

Terms of reference of OECD project on the distribution of household incomes 2005/06 wave

1. Definitions

The unit of observation of the survey is the **household**. A household is defined as a collection of individuals who are sharing the same housing unit.¹ In the distribution, *each household is weighted by the number of individuals who belong to this household*. For instance, a household of four people has a weight equal to four; this is equivalent to considering a distribution in which this household is represented by four individuals with the same level of income.

Individuals are ranked according with the value of the “adjusted” disposable income per equivalent household member of the household to which they belong. For instance, if Y_i denotes the total disposable income of household i , the “adjusted” income of each member j of household i (W_{ij}) is calculated as following :

$$[1] \quad W_{ij} = \frac{Y_i}{S_i^\varepsilon}$$

where S_i is the number of members in household i and ε is the equivalence elasticity.

All income components are reported on an *annual basis and in constant prices* (prices of the most recent year provided). The total household income (Y_i) is defined as the total disposable income; it includes wages and salaries, self-employment incomes, realised property incomes, cash transfers from the general government less taxes and social security contributions paid by households. Non-cash income components (e.g. imputed rents) should be excluded. Information on the total (non-equivalised) disposable income and its component should be provided so as to allow comparisons with external data (to be reported in the sheet "Characteristics" of the Excel file).

2. Reference populations

For Tables 1, 2, 3, 6 and 6bis, three separate panels refer to the entire population, to the population of working age (18 to 65) and of retirement age (66 and over). Children (persons aged below 18) should be included among the entire population. For each of the three panels, income estimates are ranked separately; i.e. upper bound values should be specific to the three population groups, and each decile should contain 10% of the respective reference population.

3. Equivalence scale

The equivalence elasticity (ε) characterises the amount of scale economies that households can achieve. An equivalence elasticity lower than unity implies the existence of economies of scale in household needs: any additional household member needs a less than proportionate increase of the household income in order to maintain a given level of welfare. Under this assumption, the sum (over j) of individual “adjusted” incomes W_{ij} will exceed the total household disposable income by the amount of scale economies.

All the tables specified in this request should be calculated using an *equivalence elasticity* of 0.5. This means that all incomes are adjusted by the square root of the household size².

4. Income sources

The following income sources are identified:

- 1) EH, the wage and salary income of the household head, excluding employers’ contributions to social security, but including sick pay paid by governments.

¹ However, data on a family basis (if available, and only for 2005) are requested for the first time to allow a better identification of "lone parents". See Section 10.

² For instance, the income of a household with four persons would be divided by two.

- 2) ES, the wage and salary income of the household spouse, excluding employers' contributions to social security, but including sick pay paid by governments.
- 3) EO, the wage and salary income from other household members (excluding employers' contributions to social security, but including sick pay paid by governments).
- 4) K, capital income, including occupational pensions and all kinds of private transfers.
- 5) SE, self-employment incomes.
- 6) TR, social security transfers from public sources (including accident and disability benefits, old-age cash benefits, unemployment benefits, maternity allowances, child and/or family allowances, all income-tested and means-tested benefits)
- 7) TA, taxes and social security contributions paid directly by households.

While this breakdown of income sources is used for most of the tables, Table 6bis asks for a more detailed information on different types of public transfers (see below).

To the possible extent, definitions used in calculating these income sources should be close to the recommendations adopted by the "Canberra Group on household income statistics", available at: <http://www.lisproject.org/links/canberra/finalreport.pdf>.

Individual disposable income per equivalent household member can then be expressed as follows:

$$[2] \quad W_{ij} = EH_{ij} + ES_{ij} + EO_{ij} + K_{ij} + SE_{ij} + TR_{ij} - TA_{ij}$$

In addition, we define the individual market income per equivalent household member as:

$$[3] \quad M_{ij} = EH_{ij} + ES_{ij} + EO_{ij} + K_{ij} + SE_{ij}$$

In both [2] and [3], all income components are expressed in terms of equivalent household member. For instance, EH_{ij} is calculated by dividing the earning of the head by the number of household member S_j to the power of the equivalence elasticity (ϵ) - just like in [1] - and then allocated to each household member.

5. Treatment of negative income

[1] General treatment. Once equivalent household member adjustments are done, using the equivalence elasticity under consideration (see section 3), all individual components of market income (EH, ES, EO, K, SE) showing negative values should be set to zero. For instance, any negative value of self-employment income is set equal to zero.

Then, market and disposable incomes are calculated using formulas [2] and [3]. The ranking of individuals is done on the basis of these new values of disposable income. All Tables requested will be built using the same ranking (e.g. distribution held constant), even when considering specific household groups.

The mean of market income and disposable income are then computed (over all incomes e.g. zero and positive incomes)

[2] When computing the MLD, the log properties require *strictly positive income values* (see formula [4]).

Any values of *disposable income* W_{ij} *lower than 1 per cent of the mean disposable income* is set equal to 1 per cent of the mean disposable income. The "bottom coded" value of disposable income per equivalent household member is denoted by W_{ij}^* . (see Table 1 and Table 5)

Any value of *market income* M_{ij} *lower than 1 per cent of the mean market income* is set equal to 1 per cent of the mean market income.

As a result, taking into account the adjustments described above, mean income has to be re-calculated before computing the MLD.

6. Time coverage

Income distributions refer to a particular year. Trends of income distribution are analysed by comparing static distributions at several points in time: mid-1980, around 1990, mid-1990, 2000 and the most recent year for which data exist (around 2005). It is to national experts to select specific years, depending on data availability. The income-years chosen should be indicated in the Excel spreadsheet.

7. Aggregate trends in income distributions

Table 1 describes evolution of income inequality over the last decades by using deciles values and aggregate indicators of inequality. Individuals are ranked according with their *household disposable income per equivalent household member* as described in equation [1]. Separate panels refer to the entire population, to the population of working age (18 to 65) and of retirement age (over 65). Individuals falling in each of the three population groups should be ranked separately (i.e. working age persons in the first decile are those in the bottom 10% of the working age population). For each reported year, the Excel Table has the following format.

Table 1 : Evolution of income inequality through time.

Entire population

	Entire population			Working-age pop.			Retirement-age pop.		
Total number of individuals									
Total number of households									
	upper bound value ⁽¹⁾	real income	mean	upper bound value ⁽¹⁾	real income	mean	upper bound value ⁽¹⁾	real income	mean
decile 1									
.....									
Decile 10									
TOTAL	(3)			(3)			(3)		
Real median income :									
MLD ⁽²⁾									
SCV									
Gini									
Gini before taxes and transfers									
Standard error Gini (post t&t)									
Share of income to top 1% of pop									

(1) the upper bound value is the value of the real income at the upper breaking point of the corresponding decile. Therefore, the upper bound value of decile 1 corresponds to the income of the 10% up from the bottom individual (referred to as D1 value); that of decile 9, to the income of the 90% up from the bottom individual (referred to as the D9 value) and that of decile 10, to the highest (possibly top coded) income value.

(2) MLD calculations are based on “bottom coded” values W_{ij}^* (see Section 5).

(3) shaded cells are empty.

- The MLD (Mean Log Deviation) index is calculated as :

$$[4] \quad MLD = \frac{\sum_i \sum_j \log\left(\frac{\mu}{W_{ij}^*}\right)}{n}$$

where log is the natural logarithm, μ is the arithmetic mean of disposable incomes $\mu = \frac{\sum_i \sum_j W_{ij}}{n}$; and n is the total number of individuals.

- The SCV (Squared Coefficient of Variation) index is calculated as :

$$[5] \quad SCV = \frac{\text{var}(W_{ij})}{\mu^2} = \frac{\frac{1}{n} \sum_i \sum_j (W_{ij} - \mu)^2}{\mu^2}$$

- The Gini index is calculated as :

$$[6] \quad Gini = \left(\frac{2}{\mu \cdot n^2} \cdot \sum_{k=1}^n k \cdot W_k \right) - \frac{n+1}{n} = \frac{2 \text{cov}\left(W_k, \frac{k}{n}\right)}{\mu}$$

$$= \frac{\frac{2}{n} \sum_{k=1}^n (W_k - \mu) \cdot \left(\frac{k}{n} - \frac{1}{n^2} \sum_{k=1}^n k \right)}{\mu}$$

- where household incomes per equivalent household members ($W_{ij} = W_k$) are ranked in ascending order (such as $k = 1, 2, \dots, n$).

Standard errors of the Gini coefficient (post taxes and transfers) should be provided by using "bootstrap" methods. A description of the method and programming are available on the LIS site (www.lisproject.org/keyfigures/bootsstrapmethods.htm).

Data on the share of income accruing to persons in the top 1% of the population (at least in the most recent year) should also be provided.

8. Income distribution by income sources

This section analyses how various income sources affect the distribution of household disposable income and how the structure of disposable incomes varies across deciles. The income sources considered are those specified in identity [2] above.

The following tables (Table 3 in the Excel sheet) indicate the distribution across deciles of the different income sources. Separate panels refer to the entire population, to the population of working age and to that of retirement age. Individual observations are ranked *following ascending values of household disposable income per equivalent household member* (W_{ij}), just as in Table 1. Each of the panels has the following format.

Table 3: Components of disposable income by decile

	EH	ES	EO	K	SE	TR	TA	EH+ES+E S+K+ SE+TR- TA
<u>year</u>								
dec. 1								<u>100%</u>
dec. 2								<u>100%</u>
...								
dec. 10								<u>100%</u>

As an example, the shaded cell contains the **percentage** of public transfers (in DPI) received by households/individuals of decile 1 and 2 (given that households/individuals are ranked by ascending values of disposable income per equivalent household member). **Taxes should be entered with a negative sign.**

This information will also be used by the Secretariat to derive information on the structure of disposable income for units in each decile (Table 2, as requested in previous version of this questionnaire is no longer required).

An additional breakdown, limited to 2005, is requested for (private) capital income (K) into four components (adding up to 100%):

- 1) private pensions.
- 2) occupational pensions.
- 3) other private transfers.
- 4) other capital income.

9. Additional detail on public transfers

In addition to the broad income sources reported above, we would be interested in obtaining additional information on the different types of current transfers. We are aware that the type of breakdown available may differ across countries. Where possible, we would also like to distinguish between the following:

$$TR_{ij} = OAP_{ij} + DB_{ij} + OIB_{ij} + SP_{ij} + FCB_{ij} + UB_{ij} + HB_{ij} + OCB_{ij}, \text{ where}$$

- 1) OAP stands for (public) old-age cash benefits;
- 2) DB for disability benefits;
- 3) OIB for occupational injury and disease benefits;
- 4) SP for survivor benefits;
- 5) FCB for family cash benefits;
- 6) UB for unemployment benefits;
- 7) HB for housing benefits;
- 8) OCB for benefits on other contingencies.

The categorisation of public transfers follows that used in the OECD Social Expenditure Database (OECD, 1996, "Social Expenditure Statistics of OECD Member Countries). To the extent possible, all types of occupational pensions (even when compulsory) should be **excluded** from OAP (and, a fortiori, from TR) and included in (private) "capital income.

Table 6bis: Components of public transfers by decile

	OAP	DB	OIB	SP	FCB	UB	HB	OTH	TR
<u>Year</u>									
dec 1									100%
dec 2									100%
...									
dec 10									100%

As an example, the shaded cell shows the share of old age pensions in all public transfers received by individuals in the deciles 1 and 2 (given that individuals are ranked by ascending values of disposable income per equivalent household member).

10. Income inequality for sub-groups of the population

The aim of this section is to analyse level and changes in the relative position of sub-groups of the population on the income ladder; and how these sub-groups have contributed to the overall trends of income inequality (see Table 7).

Individuals are grouped in household categories depending *first* on the age of the household head (working age head, i.e. 18-65; and retirement age, i.e. 66 and over); and *second*, within each of the two groups, according to the number of adults in the family and to the number of household members in employment (work attachment).

1) households structure:

	WORKING AGE HEAD (WA)	RETIREMENT AGE HEAD (RA)
By number of adults in the household	Single adults (SA); Two and more adults (TA)	Single adults (SA); Two and more adults (TA)
By presence of children	With children (CH); Without children (NC)	
By work attachment of household members	No worker (NW); Worker (WR) One worker (1W); 2 and more workers (2W)	No worker (NW); Worker (WR) One worker (1W); 2 and more workers (2W)

Households with a working-age head are cross-classified according to each of the criteria, thus resulting in 10 groups:

- 1) WASANCWR working-age head, single adult, no children, working
- 2) WASANCNW working-age head, single adult, no children, non working
- 3) WASACHWR working-age head, single adults, with children, working
- 4) WASACHNW working-age head, single adults, with children, non working
- 5) WATANC2W working-age head, two or more adults, no children, two or more working
- 6) WATANC1W working-age head, two or more adults, no children, one working
- 7) WATANCNW working-age head, two or more adults, no children, non working
- 8) WATACH2W working-age head, two or more adults, children, two or more working
- 9) WATACH1W working-age head, two or more adults, children, one worker
- 10) WATACHNW working-age head, two or more adults, children, no workers

Household with a retirement-age head are cross-classified by the number of adults in the household and by work attachment of household members, resulting in 5 groups

- 11) RASAWR retirement-age head, single adult, one worker
- 12) RA SANW retirement-age head, single adult, no worker
- 13) RATA2W retirement-age head, two or more adults, two or more workers
- 14) RATA1W retirement-age head, two or more adults, one worker
- 15) RATANW retirement-age head, two or more adults, no worker

An adult is any individual aged 18 and above. **A worker (W) is an adult with a non-zero annual earning or self-employment income.** Therefore, for instance, an individual belongs to the WASACHNW group if he/she belongs to a household with a working-age head, with a single adult in the household, with children, and with no income from work.

Table 7 provides information for each of the above groups.

Table 7: Household structure and inequality.

	Household with a working age head				Households with a retirement age head			
	WASANCWR	WATACHNW	Total (1)	RASAWR	...	RATANW	Total (2)
Year								
Group mean disposable income in real terms								
% individuals in each group								
[a] % of individuals in:								
decile 1 ⁱ								
...								
Decile 10 ⁱ								
[b] TOTAL	100%	100%	100%		100%	100%	100%	

(1) Total, in percent of the entire population.

(2) Total, in percent of the entire population. (1) + (2) = 100%

[a] This panel *refers to individuals* across deciles, for each household type.

[b] Columns corresponding to the total for the working-age and retirement-age headed households should sum to 100%.

For households with a **head of working age and limited to the most recent year**, this version of the questionnaire also asks for information to allow a better characterisation of "workers" and of "families with children". Data on mean income and shares of persons in each group should be provided for the following categories:

Breakdown by full- and part-time work

Single adult households without children:

Working full-time

Working part-time

Single adult households with children:

Working full-time

Working part-time

Two or more adult households without children

Two or more working full-time

At least one working full-time

Others working

Two or more adult households with children

Two or more working full-time

At least one working full-time

Others working

When possible, individuals working full-time should be those defined as those usually working 30 hours or more per week (OECD definitions); when different definitions are used (e.g. based on self-reported status) this should be noted in the Excel file in the worksheet "Characteristics".

Breakdown by number of children

Single adult households with children, working:

One child

Two children

Three or more children

Single adult households with children, not-working:

One child

Two children

Three or more children

Two or more adult households with children, working:

One child

Two children

Three or more children

Two or more adult households with children, not-working:

One child

Two children

Three of more children

11. The profile of incomes according to the age of individuals

This section describes how the age-profile of household real incomes has evolved over the time and how its structure in terms of income sources has changed. This will be done by establishing for each period a static income distribution according with various age categories and by analysing how this distribution has changed over the time.

Lifetime profiles should identify the following age categories:

- 1) 0 to 17 years old.
- 2) 18 to 25 years old.
- 3) 26 to 40 years old.
- 4) 41 to 50 years old.
- 5) 51 to 65 years old.
- 6) 66 to 75 years old.
- 7) over 75 years old.

Table 9 summarises the information required for each age category.

Table 9: Distribution of household disposable income by age category.

	0-17 y.	18-25 y.	26-40 y.	41-50 y.	51-65 y.	66-75 y.	>75 y.	total
Year								
population share (%)								100%
mean disposable income in real terms								
% of individuals in :								
decile 1 ⁽¹⁾								
... decile 10 ⁽¹⁾								
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%
% share of total disposable income:								
EH+ES+EO								
K								
SE								
TR								
-TA								
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%

(1) Same ranking as in Table 1.

In addition to this breakdown by age of individuals, information is also required (for the first time) by gender. This breakdown should be provided, limited to 2005, at the bottom of Table 5.

12. Income poverty

This section identifies the proportion of individuals living in low-income households and the characteristics of the household to which they belong to.

Poverty is defined using both a "relative" and an "absolute" definition:

- Relative poverty: the poverty threshold is expressed as a given percentage (40, 50 and 60%) of the current median income in each year. Therefore, it changes (in real terms) over time.
- "Absolute" poverty: the (relative) poverty threshold remains constant (in real terms) over time. **Differently from previous version of this questionnaire**, consultants are asked to keep constant (in real terms) the relative (50% of median income) threshold **of mid-1990s** (even when data for the mid-1970s and mid-1980s are available).

We use two indicators to characterise poverty:

The headcount ratio: the number of individuals with disposable household income per equivalent member lower or equal to the poverty threshold, as a percentage of the total number of individuals in the groups considered.

The income gap expressed as % of the poverty threshold. It is calculated as the average gap between the poverty threshold and the disposable income of poor expressed as a percentage of the poverty threshold. Thus:

$$[13] \quad \text{mean poverty gap} = \frac{(z - \mu_p)}{z} = \frac{\left(\frac{1}{p} \sum_{i=1}^p \sum_j (z - W_{ij}) \right)}{z}$$

where p is the number of poor and μ_p the mean income of the poor.

$$[14] \quad \text{median poverty gap} = \frac{\left(z - \hat{\mu}_p \right)}{z}$$

where p is the number of poor and $\hat{\mu}_p$ ³ the median income of the poor.

At least for the most recent year, the poverty gap should also be calculated using the median income of the poor.

Standard errors of the headcount rate should be provided by using "bootstrap" methods. A description of the method and programming are available on the LIS site (www.lisproject.org/keyfigures/bootsstrapmethods.htm).

Table 10 gives an overview of the evolution of poverty (both absolute and relative), for the entire population. For each year, the table is as follows:

Table 10: Evolution of "absolute" and relative poverty.

	Before taxes and transfers	After taxes and transfers
Relative poverty :		
<i>Poverty threshold = 60 per cent of the current median income</i>		
Headcount ratio		
standard error of the headcount ratio		
Mean poverty gap		
Median poverty gap		
<i>Poverty threshold = 50 per cent of the current median income</i>		
Headcount ratio		
standard error of the headcount ratio		
Mean poverty gap		
Median poverty gap		
<i>Poverty threshold = 40 per cent of the current median income</i>		
Headcount ratio		
standard error of the headcount ratio		
Mean poverty gap		
Median poverty gap		
"Absolute" poverty :		
<i>Poverty threshold = 50 per cent of the median income in the mid-1990s:</i>		
Headcount ratio		
standard error of the headcount ratio		
Mean poverty gap		
Median poverty gap		

Table 11 gives a more detailed description of which kind of households are at risk of poverty, before and after accounting for net transfers (taxes and transfers). The household and age breakdown is the same as in the previous

³ The median poverty gap is defined as the extent by which, in equivalized income, the median poor person, ranked by equivalized income, falls below the poverty line, as a percentage of that line.

sections. In Table 11, the poverty threshold is set at 50% of the current median disposable income, and poverty is expressed in terms of the headcount ratio.

Table 11 : Poverty rates before and after taxes and transfers, by household type

Head count ratio

	Year 1		Year 2	Year N
	Before taxes and transfers	After taxes and transfers		
Working age head				
<i>Household structure and work attachment</i>				
1) WASANCWR				
2) WASANCNW				
...				
10) WATACHNW				
TOTAL				
Retirement age head				
<i>Household structure and work attachment</i>				
11) RASAWR				
...				
15) RATA2W				
TOTAL				
Age of individuals				
0 - 17 y				
...				
above 75y				
TOTAL				

In the first columns, poverty indicators for the 1970-period are based on market income M_{ij} (see identity [3]); individuals with **market income** lower or equal to half of the *median disposable income* are counted as poor (i.e. the poverty threshold is the same as in Table 10). In the second column, poverty indicators are based on disposable income.

For the most recent year, data on relative poverty rates are also requested for the additional categories specified in Table 7, Section 10 (to allow a better characterisation of "workers" and of "families with children").