372	3,324	2,496	3,576	6,360	4,404	1,272	876	3,420	2,448
	4th quintile	5,040	4,896	6,360	5,628	5,376	4,404	3,931	3,036	4,644	9,780	6,360	1,956	2,158	4,152	3,036

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 23: *Annual personal income - Romania*

		ALL	AGE						EDUCATION			LABOUR FORCE STATUS				
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	10,453	1,237	2,300	1,832	2,247	1,656	1,154	1,784	7,753	913	4,322	221	176	3,666	2,074
	Mean	1,125	1,007	1,339	1,356	1,126	900	790	543	1,050	2,887	1,824	622	351	967	66
	Median	764	436	1,044	1,020	792	615	528	420	840	2,407	1,437	436	0	684	0
	1st quintile	0	0	0	0	0	360	324	36	0	1,476	816	0	0	420	0
	2nd quintile	528	0	758	756	588	492	456	372	567	2,018	1,248	87	0	588	0
	3rd quintile	1,020	1,006	1,308	1,308	984	816	624	492	1,020	2,616	1,644	701	0	816	0
	4th quintile	1,644	1,740	1,968	1,968	1,644	1,128	1,020	684	1,512	3,936	2,460	998	300	1,116	0
MEN	n	10,033	1,088	2,086	1,901	2,125	1,579	1,180	1,044	7,910	1,076	5,548	439	190	3,630	226
	Mean	1,851	1,571	2,189	2,274	1,878	1,505	1,286	925	1,723	3,690	2,369	586	272	1,385	385
	Median	1,308	1,152	1,644	1,644	1,308	1,152	1,057	768	1,308	2,952	1,704	152	0	1,092	0
	1st quintile	660	62	803	720	672	756	660	420	672	1,644	984	0	0	696	0
	2nd quintile	1,116	820	1,380	1,380	1,056	1,044	984	656	1,116	2,460	1,476	0	0	984	0
	3rd quintile	1,512	1,368	1,968	1,968	1,560	1,248	1,152	936	1,476	3,276	2,012	378	0	1,212	325
	4th quintile	2,364	2,171	2,840	2,952	2,460	1,524	1,476	1,152	2,196	4,920	2,966	926	415	1,489	588

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 24: *Annual personal income - Russian Federation*

		ALL	AGE						EDUCATION			LABOUR FORCE STATUS				
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	9,949	1,805	1,754	2,136	1,732	1,482	1,015	1,169	6,190	250	5,605	478	272	2,853	740
	Mean	1,152	929	1,248	1,390	1,452	839	738	857	1,351	909	1,631	321	317	668	232
	Median	708	408	780	928	848	684	684	648	840	558	1,032	60	66	648	24
	1st quintile	324	24	192	336	444	504	504	324	348	36	516	0	0	456	0
	2nd quintile	612	216	576	708	684	636	636	552	684	361	876	28	15	600	0
	3rd quintile	852	684	1,020	1,135	1,020	720	720	720	1,020	720	1,368	155	140	684	48
	4th quintile	1,452	1,368	1,704	1,863	1,719	864	816	1,068	1,704	1,523	2,040	514	382	768	284
MEN	n	7,875	1,482	1,568	1,918	1,369	923	584	1,729	4,515	584	5,349	557	215	1,574	176
	Mean	1,912	2,005	2,621	2,045	1,787	1,085	964	1,220	2,252	2,722	2,477	443	748	818	571
	Median	1,200	1,368	1,704	1,368	1,200	756	780	780	1,572	1,230	1,704	78	153	720	336
	1st quintile	516	254	626	444	444	612	684	372	684	359	852	0	0	576	0
	2nd quintile	852	1,020	1,368	1,020	852	708	756	684	1,224	852	1,368	6	77	684	126
	3rd quintile	1,566	1,747	2,052	1,704	1,572	804	816	960	2,040	1,704	2,052	203	227	756	510
	4th quintile	2,736	3,072	3,408	3,072	2,724	1,464	1,236	1,704	3,082	3,386	3,408	710	684	900	853

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 25: *Annual household income by household structure - Bulgaria*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	12,858	1,006	2,034	279	472	2,060	120	1,253	2,071	11	1,406	2,146
Mean	2,683	1,141	2,333	1,780	1,975	2,875	2,217	3,067	2,885	1,885	3,351	2,998
Median	2,147	798	1,534	1,411	1,718	2,556	1,963	2,454	2,515	1,023	3,068	2,556
1st quintile	1,125	521	1,043	798	920	1,472	924	1,380	1,350	796	1,841	1,278
2nd quintile	1,841	706	1,380	1,227	1,463	2,209	1,587	2,045	2,147	969	2,638	2,147
3rd quintile	2,577	982	1,841	1,718	2,045	3,068	2,155	2,945	3,068	1,657	3,681	3,068
4th quintile	3,681	1,601	2,577	2,454	2,896	3,988	3,068	3,835	3,988	3,497	4,595	4,295

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 26: *Annual household income by household structure - France*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	10,079	2,642	2,915	375	197	1,074	181	239	1,340	59	211	846
Mean	25,110	16,529	28,001	18,978	19,014	30,212	18,442	26,492	31,763	18,757	29,468	29,469
Median	26,994	14,994	26,994	14,994	14,994	32,994	14,994	26,994	32,994	14,994	32,994	26,994
1st quintile	14,994	8,994	14,994	8,994	8,994	20,994	8,994	20,994	20,994	8,994	20,994	20,994
2nd quintile	20,994	14,994	26,994	14,994	14,994	26,994	14,994	20,994	26,994	14,994	26,994	26,994
3rd quintile	26,994	14,994	32,994	20,994	20,994	32,994	20,994	32,994	38,994	20,994	32,994	32,994
4th quintile	38,994	20,994	38,994	26,994	26,994	38,994	26,994	38,994	38,994	26,994	38,994	38,994

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 27: *Annual household income by household structure - Georgia*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
Mean	2,465	1,724	1,501	2,305	1,479	3,131	2,176	2,211	2,850	1,747	2,571	2,596
Median	964	264	435	528	678	996	877	1,008	1,157	618	1,056	1,068
1st quintile	372	144	300	218	219	420	372	392	452	372	468	526
2nd quintile	736	216	348	439	420	732	691	785	948	528	877	877
3rd quintile	1,315	307	564	778	948	1,300	1,056	1,330	1,572	705	1,404	1,449
4th quintile	2,411	872	1,320	1,615	1,836	2,628	1,770	2,628	2,630	2,192	2,628	2,628

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 28: *Annual household income by household structure - Germany*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	10,017	2,510	2,962	329	185	1,304	163	323	1,305	58	215	663
Mean	24,784	15,575	27,132	18,021	18,951	29,276	19,853	27,031	31,343	19,028	29,450	31,510
Median	26,994	14,994	26,994	14,994	14,994	26,994	14,994	26,994	32,994	20,994	32,994	32,994
1st quintile	14,994	8,994	20,994	8,994	8,994	20,994	13,794	14,994	20,994	14,994	20,994	20,994
2nd quintile	20,994	14,994	20,994	14,994	14,994	26,994	14,994	20,994	26,994	14,994	26,994	26,994
3rd quintile	26,994	14,994	26,994	20,994	20,994	32,994	20,994	32,994	32,994	20,994	32,994	38,994
4th quintile	38,994	20,994	38,994	26,994	26,994	38,994	26,994	38,994	38,994	26,994	38,994	38,994

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 29: *Annual household income by household structure - Hungary*

	ALL	1 PERSON	2 PERSONS			3 PERSONS			4 PERSONS			5 PERSONS AND MORE
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	13,540	1,729	3,019	499	428	2,028	225	962	2,002	41	943	1,664
Mean	6,225	520	6,430	4,487	5,231	7,410	4,855	7,081	7,744	4,698	8,018	7,999
Median	5,869	371	5,576	4,255	4,891	6,848	4,842	7,190	7,141	4,647	7,581	7,337
1st quintile	1,019	245	3,913	2,201	2,935	4,402	795	3,893	4,431	500	3,610	4,402
2nd quintile	4,891	326	4,989	3,668	4,402	5,869	3,952	6,212	6,359	3,619	6,848	6,359
3rd quintile	6,848	408	6,261	4,891	5,625	7,484	5,869	7,816	7,826	5,380	8,804	8,315
4th quintile	9,293	530	8,119	6,359	7,337	9,782	7,337	9,782	10,516	6,359	11,739	11,250

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 30: *Annual household income by household structure - Romania*

	ALL	1 PERSON	2 PERSONS			3 PERSONS			4 PERSONS			5 PERSONS AND MORE
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
Mean	9,092	4,086	8,303	6,387	6,456	11,510	6,931	10,416	10,902	5,229	11,170	10,340
Median	6,840	3,360	6,520	5,208	5,040	9,600	5,580	8,118	9,300	2,736	9,600	8,400
1st quintile	3,120	1,560	3,600	2,400	1,949	4,440	2,375	3,840	3,670	984	3,876	3,564
2nd quintile	5,500	2,520	5,520	4,200	3,978	7,776	4,709	6,312	7,212	1,620	7,200	6,600
3rd quintile	8,520	3,840	7,684	6,264	6,120	11,594	6,192	9,720	11,076	3,720	11,664	10,308
4th quintile	13,704	5,400	10,986	9,007	10,044	17,160	9,768	15,614	16,788	11,232	16,734	15,600

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 31: *Annual household income by household structure - Russian Federation*

	ALL	1 PERSON	2 PERSONS			3 PERSONS			4 PERSONS			5 PERSONS AND MORE
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	11,261	1,927	1,956	688	490	1,925	182	851	1,214	29	850	1,149
Mean	2,555	1,200	2,158	1,750	1,930	3,133	2,007	2,971	3,062	1,989	3,649	3,728
Median	1,832	740	1,638	1,365	1,428	2,560	1,546	2,389	2,389	1,570	2,845	2,984
1st quintile	814	512	1,109	689	717	1,365	683	1,337	1,138	597	1,476	1,365
2nd quintile	1,468	683	1,428	1,126	1,222	2,050	1,223	1,991	1,991	1,072	2,389	2,389
3rd quintile	2,384	835	1,949	1,707	1,718	3,041	1,836	2,731	2,845	1,735	3,414	3,414
4th quintile	3,755	1,536	2,970	2,560	2,731	4,438	2,983	4,096	4,608	3,072	5,120	5,192

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

values show large differences that should be further investigated. Moreover, at the micro level, discrepancies between couple and household income (e.g. the former larger than the latter) are spread all over the income distribution which might be reasonable (i.e. due to the deduction of compulsory alimony payments which make the household income smaller than couple income) but would require particular attention in the combined use of these variable.

In terms of questionnaire design, the questions related to individual and household income should be related to each other in order to ensure final consistency. Two main possibilities include *i)* deriving household income as the sum of individual components (in this case all household components should be collected) or *ii)* cross-checking reported individual incomes when the household income question is asked. A further cross-check is also recommendable when the choice of the period to which the income refers to (month or year) is up to the respondent because it is more likely to observe reporting errors in this case. Taking into account these cautionary remarks, the release of both individual and household complete income variables represents a clear enhancement of the ways in which the GGS data can be used in explaining economic determinants of demographic behaviours in the UNECE region.

3 Poverty

3.1 Introduction

An individual's poverty status is based on comparing his or her net equivalised household income with a set poverty threshold - also expressed as a monetary value. We focus in this section on the standard way of assigning poverty status. The poverty line is typically calculated by adding together the post-tax personal incomes of everyone living in the household, plus any other income accruing to the household as a whole, to obtain total net household income. This amount is divided by a factor, which represents the needs of the household. One crude measure would be to divide by the number of people in the household, but as two people can live together more cheaply than two singles, and as it may be argued that children require less money than adults, it is more common to use an equivalence scale. We use the modified OECD equivalence scale, in which the first adult gets a score of 1, second and subsequent adults score 0.5, and children under 14 score 0.3. The result (total net household income divided by an equivalence scale representing the needs of the household) is termed net equivalised household income (NEHI). The OECD equivalence scale is common and poverty rates reported by EUROSTAT on the basis of the EU-SILC is based on this equivalence scale.

Median NEHI is found by calculating NEHI for every individual in the sample, lining them up in order, from smallest to largest, and selecting the NEHI of the person who is exactly in the middle of the distribution. Finally, a poverty line of 60% of median NEHI is calculated. Households with incomes below this figure are defined as "poor". Again, poverty rates reported by EUROSTAT and based on EU-SILC, is based on this definition of the poverty threshold.

This measure of poverty is relative, meaning that individuals are defined as poor or non-poor in relation to other people in their country, rather than in relation to some absolute standard of subsistence or well-being. This is common practice in countries where the basic needs for survival are more or less guaranteed; in countries where this is not the case, it is more usual to use an absolute poverty line, based on the consumption needed for subsistence.

3.2 Caveats concerning poverty measures (and income)

Whereas income and poverty are the common measures of economic wellbeing - they do have several important shortcomings that the researcher needs to be aware of. First, as reported in section 2, the GGS household income cannot be easily calculated by adding the individual specific incomes. For some countries, the number of reported sources of individual incomes is small which gives sometimes rather large discrepancies between aggregate individual income and the reported overall household income. Thus, any poverty measure must be based on the latter, which in turn may suffer from measurement error. Misreporting of income is a common phenomenon and given the range of countries and the way they differ in terms of economic development, special care is needed. Misreporting may arise for several reasons, but one issue particularly relevant for the GGS, is that households' consumption level will be driven in part by auto-consumption or consumption from home production of food. In poor rural households food tends to be a large part of consumption. Importantly, a sizeable part of this consumption is taken directly from home production. This means that consumption is not measured directly in terms of income (i.e. the goods consumed are not sold at the market from which income would be recorded). For developing countries, poverty status is consequently based on consumption level - where consumption from home production is taken into account. However, in order to calculate poverty status (as well as the poverty line) detailed information about consumption patterns is needed. The World Bank Living Measurement Surveys are specifically designed to calculate poverty in this way. In the GGS there is no way to compute poverty in this way. Still, in the poorer countries such as Bulgaria and Georgia, it is likely that home production is important, and not accounting for this may generate a downward bias in reported income levels and thus exaggerate the poverty rates.

Not many surveys have information about income, consumption patterns and household possessions at the same time. There are however some exceptions. By comparing information on assets, income and consumption expenditure from the World Bank Living Measurement Survey of Albania, Pudney and Francavilla (2006) show that there is considerable misreporting in income. In particular, wealthier households and individuals tend to under-report income, generating a significant bias in estimated poverty rates. Holding this together with the fact that poorer households might misreport income due to auto-consumption means that there is no easy way to assess the direction of the bias.

The typical way of computing poverty status in surveys such as the ECHP and EU-SILC is based on the net household income. However, as already outlined, economies of scale in household consumption are adjusted for through the use of an equivalence scale. The standard is the OECD modified equivalence scale, but there are many alternatives. For instance, the World Health Organization (WHO) operates with equivalence scales based on the typical calorie uptake necessary, which differs by age and gender. The OECD modified scale is consequently rather crude in comparison. Again, the modified OECD scale is typically applied to OECD countries. It is not clear how well this scale fit consumption patterns in countries such as Romania, Georgia and Bulgaria.

The computed equivalised income and poverty status depend on the choice of equivalence scale. Whereas it is beyond the scope of the current report to provide a detailed sensitivity analysis of how poverty rates differ for different equivalence scales, the applied analyst needs to keep in mind that his or her measure of poverty will depend critically on the choice of such a scale. This issue is perhaps particularly important given the focus on the life-course in the GGS. As demographic changes occur (e.g. childbearing, partnership formation, or death), also the household composition changes, and with it the value of the equivalence scale. For instance, if the number of household members increases (through childbearing) but the income remains the same, the traditional income measures outlined here will indicate a decline in economic wellbeing (Aasve et al., 2005).

3.3 Descriptive statistics of poverty

Table 32 provides descriptive statistics for the poverty rate based on the OECD modified equivalence scale. As expected, there are large differences across countries and household constellations. Poverty is highest in Georgia (31%) and lowest in France and Germany (20 and 19% respectively). Poverty is clearly higher among single headed households with children, though the estimates are not particularly reliable for some categories given small sample size.

One concern when considering the estimated poverty rates is that they are rather high. As we demonstrate and discuss below, the GGS poverty rates are somewhat higher than estimated rates from the EU-SILC, especially for France and Germany. Before comparing GGS and EU-SILC poverty rates, we compare poverty rates estimated on the imputed income variable and

Table 32: *Poverty rates - OECD equivalence scales*

	ALL	1 PERSON	2 PERSONS Couple without children	Single parent and 1 child	Other	3 PERSONS Couple with 1 child	Single parent and 2 children	Other	4 PERSONS Couple with 2 children	Single parent and 3 children	Other	5 PERSONS AND MORE
Bulgaria												
N	12,858	1,006	2,034	279	472	2,060	120	1,253	2,071	11	1,406	2,146
Poverty rate (OECD)	0.2343	0.3728	0.1745	0.2903	0.2415	0.1461	0.2833	0.1836	0.2279	0.5455	0.1671	0.3774
France												
N	10,079	2,642	2,915	375	197	1,074	181	239	1,340	59	211	846
Poverty rate (OECD)	0.1985	0.3452	0.0576	0.2560	0.2741	0.1378	0.3481	0.2510	0.0940	0.5932	0.2701	0.3333
Georgia												
N	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
Poverty rate (OECD)	0.3100	0.4231	0.4223	0.3349	0.3257	0.2377	0.2813	0.2665	0.2376	0.4286	0.2559	0.3313
Germany												
N	10,017	2,510	2,962	329	185	1,304	163	323	1,305	58	215	663
Poverty rate (OECD)	0.1889	0.3637	0.0459	0.2553	0.2270	0.1350	0.3497	0.2353	0.1126	0.5517	0.2837	0.2534
Hungary												
N	13,540	1,729	3,019	499	428	2,028	225	962	2,002	41	943	1,664
Poverty rate (OECD)	0.2726	0.9832	0.0878	0.2585	0.1752	0.1179	0.3022	0.1892	0.1658	0.4634	0.2185	0.2861
Romania												
N	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
Poverty rate (OECD)	0.2773	0.3548	0.1890	0.3343	0.3436	0.2042	0.3735	0.2516	0.2944	0.6316	0.2896	0.4291
Russian Federation												
N	11,261	1,927	1,956	688	490	1,925	182	851	1,214	29	850	1,149
Poverty rate (OECD)	0.2204	0.2927	0.1258	0.2863	0.2714	0.1652	0.3626	0.1645	0.2521	0.4138	0.1894	0.2950

that estimated by the original household income. The results are reported in Table 33.

In general, the poverty rates are similar when poverty is derived from the original income measure. There are, however, important exceptions. The most noticeable are the poverty rates for Hungary. With income imputed for missing values, the estimated poverty is 27.3 percent. When using the original household income (i.e. leaving out imputed observations) the poverty rate falls dramatically to a level of 12.7 percent. We find the most striking difference for one person households, where the sample falls from 1,729 to 17. Here the poverty rate with the imputed income is unrealistically high, but the contrast in sample size implies that here income is imputed for a large number of households based on a very limited set of observations. Overall, household income is imputed for almost half the sample, which clearly has an important impact on the estimated poverty rates. Interestingly, the poverty rate without imputation is similar to that of the estimates of EUROSTAT (see below). These differences in estimated poverty rates cast doubt on the reliability of household income after imputation for Hungary - especially

for those categories where income is missing in large numbers. Looking at the other countries, we find much smaller discrepancies in the poverty rates when income is not imputed. This appears to be a natural consequence of the fact that missing values for other countries are considerably smaller (i.e. smaller number of imputed values). Poverty rates are lower for Romania and Georgia where missing values of household income is also sizeable, whereas there is very little difference for France and Germany, where missing values are generally low.

Table 33: *Poverty rates - OECD equivalence scales - with and without income imputation*

				ALL	1 PERSON	2 PERSONS Couple without children	Single parent and 1 child	Other	3 PERSONS Couple with 1 child	Single parent and 2 children	Other	4 PERSONS Couple with 2 children	Single parent and 3 children	Other	5 PERSONS AND MORE
Bulgaria															
	Yes	N		12,858	1,006	2,034	279	472	2,060	120	1,253	2,071	11	1,406	2,146
		Rate		0.2343	0.3728	0.1745	0.2903	0.2415	0.1461	0.2833	0.1836	0.2279	0.5455	0.1671	0.3774
	No	N		10,224	888	1,803	235	382	1,643	98	950	1,678	7	964	1,576
		Rate		0.2275	0.3795	0.1503	0.2596	0.2382	0.1430	0.3163	0.1832	0.2199	0.5714	0.1743	0.3712
France															
	Yes	N		10,079	2,642	2,915	375	197	1,074	181	239	1,340	59	211	846
		Rate		0.1985	0.3452	0.0576	0.2560	0.2741	0.1378	0.3481	0.2510	0.0940	0.5932	0.2701	0.3333
	No	N		9,571	2,549	2,743	363	185	1,041	179	190	1,296	57	170	798
		Rate		0.1975	0.3444	0.0558	0.2590	0.2811	0.1383	0.3520	0.2263	0.0949	0.5789	0.2706	0.3271
Georgia															
	Yes	N		10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
		Rate		0.3100	0.4231	0.4223	0.3349	0.3257	0.2377	0.2813	0.2665	0.2376	0.4286	0.2559	0.3313
	No	N		7,017	478	597	148	205	662	89	469	881	8	736	2,744
		Rate		0.2887	0.4393	0.3601	0.3446	0.3317	0.2009	0.2135	0.2623	0.1952	0.3750	0.2351	0.3130
Germany															
	Yes	N		10,017	2,510	2,962	329	185	1,304	163	323	1,305	58	215	663
		Rate		0.1889	0.3637	0.0459	0.2553	0.2270	0.1350	0.3497	0.2353	0.1126	0.5517	0.2837	0.2534
	No	N		8,319	2,228	2,449	292	142	1,078	148	235	1,042	48	126	531
		Rate		0.1912	0.3654	0.0461	0.2671	0.2254	0.1391	0.3446	0.2000	0.1056	0.5833	0.2619	0.2542
Hungary															
	Yes	N		13,540	1,729	3,019	499	428	2,028	225	962	2,002	41	943	1,664
		Rate		0.2726	0.9832	0.0878	0.2585	0.1752	0.1179	0.3022	0.1892	0.1658	0.4634	0.2185	0.2861
	No	N		7,117	17	2,162	289	261	1,247	113	498	1,169	17	429	915
		Rate		0.1248		0.0587	0.2076	0.1226	0.1075	0.2035	0.0763	0.1377	0.1765	0.1282	0.2787
Romania															
	Yes	N		11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
		Rate		0.2773	0.3548	0.1890	0.3343	0.3436	0.2042	0.3735	0.2516	0.2944	0.6316	0.2896	0.4291
	No	N		9,664	1,305	2,673	281	281	1,621	69	493	1,168	10	609	1,154
		Rate		0.2375	0.3870	0.1646	0.2847	0.3132	0.1437	0.3043	0.2028	0.2209	0.4000	0.2200	0.3744
Russian Federation															
	Yes	N		11,261	1,927	1,956	688	490	1,925	182	851	1,214	29	850	1,149
		Rate		0.2204	0.2927	0.1258	0.2863	0.2714	0.1652	0.3626	0.1645	0.2521	0.4138	0.1894	0.2950
	No	N		10,337	1,846	1,847	645	441	1,764	173	764	1,117	27	719	994
		Rate		0.2099	0.3099	0.1142	0.2729	0.2472	0.1446	0.3526	0.1361	0.2426	0.4074	0.1627	0.2847

3.4 Comparisons with poverty rates reported from EU-SILC

EU-SILC is the main data source available for estimating living standards in the European Union. The Survey also includes several non-EU countries - among them Norway and Switzerland. However, the EU-SILC does not include Russia or Georgia. Whereas EU-SILC does include Germany, the income measure in the GGS may not be comparable given the way income was reported in intervals in the GGS (as opposed to the exact values). One also needs to bear in mind that the EU-SILC is extremely detailed in its recording of personal income used to generate household income. In the GGS, we rely on the overall reported household income. The countries that the two surveys have in common are: Bulgaria, France, Germany, Hungary and Romania. Table 34 report poverty rates from EU-SILC and GGS.

Table 34: *Comparison between estimates poverty rates in GGS and EU-SILC*

	Bulgaria	France	Germany	Hungary	Romania
Poverty rate GGS imputed income	0.234	0.199	0.190	0.273	0.277
Poverty rate GGS no imputations	0.228	0.197	0.191	0.125	0.237
Poverty rate EU-SILC	0.220	0.131	0.152	0.123	0.248

It is immediately clear that the GGS overestimates poverty rates. For instance, in France, the EU-SILC poverty rate is estimated to 13%, whereas it is as high as 20% in the GGS. In Bulgaria it is estimated as 22% - the GGS estimates it to be 23.4%. There are similar discrepancies for the other countries, though we clearly find the largest discrepancies for Germany and France. It is important to bear in mind that poverty rates derived from the EU-SILC are taken from 2007. Both Bulgaria and Romania experienced sharp increases in official poverty rates from 2006 to 2007.

It is somewhat difficult to decipher the reasons behind these discrepancies. As we have seen, income imputation has an impact on estimated poverty rates - in general making them higher. But income imputation does not explain the discrepancies for Germany and France for instance.

3.5 Concluding remarks on poverty

This section has presented estimates of poverty rates based on the GGS using reported overall household income equivalised by using the OECD modified equivalence scale - the same used by EUROSTAT for estimating official poverty rates. In general, the poverty rates of the GGS are higher than those of EUROSTAT and hence EU-SILC, but not dramatically so. This raises questions about the reliability of GGS poverty estimates, and as a corollary, the reported net household income. Whereas income imputation plays a role in the overestimation of poverty rates, there also appears to be significant misreporting of income. Our recommendation when using poverty as a measure of economic wellbeing, is to construct poverty based on the original household income, at least for the Hungarian GGS sample.

4 Subjective measures of economic wellbeing

The GGS also includes subjective measures that reflect the economic conditions of the household. The first is variable *1002* which is stated as follows: "Thinking of your households' total income, is your household able to make ends meet?". Responses are given on a six point Likert scale (for Bulgaria it is on a 7 point Likert scale). The scale is made up as follows: 1) with great difficulty, 2) with difficulty, 3) with some difficulty, 4) fairly easily, 5) easily, 6) very easily. In the Hungarian version, the last label is not included. Moreover, the Bulgarian sample has an additional value category at the middle. In other words, for Bulgaria the scale has seven possible values. In contrast to the inventory variables reflecting possessions of durable goods (*1001*) and affordability (question *1003*), here the questions are included in the German GGS sample. A cross-country comparison of the distribution of this variable provides evidence of right-skewness in Bulgaria, Georgia and Russia, while it is somewhat left-skewed in the German and French samples, which means that in the former countries there is a higher prevalence of individuals who have difficulties in managing their household income, while the converse holds in the latter ones. The second variable is again subjective and is a 10 point Likert scale asking individuals about their satisfaction about their dwelling. Value 10 refers to high satisfaction whereas the value 1 refers to low satisfaction. Tables 4.1 to 4.7 reports descriptive statistics of these two variables. In addition, we also report an objective measure of the quality of the dwelling. This is constructed by taking the number of rooms divided by

the number of individuals living in the household. This serves as a check on the subjective measures just outlined.

It is again useful to compare these variables with those used in the ECHP and in EU-SILC. Variable *1002* is very similar to the version used in the ECHP. However, as for the quality of the dwelling, the ECHP provided more detail. From Appendix A we see that the ECHP contained several questions about the condition of the dwelling, and importantly, they were all objective in nature. This level of detail is followed up in the EU-SILC (variables listed in Appendix C). Instead, the GGS has one subjective measure that captures the overall quality. The ECHP and the EU-SILC also contained information about the total number of rooms, and of course the total number of household members.

Table 35: *Descriptive statistics of wellbeing measures - Bulgaria*

	ALL	1 PERSON	2 PERSONS Couple without children	2 PERSONS Single parent and 1 child	2 PERSONS Other	3 PERSONS Couple with 1 child	3 PERSONS Single parent and 2 children	3 PERSONS Other	4 PERSONS Couple with 2 children	4 PERSONS Single parent and 3 children	4 PERSONS Other	5 PERSONS AND MORE
N	12,714	995	2,004	277	464	2,043	120	1,242	2,047	11	1,393	2,118
Ends meet	2.1631	1.9568	2.0943	1.8087	2.1185	2.3612	1.7250	2.2778	2.1646	1.2727	2.3798	2.0085
Sat. dwelling	7.1087	7.2063	7.6436	6.8272	6.9365	7.0694	6.2773	7.0925	7.0408	6.4545	7.2365	6.7036
Ratio of rooms	1.0442	2.4830	1.4062	1.2536	1.3182	0.8844	0.8376	0.9755	0.7220	0.5909	0.7929	0.6188

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

5   Deprivation

5.1   Introduction

In this section, we discuss the construction of deprivation indices as an alternative to the other measures discussed. The key idea is to use several variables to produce a summated scale, which reflect an individual's level of deprivation (or lack thereof). The terms deprivation index and economic wellbeing index are used interchangeable. A high value of a deprivation index reflects low economic wellbeing and vice versa. Often the index is

Table 36: *Descriptive statistics of subjective wellbeing measures - France*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	10,000	2,626	2,906	373	193	1,070	181	226	1,336	59	195	835
Ends meet	3.4974	3.4006	3.8968	2.8552	3.1917	3.4729	2.4530	3.5044	3.4513	2.5593	3.4205	3.1832
Sat. dwelling	7.8408	7.6423	8.1605	7.2667	7.3553	7.8333	7.0276	8.2176	7.9284	6.6271	8.2227	7.6537
Ratio of rooms	1.9774	2.9705	2.1118	1.8387	1.8096	1.4336	1.3094	1.5635	1.1800	1.0847	1.2808	0.9628

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

Table 37: *Descriptive statistics of subjective wellbeing measures - Georgia*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
Ends meet	2.2750	1.7289	2.0572	1.8208	2.1447	2.3092	2.0313	2.3408	2.3771	1.8571	2.4721	2.3345
Sat. dwelling	5.9451	5.7041	6.2439	5.8302	5.7533	5.9665	5.3359	5.9944	5.8013	5.5000	6.0288	5.9756
Ratio of rooms	1.0485	2.6645	1.6635	1.4505	1.5905	1.0781	1.0599	1.1805	0.8157	0.9464	0.9378	0.7054

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

constructed on a 0 to 1 scale, zero reflecting no deprivation and the value one reflecting the maximum level of deprivation. The benefit of adopting a 0 to 1 scale is that it is consistent with measures of poverty, where an individual is typically assigned the value zero if he or she is above a certain poverty threshold and the value one if below this threshold. Thus, in applied analysis, poverty rates can be compared with the mean levels of the deprivation index, though conceptually the measures are different. Construction of deprivation indices is becoming widespread (Nolan and Whelan, 1996; Whelan et al., 2001), and has also been adopted by EUROSTAT as a measure of deprivation (EUROSTAT, 2002). There are several good reasons for measuring economic wellbeing through a composite scale. Poverty status as a measure of well-being is criticised because it divides the population

Table 38: *Descriptive statistics of subjective wellbeing measures - Germany*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	9,914	2,485	2,947	328	180	1,299	163	307	1,296	58	201	650
Ends meet	3.9129	3.7417	4.2121	3.3171	3.6333	3.9161	3.0307	4.0912	3.9545	2.9310	3.8607	3.7400
Sat. dwelling	8.0401	7.7151	8.4090	7.2584	7.4372	8.0368	7.2270	7.9659	8.2230	7.6379	7.8233	8.1659
Ratio of rooms	1.8093	2.6908	1.8694	1.6201	1.6730	1.3500	1.2881	1.5037	1.1829	1.0307	1.2050	1.0042

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

Table 39: *Descriptive statistics of subjective wellbeing measures - Hungary*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	13,503	1,719	3,016	498	423	2,027	225	959	1,997	39	939	1,661
Ends meet	3.2128	3.0204	3.3664	2.9016	3.1017	3.2886	2.8622	3.3243	3.2359	2.7692	3.3152	3.0704
Sat. dwelling	7.2572	7.1205	7.7047	6.6613	6.5341	7.2959	6.6906	7.1187	7.3549	5.6154	7.3085	6.9500
Ratio of rooms	1.0502	2.1025	1.2003	1.1472	1.1635	0.8694	0.8452	0.8955	0.7099	0.6341	0.7481	0.5688

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

into a simple poor/non poor dichotomy, based on sometimes arbitrarily chosen thresholds (Cheli and Lemmi, 1995). Of course, the dichotomy is easily overcome by using income as a measure of economic well-being. But this measure is problematic as it is difficult to assess to what extent an income loss brings about a real drop in living standards, especially in a comparative perspective. Moreover both income and poverty status are only monetary measures of well-being, whereas it is well recognised that well-being itself has many more dimensions, often non-monetary in nature (Atkinson, 2003; Bourguignon and Chakravarty, 2003). Moreover, an individual's level of deprivation is typically assigned without having to resort to an equivalence scale. Certainly, in our application of consequences of marital disruption, we expect that individuals' experiences of well-being go beyond a simple drop

Table 40: *Descriptive statistics of subjective wellbeing measures - Romania*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
Ends meet	3.0577	2.5841	3.2067	2.4556	2.6341	3.3154	2.4940	3.2405	3.1362	2.1579	3.1835	2.9295
Sat. dwelling	7.7724	7.6426	8.1029	7.4704	7.4413	7.7627	6.9518	7.8418	7.7017	7.1579	7.7703	7.4814
Ratio of rooms	1.1302	2.2930	1.3349	1.2411	1.2570	0.8704	0.8353	0.9509	0.6751	0.6579	0.7718	0.5884

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

Table 41: *Descriptive statistics of subjective wellbeing measures - Russian Federation*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	11,257	1,925	1,956	688	489	1,925	182	850	1,214	29	850	1,149
Ends meet	2.3518	2.2281	2.4121	2.0698	2.3067	2.4894	1.8352	2.4800	2.3443	1.7586	2.5059	2.3098
Sat. dwelling	5.9608	6.3928	6.6252	5.6186	6.0020	5.6042	4.9890	5.9741	5.5672	4.3793	5.8809	5.5476
Ratio of rooms	0.9832	1.7925	1.0959	1.0065	1.0388	0.7452	0.7802	0.8157	0.6437	0.5862	0.6594	0.5629

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

of income: some can experience a dramatic rise in monthly expenses (for example alimony payments) with a substantial change of life-styles. Moreover, a marital disruption is likely to change, sometimes dramatically, the housing situation of the individuals involved.

5.2 Construction of deprivation indices

This section gives a general outline of the construction of deprivation indices. Multiple deprivation is defined as a matter of degree. In doing so we select a

list of items indicating non-monetary deprivation in the households. These items typically take the form of simple "yes/no" dichotomies (such as the presence or absence of enforced lack of certain goods or facilities), though one may also include other items that involve more than two ordered categories, reflecting different degrees of deprivation. Here variables take the form of "yes/no" responses. Before discussing these items in more detail, we give a general overview of how the deprivation index is calculated.

Consider the general case of item k with $m = 1$ to M ordered categories, with $m = 1$ representing the most deprived and $m = M$ the least deprived situation. Let m_{ik} be the category to which individual i belongs with respect to item k. As in Cerioli and Zani (1990) we assume that the rank of the categories represents an equally-spaced metric variable, and adopt the deprivation score:

$$d_{ik} = \frac{M_k - m_{ik}}{M_k - 1}, \qquad 1 \leq m_{ik} \leq M_k \qquad (1)$$

The most basic version but very often used - consists of counting the number of items representing deprivation and dividing them through the total number of deprivation items available. This is a summated scale where each item is given a weight of 1. This is for instance the way deprivation is reported by EUROSTAT based on EU-SILC data. Alternatively, one can construct weights that are derived from characteristics of the distribution of the variables. Following Betti and Verma (1999) one may want to let the weight depend on the item's power to differentiate among individuals in the population, that is, by its dispersion. This can be done by letting the weight be directly proportional to the coefficient of variation of deprivation score d_{ik}. Thus, items that affect only small proportions of the population - which can be expected to be considered more critical for the affected individuals (Aasve et al., 2007) - are given a larger weight. Another consideration is to limit the influence of those characteristics that are highly correlated with the other items of the index. This means that the weight of item k in deprivation index is taken as the inverse of an average measure of its correlation with all the variables included to calculate the index. There are many examples where items within a dimension can be correlated. In our case it is likely that the item measuring possession of colour TV is correlated with possession of a DVD player. Similarly, different items describing affordability may also be correlated. That is, if an individual finds it difficult to find the funds to pay bills, this may also mean that the same person is less able to pay loan repayments. The key idea is that by controlling for their correlation,

deprivation is not a simple sum of the items the individual does not possess nor can afford. In other words, a household reporting both items should not be counted as being two times worse off than a household reporting none of these items. The final weight is proportional to the product of the two factors: the coefficient of variation of the deprivation score, and the inverse of the average of the correlations.

The deprivation score can then be written as:

$$S_{\delta,i} = \frac{\sum\limits_{k} w_k(1 - d_{ik})}{\sum\limits_{k} w_k} \qquad (2)$$

where w_k are the weights defined above. Note that (2) defines a "positive" score indicating lack of deprivation.

It is important to bear in mind that the implementation of the weighting scheme does not necessarily mean lower values of the deprivation score. The weights simply reduce the influence of those items that are highly correlated or have a high coefficient of variation with respect to the index. The adjustment of the correlation may or may not reduce the overall deprivation value (it may also increase) and the value tends to be higher (but not necessarily so) when adjusting for the coefficient of variation.

5.3   Variables reflecting economic wellbeing in the GGS

The Generations and Gender Survey contains several variables that can be used to construct a deprivation index. It might be useful to compare these variables with those available in the European Community household Panel (ECHP), which was a key data set used for applications of deprivation indices. Moreover, the ECHP was the forerunner of the now EU-SILC which also contains similar deprivation variables as those reported in the ECHP. The GGS differs in several respects to the ECHP and the EU-SILC, and whereas the ECHP and EU-SILC had a strong focus on income and work, the GGS is supposed to capture much more complex pictures of individuals' current situation and life-course experiences. Naturally, the number of variables included in the GGS to capture levels of economic wellbeing, is smaller. However, the variables included in the GGS were directly motivated from the original ones in the ECHP and EU-SILC. As a result, many of the variables

are similar. The ECHP contains 25 variables and in previous applied work, based on factor analysis, the items were grouped into five dimensions (EU-ROSTAT, 2002). They were as follows:

1. basic non-monetary deprivation;

2. secondary non-monetary deprivation;

3. lack of housing facilities;

4. housing deterioration; and

5. environmental problems (see Whelan et al., 2001 or Aasve et al., 2005 for details).

The variables are listed in Appendix A whereas the variables available for the GGS are listed in Appendix B, and the variables available in EU-SILC are listed in Appendix C. In essence, the GGS enables us to create indices that reflect the first two dimensions: 1) Basic non-monetary deprivation and 2) secondary non-monetary deprivation. Questions *1003_a* to *1003_f* are almost identical to those representing basic non-monetary deprivation in the ECHP. The variables *1001_a* to *1001_i* bear strong resemblance to those variables in the ECHP that is used for secondary deprivation.

However, some variables are different - in part reflecting technical advances and economic progress. For instance, possession of a home computer was not included in the ECHP, whereas it is in the GGS (and it is included in the EU-SILC). Moreover, possession of a second car or a second home was not part of the variables available in the ECHP. The GGS does contain additional variables useful for measuring deprivation that were not directly available in the ECHP. For instance, variables *1004_a* to *1004_d* reflect the extent in which individuals are not able to meet scheduled payments, whereas question *1005* asks whether the individual is able to make any saving at the end of the month given levels of income and expenses (these variables are included in the EU-SILC however). Tables 42 to 44 provide descriptive statistics for the variables available in the GGS.

The first set of variables listed in Table 42 regards household possessions. Interviewees are shown a list of items and asked whether they already own them; if not, they have to select whether they would like to have that specific item but cannot afford it, or do not have for other reasons. The items in the list are the following: colour TV, video recorder or DVD player, washing

Table 42: *Inventory variables of durable goods (a1001_a to a1001_i)*

		Bulgaria	France	Georgia	Hungary	Romania	Russia
Color TV	Yes, possession of item	0.928	0.965	0.662	0.975	0.895	0.914
	No, cannot afford	0.053	0.005	0.328	0.014	0.088	0.068
	No, other reason	0.018	0.030	0.010	0.010	0.017	0.018
Video/DV	Yes, possession of item	0.413	0.858	0.300	0.653	0.221	0.523
	No, cannot afford	0.260	0.028	0.601	0.093	0.381	0.245
	No, other reason	0.327	0.114	0.099	0.254	0.398	0.232
Washing machine	Yes, possession of item	0.786	0.939	0.389	0.770	0.668	0.824
	No, cannot afford	0.140	0.016	0.569	0.114	0.243	0.128
	No, other reason	0.074	0.045	0.043	0.116	0.089	0.048
Microwave	Yes, possession of item	0.281	0.836	0.072	. . .	0.162	0.160
	No, cannot afford	0.357	0.019	0.632	. . .	0.454	0.457
	No, other reason	0.362	0.145	0.296	. . .	0.384	0.384
Home computer	Yes, possession of item	0.199	0.585	0.066	0.443	0.233	0.161
	No, cannot afford	0.333	0.091	0.657	0.154	0.347	0.436
	No, other reason	0.468	0.324	0.278	0.403	0.420	0.403
Dishwasher	Yes, possession of item	0.039	0.518	0.013	0.086	0.011	0.007
	No, cannot afford	0.329	0.076	0.599	0.165	0.331	0.348
	No, other reason	0.632	0.406	0.389	0.749	0.658	0.645
Telephone	Yes, possession of item	0.835	0.962	0.594	0.885	0.699	0.670
	No, cannot afford	0.088	0.010	0.356	0.051	0.210	0.223
	No, other reason	0.076	0.028	0.051	0.064	0.091	0.107
Car/van Available	Yes, possession of item	0.502	0.865	0.122	0.568	0.275	0.311
	No, cannot afford	0.243	0.043	0.656	0.175	0.397	0.380
	No, other reason	0.256	0.091	0.222	0.257	0.328	0.309
Second car	Yes, possession of item	0.063	0.483	0.057	. . .	0.030	0.036
	No, cannot afford	0.288	0.089	0.577	. . .	0.374	0.346
	No, other reason	0.648	0.428	0.366	. . .	0.596	0.619
Second home	Yes, possession of item	0.114	0.137	0.152	. . .	0.039	0.219
	No, cannot afford	0.323	0.422	0.640	. . .	0.469	0.420
	No, other reason	0.563	0.441	0.208	. . .	0.492	0.361

Table 43: *Variables reflecting affordability*

Whether HH can afford:	Bulgaria	France	Georgia	Hungary	Romania	Russia
Keeping home adequately warm	0.817	0.389	0.186	0.937	0.851	0.801
One week holiday per year	0.215	0.228	0.087	0.348	0.273	0.205
Replacing worn out furniture	0.141	0.211	0.089	0.103	0.138	0.309
Buying new clothes	0.540	0.358	0.498	0.303	0.544	0.748
Eat meat/fish every second day	0.480	0.385	0.310	. . .	0.618	0.684
Having friends/family for drink/meal e/month	0.478	0.377	0.292	0.252	0.466	0.457

Table 44: *Variables reflecting arrears of payments*

Has HH been in arrears any time last 12 months:	Bulgaria	France	Georgia	Hungary	Romania	Russia
Rent for accommodation	0.019	0.045	0.002	0.012	0.010	0.221
Mortgage payments	0.003	0.012	0.024	0.014	0.003	0.015
Utility bills	0.266	0.050	0.334	0.137	0.142	0.231
Purchase instalments/ loan repayments	0.021	0.027	0.006	0.024	0.029	0.028
Any savings left over at end of month?	0.899	0.269	0.960	. . .	0.824	0.720

machine, microwave oven, home computer, dishwasher, telephone, a car or a van for private use, a second car, a second home. In previous analysis (e.g. EUROSTAT, 2002; Aasve et al., 2005), lack of possessing an item should only count towards derivation in so far the individual would like to have the item, but could not afford it. The key problem here is that individuals may not have an item because of their preferences. In other words, individuals may not possess a car because they prefer not to have one and not because they cannot afford it. Similarly, those living in city centres may not want to have a car because it is not practical. In these cases lack of possession should not count towards deprivation. On the other hand, this choice might be questionable for other items. For instance, as for not possessing a home computer (PC), the reasons might be computer illiteracy, which could reflect economic disadvantage. Table 42 reports the proportions of responses to the three categories and it is clear that for some variables the proportions answering no possession for other reasons is large. As an example, in Hungary only 8.6 percent possesses a dishwasher, 16.5 percent says they do not have it because they cannot afford it, and the remaining of 74.9 percent says they don't have it for other reasons. This means that for only 16.5 percent does this item count towards deprivation. It is difficult to say if this is appropriate, but without any further information about what "other reasons" entail, we decide to construct the deprivation index on the basis of what has been done earlier (i.e. consistent with EUROSTAT based on EU-SILC). That is, only when the individual states that the household cannot afford the item, does it count towards deprivation.

There are important patterns of missing values. The most striking pattern is that these deprivation variables were not included in the German GGS. The only variable included is *1005*. As a result, it is not possible to compute deprivation indices for the German GGS. Another important issue concerns the fact that variable labelling differs for the Hungarian GGS and some of the deprivation items are missing. This includes possession of washing machine,

microwave oven, a second car and a second home.

Tables 42 to 44 also show that there are important differences across countries and some of the results are somewhat unexpected. For instance, a rather low proportion of the French respondents report that they are able to keep the dwelling adequately warm. Georgia is the country in which, for almost all items, there is the greatest occurrence of responses of inability to afford them. Overall, possession of colour TV, washing machine and telephone are the items with the highest positive response. For instance, individuals reporting they own a TV set is larger than 90 percent in all the national samples, apart from Georgia. This is in contrast to items such as home computer, dishwasher, second car and second home where possession is considerably lower.

Table 44 refers to the household ability to make scheduled payments during the last 12 months. As already mentioned, these items were not available in the ECHP. In contrast, they are available in the EU-SILC. The variables are simple "yes/no" dichotomies and include 1) rent for accommodation, 2) mortgage payments, 3) utility bills, such as for electricity, water, gas, and 4) purchase instalments or other loan repayments. Again, the variables are missing for the German sample. The distribution of responses reveals that three out of the four items (i.e., rent for accommodation, mortgage payments, and instalments or other loan repayments) have very low incidence of inability to be met by the households in the sample. The only exception is Russia, in which 22.2 percent of respondents report their household has been unable to meet scheduled payments of rent for accommodation. On the contrary, there is a sizeable proportion of respondents who report that they have been unable to cope with the payment of utility bills during the previous year. It is important to note that this variable is of a less subjective nature compared to question *1003*. Here the questions concerns whether the household has indeed been unable to meet scheduled payments. Question *1003*, in contrast, asks about individuals' subjective assessment of what they can afford or not. It is also important to be aware that the questions will not always be applicable in the sense that living arrangements may be such that scheduled payments are not required (one can also imagine similar scenarios for points b) and d)). In such cases, it is not clear whether reporting no problem in payment actually reflect lower levels of deprivation. In future versions of the survey one should consider including a "not applicable" entry. As they stand, it is possible that items a) b) and d) are less useful from the point of view of the construction of deprivation indices.

Question *1005* asks if, considering all sources of income and all expenses, the household 'normally' manages to save some money. The proportions are reported in the last row in Table 44. Importantly, in order to be consistent with variables *1004*, we have here coded this variable so that a positive response means not able to save money. Thus, in the French sample, around 28 percent are not able to make any savings, whereas the proportions for the other countries are way higher. Variable *1005* is in fact available for the German sample. 38.9 percent of the German sample reported that they were unable to make savings after given levels of incomes and savings. Again, the Georgian sample is the one with the highest level of deprivation.

5.4   Descriptive statistics of deprivation

We present in this section descriptive statistics of the overall deprivation index, that is, a deprivation index based on all items available (i.e. variables listed in Tables 42 to 44). Table 45 presents results for indices divided by 1) Basic non-monetary deprivation (i.e. variables *1003_a* to *1003_f*), 2) Secondary deprivation (based on variables 1001_a to 1003_i), and 3) an index of inability to pay (variables 1004_a to *1004_d* and *1005*). The overall deprivation index is listed together with the poverty rate based on net equivalised household income and a poverty threshold of 60% of this amount, and the subjective measure referring to "ability to make ends meet".

The unweighted deprivation index is derived by simply adding up the items and divide by the total number of items available. The items are consistently rescaled so that 1 refers to the highest possible level of deprivation and 0 reflects no deprivation. As such the deprivation index is consistent with the poverty measure. We have also rescaled the subjective measure of being able to make ends meet. The original version of this variable was measured on a six value likert scale (1 to 7 for Bulgaria), but is rescaled so that 0 means making ends meet is very easily and value 1 refers to "with great difficulty. Whereas we have outlined more sophisticated ways of calculating the deprivation index above through weighting, it is useful to consider the unweighted version. In particular, EUROSTAT does not impose weights in their tables reflecting non-monetary deprivation.

There is an important issue concerning missing values for those variables referring to what households can afford (i.e. variables *1003_a* to *1003_f*). Here the set-up in the harmonized data set means that it is easy to distinguish genuine missing values. In the current version constructing the depriva-

tion index, we have assumed that a non-missing value reflect no deprivation, whereas missing values has to be taken as presence of deprivation. In its current form, it is difficult to distinguish truly non-missing values.

Table 45: *Descriptive statistics of deprivation index, poverty rate and subjective measure of making ends meet - by HH composition*

	ALL	1 PERSON	2 PERSONS Couple without children	Single parent and 1 child	Other	3 PERSONS Couple with 1 child	Single parent and 2 children	Other	4 PERSONS Couple with 2 children	Single parent and 3 children	Other	5 PERSONS AND MORE
Bulgaria												
N	12,858	1,006	2,034	279	472	2,060	120	1,253	2,071	11	1,406	2,146
Dep. Index (unweighted)	0.330	0.347	0.319	0.376	0.342	0.300	0.387	0.321	0.331	0.515	0.302	0.371
Poverty rate (OECD)	0.234	0.373	0.175	0.290	0.242	0.146	0.283	0.184	0.228	0.545	0.167	0.377
Ends meet	0.767	0.809	0.781	0.838	0.776	0.728	0.855	0.744	0.767	0.945	0.724	0.798
France												
N	10,079	2,642	2,915	375	197	1,074	181	239	1,340	59	211	846
Dep. Index (unweighted)	0.250	0.255	0.261	0.249	0.251	0.236	0.239	0.249	0.231	0.258	0.232	0.244
Poverty rate (OECD)	0.199	0.345	0.058	0.256	0.274	0.138	0.348	0.251	0.094	0.593	0.270	0.333
Ends meet	0.501	0.520	0.421	0.629	0.562	0.505	0.709	0.499	0.510	0.688	0.516	0.563
Georgia												
N	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
Dep. Index (unweighted)	0.547	0.552	0.539	0.565	0.562	0.544	0.577	0.544	0.540	0.639	0.540	0.549
Poverty rate (OECD)	0.310	0.423	0.422	0.335	0.326	0.238	0.281	0.266	0.238	0.429	0.256	0.331
Ends meet	0.745	0.854	0.789	0.836	0.771	0.738	0.794	0.732	0.725	0.829	0.706	0.733
Hungary												
N	13,540	1,729	3,019	499	428	2,028	225	962	2,002	41	943	1,664
Dep. Index (unweighted)	0.236	0.257	0.221	0.283	0.261	0.225	0.299	0.218	0.221	0.296	0.214	0.263
Poverty rate (OECD)	0.273	0.983	0.088	0.259	0.175	0.118	0.302	0.189	0.166	0.463	0.218	0.286
Ends meet	0.557	0.596	0.527	0.620	0.580	0.542	0.628	0.535	0.553	0.646	0.537	0.586
Romania												
N	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
Dep. Index (unweighted)	0.353	0.377	0.324	0.415	0.406	0.329	0.462	0.340	0.349	0.516	0.348	0.399
Poverty rate (OECD)	0.277	0.355	0.189	0.334	0.344	0.204	0.373	0.252	0.294	0.632	0.290	0.429
Ends meet	0.657	0.736	0.632	0.757	0.728	0.614	0.751	0.627	0.644	0.807	0.636	0.678
Russian Federation												
N	11,261	1,927	1,956	688	490	1,925	182	851	1,214	29	850	1,149
Dep. Index (unweighted)	0.336	0.348	0.311	0.394	0.362	0.314	0.437	0.326	0.334	0.452	0.320	0.349
Poverty rate (OECD)	0.220	0.293	0.126	0.286	0.271	0.165	0.363	0.165	0.252	0.414	0.189	0.295
Ends meet	0.730	0.754	0.718	0.786	0.739	0.702	0.833	0.704	0.731	0.848	0.699	0.738

Table 45 shows interesting differences across countries and household composition. Starting by looking at the deprivation and poverty for the overall samples, we see that they are not very different in levels. The level of deprivation appears to be higher than the poverty rate, though not for all countries, Hungary being an example. The subjective measure, however, is much higher than both the level of deprivation and the poverty rate. There are important differences across countries. France and Hungary are the countries with lowest deprivation (0.250 and 0.236 respectively) whereas Georgia is the country where deprivation is highest (0.547). As we look across the different

household compositions, we do find consistency across the three measures. In general, as poverty rate is higher, the deprivation is also higher. However, the level of deprivation is much less sensitive than the poverty rate. As discussed earlier, the estimated poverty rate differs widely for the different family constellations. In contrast, the level of deprivation is much more stable. However, all three measures move in the same direction for different household constellations. For instance, single headed households are more at risk of poverty, which is reflected by higher levels of deprivation and the subjective measure of ends meet. In general, we find high levels of deprivation among those being single and having two or more children.

5.5 Comparing non-monetary deprivation in the GGS and the EU-SILC

In this section, we make a simple comparison between deprivation reported by EUROSTAT based on the EU-SILC and items collected in GGS. Based on EU-SILC data, EUROSTAT reports material deprivation and economic strain for the EU27 countries. In particular, the measure of material deprivation refers to enforced lack of 1) a telephone, 2) a colour TV, 3) a home computer, 4) a washing machine and 5) a personal car. By taking a subsample of the GGS items we are able to construct a similar measure. Rather than reporting a material deprivation index, EUROSTAT reports the proportions of households where there is no lack of any of the items. This is also the way they report "Economic strain". Here the variables are as follows:

1. Inability to keep the home adequately warm,

2. Inability to have one week's annual holiday,

3. Inability to eat meat or fish every second day,

4. Inability to face unexpected financial expenses,

5. Arrears in mortgage payments or rent

6. Arrears in payment of utility bills,

7. Arrears on hire purchase payments and

8. Inability to make ends meet.

These items do not overlap completely with those available in the GGS. In particular, the GGS does not include an item where respondents are asked to what extent they are able to face unexpected financial expenses. Instead, we use the item where respondents are asked if they have any left over for savings after incomes and expenses. As for the item regarding inability to make ends meet, we construct a dichotomous version of the original GGS question (in the GGS the responses to this question is given on a six item Likert scale whereas for Bulgaria it is given on a 7 point scale. Table 46 presents the mean of the durables and economic strain dimensions. The figures are the mean of variables counting the number of individuals in the sample where none of the items of deprivation applies.

Table 46: *Mean values of Durables and economic strain dimensions - EU-SILC vs GGS*

	Bulgaria	France	Hungary	Romania
Durables dimension EU-SILC	0.431	0.908	0.692	0.327
Durables dimension GGS	0.512	0.872	0.679	0.363
Economic strain dimension EU-SILC	0.062	0.558	0.207	0.186
Economic strain dimension GGS	0.035	0.431	0.204	0.101

When considering the durables dimension we see that the EU-SILC and GGS produce very similar results. The figures are particularly similar for Hungary and France, whereas the discrepancy is somewhat larger for Bulgaria. The discrepancies for the economic strain dimension is larger, though this is not unexpected given that the items included in the GGS are not exactly the same as the ones used for EU-SILC. The EU-SILC and GGS measures are particularly similar for Hungary, though here we need to point out that the item regarding "any left-over savings" is not included, and as such, the GGS figure of 0.204 is probably a bit on the high side. France is problematic. The value of 0.431 from the GGS sample does not include the affordability items. When it is included, no households in the French GGS report no deprivation on all items. The items referring to affordability appears to be the main culprit in generating such high levels of economic strain.

5.6 Concluding remarks

We have demonstrated in this report how one can use variables in the GGS to construct deprivation indices, or in other words, composite indices that reflect economic wellbeing. The number of variables included in the GGS is much lower than in other surveys such as the ECHP or the EU-SILC. However, the variables applied here are very similar and it is likely that the deprivation index that we have created is useful in measuring economic wellbeing (or lack thereof). Looking at the country specific distributions of the overall deprivation, we see that Georgia is the most deprived country, whereas France is the least deprived country, though it is not easy to see much difference between France and Hungary. In any case, the simple descriptive results confirm our expectations. There are several problems in using these variables for constructing deprivation indices. The most obvious is that most of the variables are not included in the German GGS rendering any useful comparative analysis of Germany with respect to the other GGS countries. There are also issues concerning value labels which differs for Hungary and on one occasion for Bulgaria.

6 Conclusions

This report presents and reviews a range of variables in the GGS that can be used to measure individuals' and households' level of economic wellbeing. It is important to bear in mind that unlike the EU-SILC, the GGS is not designed to provide extensive information about economic wellbeing. Whereas the EU-SILC is *the* source of information for assessing living conditions in the European Union, the key focus of the GGS is generations and gender. As such, an important aim of this report is to assess to what extent - given limited measures - variables reflecting economic wellbeing resembles those of the EU-SILC and hence its usefulness in terms of measuring economic wellbeing for different demographic constellations and different age groups. Our opinion is that the GGS with its focus on demographic trajectories and relations between genders and generations offers an important contribution towards assessing the life-course and economic outcomes. Moreover, the GGS is important in the sense that it has a longitudinal design. That is, individuals will re-interviewed in three years follow-up waves. With consistent measures of economic wellbeing, we are not only able to assess how trajectories may have an impact on current economic wellbeing, but we are also able to assess

how demographic changes between waves are related to changes in economic wellbeing. This design will provide important insights that cannot be gained from EU-SILC.

A key aim of this report is therefore to map and assess the various measures available in the GGS and to compare them - when possible - to the measures used in the EU-SILC. Whereas the GGS is based on a common questionnaire for which all country specific surveys are based, the respective countries have powers to add additional modules or to cut questions. We see some important consequences of this when considering economic wellbeing measures. Germany is clearly problematic. Here hardly any of the deprivation variables are included and household income is only measured in discrete income bands. Clearly, the measures for Germany cannot be compared with those available for the German sample in the EU-SILC, which includes estimated poverty rates.

The report also summarises the imputation procedures applied to GGS income sources. Much more detail is available from Figari (2010). The imputations are important, but one should be aware that for some countries the original income variables contain large number of missing values. This is especially the case for Hungary. The assessment of income sources make it clear that it is not possible to construct overall household income by adding the personal income sources. In some instances, income sources are reported without actually giving the amounts received. Whereas this has some value in the income imputation process, they are of little value in assessing the actual income level and hence economic wellbeing. Section 2 gives some recommendation for further development of questionnaire design in future waves of the GGS. One possibility for ensuring quality of the overall household income is to have much more detailed information about the personal incomes. By doing so one is in a better position to perform cross checks. However, this would imply adding more questions (in spirit of the EU-SILC). Given the focus and priorities of the GGS this appears unrealistic.

Based on the household income as reported by the respondent, we have also computed poverty rates by taking a standard approach similar to that used by EUROSTAT using EU-SILC data. We have done this also for Germany and France, despite household income here being reported in income bands rather than actual incomes. Our estimates show that in those countries where household income is given by exact amounts, the estimated poverty rates are very similar to those of EU-SILC. The exceptions are Germany and France, where the GGS poverty rates are somewhat higher. The analysis shows that

this is not due to the imputation procedure implemented. Most likely it is a result of the way household income is reported in income bands. The other exception is Hungary where the number of missing values for household income is large. Here the imputation does impact the poverty rates, and our recommendation here is to stick with the original income measure if the aim is to produce reliable poverty statistics.

In section 4, we presented descriptive statistics of two subjective measures of economic wellbeing. In section 5, we presented measures of deprivation based on a range of inventory variables. The original measures in the GGS were motivated by those used in the ECHP and EU-SILC, though there is no perfect overlap. Thus, deprivation indices produced by GGS cannot be directly compared with those based on ECHP or EU-SILC. However, by using a subset of variables in GGS we can perform some consistency check. The conclusion is that measures of material deprivation are highly consistent with EU-SILC, whereas there are some important discrepancies for what is by EUROSTAT termed "economic strain". The discrepancy refers to the French GGS sample. Essentially, the French GGS appears to overstate deprivation compared to the French EU-SILC sample. Descriptive statistics shows that levels of deprivations are consistent with the subjective measures and also estimated poverty rates in that they move in same direction when the levels varies for different household constellations. The measures are also consistent in terms across country levels. France and Germany are the countries with lowest levels of economic deprivation - not matter how it is measured, whereas it is highest for Georgia.

We conclude that the economic wellbeing measures in the GGS are of decent quality, but that country differences need to be taken into account when comparative analysis is done. We also feel that the inclusion of these measures provide high value added compared to EU-SILC - especially because of the longitudinal design and its emphasis on demographic processes.

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Appendices

A Variables used in the European Community Household Panel (ECHP) for creating deprivation index

Dimensions and items of non-monetary deprivation

1 Basic non-monetary deprivation - these concern the lack of ability to afford most basic requirements:
    Keeping the home (household's principal accommodation) adequately warm.
    Paying for a week's annual holiday away from home.
    Replacing any worn-out furniture.
    Buying new, rather than second hand clothes.
    Eating meat chicken or fish every second day, if the household wanted to.
    Having friends or family for a drink or meal at least once a month.
    Inability to meet payment of scheduled mortgage payments, utility bills or hire purchase instalments.

2 Secondary non-monetary deprivation - these concern enforced lack of widely desired possessions ("enforced" means that the lack of possession is because of lack of resources):
    A car or van.
    A colour TV.
    A video recorder.
    A micro wave.
    A dishwasher.
    A telephone.

3 Lacking housing facilities - these concern the absence of basic housing facilities (so basic that one can presume all households would wish to have them):
    A bath or shower.
    An indoor flushing toilet.
    Hot running water.

4 Housing deterioration - these concern serious problems with accommodation:
    Leaky roof.
    Damp walls, floors, foundation etc.
    Rot in window frames or floors.

5 Environmental problems - these concern problems with the neighbourhood and the environment:
    Shortage of space.
    Noise from neighbours or outside.
    Dwelling too dark/not enough light.
    Pollution, grime or other environmental problems caused by traffic or industry.
    Vandalism or crime in the area.

B   Variables used for constructing deprivation index in the GGS surveys

Questions 1003_a to 1003_f (Yes/No)

Keeping the home (household's principal accommodation) adequately warm.
Paying for a week's annual holiday away from home.
Replacing any worn-out furniture.
Buying new, rather than second hand clothes.
Eating meat chicken or fish every second day, if the household wanted to.
Having friends or family for a drink or meal at least once a month.

Questions 1001_a to 1001_j (whether or not HH possesses the item, Yes/no cannot afford/ do not have it for other reason)

A color TV
A DVD player
A washing machine
Microwave oven
A home computer
A dishwasher
A telephone
A car
A second car
A second home

Questions 1004_a to 1004_d (Has your HH been in arrears at any time during the past 12 months, that is, unable to pay as scheduled any of the following? – Yes/no)

Rent for accommodation
Mortgage payments
Utility bill, such as for electricity, water, gas
Purchase instalments or other loan repayments

Question 1005 (Considering your HH's income as well as expenses: is there any left that you could save? – Yes/No)

C Deprivation variables provided by EURO-STAT based on EU-SILC

Economic strain

Inability to keep home adequately warm (*ilc_mdes01*)
Inability to afford paying for one week annual holiday away from home (*ilc_mdes02*)
Inability to afford a meal with meat, fish, chicken every second day (*ilc_mdes03*)
Inability to face unexpected financial expenses (*ilc_mdes04*)
Arrears on mortgage or rent, utility bills or hire purchases (*ilc_mdes05*)
Arrears on utility bills (*ilc_mdes7*)
Arrears on hire purchases instalments or other loan payments (*ilc_mdes08*)
Inability to make ends meet (*ilc_mdes09*)

Durables

Enforced lack of a telephone (*ilc_mddu01*)
Enforced lack of a colour TV (*ilc_mddu02*)
Enforced lack of a computer (*ilc_mddu03*)
Enforced lack of a washing machine (*ilc_mddu04*)
Enforced lack of a personal car (*ilc_mddu05*)

Housing

Leaking roof, damp walls, floors or foundations, or in the window frames (*ilc_mdho01*)
Lack of bath or shower in dwelling (*ilc_mdho02*)
Lack of indoor flushing toilet in the dwelling (*ilc_mdho03*)
Dwelling too dark (*ilc_mdho04*)
Lack of bath, shower and indoor flushing toilet in the dwelling (*ilc_mdho05*)

Environment

Noise from neighbours or from the street (*ilc_mddw01*)
Pollution, grime or other environmental problems (*ilc_mddw02*)
Crime, violence or vandalism in the area (*ilc_mddw03*)

D Missing response rate of deprivation items (as % of total sample)[5]

	Bulgaria	France	Georgia	Germany	Hungary	Russian Federation
1001.a	0.3	0.1	0.0	100.0	0.0	0.1
1001.b	0.8	0.0	0.0	100.0	0.0	0.3
1001.c	0.3	0.0	0.0	100.0	100.0	0.3
1001.d	0.6	0.0	0.0	100.0	100.0	0.2
1001.e	0.7	0.1	0.0	100.0	0.0	0.3
1001.f	1.0	0.0	0.0	100.0	0.0	0.9
1001.g	0.4	0.1	0.0	100.0	0.0	0.4
1001.h	0.6	0.1	0.0	100.0	0.0	0.3
1001.i	1.5	13.5	0.0	100.0	100.0	1.0
1001.j	1.2	0.1	0.0	100.0	100.0	0.4
1002	1.1	0.8	0.0	1.0	0.3	0.0
1003.a	0.0	0.0	0.0	100.0	0.0	0.0
1003.b	0.0	0.0	0.0	100.0	0.0	0.0
1003.c	0.0	0.0	0.0	100.0	0.0	0.0
1003.d	0.0	0.0	0.0	100.0	0.0	0.0
1003.e	0.0	0.0	0.0	100.0	100.0	0.0
1003.f	0.0	0.0	0.0	100.0	0.0	0.0
1004.a	0.0	0.0	0.0	100.0	0.0	0.0
1004.b	0.0	0.0	0.0	100.0	0.0	0.0
1004.c	0.0	0.0	0.0	100.0	0.0	0.0
1004.d	0.0	0.0	0.0	100.0	0.0	0.0
1005	1.3	23.0	0.0	3.9	100.0	2.6

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[5]Note that the absence of missing values for variables *1003* and *1004* is due to the fact that if respondent has not picked up a certain item it is assumed that she can (for *1003*) or cannot (for *1004*) afford it.

Contents

1   Introduction and premise[1]

This report represents the first deliverable of WP7: Report on existing wellbeing indices in the GGS. Its aim is to assess existing Generations and Gender Programme/Survey (GGP/GGS) measures and develop indices that can be used by researchers in their analysis. Examples are: measures of income, poverty indicators, subjective indicators that illuminate economic wellbeing and deprivation indices. Thus, the work of this work package entails:

1. Creation of indicators of economic wellbeing and provision of comparisons with other comparative surveys and official statistics, where applicable,

2. An evaluation of the usefulness of GGP/GGS indicators of economic wellbeing in the explanation of the relationships between genders and generations by analysing data and reviewing existing research, and

3. An evaluation of the usefulness of the indicators on the relationships between genders and generations in the explanation of wellbeing, and finally

4. Suggestions for the improvement and the expansion of measures of economic wellbeing in an updated GGS questionnaire.

Point 4) will be discussed and presented in a later report of WP7.

The difference between points 2) and 3) is subtle but important. On the one hand, interest lies in understanding how variation in economic wellbeing might have an impact on gender and generational relationships. On the other hand, variations in those very relationships may affect outcomes of economic wellbeing. Thus, points 2) and 3) refer to mechanisms of causality, in which the GGS may provide answers in the future as further waves are becoming available. It should be noted already here that disentangling these relationships requires longitudinal information that we do not have available yet. Thus, the discussion of points 2) and 3) will necessarily overlap to some extent. That said, the way in which economic wellbeing is measured will have critical implications for how one can derive causality statements as further

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waves are becoming available and appropriate statistical techniques can be developed and applied. In this report, we assess the various measures by age and family constellations. There are clear differences in economic wellbeing depending on the demographic status of the household - independent of how economic wellbeing is measured. The GGS offers a range of measures of economic wellbeing. It is important to bear in mind that these are complementary (e.g. poverty and deprivation). In applied analysis, it is always useful to use more than one measure.

The report is structured in the following way. We start by assessing the most traditional measure of economic wellbeing, which is household income. Here we point to the way household income is measured and the way in which missing income information is imputed. The content builds largely on Francesco Figari's report on income imputation for the GGS (Figari, 2010), which the Bocconi team initiated with the help of Viola Spinelli and Francesco Lovecchio. We analyse differences in household income for different household constellations for the countries considered. The GGS also includes information about individuals' income sources. Our analysis shows differences between genders in the countries considered. Benefits and drawbacks of the GGS income measures are discussed in light of how income is typically measured in other surveys. From the household income, we apply the Modified OECD equivalence scale to generate equivalised household income, from which we in turn derive individuals' poverty status. Again potential drawbacks and caveats about the use of poverty as an economic wellbeing measure are discussed. The GGS includes several subjective measures that allude to individuals' economic situation. We discuss these variables and analyse how they as outcome variables differ by different family constellations. Finally we consider variables in the GGS that can be used to construct deprivation indices. We present a general approach for its construction and provide applications from the GGS surveys. In the following part, based on the measures discussed, we make a comparison with what information other mainstream household surveys provide. Our focus is mainly on the ECHP and EU-SILC. Though the former is discontinued, it does provide an important yardstick for how economic wellbeing measures are constructed - especially with regard to deprivation indices. The EU-SILC is the continuation of the ECHP, and though very different in format to both the ECHP and GGS, it does provide the key data source for providing information about economic wellbeing across Europe. As will be clear, this comparison is of a "qualitative" nature in the sense that the components used for measuring economic wellbeing in the GGS are different from the others. That said, some of measures are comparable, in particular for the measures of relative poverty and depriva-

tion - we do provide comparisons. The issues raised under 2) and 3) above are considered for each of the items and are embedded in the text where the different measures are presented. As already mentioned, point 4) will be discussed in a later report, in part derived from the findings of this report. In the concluding part, we discuss the usefulness of the GGS measures.

It is worthwhile bearing in mind that apart from household and individual income, the various measures of economic wellbeing presented in this report, are at this point not meant to be embedded in the harmonization procedure of the GGS surveys. The key aim of this report is to generate a basis for improving questionnaires in future waves of the GGS (hence ensuring that longitudinal analysis can be done safely) and to inform the users of GGS on how measures of economic wellbeing can be constructed in an easy way, and to bring to light the key issues one needs to be aware of when demographic life-course events are analysed in conjunction with economic wellbeing.

The analysis comprises Bulgaria, France, Georgia, Germany, Hungary, Romania and the Russian Federation.

2 Income

Income is the most common measure of economic wellbeing. The GGS questionnaire asks respondents to report her/his income and that of the partner. The variables included in the data refer to the income types received during the last 12 months, the number of times each income type was received, the average net amount of each income type (per time unit) and the approximate range of each income type (per time unit). Moreover, the respondent reports also information about household's income, in terms of average income over the last 12 months, the period to which the income refers to (month or year) and the approximate range of household income. In the case the respondent does not know or is unable to report the household income, the interviewer prompts the respondent for which income band he or she believes the household belongs to. This is different to most mainstream surveys and offers important benefits. First, it does reduce the number of missing values (though the value is less exact when income simply refers to a discrete income band). Secondly, it improves the precision of income imputation in the sense that we do know to which income interval the respondent belongs to. Thus, imputation is based on income information of similar households in the relevant income band (as opposed to comparable households over the whole

income distribution). However, there are a number of countries' specificities and exceptions (see Table 1 and 2) which need to be taken into account in order to derive harmonised variables. For instance, in the German GGS, respondents are not offered to answer the exact household income; instead only the income band is available.

As shown in Table 1, the number of income variables ranges from 3 in Georgia to 13 in Bulgaria for the respondent and from 2 to 13 for the partner. However, in Hungary there is neither the indication of number of payments received by the respondent nor the distinction between different income sources for the partner for whom only the total amount is reported.

The other relevant difference across countries is the number and type of income sources (e.g. earnings from job, retirement pension, survivor benefit, unemployment benefit, social assistance, etc.), potentially reported: from 7 in Germany to 14 in Russia. Given the differences in the average amount of each income source and the characteristics of the recipients and the family associated with each type, the imputation of missing values needs to be done separately for each income source.

Table 1: *Individual income variables in GGS data*

	Respondent				Partner				
Country	Type of income	Number of payments	Net amount	Band	Type of income	Number of payments	Net amount	Band	Income sources
Variable	a864_x	a865_x	a866_x	a867_x	a864_x	a865_x	a866_x	a867_x	
BG	13	13	13	13	13	13	13	13	13
FR	4	4	4	4	4	4	4	4	9
GE	3	3	3	3	2	2	2	2	10
DE	4	No	No	4	3	No	No	3	7
HU	9	No	a866_1601	a867_1601	No	No	a938_1601	a939_1601	9
RO	4	4	4	4	3	3	3	3	11
RU	6	6	6	6	5	5	5	5	14

Notes: The figures in each cell represent the number of times each variable is repeated at most in the questionnaire. In Hungary the name of the variables reporting the net amount and the bands is different as indicated in the table. Respondent's income: *a864_x*: income type during the last 12 months, *a865_x*: number of times received each income type, *a866_x*: average net amount of each income type (per time), *a867_x*: approximate range of each income type (per time). Partner's income: *a936_x*: income type during the last 12 months, *a937_x*: number of times received each income type, *a938_x*: average net amount of each income type (per time), *a939_x*: approximate range of each income type (per time).

Table 2 gives an overview of the variables on household income. The net amount of total income (variable *a1008*) and its reference unit (i.e. month or year, variable *a1008u*) is provided in all countries but France and Germany where only the income band is reported (variable *a1009*). An indication of

secondary sources of income for the household (from 3 sources in France and Germany to 7 in Georgia and Romania) is given in all countries but without specifying the income values for these specific sources (variables *a1006_x*). The same applies to the income sources (from 5 in Germany and Romania to 11 in Bulgaria, none in France and Hungary) of members of the household other than the respondent and the partner (variables *a1007_x*). In all countries but Hungary there is also an indication of the receipt of transfers from outside the household, but again without its amount. The lack of amount of these income sources does not enable us to take them into account in the imputation of household income for those who do not report the total amount, but the information can be used as controls in the imputation procedure.

Table 2: *Household income variables in GGS data*

	Type of income	Type of income (other HH member)	Net amount	Unit	Band	Transfer from outside HH
Variable	a1006_x	a1007_x	a1008	a1008u	a1009	a1010
BG	6	11	Yes(*)	Yes	Yes	Yes
FR	3	No	No	No	Yes	Yes
GE	7	10	Yes	Yes	Yes	Yes
DE	3	5	No	No	Yes	Yes
HU	5	No	Yes	Yes	Yes	No
RO	4	5	Yes	Yes	Yes	Yes
RU	7	6	Yes	Yes	Yes	Yes

Notes: (*) In Bulgaria the names of the variables reporting the net amount and the unit is different: *a1008_1101* and *a1008_1102*. *a1006_x*: types of income received by household, *a1007_x*: Types of income received by other members of household, except respondent and partner, *a1008*: average household income over the last 12 months, *a1008u*: period related to the household income: month/year, *a1009*: approximate range of household income, *a1010*: Any transfer (money etc.) received from person outside household.

The countries specificities highlighted above, in terms of number of income sources, type of income sources, and variables omitted, imply that each country needs to be treated separately, analysing each source of income for both respondent and partner at time.

2.1   Income imputation

An aspect which most surveys have in common, is the lack of information for a specific variable due to non-response. Within a given survey, the non-response may be related to the whole unit (unit non-response) or to a specific variable (item non-response). The harmonisation of income variables neces-

sarily needs to deal with the item non-response which affects to a different extent income variables across countries. The imputation of missing values is useful in order to avoid a loss of valuable information at the analysis stage (i.e. if only completed observed units were analysed) and to minimise the mean squared error of survey estimates, in particular the non-response bias component that arises when the pattern of missing data is not random. For the GGS we have applied single imputation consistent with the approach proposed by EUROSTAT (EUROSTAT, 2001). Here we summarize the key issues concerning income imputation for the GGS. See Figari (2010) for a detailed exposition of income imputation for the GGS.

Single imputation is the preferred method in the context of large public surveys such as the European Community Household Panel - ECHP (EURO-STAT, 2001) and the European Union Survey on Income and Living Conditions - EU-SILC (EUROSTAT, 2010). In particular EUROSTAT, in order to limit the complexity or the computational work involved in the construction of the imputations, rules out special techniques such as multiple imputation or methods using neural networks, despite certain desirable statistical properties they may have (EUROSTAT, 2010). A large public survey which provides imputed values using multiple imputation is SHARE - Survey of Health, Ageing and Retirement in Europe - for which there are five different datasets that differ with respect to the missing values and are identical with respect to the non-missing ones (SHARE, 2009).

A univariate imputation procedure is used to impute, separately, respondent's, partner's and household income. In order to preserve the main characteristics of the observed data, in the imputation an appropriate number of predictors (related to individual and family characteristics) has been used, in order to avoid imposing incorrect assumptions on the relationships between the variables. Given the continuous nature of the income variables to be imputed a predictive mean matching procedure has been applied. The main difference between predictive mean matching and linear regression is that the latter is a fully parametric method which relies on the normality of the model. Predictive mean matching is a partially parametric method that matches the missing value to the observed value with the closest predicted mean (Little, 1988), using linear regression to obtain linear predictions. The linear predictions are then used as a distance measure to create the set of nearest neighbours which act as possible donors with complete observation. From this set an imputed value is randomly drawn, preserving the distribution of the observed values in the missing data, which makes the approach more robust than the one based on a fully parametric linear regression. The

use of prediction matching ensures that values are imputed only within the observed distribution of the variable of interest (Schenker and Taylor, 1996). The parameters of the regressions are estimated within a bootstrap sample. The bootstrap method has the advantage of robustness since it is not necessary to assume that the coefficients are normally distributed (Royston, 2004).

For the GGS two different strategies were adopted in order to impute income variables which may contain missing values both at household and individual level. The first strategy is used to impute household income while the second strategy is used to impute income at the individual level, referring to the respondent, her/his partner and the couple.

2.1.1   Imputation of household income (1st strategy)

The variable *HHincome* (with *HHincome_f* as correspondent flag) contains the Household's annual income, imputed by multivariate regression (predictive mean matching) i) by band if band reported or ii) on the overall sample if band is not reported. The covariates included in the regressions refer to household (being a couple, number of household members, number of dependent children, number of adults working, number of adults retired, number of disabled people) and respondent characteristics (gender, age, age square, high level of education).

The flag takes 3 values (i.e. 0, 1 and 2) related to the value of the variable reported in the original dataset:

- *HHincome_f = 0* if the respondent declares the continuous value of his household income. The reported value is kept in the final dataset and the set of complete observations forms the sample (a) used for matching regressions.

- *HHincome_f = 1* if the respondent declares the band of his household income but not the continuous value. The continuous value is predicted using sample (a) restricted to those reporting the same income band.

- *HHincome_f = 2* if the respondent does not declare his household income (neither the continuous value nor the band). The continuous value is predicted using sample (a).

2.1.2 Imputation of individual incomes (2nd strategy)

The variables *Rincome* (with *Rincome_f* as correspondent flag) and *Pincome* (*Pincome_f*) contain respectively the annual income of the respondent and her/his partner. Missing values for each income source (e.g. earnings from job, retirement pension, survivor benefit, unemployment benefit, social assistance, etc.), have been imputed by multivariate regression (predictive mean matching) i) by band if band reported or ii) on the overall sample if band is not reported.[2] The covariates included in the regressions refer to individual characteristics (gender, age, age square, high level of education, disable, number of dependent children and being in a couple (only for the "respondent"). Moreover, if the dependent variable refers to labour income, other covariates are included: being employee (rather than self-employed), working part-time (rather than full-time), partner works, dependent children interacted with being a woman. If the dependent variable refers to a non-labour income, dummies reporting whether the respondent (partner) works or not are included. The total individual income for both respondent and partner is given by the sum of each reported or imputed income source.

The flags take 3 values (i.e. 0, 1 and 2) taking the maximum value (i.e. value corresponding to the worst case) between the flags constructed for each source of individual income. The detailed procedures explained below have been implemented in order to maximise the use of available information. At each step, the imputation makes use of the smallest subset of observations with missing values as possible.

2.2 Descriptive statistics of income

Relevant cross-country specificities in the collected data make the imputation of income variables a country-specific exercise, in order to guarantee harmonized final income variables. This section provides descriptive statistics on original variables included in the survey, in order to highlight the most critical cases in terms of number of observations reporting missing values. Moreover we show the pattern, in terms of mean and median, of imputed variables (by different subsets identified by different flag values) in comparison with the subset of complete observations (i.e. flag equal to 0, cases not subject to any imputation). Finally, we report descriptive statistics on individual

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[2]If the number of potential donors is smaller than 30, the average value by income source (and band) is imputed.

incomes (by gender, age, education and labour force status) and household income (by household structure) following the template of the GGS Wave 1 Standard Tables.

2.2.1 Original data

The following Tables 3 - 9 show, for each country separately, the extent to which missing information affects the overall reliability of the individual income variables. For each country the total number of households is indicated (ranging from around 10,000 in France, Georgia and Germany to 13,540 in Hungary) and for each income source the number of observations with an expected value and those with a missing value are reported. For such a descriptive purpose, the number of missing values refers to observations with income values provided neither continuous nor in bands. Those reporting income only in band are not included in this count although, as explained in the section above, these observations have been imputed accordingly.[3]

The pattern of missing values in individual income variables is quite different across countries with France, Georgia, Hungary, Romania and Russia showing a share of missing values for each income source well below 10%, with only some limited exceptions. Bulgaria reports a high number of income sources (i.e. 13) and some of them show slightly higher percentages of missing values but with a relative low incidence in terms of absolute numbers. In case of Germany the percentages of missing values are a bit higher with values between 14% and 24% for the main income sources.

The following Table 10 reports the incidence of missing values in the household income variables, referring to the number of cases with income values not provided neither continuous nor in bands.[4] The share of households with household income missing ranges from below or around 5% in Romania, Russia, France and Georgia to 17% in Bulgaria and Germany and 21% in Hungary.

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[3]The rationale for providing such more restricted statistic relies on the fact that the imputation of continuous values for those reporting the band is less problematic.

[4]As in the case of individual incomes, those reporting income only in band are not included in this count although, as explained in the section above, these observations have been imputed. The rationale for providing such more restricted statistic relies on the fact that the imputation of continuous values for those reporting the band is less problematic.

Table 3: *Descriptive statistics - original data - individual incomes - Bulgaria*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	7,117	653	5,322	765
Other job	667	106	341	87
Pension	2,533	79	1,735	71
Widow/survivor's pension	423	21	26	4
Disability benefit	491	27	284	16
Unemployment benefit	280	12	168	18
Social assistance	343	30	189	23
Education related benefit	174	10	29	6
Parental leave benefit	277	18	174	13
Social pension	83	7	35	4
Childbirth benefit	86	14	51	6
Children allowance	1,716	40	909	28
Other	96	26	22	12
Number of Households (N)	12,858			

Table 4: *Descriptive statistics - original data - individual incomes - France*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	5,878	117	4,512	305
Other job	287	15	142	27
Pension	2,399	101	1,524	142
Widow/survivor's pension	545	36	39	8
Disability benefit	468	12	199	17
Unemployment benefit	638	15	303	27
Social assistance	267	1	66	6
Education related benefit	254	5	85	14
Parental leave benefit	235	4	129	3
Number of Households (N)	10,079			

Table 5: *Descriptive statistics - original data - individual incomes - Georgia*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	3,959	106	2,814	121
Other job	547	19	315	7
Pension	1671	0	923	0
Widow/survivor's pension	106	0	33	0
Disability benefit	478	1	271	1
Unemployment benefit	9	0	5	0
Social assistance	316	2	121	0
Education related benefit	48	0	3	0
Parental leave benefit	9	0	11	1
Social pension	0	0	0	0
Number of Households (N)	10,000			

Table 6: *Descriptive statistics - original data - individual incomes - Germany*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	5,841	892	3,846	761
Pension	2,198	370	1,291	264
Widow/survivor's pension	375	53	25	6
Disability benefit	190	36	112	12
Unemployment benefit	667	87	301	51
Education related benefit	171	12	41	5
Parental leave benefit	1,473	156	594	70
Number of Households (N)	10,017			

2.3 Imputed incomes

Following the description of the imputation approaches adopted (section 2.1) in order to provide harmonised income variables, Tables 11 - 17 show the proportion of cases falling into the three different categories corresponding to a flag value equal to 0 (i.e. no imputation), 1 (i.e. imputation of continuous value from bands for household income; imputation of individual incomes using partial information recorded in the data) or 2 (i.e. imputation of information completely missing in the data). The share of most serious cases (i.e. flag = 2) ranges from 1% in Georgia to 14% in Germany when considering individual incomes and from null in France, Georgia and Germany to 21% in

Table 7: *Descriptive statistics - original data - individual incomes - Hungary*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	9,189	604	0	0
Other job	1,978	123	0	0
Pension	4,751	189	0	0
Widow/survivor's pension	852	30	0	0
Disability benefit	2,568	85	0	0
Unemployment benefit	703	31	0	0
Social assistance	175	8	0	0
Education related benefit	507	35	0	0
Parental leave benefit	1,284	58	0	0
Number of Households (N)	13,540			

Table 8: *Descriptive statistics - original data - individual incomes - Romania*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	4,384	168	3478	174
Other job	228	9	93	5
Pension	3,573	117	2,358	85
Widow/survivor's pension	61	0	19	1
Disability benefit	1,009	17	575	16
Unemployment benefit	157	7	114	5
Social assistance	85	3	37	1
Education related benefit	30	2	7	1
Parental leave benefit	105	1	113	4
Self Employment	1,380	66	946	53
Other	553	31	267	16
Number of Households (N)	11,986			

Table 9: *Descriptive statistics - original data - individual incomes - Russian Federation*

	Respondent		Partner	
	No. obs	No. missing	No. obs	No. missing
Main job	6,583	331	5,081	501
Other job	920	57	466	74
Pension	3195	36	1,488	40
Widow/survivor's pension	174	4	26	1
Disability benefit	511	9	220	5
Unemployment benefit	115	2	61	7
Education related benefit	0	0	0	0
Parental leave benefit	232	2	108	11
Service pension	187	6	124	14
Social pension	236	5	137	6
Military pension	39	0	21	2
Employment pension	78	3	85	7
Social Assistance	17	0	12	0
Other	175	5	50	5
Number of Households (N)	11,261			

Table 10: *Descriptive statistics - original data - household income*

	No. obs	No. missing
Bulgaria	12,858	2,115
France	10,079	508
Georgia	10,000	605
Germany	10,017	1,698
Hungary	13,540	2,868
Romania	11,986	334
Russian Federation	11,261	481

Hungary. In case of individual incomes, the figures are derived considering all income sources together for each individual.

Tables 11 - 17 also report mean and median of each income variable, by imputation-flag category. It emerges that mean and median of subsets of imputed values are larger than those fully recorded in the data in all countries, highlighting a selection issue in the pattern of missing values. Average income values in the sample as a whole are larger than in the original data, but the difference is not so big due to the relative small size of imputed subsets.

Average household income is larger than couple income in all countries but

France, where the continuous household income is not recorded in the data and it is imputed from income bands without any additional information on the within band distribution. The difference between average household income and couple income is particularly large in Georgia and Romania suggesting that a within household consistency check of information recorded in the data should be performed together with an analysis of the household composition that might explain at least part of the differences.

Table 11: *Descriptive statistics - imputed data - Bulgaria*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	87%	1,006	780	6%	2,187	1,524	7%	1,532	1,224	1,117	840
Pincome	83%	695	360	8%	2,058	1,536	9%	1,434	1,224	812	492
Cincome	78%	1,720	1,332	10%	3,205	2,364	12%	2,528	2,161	1,928	1,476
HHincome	80%	2,599	2,086	4%	3,804	3,927	16%	2,814	2,454	2,683	2,147

Note: *Annual incomes in euro. % are share of cases in each imputation-flag category. Flag = 0: no imputation; Flag = 1: imputation of continuous value from bands for household income; imputation of individual income using partial information recorded in the data. Flag = 2: imputation of information completely missing in the data.*

Table 12: *Descriptive statistics - imputed data - France*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	89%	16,166	13,800	8%	20,009	14,400	2%	20,811	14,400	16,593	13,896
Pincome	86%	11,491	6,000	10%	24,981	16,800	4%	21,287	13,785	12,652	8,000
Cincome	82%	28,522	22,800	13%	33,735	25,662	5%	31,868	21,948	29,245	22,950
HHincome	95%	25,127	26,994	5%	24,797	26,994	- - -	- - -	- - -	25,110	26,994

Note: *see Table 11*

Table 13: *Descriptive statistics - imputed data - Georgia*

	Flag = 0			Flag = 1			Flag = 2			All cases	
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	96%	392	144	3%	1,294	792	1%	877	528	424	144
Pincome	94%	307	0	4%	1,629	1,056	2%	782	420	345	0
Cincome	91%	709	288	6%	1,741	1,175	3%	1,173	752	768	288
HHincome	70%	1,415	877	30%	4,936	1,320	- - -	- - -	- - -	2,465	964

Note: *see Table 11*

2.4 Final incomes

Tables 18 - 24 report the annual personal income by gender, age, education and labour force status as suggested in the template of the GGS Wave 1 Stan-

Table 14: *Descriptive statistics - imputed data - Germany*

| | Flag = 0 | | | Flag = 1 | | | Flag = 2 | | | All cases | |
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	86%	14,555	14,994	- - -	- - -	- - -	14%	16,637	14,994	14,850	14,994
Pincome	87%	8,711	0	- - -	- - -	- - -	13%	21,684	20,994	9,735	2,994
Cincome	81%	24,247	20,994	- - -	- - -	- - -	19%	26,328	23,988	24,585	20,994
HHincome	83%	24,489	20,994	17%	26,231	26,994	- - -	- - -	- - -	24,784	26,994

Note: *see Table 11*

Table 15: *Descriptive statistics - imputed data - Hungary*

| | Flag = 0 | | | Flag = 1 | | | Flag = 2 | | | All cases | |
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	69%	3,212	2,784	25%	4,109	3,420	5%	3,888	3,228	3,474	2,940
Pincome	69%	1,894	1,080	24%	4,315	3,672	7%	4,585	3,420	2,393	2,052
Cincome	65%	5,343	4,608	28%	6,819	5,868	8%	7,272	6,012	5,867	4,896
HHincome	53%	7,317	6,359	26%	8,641	7,337	21%	522	448	6,225	5,869

Note: *see Table 11*

Table 16: *Descriptive statistics - imputed data - Romania*

| | Flag = 0 | | | Flag = 1 | | | Flag = 2 | | | All cases | |
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	89%	1,347	1,020	8%	2,758	1,404	3%	1,788	1,248	1,476	1,039
Pincome	89%	946	492	8%	2,986	1,644	3%	1,890	1,344	1,081	636
Cincome	84%	2,344	1,644	11%	4,122	2,208	6%	3,046	2,364	2,557	1,704
HHincome	81%	10,071	7,920	17%	3,881	2,940	3%	11,773	9,852	9,092	6,840

Note: *see Table 11*

Table 17: *Descriptive statistics - imputed data - Russian Federation*

| | Flag = 0 | | | Flag = 1 | | | Flag = 2 | | | All cases | |
	%	Mean	Median	%	Mean	Median	%	Mean	Median	Mean	Median
Rincome	90%	1,366	768	6%	3,043	1,713	4%	1,974	1,083	1,489	792
Pincome	87%	840	324	8%	2,694	1,704	4%	1,414	912	952	408
Cincome	83%	2,218	1,404	10%	4,122	2,724	6%	3,288	2,027	2,441	1,524
HHincome	92%	2,549	1,849	4%	4,298	3,414	4%	1,064	284	2,555	1,832

Note: *see Table 11*

dard Tables. Monetary values are expressed in Euro. Along with the number of unweighted observations in each cell, the tables report mean, median and quintile points. The total number of observations might be different from the sum of the observations in each age, education and labour force status category due to the presence of individual the younger (older) than 18 (79) years old or missing values in the education and labour force status variables in the original data. Finally, Tables 25 - 31 report mean, median and quintile points of the annual household income (expressed in Euro) by household structure.

Table 18: *Annual personal income - Bulgaria*

| | | ALL | AGE | | | | | | EDUCATION | | | LABOUR FORCE STATUS | | | | |
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	10,910	2,398	2,739	2,039	1,662	1,275	754	848	7,414	2,472	5,610	1,948	422	2,481	416
	Mean	932	732	1,114	1,164	1,009	676	577	425	818	1,485	1,366	286	246	674	354
	Median	732	522	1,020	1,044	789	552	516	396	720	1,321	1,224	108	0	552	216
	1st quintile	216	0	216	336	336	396	385	108	216	671	732	0	0	396	0
	2nd quintile	588	255	840	920	648	504	492	362	552	1,104	1,033	0	0	492	108
	3rd quintile	924	732	1,224	1,224	947	612	564	456	840	1,536	1,332	216	62	612	336
	4th quintile	1,416	1,212	1,596	1,716	1,536	792	732	652	1,224	1,968	1,836	444	279	768	552
MEN	n	10,491	1,877	2,591	2,287	1,617	1,247	828	598	8,036	1,750	5,839	1,844	289	2,278	216
	Mean	1,358	1,026	1,600	1,600	1,433	1,086	977	506	1,258	2,167	1,871	294	304	1,062	1,059
	Median	1,104	726	1,284	1,224	1,224	924	792	456	1,044	1,836	1,536	0	0	864	552
	1st quintile	372	0	426	492	492	611	552	0	360	924	924	0	0	588	360
	2nd quintile	863	325	1,104	1,104	924	792	724	339	804	1,530	1,232	0	0	744	492
	3rd quintile	1,224	1,024	1,596	1,536	1,407	1,044	876	552	1,224	2,088	1,836	10	26	984	645
	4th quintile	1,956	1,721	2,328	2,299	1,968	1,436	1,104	768	1,836	2,918	2,460	492	360	1,343	972

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

2.5 Concluding remarks concerning income in GGS

This section describes the procedures involved in providing GGS users with *harmonised*, *complete* and *user-ready* income variables and their flags. A major imputation process has been necessary in order to provide complete dataset across countries. As a result, a user can exploit the availability of individual (i.e. partner and respondent), couple and household income variables according to her own needs and research questions.

A general issue concerns the consistency between couple annual income (i.e. the sum of income of respondent and partner available in the data) and household annual income. As noted above, in a couple of countries the average

Table 19: *Annual personal income - France*

		ALL	**18-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**	**primary**	**secondary**	**higher**	**employed**	**unemployed**	**student**	**retired**	**other non-active**
					AGE					EDUCATION			LABOUR FORCE STATUS			
WOMEN	n	8,494	1,381	1,772	1,633	1,637	1,174	864	2,972	3,244	2,258	4,493	554	402	1,801	1,244
	Mean	12,472	8,280	13,755	15,399	13,745	11,262	10,456	8,887	11,694	18,307	16,653	6,478	2,318	12,081	3,885
	Median	11,160	7,200	13,200	13,800	12,000	9,144	9,000	7,800	11,340	17,400	14,400	5,472	165	10,260	0
	1st quintile	2,550	0	5,674	5,032	322	2,744	3,600	581	2,840	6,650	9,000	0	0	5,232	0
	2nd quintile	8,640	4,500	11,000	12,000	9,600	7,200	7,200	6,000	9,000	14,634	13,200	4,080	0	8,640	0
	3rd quintile	13,200	10,200	14,400	15,600	14,400	11,340	10,636	9,600	13,200	19,200	16,800	7,440	1,000	12,000	0
	4th quintile	18,288	14,400	19,200	22,200	20,747	17,760	15,000	14,400	17,400	25,608	21,600	10,800	3,840	18,000	6,684
MEN	n	7,614	987	1,604	1,553	1,528	1,069	800	2,243	3,419	1,925	4,687	419	218	2,041	249
	Mean	23,325	12,578	22,776	26,148	28,813	25,271	19,694	16,158	20,090	37,365	26,642	14,385	2,789	21,307	10,457
	Median	16,910	13,200	18,000	18,600	19,200	16,800	14,640	14,400	16,800	25,608	18,600	8,160	425	15,732	8,016
	1st quintile	10,980	2,000	13,200	13,200	12,756	10,200	9,439	8,868	11,892	15,600	14,400	0	0	9,706	2,500
	2nd quintile	15,360	10,800	16,200	16,800	17,205	14,640	12,804	12,804	15,240	21,948	17,040	5,400	0	14,400	7,188
	3rd quintile	19,200	14,400	19,200	21,600	22,038	19,200	17,347	15,600	18,000	30,000	21,600	10,200	1,800	18,000	9,336
	4th quintile	27,444	18,000	26,400	30,000	32,400	29,736	24,000	20,400	24,000	42,185	30,000	14,220	5,568	25,200	14,400

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 20: *Annual personal income - Georgia*

		ALL	**18-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**	**primary**	**secondary**	**higher**	**employed**	**unemployed**	**student**	**retired**	**other non-active**
					AGE					EDUCATION			LABOUR FORCE STATUS			
WOMEN	n	8,618	1,642	1,732	1,888	1,449	1,093	799	357	5,979	2,277	2,668	1,217	291	1,621	2,821
	Mean	245	131	266	345	282	218	168	143	163	475	642	44	36	156	29
	Median	63	0	0	0	88	144	144	144	0	144	420	0	0	144	0
	1st quintile	0	0	0	0	0	144	144	144	0	0	108	0	0	144	0
	2nd quintile	0	0	0	0	0	144	144	144	0	72	276	0	0	144	0
	3rd quintile	144	0	0	144	144	144	144	144	144	307	528	0	0	144	0
	4th quintile	303	44	420	528	468	168	144	144	168	780	948	0	0	144	0
MEN	n	7,804	1,331	1,546	1,830	1,382	987	692	256	5,307	2,233	4,484	1,610	249	1,154	307
	Mean	693	497	1,026	896	727	357	224	195	510	1,188	1,088	141	62	196	192
	Median	225	0	528	528	372	144	144	144	168	684	768	0	0	144	144
	1st quintile	0	0	0	0	0	132	144	144	0	42	182	0	0	144	144
	2nd quintile	144	0	307	269	193	144	144	144	144	372	528	0	0	144	144
	3rd quintile	440	177	840	780	538	144	144	144	312	953	948	0	0	144	144
	4th quintile	1,056	840	1,572	1,438	1,124	527	168	173	876	1,836	1,572	59	0	168	180

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 21: *Annual personal income - Germany*

		ALL	AGE						EDUCATION			LABOUR FORCE STATUS				
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	8,285	1,143	1,661	1,887	1,381	1,339	781	1,419	6,417	3,262	4,114	526	319	1,779	1,509
	Mean	10,766	8,340	10,336	12,011	11,977	10,155	11,663	7,271	11,564	9,521	14,466	5,983	4,932	11,241	3,134
	Median	8,994	8,994	8,994	8,994	8,994	8,994	8,994	5,988	8,994	8,994	14,994	2,994	2,994	8,994	0
	1st quintile	2,994	2,994	2,994	2,994	2,994	2,994	2,994	0	2,994	0	8,994	0	0	2,994	0
	2nd quintile	8,994	2,994	5,988	8,994	8,994	8,994	8,994	2,994	8,994	2,994	8,994	2,994	2,994	8,994	0
	3rd quintile	11,988	8,994	11,988	14,994	14,994	8,994	11,988	8,994	14,994	8,994	14,994	5,988	2,994	8,994	2,994
	4th quintile	14,994	14,994	17,988	20,987	20,994	14,994	14,994	11,988	17,988	14,994	20,994	8,994	8,994	14,994	2,994
MEN	n	7,931	1,061	1,440	1,836	1,398	1,333	725	608	6,723	3,776	4,890	599	350	1,928	110
	Mean	19,619	11,700	21,545	23,286	21,625	18,869	17,320	13,395	20,163	20,187	23,598	7,512	5,395	16,710	10,060
	Median	20,994	11,988	20,994	20,994	20,994	14,994	14,994	14,994	20,994	20,994	20,994	5,988	2,994	14,994	2,994
	1st quintile	8,994	2,994	14,994	14,994	8,994	8,994	8,994	2,994	8,994	8,994	14,994	0	0	8,994	0
	2nd quintile	14,994	8,994	20,994	20,994	14,994	14,994	14,994	8,994	14,994	14,994	20,994	2,994	2,994	14,994	1,198
	3rd quintile	20,994	14,994	20,994	26,994	22,192	20,994	14,994	14,994	20,994	20,994	26,994	8,994	5,988	14,994	8,994
	4th quintile	26,994	19,792	29,988	32,994	32,994	26,994	20,994	20,994	26,994	32,994	32,994	11,988	8,994	20,994	20,994

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 22: *Annual personal income - Hungary*

		ALL	AGE						EDUCATION			LABOUR FORCE STATUS				
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	11,723	2,001	2,123	2,208	2,410	1,890	1,067	760	9,005	1,956	6,195	488	245	3,113	1,645
	Mean	2,999	2,781	3,216	3,372	3,212	2,594	2,474	1,911	2,666	4,956	3,735	1,270	1,365	2,707	1,543
	Median	2,592	2,448	2,880	2,940	2,688	2,352	2,448	1,956	2,448	4,404	3,276	1,032	1,176	2,448	1,320
	1st quintile	1,560	1,176	1,464	1,658	1,560	1,764	1,956	1,080	1,464	2,940	2,304	780	598	1,908	876
	2nd quintile	2,352	2,100	2,448	2,592	2,352	2,119	2,304	1,764	2,244	3,912	2,940	924	780	2,304	1,080
	3rd quintile	2,940	2,940	3,199	3,420	3,036	2,544	2,592	2,100	2,736	4,896	3,672	1,320	1,464	2,640	1,620
	4th quintile	3,912	3,912	4,164	4,644	4,250	3,180	3,036	2,496	3,516	6,360	4,896	1,860	1,464	3,276	2,148
MEN	n	10,694	1,763	2,111	1,983	2,198	1,622	927	404	8,522	1,768	6,316	492	203	2,499	1,157
	Mean	4,138	3,883	4,785	4,286	4,419	3,578	3,266	2,442	3,674	6,760	5,044	1,404	1,593	3,454	2,302
	Median	3,420	3,420	3,912	3,420	3,420	2,940	3,036	2,352	3,180	5,376	3,912	984	876	3,036	2,196
	1st quintile	2,244	1,860	2,448	2,244	2,196	2,196	2,400	1,716	2,196	3,672	2,784	780	770	2,352	1,224
	2nd quintile	2,940	2,940	3,420	3,084	2,940	2,688	2,832	2,196	2,940	4,896	3,672	780	780	2,832	1,956
	3rd quintile	3,912	3,912	4,404	3,912	3,912	3,372	3,324	2,496	3,576	6,360	4,404	1,272	876	3,420	2,448
	4th quintile	5,040	4,896	6,360	5,628	5,376	4,404	3,931	3,036	4,644	9,780	6,360	1,956	2,158	4,152	3,036

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 23: *Annual personal income - Romania*

		ALL	AGE						EDUCATION			LABOUR FORCE STATUS				
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	10,453	1,237	2,300	1,832	2,247	1,656	1,154	1,784	7,753	913	4,322	221	176	3,666	2,074
	Mean	1,125	1,007	1,339	1,356	1,126	900	790	543	1,050	2,887	1,824	622	351	967	66
	Median	764	436	1,044	1,020	792	615	528	420	840	2,407	1,437	436	0	684	0
	1st quintile	0	0	0	0	0	360	324	36	0	1,476	816	0	0	420	0
	2nd quintile	528	0	758	756	588	492	456	372	567	2,018	1,248	87	0	588	0
	3rd quintile	1,020	1,006	1,308	1,308	984	816	624	492	1,020	2,616	1,644	701	0	816	0
	4th quintile	1,644	1,740	1,968	1,968	1,644	1,128	1,020	684	1,512	3,936	2,460	998	300	1,116	0
MEN	n	10,033	1,088	2,086	1,901	2,125	1,579	1,180	1,044	7,910	1,076	5,548	439	190	3,630	226
	Mean	1,851	1,571	2,189	2,274	1,878	1,505	1,286	925	1,723	3,690	2,369	586	272	1,385	385
	Median	1,308	1,152	1,644	1,644	1,308	1,152	1,057	768	1,308	2,952	1,704	152	0	1,092	0
	1st quintile	660	62	803	720	672	756	660	420	672	1,644	984	0	0	696	0
	2nd quintile	1,116	820	1,380	1,380	1,056	1,044	984	656	1,116	2,460	1,476	0	0	984	0
	3rd quintile	1,512	1,368	1,968	1,968	1,560	1,248	1,152	936	1,476	3,276	2,012	378	0	1,212	325
	4th quintile	2,364	2,171	2,840	2,952	2,460	1,524	1,476	1,152	2,196	4,920	2,966	926	415	1,489	588

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 24: *Annual personal income - Russian Federation*

		ALL	AGE						EDUCATION			LABOUR FORCE STATUS				
			18-29	30-39	40-49	50-59	60-69	70-79	primary	secondary	higher	employed	unemployed	student	retired	other non-active
WOMEN	n	9,949	1,805	1,754	2,136	1,732	1,482	1,015	1,169	6,190	250	5,605	478	272	2,853	740
	Mean	1,152	929	1,248	1,390	1,452	839	738	857	1,351	909	1,631	321	317	668	232
	Median	708	408	780	928	848	684	684	648	840	558	1,032	60	66	648	24
	1st quintile	324	24	192	336	444	504	504	324	348	36	516	0	0	456	0
	2nd quintile	612	216	576	708	684	636	636	552	684	361	876	28	15	600	0
	3rd quintile	852	684	1,020	1,135	1,020	720	720	720	1,020	720	1,368	155	140	684	48
	4th quintile	1,452	1,368	1,704	1,863	1,719	864	816	1,068	1,704	1,523	2,040	514	382	768	284
MEN	n	7,875	1,482	1,568	1,918	1,369	923	584	1,729	4,515	210	5,349	557	215	1,574	176
	Mean	1,912	2,005	2,621	2,045	1,787	1,085	964	1,220	2,252	2,722	2,477	443	748	818	571
	Median	1,200	1,368	1,704	1,368	1,200	756	780	780	1,572	1,230	1,704	78	153	720	336
	1st quintile	516	254	626	444	444	612	684	372	684	359	852	0	0	576	0
	2nd quintile	852	1,020	1,368	1,020	852	708	756	684	1,224	852	1,368	6	77	684	126
	3rd quintile	1,566	1,747	2,052	1,704	1,572	804	816	960	2,040	1,704	2,052	203	227	756	510
	4th quintile	2,736	3,072	3,408	3,072	2,724	1,464	1,236	1,704	3,082	3,386	3,408	710	684	900	853

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 25: *Annual household income by household structure - Bulgaria*

	ALL	1 PERSON	2 PERSONS			3 PERSONS			4 PERSONS			5 PERSONS AND MORE
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	12,858	1,006	2,034	279	472	2,060	120	1,253	2,071	11	1,406	2,146
Mean	2,683	1,141	2,333	1,780	1,975	2,875	2,217	3,067	2,885	1,885	3,351	2,998
Median	2,147	798	1,534	1,411	1,718	2,556	1,963	2,454	2,515	1,023	3,068	2,556
1st quintile	1,125	521	1,043	798	920	1,472	924	1,380	1,350	796	1,841	1,278
2nd quintile	1,841	706	1,380	1,227	1,463	2,209	1,587	2,045	2,147	969	2,638	2,147
3rd quintile	2,577	982	1,841	1,718	2,045	3,068	2,155	2,945	3,068	1,657	3,681	3,068
4th quintile	3,681	1,601	2,577	2,454	2,896	3,988	3,068	3,835	3,988	3,497	4,595	4,295

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 26: *Annual household income by household structure - France*

	ALL	1 PERSON	2 PERSONS			3 PERSONS			4 PERSONS			5 PERSONS AND MORE
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	10,079	2,642	2,915	375	197	1,074	181	239	1,340	59	211	846
Mean	25,110	16,529	28,001	18,978	19,014	30,212	18,442	26,492	31,763	18,757	29,468	29,469
Median	26,994	14,994	26,994	14,994	14,994	32,994	14,994	26,994	32,994	14,994	32,994	26,994
1st quintile	14,994	8,994	14,994	8,994	8,994	20,994	8,994	14,994	20,994	8,994	20,994	20,994
2nd quintile	20,994	14,994	26,994	14,994	14,994	26,994	14,994	20,994	26,994	14,994	26,994	26,994
3rd quintile	26,994	14,994	32,994	20,994	20,994	32,994	20,994	32,994	38,994	20,994	32,994	32,994
4th quintile	38,994	20,994	38,994	26,994	26,994	38,994	26,994	38,994	38,994	26,994	38,994	38,994

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 27: *Annual household income by household structure - Georgia*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
Mean	2,465	1,724	1,501	2,305	1,479	3,131	2,176	2,211	2,850	1,747	2,571	2,596
Median	964	264	435	528	678	996	877	1,008	1,157	618	1,056	1,068
1st quintile	372	144	300	218	219	420	372	392	452	372	468	526
2nd quintile	736	216	348	439	420	732	691	785	948	528	877	877
3rd quintile	1,315	307	564	778	948	1,300	1,056	1,330	1,572	705	1,404	1,449
4th quintile	2,411	872	1,320	1,615	1,836	2,628	1,770	2,628	2,630	2,192	2,628	2,628

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 28: *Annual household income by household structure - Germany*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	10,017	2,510	2,962	329	185	1,304	163	323	1,305	58	215	663
Mean	24,784	15,575	27,132	18,021	18,951	29,276	19,853	27,031	31,343	19,028	29,450	31,510
Median	26,994	14,994	26,994	14,994	14,994	26,994	14,994	26,994	32,994	20,994	32,994	32,994
1st quintile	14,994	8,994	20,994	8,994	8,994	20,994	13,794	14,994	20,994	14,994	20,994	20,994
2nd quintile	20,994	14,994	20,994	14,994	14,994	26,994	14,994	20,994	26,994	14,994	26,994	26,994
3rd quintile	26,994	14,994	26,994	20,994	20,994	32,994	20,994	32,994	32,994	20,994	32,994	38,994
4th quintile	38,994	20,994	38,994	26,994	26,994	38,994	26,994	38,994	38,994	26,994	38,994	38,994

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 29: *Annual household income by household structure - Hungary*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	13,540	1,729	3,019	499	428	2,028	225	962	2,002	41	943	1,664
Mean	6,225	520	6,430	4,487	5,231	7,410	4,855	7,081	7,744	4,698	8,018	7,999
Median	5,869	371	5,576	4,255	4,891	6,848	4,842	7,190	7,141	4,647	7,581	7,337
1st quintile	1,019	245	3,913	2,201	2,935	4,402	795	3,893	4,431	500	3,610	4,402
2nd quintile	4,891	326	4,989	3,668	4,402	5,869	3,952	6,212	6,359	3,619	6,848	6,359
3rd quintile	6,848	408	6,261	4,891	5,625	7,484	5,869	7,816	7,826	5,380	8,804	8,315
4th quintile	9,293	530	8,119	6,359	7,337	9,782	7,337	9,782	10,516	6,359	11,739	11,250

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 30: *Annual household income by household structure - Romania*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
Mean	9,092	4,086	8,303	6,387	6,456	11,510	6,931	10,416	10,902	5,229	11,170	10,340
Median	6,840	3,360	6,520	5,208	5,040	9,600	5,580	8,118	9,300	2,736	9,600	8,400
1st quintile	3,120	1,560	3,600	2,400	1,949	4,440	2,375	3,840	3,670	984	3,876	3,564
2nd quintile	5,500	2,520	5,520	4,200	3,978	7,776	4,709	6,312	7,212	1,620	7,200	6,600
3rd quintile	8,520	3,840	7,684	6,264	6,120	11,594	6,192	9,720	11,076	3,720	11,664	10,308
4th quintile	13,704	5,400	10,986	9,007	10,044	17,160	9,768	15,614	16,788	11,232	16,734	15,600

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

Table 31: *Annual household income by household structure - Russian Federation*

	ALL	1 PERSON	2 PERSONS			3 PERSONS			4 PERSONS			5 PERSONS AND MORE
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
n	11,261	1,927	1,956	688	490	1,925	182	851	1,214	29	850	1,149
Mean	2,555	1,200	2,158	1,750	1,930	3,133	2,007	2,971	3,062	1,989	3,649	3,728
Median	1,832	740	1,638	1,365	1,428	2,560	1,546	2,389	2,389	1,570	2,845	2,984
1st quintile	814	512	1,109	689	717	1,365	683	1,337	1,138	597	1,476	1,365
2nd quintile	1,468	683	1,428	1,126	1,222	2,050	1,223	1,991	1,991	1,072	2,389	2,389
3rd quintile	2,384	835	1,949	1,707	1,718	3,041	1,836	2,731	2,845	1,735	3,414	3,414
4th quintile	3,755	1,536	2,970	2,560	2,731	4,438	2,983	4,096	4,608	3,072	5,120	5,192

Note: *Number of observation, mean and median income, quintile points by individual characteristics. Monetary amount expressed in euro.*

values show large differences that should be further investigated. Moreover, at the micro level, discrepancies between couple and household income (e.g. the former larger than the latter) are spread all over the income distribution which might be reasonable (i.e. due to the deduction of compulsory alimony payments which make the household income smaller than couple income) but would require particular attention in the combined use of these variable.

In terms of questionnaire design, the questions related to individual and household income should be related to each other in order to ensure final consistency. Two main possibilities include *i)* deriving household income as the sum of individual components (in this case all household components should be collected) or *ii)* cross-checking reported individual incomes when the household income question is asked. A further cross-check is also recommendable when the choice of the period to which the income refers to (month or year) is up to the respondent because it is more likely to observe reporting errors in this case. Taking into account these cautionary remarks, the release of both individual and household complete income variables represents a clear enhancement of the ways in which the GGS data can be used in explaining economic determinants of demographic behaviours in the UNECE region.

3 Poverty

3.1 Introduction

An individual's poverty status is based on comparing his or her net equiv-alised household income with a set poverty threshold - also expressed as a monetary value. We focus in this section on the standard way of assigning poverty status. The poverty line is typically calculated by adding together the post-tax personal incomes of everyone living in the household, plus any other income accruing to the household as a whole, to obtain total net house-hold income. This amount is divided by a factor, which represents the needs of the household. One crude measure would be to divide by the number of people in the household, but as two people can live together more cheaply than two singles, and as it may be argued that children require less money than adults, it is more common to use an equivalence scale. We use the modified OECD equivalence scale, in which the first adult gets a score of 1, second and subsequent adults score 0.5, and children under 14 score 0.3. The result (total net household income divided by an equivalence scale represent-ing the needs of the household) is termed net equivalised household income (NEHI). The OECD equivalence scale is common and poverty rates reported by EUROSTAT on the basis of the EU-SILC is based on this equivalence scale.

Median NEHI is found by calculating NEHI for every individual in the sam-ple, lining them up in order, from smallest to largest, and selecting the NEHI of the person who is exactly in the middle of the distribution. Finally, a poverty line of 60% of median NEHI is calculated. Households with incomes below this figure are defined as "poor". Again, poverty rates reported by EU-ROSTAT and based on EU-SILC, is based on this definition of the poverty threshold.

This measure of poverty is relative, meaning that individuals are defined as poor or non-poor in relation to other people in their country, rather than in relation to some absolute standard of subsistence or well-being. This is common practice in countries where the basic needs for survival are more or less guaranteed; in countries where this is not the case, it is more usual to use an absolute poverty line, based on the consumption needed for subsistence.

3.2 Caveats concerning poverty measures (and income)

Whereas income and poverty are the common measures of economic wellbeing - they do have several important shortcomings that the researcher needs to be aware of. First, as reported in section 2, the GGS household income cannot be easily calculated by adding the individual specific incomes. For some countries, the number of reported sources of individual incomes is small which gives sometimes rather large discrepancies between aggregate individual income and the reported overall household income. Thus, any poverty measure must be based on the latter, which in turn may suffer from measurement error. Misreporting of income is a common phenomenon and given the range of countries and the way they differ in terms of economic development, special care is needed. Misreporting may arise for several reasons, but one issue particularly relevant for the GGS, is that households' consumption level will be driven in part by auto-consumption or consumption from home production of food. In poor rural households food tends to be a large part of consumption. Importantly, a sizeable part of this consumption is taken directly from home production. This means that consumption is not measured directly in terms of income (i.e. the goods consumed are not sold at the market from which income would be recorded). For developing countries, poverty status is consequently based on consumption level - where consumption from home production is taken into account. However, in order to calculate poverty status (as well as the poverty line) detailed information about consumption patterns is needed. The World Bank Living Measurement Surveys are specifically designed to calculate poverty in this way. In the GGS there is no way to compute poverty in this way. Still, in the poorer countries such as Bulgaria and Georgia, it is likely that home production is important, and not accounting for this may generate a downward bias in reported income levels and thus exaggerate the poverty rates.

Not many surveys have information about income, consumption patterns and household possessions at the same time. There are however some exceptions. By comparing information on assets, income and consumption expenditure from the World Bank Living Measurement Survey of Albania, Pudney and Francavilla (2006) show that there is considerable misreporting in income. In particular, wealthier households and individuals tend to under-report income, generating a significant bias in estimated poverty rates. Holding this together with the fact that poorer households might misreport income due to auto-consumption means that there is no easy way to assess the direction of the bias.

The typical way of computing poverty status in surveys such as the ECHP and EU-SILC is based on the net household income. However, as already outlined, economies of scale in household consumption are adjusted for through the use of an equivalence scale. The standard is the OECD modified equivalence scale, but there are many alternatives. For instance, the World Health Organization (WHO) operates with equivalence scales based on the typical calorie uptake necessary, which differs by age and gender. The OECD modified scale is consequently rather crude in comparison. Again, the modified OECD scale is typically applied to OECD countries. It is not clear how well this scale fit consumption patterns in countries such as Romania, Georgia and Bulgaria.

The computed equivalised income and poverty status depend on the choice of equivalence scale. Whereas it is beyond the scope of the current report to provide a detailed sensitivity analysis of how poverty rates differ for different equivalence scales, the applied analyst needs to keep in mind that his or her measure of poverty will depend critically on the choice of such a scale. This issue is perhaps particularly important given the focus on the life-course in the GGS. As demographic changes occur (e.g. childbearing, partnership formation, or death), also the household composition changes, and with it the value of the equivalence scale. For instance, if the number of household members increases (through childbearing) but the income remains the same, the traditional income measures outlined here will indicate a decline in economic wellbeing (Aasve et al., 2005).

3.3   Descriptive statistics of poverty

Table 32 provides descriptive statistics for the poverty rate based on the OECD modified equivalence scale. As expected, there are large differences across countries and household constellations. Poverty is highest in Georgia (31%) and lowest in France and Germany (20 and 19% respectively). Poverty is clearly higher among single headed households with children, though the estimates are not particularly reliable for some categories given small sample size.

One concern when considering the estimated poverty rates is that they are rather high. As we demonstrate and discuss below, the GGS poverty rates are somewhat higher than estimated rates from the EU-SILC, especially for France and Germany. Before comparing GGS and EU-SILC poverty rates, we compare poverty rates estimated on the imputed income variable and

Table 32: *Poverty rates - OECD equivalence scales*

	ALL	1 PERSON	2 PERSONS Couple without children	Single parent and 1 child	Other	3 PERSONS Couple with 1 child	Single parent and 2 children	Other	4 PERSONS Couple with 2 children	Single parent and 3 children	Other	5 PERSONS AND MORE
Bulgaria												
N	12,858	1,006	2,034	279	472	2,060	120	1,253	2,071	11	1,406	2,146
Poverty rate (OECD)	0.2343	0.3728	0.1745	0.2903	0.2415	0.1461	0.2833	0.1836	0.2279	0.5455	0.1671	0.3774
France												
N	10,079	2,642	2,915	375	197	1,074	181	239	1,340	59	211	846
Poverty rate (OECD)	0.1985	0.3452	0.0576	0.2560	0.2741	0.1378	0.3481	0.2510	0.0940	0.5932	0.2701	0.3333
Georgia												
N	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
Poverty rate (OECD)	0.3100	0.4231	0.4223	0.3349	0.3257	0.2377	0.2813	0.2665	0.2376	0.4286	0.2559	0.3313
Germany												
N	10,017	2,510	2,962	329	185	1,304	163	323	1,305	58	215	663
Poverty rate (OECD)	0.1889	0.3637	0.0459	0.2553	0.2270	0.1350	0.3497	0.2353	0.1126	0.5517	0.2837	0.2534
Hungary												
N	13,540	1,729	3,019	499	428	2,028	225	962	2,002	41	943	1,664
Poverty rate (OECD)	0.2726	0.9832	0.0878	0.2585	0.1752	0.1179	0.3022	0.1892	0.1658	0.4634	0.2185	0.2861
Romania												
N	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
Poverty rate (OECD)	0.2773	0.3548	0.1890	0.3343	0.3436	0.2042	0.3735	0.2516	0.2944	0.6316	0.2896	0.4291
Russian Federation												
N	11,261	1,927	1,956	688	490	1,925	182	851	1,214	29	850	1,149
Poverty rate (OECD)	0.2204	0.2927	0.1258	0.2863	0.2714	0.1652	0.3626	0.1645	0.2521	0.4138	0.1894	0.2950

that estimated by the original household income. The results are reported in Table 33.

In general, the poverty rates are similar when poverty is derived from the original income measure. There are, however, important exceptions. The most noticeable are the poverty rates for Hungary. With income imputed for missing values, the estimated poverty is 27.3 percent. When using the original household income (i.e. leaving out imputed observations) the poverty rate falls dramatically to a level of 12.7 percent. We find the most striking difference for one person households, where the sample falls from 1,729 to 17. Here the poverty rate with the imputed income is unrealistically high, but the contrast in sample size implies that here income is imputed for a large number of households based on a very limited set of observations. Overall, household income is imputed for almost half the sample, which clearly has an important impact on the estimated poverty rates. Interestingly, the poverty rate without imputation is similar to that of the estimates of EUROSTAT (see below). These differences in estimated poverty rates cast doubt on the reliability of household income after imputation for Hungary - especially

for those categories where income is missing in large numbers. Looking at the other countries, we find much smaller discrepancies in the poverty rates when income is not imputed. This appears to be a natural consequence of the fact that missing values for other countries are considerably smaller (i.e. smaller number of imputed values). Poverty rates are lower for Romania and Georgia where missing values of household income is also sizeable, whereas there is very little difference for France and Germany, where missing values are generally low.

Table 33: *Poverty rates - OECD equivalence scales - with and without income imputation*

	Imputation		ALL	1 PERSON	2 PERSONS Couple without children	2 PERSONS Single parent and 1 child	2 PERSONS Other	3 PERSONS Couple with 1 child	3 PERSONS Single parent and 2 children	3 PERSONS Other	4 PERSONS Couple with 2 children	4 PERSONS Single parent and 3 children	4 PERSONS Other	5 PERSONS AND MORE
Bulgaria														
	Yes	N	12,858	1,006	2,034	279	472	2,060	120	1,253	2,071	11	1,406	2,146
		Rate	0.2343	0.3728	0.1745	0.2903	0.2415	0.1461	0.2833	0.1836	0.2279	0.5455	0.1671	0.3774
	No	N	10,224	888	1,803	235	382	1,643	98	950	1,678	7	964	1,576
		Rate	0.2275	0.3795	0.1503	0.2596	0.2382	0.1430	0.3163	0.1832	0.2199	0.5714	0.1743	0.3712
France														
	Yes	N	10,079	2,642	2,915	375	197	1,074	181	239	1,340	59	211	846
		Rate	0.1985	0.3452	0.0576	0.2560	0.2741	0.1378	0.3481	0.2510	0.0940	0.5932	0.2701	0.3333
	No	N	9,571	2,549	2,743	363	185	1,041	179	190	1,296	57	170	798
		Rate	0.1975	0.3444	0.0558	0.2590	0.2811	0.1383	0.3520	0.2263	0.0949	0.5789	0.2706	0.3271
Georgia														
	Yes	N	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
		Rate	0.3100	0.4231	0.4223	0.3349	0.3257	0.2377	0.2813	0.2665	0.2376	0.4286	0.2559	0.3313
	No	N	7,017	478	597	148	205	662	89	469	881	8	736	2,744
		Rate	0.2887	0.4393	0.3601	0.3446	0.3317	0.2009	0.2135	0.2623	0.1952	0.3750	0.2351	0.3130
Germany														
	Yes	N	10,017	2,510	2,962	329	185	1,304	163	323	1,305	58	215	663
		Rate	0.1889	0.3637	0.0459	0.2553	0.2270	0.1350	0.3497	0.2353	0.1126	0.5517	0.2837	0.2534
	No	N	8,319	2,228	2,449	292	142	1,078	148	235	1,042	48	126	531
		Rate	0.1912	0.3654	0.0461	0.2671	0.2254	0.1391	0.3446	0.2000	0.1056	0.5833	0.2619	0.2542
Hungary														
	Yes	N	13,540	1,729	3,019	499	428	2,028	225	962	2,002	41	943	1,664
		Rate	0.2726	0.9832	0.0878	0.2585	0.1752	0.1179	0.3022	0.1892	0.1658	0.4634	0.2185	0.2861
	No	N	7,117	17	2,162	289	261	1,247	113	498	1,169	17	429	915
		Rate	0.1248		0.0587	0.2076	0.1226	0.1075	0.2035	0.0763	0.1377	0.1765	0.1282	0.2787
Romania														
	Yes	N	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
		Rate	0.2773	0.3548	0.1890	0.3343	0.3436	0.2042	0.3735	0.2516	0.2944	0.6316	0.2896	0.4291
	No	N	9,664	1,305	2,673	281	281	1,621	69	493	1,168	10	609	1,154
		Rate	0.2375	0.3870	0.1646	0.2847	0.3132	0.1437	0.3043	0.2028	0.2209	0.4000	0.2200	0.3744
Russian Federation														
	Yes	N	11,261	1,927	1,956	688	490	1,925	182	851	1,214	29	850	1,149
		Rate	0.2204	0.2927	0.1258	0.2863	0.2714	0.1652	0.3626	0.1645	0.2521	0.4138	0.1894	0.2950
	No	N	10,337	1,846	1,847	645	441	1,764	173	764	1,117	27	719	994
		Rate	0.2099	0.3099	0.1142	0.2729	0.2472	0.1446	0.3526	0.1361	0.2426	0.4074	0.1627	0.2847

3.4 Comparisons with poverty rates reported from EU-SILC

EU-SILC is the main data source available for estimating living standards in the European Union. The Survey also includes several non-EU countries - among them Norway and Switzerland. However, the EU-SILC does not include Russia or Georgia. Whereas EU-SILC does include Germany, the income measure in the GGS may not be comparable given the way income was reported in intervals in the GGS (as opposed to the exact values). One also needs to bear in mind that the EU-SILC is extremely detailed in its recording of personal income used to generate household income. In the GGS, we rely on the overall reported household income. The countries that the two surveys have in common are: Bulgaria, France, Germany, Hungary and Romania. Table 34 report poverty rates from EU-SILC and GGS.

Table 34: *Comparison between estimates poverty rates in GGS and EU-SILC*

	Bulgaria	France	Germany	Hungary	Romania
Poverty rate GGS imputed income	0.234	0.199	0.190	0.273	0.277
Poverty rate GGS no imputations	0.228	0.197	0.191	0.125	0.237
Poverty rate EU-SILC	0.220	0.131	0.152	0.123	0.248

It is immediately clear that the GGS overestimates poverty rates. For instance, in France, the EU-SILC poverty rate is estimated to 13%, whereas it is as high as 20% in the GGS. In Bulgaria it is estimated as 22% - the GGS estimates it to be 23.4%. There are similar discrepancies for the other countries, though we clearly find the largest discrepancies for Germany and France. It is important to bear in mind that poverty rates derived from the EU-SILC are taken from 2007. Both Bulgaria and Romania experienced sharp increases in official poverty rates from 2006 to 2007.

It is somewhat difficult to decipher the reasons behind these discrepancies. As we have seen, income imputation has an impact on estimated poverty rates - in general making them higher. But income imputation does not explain the discrepancies for Germany and France for instance.

3.5 Concluding remarks on poverty

This section has presented estimates of poverty rates based on the GGS using reported overall household income equivalised by using the OECD modified equivalence scale - the same used by EUROSTAT for estimating official poverty rates. In general, the poverty rates of the GGS are higher than those of EUROSTAT and hence EU-SILC, but not dramatically so. This raises questions about the reliability of GGS poverty estimates, and as a corollary, the reported net household income. Whereas income imputation plays a role in the overestimation of poverty rates, there also appears to be significant misreporting of income. Our recommendation when using poverty as a measure of economic wellbeing, is to construct poverty based on the original household income, at least for the Hungarian GGS sample.

4   Subjective measures of economic wellbeing

The GGS also includes subjective measures that reflect the economic conditions of the household. The first is variable *1002* which is stated as follows: "Thinking of your households' total income, is your household able to make ends meet?". Responses are given on a six point Likert scale (for Bulgaria it is on a 7 point Likert scale). The scale is made up as follows: 1) with great difficulty, 2) with difficulty, 3) with some difficulty, 4) fairly easily, 5) easily, 6) very easily. In the Hungarian version, the last label is not included. Moreover, the Bulgarian sample has an additional value category at the middle. In other words, for Bulgaria the scale has seven possible values. In contrast to the inventory variables reflecting possessions of durable goods (*1001*) and affordability (question *1003*), here the questions are included in the German GGS sample. A cross-country comparison of the distribution of this variable provides evidence of right-skewness in Bulgaria, Georgia and Russia, while it is somewhat left-skewed in the German and French samples, which means that in the former countries there is a higher prevalence of individuals who have difficulties in managing their household income, while the converse holds in the latter ones. The second variable is again subjective and is a 10 point Likert scale asking individuals about their satisfaction about their dwelling. Value 10 refers to high satisfaction whereas the value 1 refers to low satisfaction. Tables 4.1 to 4.7 reports descriptive statistics of these two variables. In addition, we also report an objective measure of the quality of the dwelling. This is constructed by taking the number of rooms divided by

the number of individuals living in the household. This serves as a check on the subjective measures just outlined.

It is again useful to compare these variables with those used in the ECHP and in EU-SILC. Variable *1002* is very similar to the version used in the ECHP. However, as for the quality of the dwelling, the ECHP provided more detail. From Appendix A we see that the ECHP contained several questions about the condition of the dwelling, and importantly, they were all objective in nature. This level of detail is followed up in the EU-SILC (variables listed in Appendix C). Instead, the GGS has one subjective measure that captures the overall quality. The ECHP and the EU-SILC also contained information about the total number of rooms, and of course the total number of household members.

Table 35: *Descriptive statistics of wellbeing measures - Bulgaria*

	ALL	1 PERSON	2 PERSONS Couple without children	2 PERSONS Single parent and 1 child	2 PERSONS Other	3 PERSONS Couple with 1 child	3 PERSONS Single parent and 2 children	3 PERSONS Other	4 PERSONS Couple with 2 children	4 PERSONS Single parent and 3 children	4 PERSONS Other	5 PERSONS AND MORE
N	12,714	995	2,004	277	464	2,043	120	1,242	2,047	11	1,393	2,118
Ends meet	2.1631	1.9568	2.0943	1.8087	2.1185	2.3612	1.7250	2.2778	2.1646	1.2727	2.3798	2.0085
Sat. dwelling	7.1087	7.2063	7.6436	6.8272	6.9365	7.0694	6.2773	7.0925	7.0408	6.4545	7.2365	6.7036
Ratio of rooms	1.0442	2.4830	1.4062	1.2536	1.3182	0.8844	0.8376	0.9755	0.7220	0.5909	0.7929	0.6188

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

5 Deprivation

5.1 Introduction

In this section, we discuss the construction of deprivation indices as an alternative to the other measures discussed. The key idea is to use several variables to produce a summated scale, which reflect an individual's level of deprivation (or lack thereof). The terms deprivation index and economic wellbeing index are used interchangeable. A high value of a deprivation index reflects low economic wellbeing and vice versa. Often the index is

Table 36: *Descriptive statistics of subjective wellbeing measures - France*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	10,000	2,626	2,906	373	193	1,070	181	226	1,336	59	195	835
Ends meet	3.4974	3.4006	3.8968	2.8552	3.1917	3.4729	2.4530	3.5044	3.4513	2.5593	3.4205	3.1832
Sat. dwelling	7.8408	7.6423	8.1605	7.2667	7.3553	7.8333	7.0276	8.2176	7.9284	6.6271	8.2227	7.6537
Ratio of rooms	1.9774	2.9705	2.1118	1.8387	1.8096	1.4336	1.3094	1.5635	1.1800	1.0847	1.2808	0.9628

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

Table 37: *Descriptive statistics of subjective wellbeing measures - Georgia*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
Ends meet	2.2750	1.7289	2.0572	1.8208	2.1447	2.3092	2.0313	2.3408	2.3771	1.8571	2.4721	2.3345
Sat. dwelling	5.9451	5.7041	6.2439	5.8302	5.7533	5.9665	5.3359	5.9944	5.8013	5.5000	6.0288	5.9756
Ratio of rooms	1.0485	2.6645	1.6635	1.4505	1.5905	1.0781	1.0599	1.1805	0.8157	0.9464	0.9378	0.7054

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

constructed on a 0 to 1 scale, zero reflecting no deprivation and the value one reflecting the maximum level of deprivation. The benefit of adopting a 0 to 1 scale is that it is consistent with measures of poverty, where an individual is typically assigned the value zero if he or she is above a certain poverty threshold and the value one if below this threshold. Thus, in applied analysis, poverty rates can be compared with the mean levels of the deprivation index, though conceptually the measures are different. Construction of deprivation indices is becoming widespread (Nolan and Whelan, 1996; Whelan et al., 2001), and has also been adopted by EUROSTAT as a measure of deprivation (EUROSTAT, 2002). There are several good reasons for measuring economic wellbeing through a composite scale. Poverty status as a measure of well-being is criticised because it divides the population

Table 38: *Descriptive statistics of subjective wellbeing measures - Germany*

	ALL	1 PERSON	2 PERSONS			3 PERSONS			4 PERSONS			5 PERSONS AND MORE
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	9,914	2,485	2,947	328	180	1,299	163	307	1,296	58	201	650
Ends meet	3.9129	3.7417	4.2121	3.3171	3.6333	3.9161	3.0307	4.0912	3.9545	2.9310	3.8607	3.7400
Sat. dwelling	8.0401	7.7151	8.4090	7.2584	7.4372	8.0368	7.2270	7.9659	8.2230	7.6379	7.8233	8.1659
Ratio of rooms	1.8093	2.6908	1.8694	1.6201	1.6730	1.3500	1.2881	1.5037	1.1829	1.0307	1.2050	1.0042

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

Table 39: *Descriptive statistics of subjective wellbeing measures - Hungary*

	ALL	1 PERSON	2 PERSONS			3 PERSONS			4 PERSONS			5 PERSONS AND MORE
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	13,503	1,719	3,016	498	423	2,027	225	959	1,997	39	939	1,661
Ends meet	3.2128	3.0204	3.3664	2.9016	3.1017	3.2886	2.8622	3.3243	3.2359	2.7692	3.3152	3.0704
Sat. dwelling	7.2572	7.1205	7.7047	6.6613	6.5341	7.2959	6.6906	7.1187	7.3549	5.6154	7.3085	6.9500
Ratio of rooms	1.0502	2.1025	1.2003	1.1472	1.1635	0.8694	0.8452	0.8955	0.7099	0.6341	0.7481	0.5688

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

into a simple poor/non poor dichotomy, based on sometimes arbitrarily chosen thresholds (Cheli and Lemmi, 1995). Of course, the dichotomy is easily overcome by using income as a measure of economic well-being. But this measure is problematic as it is difficult to assess to what extent an income loss brings about a real drop in living standards, especially in a comparative perspective. Moreover both income and poverty status are only monetary measures of well-being, whereas it is well recognised that well-being itself has many more dimensions, often non-monetary in nature (Atkinson, 2003; Bourguignon and Chakravarty, 2003). Moreover, an individual's level of deprivation is typically assigned without having to resort to an equivalence scale. Certainly, in our application of consequences of marital disruption, we expect that individuals' experiences of well-being go beyond a simple drop

Table 40: *Descriptive statistics of subjective wellbeing measures - Romania*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
Ends meet	3.0577	2.5841	3.2067	2.4556	2.6341	3.3154	2.4940	3.2405	3.1362	2.1579	3.1835	2.9295
Sat. dwelling	7.7724	7.6426	8.1029	7.4704	7.4413	7.7627	6.9518	7.8418	7.7017	7.1579	7.7703	7.4814
Ratio of rooms	1.1302	2.2930	1.3349	1.2411	1.2570	0.8704	0.8353	0.9509	0.6751	0.6579	0.7718	0.5884

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

Table 41: *Descriptive statistics of subjective wellbeing measures - Russian Federation*

| | ALL | 1 PERSON | 2 PERSONS | | | 3 PERSONS | | | 4 PERSONS | | | 5 PERSONS AND MORE |
			Couple without children	Single parent and 1 child	Other	Couple with 1 child	Single parent and 2 children	Other	Couple with 2 children	Single parent and 3 children	Other	
N	11,257	1,925	1,956	688	489	1,925	182	850	1,214	29	850	1,149
Ends meet	2.3518	2.2281	2.4121	2.0698	2.3067	2.4894	1.8352	2.4800	2.3443	1.7586	2.5059	2.3098
Sat. dwelling	5.9608	6.3928	6.6252	5.6186	6.0020	5.6042	4.9890	5.9741	5.5672	4.3793	5.8809	5.5476
Ratio of rooms	0.9832	1.7925	1.0959	1.0065	1.0388	0.7452	0.7802	0.8157	0.6437	0.5862	0.6594	0.5629

Note: *All figures are mean values. Ends meet is measured on a scale from 1 to 6, value 1 referring to "With great difficulty" and 6 referring to "Very easily". Satisfaction with dwelling is measured on a 10 point scale, 1 meaning dissatisfied and 10 highly satisfied.*

of income: some can experience a dramatic rise in monthly expenses (for example alimony payments) with a substantial change of life-styles. Moreover, a marital disruption is likely to change, sometimes dramatically, the housing situation of the individuals involved.

5.2 Construction of deprivation indices

This section gives a general outline of the construction of deprivation indices. Multiple deprivation is defined as a matter of degree. In doing so we select a

list of items indicating non-monetary deprivation in the households. These items typically take the form of simple "yes/no" dichotomies (such as the presence or absence of enforced lack of certain goods or facilities), though one may also include other items that involve more than two ordered categories, reflecting different degrees of deprivation. Here variables take the form of "yes/no" responses. Before discussing these items in more detail, we give a general overview of how the deprivation index is calculated.

Consider the general case of item k with $m = 1$ to M ordered categories, with $m = 1$ representing the most deprived and $m = M$ the least deprived situation. Let m_{ik} be the category to which individual i belongs with respect to item k. As in Cerioli and Zani (1990) we assume that the rank of the categories represents an equally-spaced metric variable, and adopt the deprivation score:

$$d_{ik} = \frac{M_k - m_{ik}}{M_k - 1}, \qquad 1 \leq m_{ik} \leq M_k \tag{1}$$

The most basic version but very often used - consists of counting the number of items representing deprivation and dividing them through the total number of deprivation items available. This is a summated scale where each item is given a weight of 1. This is for instance the way deprivation is reported by EUROSTAT based on EU-SILC data. Alternatively, one can construct weights that are derived from characteristics of the distribution of the variables. Following Betti and Verma (1999) one may want to let the weight depend on the item's power to differentiate among individuals in the population, that is, by its dispersion. This can be done by letting the weight be directly proportional to the coefficient of variation of deprivation score d_{ik}. Thus, items that affect only small proportions of the population - which can be expected to be considered more critical for the affected individuals (Aasve et al., 2007) - are given a larger weight. Another consideration is to limit the influence of those characteristics that are highly correlated with the other items of the index. This means that the weight of item k in deprivation index is taken as the inverse of an average measure of its correlation with all the variables included to calculate the index. There are many examples where items within a dimension can be correlated. In our case it is likely that the item measuring possession of colour TV is correlated with possession of a DVD player. Similarly, different items describing affordability may also be correlated. That is, if an individual finds it difficult to find the funds to pay bills, this may also mean that the same person is less able to pay loan repayments. The key idea is that by controlling for their correlation,

deprivation is not a simple sum of the items the individual does not possess nor can afford. In other words, a household reporting both items should not be counted as being two times worse off than a household reporting none of these items. The final weight is proportional to the product of the two factors: the coefficient of variation of the deprivation score, and the inverse of the average of the correlations.

The deprivation score can then be written as:

$$S_{\delta,i} = \frac{\sum\limits_k w_k(1 - d_{ik})}{\sum\limits_k w_k} \tag{2}$$

where w_k are the weights defined above. Note that (2) defines a "positive" score indicating lack of deprivation.

It is important to bear in mind that the implementation of the weighting scheme does not necessarily mean lower values of the deprivation score. The weights simply reduce the influence of those items that are highly correlated or have a high coefficient of variation with respect to the index. The adjustment of the correlation may or may not reduce the overall deprivation value (it may also increase) and the value tends to be higher (but not necessarily so) when adjusting for the coefficient of variation.

5.3 Variables reflecting economic wellbeing in the GGS

The Generations and Gender Survey contains several variables that can be used to construct a deprivation index. It might be useful to compare these variables with those available in the European Community household Panel (ECHP), which was a key data set used for applications of deprivation indices. Moreover, the ECHP was the forerunner of the now EU-SILC which also contains similar deprivation variables as those reported in the ECHP. The GGS differs in several respects to the ECHP and the EU-SILC, and whereas the ECHP and EU-SILC had a strong focus on income and work, the GGS is supposed to capture much more complex pictures of individuals' current situation and life-course experiences. Naturally, the number of variables included in the GGS to capture levels of economic wellbeing, is smaller. However, the variables included in the GGS were directly motivated from the original ones in the ECHP and EU-SILC. As a result, many of the variables

are similar. The ECHP contains 25 variables and in previous applied work, based on factor analysis, the items were grouped into five dimensions (EU-ROSTAT, 2002). They were as follows:

1. basic non-monetary deprivation;

2. secondary non-monetary deprivation;

3. lack of housing facilities;

4. housing deterioration; and

5. environmental problems (see Whelan et al., 2001 or Aasve et al., 2005 for details).

The variables are listed in Appendix A whereas the variables available for the GGS are listed in Appendix B, and the variables available in EU-SILC are listed in Appendix C. In essence, the GGS enables us to create indices that reflect the first two dimensions: 1) Basic non-monetary deprivation and 2) secondary non-monetary deprivation. Questions *1003_a* to *1003_f* are almost identical to those representing basic non-monetary deprivation in the ECHP. The variables *1001_a* to *1001_i* bear strong resemblance to those variables in the ECHP that is used for secondary deprivation.

However, some variables are different - in part reflecting technical advances and economic progress. For instance, possession of a home computer was not included in the ECHP, whereas it is in the GGS (and it is included in the EU-SILC). Moreover, possession of a second car or a second home was not part of the variables available in the ECHP. The GGS does contain additional variables useful for measuring deprivation that were not directly available in the ECHP. For instance, variables *1004_a* to *1004_d* reflect the extent in which individuals are not able to meet scheduled payments, whereas question *1005* asks whether the individual is able to make any saving at the end of the month given levels of income and expenses (these variables are included in the EU-SILC however). Tables 42 to 44 provide descriptive statistics for the variables available in the GGS.

The first set of variables listed in Table 42 regards household possessions. Interviewees are shown a list of items and asked whether they already own them; if not, they have to select whether they would like to have that specific item but cannot afford it, or do not have for other reasons. The items in the list are the following: colour TV, video recorder or DVD player, washing

Table 42: *Inventory variables of durable goods (a1001_a to a1001_i)*

		Bulgaria	France	Georgia	Hungary	Romania	Russia
Color TV	Yes, possession of item	0.928	0.965	0.662	0.975	0.895	0.914
	No, cannot afford	0.053	0.005	0.328	0.014	0.088	0.068
	No, other reason	0.018	0.030	0.010	0.010	0.017	0.018
Video/DV	Yes, possession of item	0.413	0.858	0.300	0.653	0.221	0.523
	No, cannot afford	0.260	0.028	0.601	0.093	0.381	0.245
	No, other reason	0.327	0.114	0.099	0.254	0.398	0.232
Washing machine	Yes, possession of item	0.786	0.939	0.389	0.770	0.668	0.824
	No, cannot afford	0.140	0.016	0.569	0.114	0.243	0.128
	No, other reason	0.074	0.045	0.043	0.116	0.089	0.048
Microwave	Yes, possession of item	0.281	0.836	0.072	. . .	0.162	0.160
	No, cannot afford	0.357	0.019	0.632	. . .	0.454	0.457
	No, other reason	0.362	0.145	0.296	. . .	0.384	0.384
Home computer	Yes, possession of item	0.199	0.585	0.066	0.443	0.233	0.161
	No, cannot afford	0.333	0.091	0.657	0.154	0.347	0.436
	No, other reason	0.468	0.324	0.278	0.403	0.420	0.403
Dishwasher	Yes, possession of item	0.039	0.518	0.013	0.086	0.011	0.007
	No, cannot afford	0.329	0.076	0.599	0.165	0.331	0.348
	No, other reason	0.632	0.406	0.389	0.749	0.658	0.645
Telephone	Yes, possession of item	0.835	0.962	0.594	0.885	0.699	0.670
	No, cannot afford	0.088	0.010	0.356	0.051	0.210	0.223
	No, other reason	0.076	0.028	0.051	0.064	0.091	0.107
Car/van Available	Yes, possession of item	0.502	0.865	0.122	0.568	0.275	0.311
	No, cannot afford	0.243	0.043	0.656	0.175	0.397	0.380
	No, other reason	0.256	0.091	0.222	0.257	0.328	0.309
Second car	Yes, possession of item	0.063	0.483	0.057	. . .	0.030	0.036
	No, cannot afford	0.288	0.089	0.577	. . .	0.374	0.346
	No, other reason	0.648	0.428	0.366	. . .	0.596	0.619
Second home	Yes, possession of item	0.114	0.137	0.152	. . .	0.039	0.219
	No, cannot afford	0.323	0.422	0.640	. . .	0.469	0.420
	No, other reason	0.563	0.441	0.208	. . .	0.492	0.361

Table 43: *Variables reflecting affordability*

Whether HH can afford:	Bulgaria	France	Georgia	Hungary	Romania	Russia
Keeping home adequately warm	0.817	0.389	0.186	0.937	0.851	0.801
One week holiday per year	0.215	0.228	0.087	0.348	0.273	0.205
Replacing worn out furniture	0.141	0.211	0.089	0.103	0.138	0.309
Buying new clothes	0.540	0.358	0.498	0.303	0.544	0.748
Eat meat/fish every second day	0.480	0.385	0.310	. . .	0.618	0.684
Having friends/family for drink/meal e/month	0.478	0.377	0.292	0.252	0.466	0.457

Table 44: *Variables reflecting arrears of payments*

Has HH been in arrears any time last 12 months:	Bulgaria	France	Georgia	Hungary	Romania	Russia
Rent for accommodation	0.019	0.045	0.002	0.012	0.010	0.221
Mortgage payments	0.003	0.012	0.024	0.014	0.003	0.015
Utility bills	0.266	0.050	0.334	0.137	0.142	0.231
Purchase instalments/ loan repayments	0.021	0.027	0.006	0.024	0.029	0.028
Any savings left over at end of month?	0.899	0.269	0.960	. . .	0.824	0.720

machine, microwave oven, home computer, dishwasher, telephone, a car or a van for private use, a second car, a second home. In previous analysis (e.g. EUROSTAT, 2002; Aasve et al., 2005), lack of possessing an item should only count towards derivation in so far the individual would like to have the item, but could not afford it. The key problem here is that individuals may not have an item because of their preferences. In other words, individuals may not possess a car because they prefer not to have one and not because they cannot afford it. Similarly, those living in city centres may not want to have a car because it is not practical. In these cases lack of possession should not count towards deprivation. On the other hand, this choice might be questionable for other items. For instance, as for not possessing a home computer (PC), the reasons might be computer illiteracy, which could reflect economic disadvantage. Table 42 reports the proportions of responses to the three categories and it is clear that for some variables the proportions answering no possession for other reasons is large. As an example, in Hungary only 8.6 percent possesses a dishwasher, 16.5 percent says they do not have it because they cannot afford it, and the remaining of 74.9 percent says they don't have it for other reasons. This means that for only 16.5 percent does this item count towards deprivation. It is difficult to say if this is appropriate, but without any further information about what "other reasons" entail, we decide to construct the deprivation index on the basis of what has been done earlier (i.e. consistent with EUROSTAT based on EU-SILC). That is, only when the individual states that the household cannot afford the item, does it count towards deprivation.

There are important patterns of missing values. The most striking pattern is that these deprivation variables were not included in the German GGS. The only variable included is *1005*. As a result, it is not possible to compute deprivation indices for the German GGS. Another important issue concerns the fact that variable labelling differs for the Hungarian GGS and some of the deprivation items are missing. This includes possession of washing machine,

microwave oven, a second car and a second home.

Tables 42 to 44 also show that there are important differences across countries and some of the results are somewhat unexpected. For instance, a rather low proportion of the French respondents report that they are able to keep the dwelling adequately warm. Georgia is the country in which, for almost all items, there is the greatest occurrence of responses of inability to afford them. Overall, possession of colour TV, washing machine and telephone are the items with the highest positive response. For instance, individuals reporting they own a TV set is larger than 90 percent in all the national samples, apart from Georgia. This is in contrast to items such as home computer, dishwasher, second car and second home where possession is considerably lower.

Table 44 refers to the household ability to make scheduled payments during the last 12 months. As already mentioned, these items were not available in the ECHP. In contrast, they are available in the EU-SILC. The variables are simple "yes/no" dichotomies and include 1) rent for accommodation, 2) mortgage payments, 3) utility bills, such as for electricity, water, gas, and 4) purchase instalments or other loan repayments. Again, the variables are missing for the German sample. The distribution of responses reveals that three out of the four items (i.e., rent for accommodation, mortgage payments, and instalments or other loan repayments) have very low incidence of inability to be met by the households in the sample. The only exception is Russia, in which 22.2 percent of respondents report their household has been unable to meet scheduled payments of rent for accommodation. On the contrary, there is a sizeable proportion of respondents who report that they have been unable to cope with the payment of utility bills during the previous year. It is important to note that this variable is of a less subjective nature compared to question *1003*. Here the questions concerns whether the household has indeed been unable to meet scheduled payments. Question *1003*, in contrast, asks about individuals' subjective assessment of what they can afford or not. It is also important to be aware that the questions will not always be applicable in the sense that living arrangements may be such that scheduled payments are not required (one can also imagine similar scenarios for points b) and d)). In such cases, it is not clear whether reporting no problem in payment actually reflect lower levels of deprivation. In future versions of the survey one should consider including a "not applicable" entry. As they stand, it is possible that items a) b) and d) are less useful from the point of view of the construction of deprivation indices.

Question *1005* asks if, considering all sources of income and all expenses, the household 'normally' manages to save some money. The proportions are reported in the last row in Table 44. Importantly, in order to be consistent with variables *1004*, we have here coded this variable so that a positive response means not able to save money. Thus, in the French sample, around 28 percent are not able to make any savings, whereas the proportions for the other countries are way higher. Variable *1005* is in fact available for the German sample. 38.9 percent of the German sample reported that they were unable to make savings after given levels of incomes and savings. Again, the Georgian sample is the one with the highest level of deprivation.

5.4   Descriptive statistics of deprivation

We present in this section descriptive statistics of the overall deprivation index, that is, a deprivation index based on all items available (i.e. variables listed in Tables 42 to 44). Table 45 presents results for indices divided by 1) Basic non-monetary deprivation (i.e. variables *1003_a* to *1003_f*), 2) Secondary deprivation (based on variables 1001_a to 1003_i), and 3) an index of inability to pay (variables 1004_a to *1004_d* and *1005*). The overall deprivation index is listed together with the poverty rate based on net equivalised household income and a poverty threshold of 60% of this amount, and the subjective measure referring to "ability to make ends meet".

The unweighted deprivation index is derived by simply adding up the items and divide by the total number of items available. The items are consistently rescaled so that 1 refers to the highest possible level of deprivation and 0 reflects no deprivation. As such the deprivation index is consistent with the poverty measure. We have also rescaled the subjective measure of being able to make ends meet. The original version of this variable was measured on a six value likert scale (1 to 7 for Bulgaria), but is rescaled so that 0 means making ends meet is very easily and value 1 refers to "with great difficulty. Whereas we have outlined more sophisticated ways of calculating the deprivation index above through weighting, it is useful to consider the unweighted version. In particular, EUROSTAT does not impose weights in their tables reflecting non-monetary deprivation.

There is an important issue concerning missing values for those variables referring to what households can afford (i.e. variables *1003_a* to *1003_f*). Here the set-up in the harmonized data set means that it is easy to distinguish genuine missing values. In the current version constructing the depriva-

tion index, we have assumed that a non-missing value reflect no deprivation, whereas missing values has to be taken as presence of deprivation. In its current form, it is difficult to distinguish truly non-missing values.

Table 45: *Descriptive statistics of deprivation index, poverty rate and subjective measure of making ends meet - by HH composition*

	ALL	1 PERSON	2 PERSONS Couple without children	Single parent and 1 child	Other	3 PERSONS Couple with 1 child	Single parent and 2 children	Other	4 PERSONS Couple with 2 children	Single parent and 3 children	Other	5 PERSONS AND MORE
Bulgaria												
N	12,858	1,006	2,034	279	472	2,060	120	1,253	2,071	11	1,406	2,146
Dep. Index (unweighted)	0.330	0.347	0.319	0.376	0.342	0.300	0.387	0.321	0.331	0.515	0.302	0.371
Poverty rate (OECD)	0.234	0.373	0.175	0.290	0.242	0.146	0.283	0.184	0.228	0.545	0.167	0.377
Ends meet	0.767	0.809	0.781	0.838	0.776	0.728	0.855	0.744	0.767	0.945	0.724	0.798
France												
N	10,079	2,642	2,915	375	197	1,074	181	239	1,340	59	211	846
Dep. Index (unweighted)	0.250	0.255	0.261	0.249	0.251	0.236	0.239	0.249	0.231	0.258	0.232	0.244
Poverty rate (OECD)	0.199	0.345	0.058	0.256	0.274	0.138	0.348	0.251	0.094	0.593	0.270	0.333
Ends meet	0.501	0.520	0.421	0.629	0.562	0.505	0.709	0.499	0.510	0.688	0.516	0.563
Georgia												
N	10,000	605	734	212	304	896	128	713	1,233	14	1,110	4,051
Dep. Index (unweighted)	0.547	0.552	0.539	0.565	0.562	0.544	0.577	0.544	0.540	0.639	0.540	0.549
Poverty rate (OECD)	0.310	0.423	0.422	0.335	0.326	0.238	0.281	0.266	0.238	0.429	0.256	0.331
Ends meet	0.745	0.854	0.789	0.836	0.771	0.738	0.794	0.732	0.725	0.829	0.706	0.733
Hungary												
N	13,540	1,729	3,019	499	428	2,028	225	962	2,002	41	943	1,664
Dep. Index (unweighted)	0.236	0.257	0.221	0.283	0.261	0.225	0.299	0.218	0.221	0.296	0.214	0.263
Poverty rate (OECD)	0.273	0.983	0.088	0.259	0.175	0.118	0.302	0.189	0.166	0.463	0.218	0.286
Ends meet	0.557	0.596	0.527	0.620	0.580	0.542	0.628	0.535	0.553	0.646	0.537	0.586
Romania												
N	11,986	1,522	3,111	338	358	2,086	83	632	1,505	19	801	1,531
Dep. Index (unweighted)	0.353	0.377	0.324	0.415	0.406	0.329	0.462	0.340	0.349	0.516	0.348	0.399
Poverty rate (OECD)	0.277	0.355	0.189	0.334	0.344	0.204	0.373	0.252	0.294	0.632	0.290	0.429
Ends meet	0.657	0.736	0.632	0.757	0.728	0.614	0.751	0.627	0.644	0.807	0.636	0.678
Russian Federation												
N	11,261	1,927	1,956	688	490	1,925	182	851	1,214	29	850	1,149
Dep. Index (unweighted)	0.336	0.348	0.311	0.394	0.362	0.314	0.437	0.326	0.334	0.452	0.320	0.349
Poverty rate (OECD)	0.220	0.293	0.126	0.286	0.271	0.165	0.363	0.165	0.252	0.414	0.189	0.295
Ends meet	0.730	0.754	0.718	0.786	0.739	0.702	0.833	0.704	0.731	0.848	0.699	0.738

Table 45 shows interesting differences across countries and household composition. Starting by looking at the deprivation and poverty for the overall samples, we see that they are not very different in levels. The level of deprivation appears to be higher than the poverty rate, though not for all countries, Hungary being an example. The subjective measure, however, is much higher than both the level of deprivation and the poverty rate. There are important differences across countries. France and Hungary are the countries with lowest deprivation (0.250 and 0.236 respectively) whereas Georgia is the country where deprivation is highest (0.547). As we look across the different

household compositions, we do find consistency across the three measures. In general, as poverty rate is higher, the deprivation is also higher. However, the level of deprivation is much less sensitive than the poverty rate. As discussed earlier, the estimated poverty rate differs widely for the different family constellations. In contrast, the level of deprivation is much more stable. However, all three measures move in the same direction for different household constellations. For instance, single headed households are more at risk of poverty, which is reflected by higher levels of deprivation and the subjective measure of ends meet. In general, we find high levels of deprivation among those being single and having two or more children.

5.5 Comparing non-monetary deprivation in the GGS and the EU-SILC

In this section, we make a simple comparison between deprivation reported by EUROSTAT based on the EU-SILC and items collected in GGS. Based on EU-SILC data, EUROSTAT reports material deprivation and economic strain for the EU27 countries. In particular, the measure of material deprivation refers to enforced lack of 1) a telephone, 2) a colour TV, 3) a home computer, 4) a washing machine and 5) a personal car. By taking a subsample of the GGS items we are able to construct a similar measure. Rather than reporting a material deprivation index, EUROSTAT reports the proportions of households where there is no lack of any of the items. This is also the way they report "Economic strain". Here the variables are as follows:

1. Inability to keep the home adequately warm,

2. Inability to have one week's annual holiday,

3. Inability to eat meat or fish every second day,

4. Inability to face unexpected financial expenses,

5. Arrears in mortgage payments or rent

6. Arrears in payment of utility bills,

7. Arrears on hire purchase payments and

8. Inability to make ends meet.

These items do not overlap completely with those available in the GGS. In particular, the GGS does not include an item where respondents are asked to what extent they are able to face unexpected financial expenses. Instead, we use the item where respondents are asked if they have any left over for savings after incomes and expenses. As for the item regarding inability to make ends meet, we construct a dichotomous version of the original GGS question (in the GGS the responses to this question is given on a six item Likert scale whereas for Bulgaria it is given on a 7 point scale. Table 46 presents the mean of the durables and economic strain dimensions. The figures are the mean of variables counting the number of individuals in the sample where none of the items of deprivation applies.

Table 46: *Mean values of Durables and economic strain dimensions - EU-SILC vs GGS*

	Bulgaria	France	Hungary	Romania
Durables dimension EU-SILC	0.431	0.908	0.692	0.327
Durables dimension GGS	0.512	0.872	0.679	0.363
Economic strain dimension EU-SILC	0.062	0.558	0.207	0.186
Economic strain dimension GGS	0.035	0.431	0.204	0.101

When considering the durables dimension we see that the EU-SILC and GGS produce very similar results. The figures are particularly similar for Hungary and France, whereas the discrepancy is somewhat larger for Bulgaria. The discrepancies for the economic strain dimension is larger, though this is not unexpected given that the items included in the GGS are not exactly the same as the ones used for EU-SILC. The EU-SILC and GGS measures are particularly similar for Hungary, though here we need to point out that the item regarding "any left-over savings" is not included, and as such, the GGS figure of 0.204 is probably a bit on the high side. France is problematic. The value of 0.431 from the GGS sample does not include the affordability items. When it is included, <u>no</u> households in the French GGS report no deprivation on all items. The items referring to affordability appears to be the main culprit in generating such high levels of economic strain.

5.6 Concluding remarks

We have demonstrated in this report how one can use variables in the GGS to construct deprivation indices, or in other words, composite indices that reflect economic wellbeing. The number of variables included in the GGS is much lower than in other surveys such as the ECHP or the EU-SILC. However, the variables applied here are very similar and it is likely that the deprivation index that we have created is useful in measuring economic wellbeing (or lack thereof). Looking at the country specific distributions of the overall deprivation, we see that Georgia is the most deprived country, whereas France is the least deprived country, though it is not easy to see much difference between France and Hungary. In any case, the simple descriptive results confirm our expectations. There are several problems in using these variables for constructing deprivation indices. The most obvious is that most of the variables are not included in the German GGS rendering any useful comparative analysis of Germany with respect to the other GGS countries. There are also issues concerning value labels which differs for Hungary and on one occasion for Bulgaria.

6 Conclusions

This report presents and reviews a range of variables in the GGS that can be used to measure individuals' and households' level of economic wellbeing. It is important to bear in mind that unlike the EU-SILC, the GGS is not designed to provide extensive information about economic wellbeing. Whereas the EU-SILC is *the* source of information for assessing living conditions in the European Union, the key focus of the GGS is generations and gender. As such, an important aim of this report is to assess to what extent - given limited measures - variables reflecting economic wellbeing resembles those of the EU-SILC and hence its usefulness in terms of measuring economic wellbeing for different demographic constellations and different age groups. Our opinion is that the GGS with its focus on demographic trajectories and relations between genders and generations offers an important contribution towards assessing the life-course and economic outcomes. Moreover, the GGS is important in the sense that it has a longitudinal design. That is, individuals will re-interviewed in three years follow-up waves. With consistent measures of economic wellbeing, we are not only able to assess how trajectories may have an impact on current economic wellbeing, but we are also able to assess

how demographic changes between waves are related to changes in economic wellbeing. This design will provide important insights that cannot be gained from EU-SILC.

A key aim of this report is therefore to map and assess the various measures available in the GGS and to compare them - when possible - to the measures used in the EU-SILC. Whereas the GGS is based on a common questionnaire for which all country specific surveys are based, the respective countries have powers to add additional modules or to cut questions. We see some important consequences of this when considering economic wellbeing measures. Germany is clearly problematic. Here hardly any of the deprivation variables are included and household income is only measured in discrete income bands. Clearly, the measures for Germany cannot be compared with those available for the German sample in the EU-SILC, which includes estimated poverty rates.

The report also summarises the imputation procedures applied to GGS income sources. Much more detail is available from Figari (2010). The imputations are important, but one should be aware that for some countries the original income variables contain large number of missing values. This is especially the case for Hungary. The assessment of income sources make it clear that it is not possible to construct overall household income by adding the personal income sources. In some instances, income sources are reported without actually giving the amounts received. Whereas this has some value in the income imputation process, they are of little value in assessing the actual income level and hence economic wellbeing. Section 2 gives some recommendation for further development of questionnaire design in future waves of the GGS. One possibility for ensuring quality of the overall household income is to have much more detailed information about the personal incomes. By doing so one is in a better position to perform cross checks. However, this would imply adding more questions (in spirit of the EU-SILC). Given the focus and priorities of the GGS this appears unrealistic.

Based on the household income as reported by the respondent, we have also computed poverty rates by taking a standard approach similar to that used by EUROSTAT using EU-SILC data. We have done this also for Germany and France, despite household income here being reported in income bands rather than actual incomes. Our estimates show that in those countries where household income is given by exact amounts, the estimated poverty rates are very similar to those of EU-SILC. The exceptions are Germany and France, where the GGS poverty rates are somewhat higher. The analysis shows that

this is not due to the imputation procedure implemented. Most likely it is a result of the way household income is reported in income bands. The other exception is Hungary where the number of missing values for household income is large. Here the imputation does impact the poverty rates, and our recommendation here is to stick with the original income measure if the aim is to produce reliable poverty statistics.

In section 4, we presented descriptive statistics of two subjective measures of economic wellbeing. In section 5, we presented measures of deprivation based on a range of inventory variables. The original measures in the GGS were motivated by those used in the ECHP and EU-SILC, though there is no perfect overlap. Thus, deprivation indices produced by GGS cannot be directly compared with those based on ECHP or EU-SILC. However, by using a subset of variables in GGS we can perform some consistency check. The conclusion is that measures of material deprivation are highly consistent with EU-SILC, whereas there are some important discrepancies for what is by EUROSTAT termed "economic strain". The discrepancy refers to the French GGS sample. Essentially, the French GGS appears to overstate deprivation compared to the French EU-SILC sample. Descriptive statistics shows that levels of deprivations are consistent with the subjective measures and also estimated poverty rates in that they move in same direction when the levels varies for different household constellations. The measures are also consistent in terms across country levels. France and Germany are the countries with lowest levels of economic deprivation - not matter how it is measured, whereas it is highest for Georgia.

We conclude that the economic wellbeing measures in the GGS are of decent quality, but that country differences need to be taken into account when comparative analysis is done. We also feel that the inclusion of these measures provide high value added compared to EU-SILC - especially because of the longitudinal design and its emphasis on demographic processes.

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Appendices

A   Variables used in the European Community Household Panel (ECHP) for creating deprivation index

Dimensions and items of non-monetary deprivation

1 Basic non-monetary deprivation - these concern the lack of ability to afford most basic requirements:
   Keeping the home (household's principal accommodation) adequately warm.
   Paying for a week's annual holiday away from home.
   Replacing any worn-out furniture.
   Buying new, rather than second hand clothes.
   Eating meat chicken or fish every second day, if the household wanted to.
   Having friends or family for a drink or meal at least once a month.
   Inability to meet payment of scheduled mortgage payments, utility bills or hire purchase instalments.

2 Secondary non-monetary deprivation - these concern enforced lack of widely desired possessions ("enforced" means that the lack of possession is because of lack of resources):
   A car or van.
   A colour TV.
   A video recorder.
   A micro wave.
   A dishwasher.
   A telephone.

3 Lacking housing facilities - these concern the absence of basic housing facilities (so basic that one can presume all households would wish to have them):
   A bath or shower.
   An indoor flushing toilet.
   Hot running water.

4 Housing deterioration - these concern serious problems with accommodation:
   Leaky roof.
   Damp walls, floors, foundation etc.
   Rot in window frames or floors.

5 Environmental problems - these concern problems with the neighbourhood and the environment:
   Shortage of space.
   Noise from neighbours or outside.
   Dwelling too dark/not enough light.
   Pollution, grime or other environmental problems caused by traffic or industry.
   Vandalism or crime in the area.

B   Variables used for constructing deprivation index in the GGS surveys

Questions 1003_a to 1003_f (Yes/No)

Keeping the home (household's principal accommodation) adequately warm.

Paying for a week's annual holiday away from home.

Replacing any worn-out furniture.

Buying new, rather than second hand clothes.

Eating meat chicken or fish every second day, if the household wanted to.

Having friends or family for a drink or meal at least once a month.

Questions 1001_a to 1001_j (whether or not HH possesses the item, Yes/no cannot afford/ do not have it for other reason)

A color TV

A DVD player

A washing machine

Microwave oven

A home computer

A dishwasher

A telephone

A car

A second car

A second home

Questions 1004_a to 1004_d (Has your HH been in arrears at any time during the past 12 months, that is, unable to pay as scheduled any of the following? – Yes/no)

Rent for accommodation

Mortgage payments

Utility bill, such as for electricity, water, gas

Purchase instalments or other loan repayments

Question 1005 (Considering your HH's income as well as expenses: is there any left that you could save? – Yes/No)

C Deprivation variables provided by EURO-STAT based on EU-SILC

Economic strain

Inability to keep home adequately warm (*ilc_mdes01*)
Inability to afford paying for one week annual holiday away from home (*ilc_mdes02*)
Inability to afford a meal with meat, fish, chicken every second day (*ilc_mdes03*)
Inability to face unexpected financial expenses (*ilc_mdes04*)
Arrears on mortgage or rent, utility bills or hire purchases (*ilc_mdes05*)
Arrears on utility bills (*ilc_mdes7*)
Arrears on hire purchases instalments or other loan payments (*ilc_mdes08*)
Inability to make ends meet (*ilc_mdes09*)

Durables

Enforced lack of a telephone (*ilc_mddu01*)
Enforced lack of a colour TV (*ilc_mddu02*)
Enforced lack of a computer (*ilc_mddu03*)
Enforced lack of a washing machine (*ilc_mddu04*)
Enforced lack of a personal car (*ilc_mddu05*)

Housing

Leaking roof, damp walls, floors or foundations, or in the window frames (*ilc_mdho01*)
Lack of bath or shower in dwelling (*ilc_mdho02*)
Lack of indoor flushing toilet in the dwelling (*ilc_mdho03*)
Dwelling too dark (*ilc_mdho04*)
Lack of bath, shower and indoor flushing toilet in the dwelling (*ilc_mdho05*)

Environment

Noise from neighbours or from the street (*ilc_mddw01*)
Pollution, grime or other environmental problems (*ilc_mddw02*)
Crime, violence or vandalism in the area (*ilc_mddw03*)

D   Missing response rate of deprivation items (as % of total sample)[5]

	Bulgaria	France	Georgia	Germany	Hungary	Russian Federation
1001.a	0.3	0.1	0.0	100.0	0.0	0.1
1001.b	0.8	0.0	0.0	100.0	0.0	0.3
1001.c	0.3	0.0	0.0	100.0	100.0	0.3
1001.d	0.6	0.0	0.0	100.0	100.0	0.2
1001.e	0.7	0.1	0.0	100.0	0.0	0.3
1001.f	1.0	0.0	0.0	100.0	0.0	0.9
1001.g	0.4	0.1	0.0	100.0	0.0	0.4
1001.h	0.6	0.1	0.0	100.0	0.0	0.3
1001.i	1.5	13.5	0.0	100.0	100.0	1.0
1001.j	1.2	0.1	0.0	100.0	100.0	0.4
1002	1.1	0.8	0.0	1.0	0.3	0.0
1003.a	0.0	0.0	0.0	100.0	0.0	0.0
1003.b	0.0	0.0	0.0	100.0	0.0	0.0
1003.c	0.0	0.0	0.0	100.0	0.0	0.0
1003.d	0.0	0.0	0.0	100.0	0.0	0.0
1003.e	0.0	0.0	0.0	100.0	100.0	0.0
1003.f	0.0	0.0	0.0	100.0	0.0	0.0
1004.a	0.0	0.0	0.0	100.0	0.0	0.0
1004.b	0.0	0.0	0.0	100.0	0.0	0.0
1004.c	0.0	0.0	0.0	100.0	0.0	0.0
1004.d	0.0	0.0	0.0	100.0	0.0	0.0
1005	1.3	23.0	0.0	3.9	100.0	2.6

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[5]Note that the absence of missing values for variables *1003* and *1004* is due to the fact that if respondent has not picked up a certain item it is assumed that she can (for *1003*) or cannot (for *1004*) afford it.