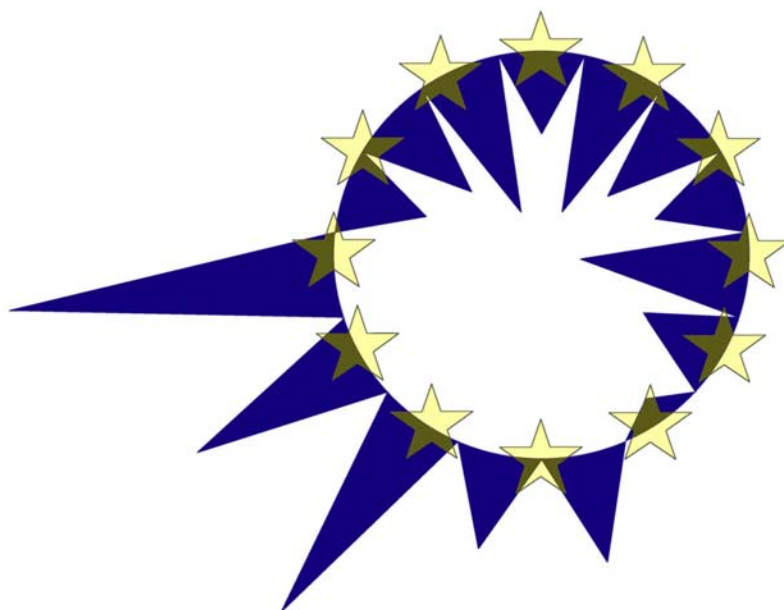


# **EUROMOD**

## **COUNTRY REPORT**



EUROMOD Country Report

**ITALY**

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and Luca Mastrofrancesco

July 2001

# **Euromod Country report - Italy**

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## 1. Tax-benefit system - outline

The main purpose of this report is to document the Italian tax-benefit system as it has been modelled in Euromod. The relationship between gross income, net income and the structure of the Italian fiscal system can be depicted as in the following table:

<p><b><i>Social Contributions</i></b></p> <p>Total Cost of Labour - Employers Social Security Contributions = <b>Gross Wages</b></p> <p>Gross wages – Employees Social Security Contributions = <b>Net Wages</b></p> <p>Self- Employment Income - Social Security Contributions = <b>Income from Self-employment Net of Contributions</b> (<i>Productive Activities Regional Tax (IRAP)</i>)</p> <p><b><i>Tax and Benefits</i></b></p> <p>Net Wages + Income from Self-employment net of contribution + Pensions + Income from real capital + Other Transfers = <b>Taxable Income</b> (<i>Family Benefits</i>)</p> <p>Taxable Income - Deductions = <b>Net Taxable Income</b> (<i>Personal Income Tax (Irpef), Additional Regional Irpef</i>) (Net taxable Income, Irpef marginal rates, regional Irpef marginal rate) = <b>Gross Income Tax</b> (See table3.2)</p> <p>Gross Income Tax- Credits = <b>Net Income Tax</b></p> <p>Gross Income from financial capital – Withdrawal Tax on Financial capital Income = <b>Net Income from Financial capital</b></p> <p>F(ICI Marginal Tax Rate, Cadastral Rent of Estates) – Deductions First House = <b>Estate Town tax (ICI)</b></p> <p>F(IRAP Marginal Tax Rates, Income from Self-employment Net of Contributions) = <b>Productive Activities Regional Tax (IRAP)</b></p> <p>Taxable Income - Net Income Tax + Net Income from Financial Capital – ICI – IRAP = <b>Net Income</b></p> <p>Net Income + Family Benefits = <b>Disposable Income</b></p>
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(\*) In brackets is the policy instrument for which the specific definition of Income is relevant

In the Italian fiscal system, taxation is levied at individual level or at the level family nucleus (nucleo familiare), a tax unit that includes the head of the household and all dependent members. Members of the household are defined “dependent” when their income does not exceed a certain threshold (equal in 1998 to Lit 5,5 Millions). Dependent members of the household among the first four persons beside the head of household are identified building a dummy variable that specifies not only whether they are dependent or not, but also the type of relationship they have with the head of household. The household considered by the Bank of Italy follows a broad definition that can easily include more than one tax unit. In particular, we can retrace the following units:

1. “Family nucleus” that includes the head of household and all the dependent persons;

2. “Individuals” who are part of the family, but declare their income separately;
3. “Households” including all family members according to the definition adopted in the Bank of Italy survey.

All the input data refer to 1998 and are monthly unless otherwise stated. Output data have been obtained using fiscal rules valid for 1998.

In the following paragraphs, we give a detailed description of all tax and benefit schemes modelled by the Italian section of Euromod. Entries in *italics* refer to benefits and contributions simulated by Euromod.

### **1.1 Income components, benefits**

The *Family Benefits* represent the only cash family benefit of the Italian system, but since they are only categorical and of small amount their incidence on overall social protection expenditure is very limited. The allowance (assegno familiare) is given to the head of the household provided that he/she is a dependent worker or pensioner and that wage or pension earnings are the main component (greater than 70%) of total household taxable income. Their amount varies according to the level of income, the number of household components, and to the presence of both parents. Furthermore, citizens whose pension is less than a certain minimum threshold (very low) can obtain a *Supplementary Pension* to reach that minimum; at the same time, citizens older than 65 year, with short contributory life or without contributory life , earn a *Social Pension*.

### **1.2 Taxes and contributions**

The main Italian income Tax (*IRPEF*) is computed applying marginal progressive rates to the increasing income brackets.

*Employers and employees contributions* are levied on gross earnings from wages. In both cases the rates of contribution vary according to firm size, sector of activity and occupational status. In the model three main work statuses are considered (blue collar, white collar and executives), and only eight sectors of activity could be taken into account following the level of detail allowed by survey data.

In general, the systems of social contributions is finalized to find resources for a wide variety of benefit schemes such as family allowances, unemployment support, invalidity and maternity (before the fiscal reform of IRAP in the 1998, it financed mainly the National Health System (*SSN : Servizio Sanitario Nazionale*)).

These contributions and other deductions (such as *Deduction for owner occupied house* and *Approximate deductions which are not simulated*) are subtracted from taxable income before deduction in order to obtain the *taxable income*.

## 2. Tax-benefit system - Detailed description

In this chapter we provide a description of relevant details of the tax-benefit system in the Italy, focusing on the way they have been modelled in Euromod. All entries in *italic* refer to the names of policy modules, and to parameters and conditions in the relevant Euromod parameter sheets (in particular *pol\_IT.xls*). In a number of instances, we mention where we make simplifying assumptions for Euromod.

Table 1 lists the policy sheets in *pol\_IT.xls*. The number under “Section” heading in column 1 refer to the sections of this report in which the various policies are described.

Note that **sben\_spen\_IT** (Social Pension), **sben\_dis\_IT** (State Non-Contributory Disability Pension) and **polIT\_Property\_IT** (Local Property Tax) are not currently simulated in the model results reported below (they are "switched off") but they are modelled in principle and can be simulated if desired.

Table 1. Policies included in *pol\_IT.xls*

Section	Policy	Description
2.1.1	<b>IT_rentY_cadY_IT</b>	Computes Rental Income and Cadastral Income relevant for Income Tax
2.1.2	<b>polIT_Property_IT</b>	Local Property Tax (ICI) (NOT CURRENTLY SIMULATED)
2.2.1	<b>EESIC_IT</b>	Employee Social Insurance Contributions
2.2.2	<b>ERSIC_IT</b>	Employer Social Insurance Contributions
2.3.1	<b>SBEN_suppPen_IT</b>	Supplementary Pension
2.4.1	<b>IT_ded_IT</b>	Compute Deductions relevant for Income Tax
2.3.2	<b>sben_spen_IT</b>	Social Pension (NOT CURRENTLY SIMULATED)
2.3.3	<b>sben_dis_IT</b>	State Non-Contributory Disability Pension (NOT CURRENTLY SIMULATED)
2.1.3	<b>IT_IT</b>	Income Tax
2.1.4	<b>IT_DEP_IT</b>	Tax on deposits
2.1.4	<b>IT_SB_IT</b>	Tax on government Bonds
2.1.4	<b>IT_OB_IT</b>	Tax on other bonds
2.1.4	<b>IT_DIV_IT</b>	Tax on dividends

2.1.5	<b>IT_severance_pay_IT</b>	Income Tax on Severance Pay
2.1.6	<b>IT_Productive_Act_IT</b>	Income Tax for self-employed on income from production activities (IRAP)
2.5	<b>SBEN_FA1a0ch_IT</b>	Family Allowance for 1 adult and 0 own children but at least one 'other' child
2.5	<b>SBEN_FA2a0ch_IT</b>	Family Allowance for 2 partners and 0 children
2.5	<b>SBEN_FA1a1ch_IT</b>	Family Allowance for 1 parent and children
2.5	<b>SBEN_FA2a1ch_IT</b>	Family Allowance for 2 parents and children
	<b>OUTPUT_std_IT</b>	Output (unit of analysis can be freely chosen)
	<b>OUTPUT_final_IT</b>	Standard Output (individual level)

## 2.1 Income taxation

In the model, first of all, the family nucleus is defined with the identification of all the dependent members; then the income of its components is summed up and taxes are levied on the overall income of the unity. This definition of income of the Family Nucleus is the base for the calculation of the incidence of deductions and the eligibility for tax credits and family allowances. For those individuals who are members of the household but that are not dependent, deductions and benefits apply separately since they are taxed separately.

### 2.1.1 Computes Rental Income and Cadastral Income relevant for Income Tax (policy *IT\_rentY\_cadY\_IT*)

Next to the personal income components, the tax base also includes imputed income from owner occupied housing, income from letting or sub-letting one's owned or rented house and other income from real estate property (income from land and tenements).

The part of rental income which is taxable is 85% (*it\_ten\_tax\_prop*).

When real estate property does not produce lease income, the taxable amount becomes Cadastral income. In order to compute Cadastral income the imputed rent variable is used, *itIMPREL* for land, *itIMPRET* for tenements and *itIMPRESH* for main house. In the first case, Cadastral income is equal to  $itIMPREL * IT\_LAND\_PAR$  (0,1558); in the second and third case, *itIMPRET* and *itIMPRESH* are compared, respectively, with income brackets of the following table and multiplied by the correspondent rate.

Table 2. Parameters to estimated Cadastral rent from imputed rent by deciles

Deciles (Lit*1000)	Parameters
0	0.09357687
1000	0.09357687
1800	0.08028825

2700	0.08310584
3200	0.11251543
4000	0.12645375
4800	0.14307834
6000	0.17840219
7200	0.25326589
9600	0.25326589

This method to calculate the Cadastral income is a simplification of the actual Italian system that defines the Cadastral rent as estimation of the value of different building typology. Starting from 1994, this value can be established at municipal level.

### 2.1.2 Local Property Tax 'ICI', (policy *polIT\_Property\_IT*)

Note that, although modelled in EUROMOD, in obtaining the model results reported below, local property taxes are not currently simulated. Since information on the amounts of property tax paid is also not included in the microdata, this tax is entirely disregarded in computing disposable incomes. ICI is a local tax on real estate property destined to any use. The real estate subjected to taxation are:

- buildings
- areas feasible for construction (*area edificabile*)
- agricultural land.

The rateable base is equal to the value of the real estate property determined according to the type of the property. The first step is to compute the Property value: Total estimated land income\**rev\_land\_par* (75) + (*cadastral rent of tenements* + *Total estimated tenement income* + *cadastral rent of main house*)\**it\_rev\_ten\_par* (100) + [ if you have Self-employment income and you are in the agricultural sector then you have *estimated land value*\*rate (this depends on income brackets, see table 3)] otherwise estimated land value.

Table 3. Parameters for ICI on land income

Brackets	Rates	Constant
0	0	0
50000	0.7	0
120000	0.5	49000
200000	0.25	40000
250000	0	12500

The Property value is then used to get the Gross ICI: Property value \*ICI\_tax\_rate (on average 0,005). This amount, net of main house deductions, equals Net ICI.

### 2.1.3 Income Tax (policy *polIT\_IT*)

The amount of gross income tax is determined summing up two components: *Irpef* and *Additional regional Irpef*. *Irpef* is obtained applying marginal progressive rates to the increasing income brackets (See Table 4); *Additional regional Irpef* is obtained applying an additional marginal rate to the same net taxable income.

Table 4. Progressive Income Tax Rates

<b>Income Brackets (millions): taxable income</b>	<b>Rate</b>	<b>Constant (millions)</b>
up to 15	0.185	0
Over 15 up to 30	0.265	2.775
Over 30 up to 60	0.335	6,75
Over 60 up to 135	0.395	16,8
Over 135	0.455	46,425

Table 5. Additional Regional Irpef tax rate

<b>Marginal Rate</b>
0.50%

All residents who produce income, even if not in Italy, are subjected to *Irpef*; total income (the sum of income from land or tenements, income from capital, income from employment, income from self-employment and others) except some deductions (*oneri deducibili*) is taxable. *Irpef* does not apply for some particular kind of income (exempted income) as Maintenance payments received, other private transfers received, Social Pension, Social Assistance Benefits, Student payments. Further, there are some typologies of income that because of their characteristics of being either *una tantum* or of special nature (concerning more than one fiscal years), are subject to separate taxation (total interest, severance pay). The *Additional regional personal income tax* is computed as 0,5% of taxable income (*tax\_inc*).

There is one extra income taxes at municipal level that has not been simulated due to lack of data.

#### 2.1.3.1 Tax credit

Tax credits are subtracted to gross income tax to obtain the value of net income tax that has to be paid. However, they cannot be allowed for a value greater than income tax. Since the incidence of



the credits on gross income tax (often resulting in an exemption from income tax for low incomes and then rapidly diminishing) decreases as gross income tax increases the whole amount of credits can be interpreted as a kind of low income support.

There are three types of tax credits: Credits for former Deductions, Credits for Work-related Expenses and Family Credits.

Credits for former Deductions (it\_it\_imputed\_tcred)

The first kind of tax credits, introduced in the latest years, is allowed as a percentage (19%) of some expenses that used to be deductible: they include interests on mortgages for the first-owned house, medical expenses, school or education fees, insurance, etc. As for deductions (see par. 2.4), the incidence of these expenses on different levels of taxable income is estimated and the resulting parameters adopted in the simulation (see Table 6).

Table 6. Imputed former deductions

<b>Income</b>	<b>Perc</b>
0	0.062
3000	0.028
4000	0.025
5000	0.028
6000	0.025
7000	0.014
9000	0.015
11000	0.016
13000	0.015
15000	0.014
17000	0.014
19000	0.012
22000	0.012
25000	0.013
30000	0.014
35000	0.015
40000	0.015
50000	0.015
60000	0.015
80000	0.013
100000	0.013
125000	0.012
150000	0.011
175000	0.011
200000	0.010
250000	0.009
300000	0.008
350000	0.007
400000	0.006
450000	0.006
500000	0.006
550000	0.003

*Work-related expenses (it\_it\_earnings\_tcred, it\_it\_se\_earnings\_tcred and it\_it\_pen\_tcred)*

*Credits for dependent workers and pensioners.* Earned Income Credit allows for a income tested amount that decreases slightly at increasing levels of taxable income as shown in Table 7. An additional credit is allowed to pensioner with income below the threshold of £ 18,000,000 (*it\_pen\_tcred\_thresh* - see table 8).

Table 7 Amount of income tested earned income credit

Income Brackets (thousands)	Amount of Tax Credit (thousands)
Up to 9,100	1,680
Over 9,100 up to 9,300	1,600
Over 9,300 up to 15,000	1,500
Over 15,000 up to 15,300	1,350
Over 15,300 up to 15,600	1,250
Over 15,600 up to 15,900	1,150
Over 15,900 up to 30,000	1,050
Over 30,000 up to 40,000	950
Over 40,000 up to 50,000	850
Over 50,000 up to 60,000	750
Over 60,000 up to 60,300	650
Over 60,300 up to 70,000	550
Over 70,000 up to 80,000	450
Over 80,000 up to 90,000	350
Over 90,000 up to 90,400	250
Over 90,400 up to 100,000	150
Over 100,000	100

Table 8 Pensioner additional credit

Up to 18,000,000	70,000
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*Tax credits for self-employed*

*Tax credits for self-employed* are completely income-tested, slightly decreasing according to increasing levels of income and allowed only for incomes below the threshold of £ 60 Millions (*it\_se\_earnings\_tcred\_lt7*).

Table 9 Self-employment income credit

Income Brackets (thousands)	Amount of Tax Credit (thousands)
Up to 9,100	700
Over 9,100 up to 9,300	600
Over 9,300 up to 9,600	500
Over 9,600 up to 9,900	400
Over 9,900 up to 15,000	300

Over 15,000 up to 30,000	200
Over 30,000 up to 60,000	100

*Family credits (it\_it\_tcred\_dep\_sp, it\_it\_tcred\_dep\_oth, it\_it\_tcred\_dep\_ch and it\_it\_tcred\_lpch)*

Tax credits for dependent relatives according to the standard fiscal definition including dependent husband or wife, dependent children and any other dependent members of the family are always allowed at any level of income.

Family credits are allowed separately to other members of the household that constitute an independent tax unit.

The amount of credits for dependent children increases with the number of children and it is higher in cases of lone parenthood according to the following table.

**Table 10. Credits for Dependent Relatives**

Tax credit for dependent spouse

Income brackets (millions)	Credit
Up to 30	1.057.552
From 30 to 60	961.552
From 60 to 100	889.552
Over 100	817.552

Tax credit for dependent children

**Spouse present in the family**

336.000	Each children
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**Lone parent**

As for dependent consort considering the first child as the consort.	
336.000	Each children after the first

Tax credit for other dependent

336.000	Each other dependent
---------	----------------------

**2.1.4 Taxation of Financial Capital**

The amount of *Tax on financial assets* is a withdrawal tax calculated with three different rates according to the type of the asset: “Government bonds” and “Other bonds” are taxed with a tax rate of 12.5%, while “Short Term Bank Deposits” are taxed with a rate of 27%. In the model the tax is subtracted to gross financial capital to determine the net amount of financial capital that is part of disposable income. Since financial capital is strongly underestimated in the Bank of Italy survey, the revenue of the tax in the model results proportionally underestimated.

#### Computation

Tax on government Bonds and Tax on other bonds is 12,5% of Interests on bonds;

The amount of tax on deposits is 27% of Interests on deposits;

The amount of tax on dividends is 12,5% of Dividends (firms with more than 20 employees).

#### **2.1.5 Severance Pay (*polIT\_severence\_pay\_IT*)**

Note that in the model results reported below, Taxes on Severance Pay are not included in total income taxes. This is because the definition adopted for the validation exercise does not contain lump sum incomes. Since lump sum incomes are not included, taxes on these incomes are disregarded as well.

An annual amount, equal to 0.0714% of gross earnings, is paid to a special fund (TFR) that collects the money necessary for the payment of severance pays.

Taxable (conventional) income from TFR is: Severance pay minus a parameter (*tfr\_par1*) multiplied by the length of time in work.

You have to compare Severance Pay/Length of time in work with the bands for computing Personal income tax (IRPEF), in this way you can get Average tax rate (conventional) on TFR income.

Table 11

<b>Tax Band</b>	<b>Tax Rate</b>
0 – 15000	0.185
15000- 30000	0.265
30000 – 60000	0.335
60000 – 135000	0.395
+ 135000	0.455

Income base (*tfr*) = TFR-(600\*Length of time in work)

## 2.1.6 Income tax on income from production activities – IRAP (*polIT\_Productive\_act\_IT*)

IRAP is a tax with wide rateable base that allows to have a very reduced and contained rate. It represents tax on productive activity collected at a regional level. It is the main regional tax, and the first important example of administrative devolution in the Italian system.

"IRAP tax" has replaced "ILOR tax", some previous social contribution and minor taxes. The tax is applicable at a rate ranging from 2.5% to 5.4% (see tab.12) on the profit, gross of interest charges and labour costs (which latter costs are therefore not deductible for IRAP tax purposes);

Tab. 12

<b>Irap tax rates (tax on productive activities)</b>	
Agriculture	0.0250
Banks and insurance.	0.0540
Other sectors	0.0425

### Computation

IRAP tax is calculated with three different rates, as a percentage of self-employment income, according to the typology of productive activities.

## 2.2 Social security contributions

Since the incidence of contributions on earned income is different according to the type of income (dependent, self-employment, pensions), occupational status and sector of activity, the model identifies these characteristics.

### 2.2.1 Employee Social Insurance Contributions (*EESIC\_IT*)

Gross earnings are obtained grossing up net earnings from Survey data according to the specific rate of contribution as shown in Table 13. Gross earnings and contributions are summed to obtain the overall value of contributions by individual.

Table 13 Employees contribution

Sectors		Blue Collars	White Collars	Executives
Industry exc. Constr. CIGS	1	9.19	9.19	0.00
Industry exc. Constr. No CIGS	2	8.89	8.89	0.00
Construction CIGS	3	9.19	9.19	0.00
Construction NO CIGS	4	8.89	8.89	0.00
Commerce and P. Services	5	8.89	8.89	8.89

<b>Services CIGS</b>	6	9.19	9.19	8.89
<b>Banking and Insurance</b>	7	8.89	8.89	8.89
<b>Agriculture</b>	8	6.54	8.54	8.54

### Computation

After identification of the different sectors:

sector 1 (Manufacturing sector with less than 50 workers)

sector 2 (Manufacturing sector with more than 50 workers)

sector 3 (Building sector with less than 50 workers)

sector 4 (Building sector with more than 50 workers)

sector 5 (Services sector with less than 50 workers and Public Administration)

sector 6 (Services sector with more than 50 workers)

sector 7 (Banking)

sector 8 (Agricultural sector)

the corresponding rates are different for Blue Collars, White Collars and Executives. These rates, are then used to multiply the gross income from employment. If this income is greater than a threshold ( $y_{\text{thresh}}$ ), the gross income minus that limit are multiplied by an additional rate (0.01). For executives in the industry and construction sectors there is a particular treatment; the social insurance contribution is mean tested.

Table 14. Employees contribution special category of executive (INPDAI)

<b>Inc. brackets</b>	<b>Rate</b>	<b>Constant</b>
0	0.0889	0
64128	0.0989	5700.97
254244	0	24503.45

#### 2.2.1.1 Self employed contributions

Self-employed pay a minimum contribution and a contribution for social security with rates varying according to the type of occupational status (see Table 15 as an example for manual workers and for the Commerce sector). The average rate is around 10%. However, due also to the strong under-reporting of self-employment income, the amount of contribution is still very limited.

Table 15. Self employed contribution

<b>Manual workers and Commerce social contribution</b>
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Brackets	Mw-Rate	Constant	Comm-rate	constant
0	0.000	2163	0.000	2163
21635	0.150	2163	0.154	2163
63054	0.160	8376	0.164	8538
105090	0.000	15102	0.000	15427

For agriculture independent workers the rate is 0,1 (*agr\_rate*) of self-employment income, whereas for professional men or partners in a company and other workers (entrepreneur or owner, assistant of a household firm) the income is multiplied by *sic\_rate* (0.06681) and then two fixed amounts (*mat\_con*, *fix\_con*) are added to it.

### 2.2.1 Employer Social Insurance Contributions (*ERSIC\_IT*)

Average rates are about 42% for employers' contributions but they vary considerably according to the size of the firm, to the work status of the dependent worker, to the sector of activity and to the level of income (above or below a ceiling of £40 Millions of net earned income). No contributions are paid over £150 Millions threshold.

Table 16. Employers contribution

Sectors (firm category)		Blue Collars	White Collars	Executives
Industry exc. Constr. (CIGS)	1	34.6	32.38	0
Industry exc. Constr. (No CIGS)	2	33.7	31.48	0
Construction (CIGS)	3	38.4	32.88	0
Construction (No CIGS)	4	37.8	32.28	0
Commerce and P. Services	5	29.75	29.75	26.8
Services (CIGS)	6	30.65	30.65	27.1
Banking and Insurance	7	29.25	29.25	28.85
Agriculture	8	32.21	28.1	26.55

### Computation

As in the case of Employee Contributions, after identifying the different 8 sectors, the corresponding rates vary according to the typology of workers (Blue Collar, White Collar and Executives). If the worker is in the Manufacturing sector with less than 50 workers and he is a "Blue Collar", "Supervisor and Intermediate", or "White Collar", then to the rate is added an additional rate (0.003).

The executives in industry and construction have a particular treatment for Employer Contribution too. The social insurance contribution is mean tested as before, but different rates apply if the worker started to work in 1996 or after.

Table 17. Employers contribution special category of executive (INPDAI+INPS)

Inc. brackets	Enrolled after 31/12/95		Enrolled before 31/12/95		
	Rate	Constant	Rate	Constant	
0	0.2466	0	0.2321	0	INPDAI
64128	0.2466	15813.9	0.2321	14884.11	
254244	0.0040	62696.5	0.0040	59010.00	
	0.0476		0.0562		INPS

### Relief

For large firms in Manufacturing and Building Industry there is a relief equal to gross income\*  $er\_rel\_rate$  (0.0016), this is an exemption from social-security taxes. A special relief is for firms that are in the Southern regions: for large firms in Manufacturing and Building Industry, small firms in Services and Banks that are in the South of Italy and whose gross income is less than certain limit ( $er\_south\_lt$ ), there is an amount ( $er\_south\_amt$ ) as relief.

## **2.3 Pensions**

For some of the simulated pensions there exist corresponding input variable from the Bank of Italy survey, except for Supplementary pensions, Social Pensions (corresponds to input variable itBENSOC), and State Non-Contributory Disability Pension (corresponds to input variable itBENDE1).

### **2.3.1 Supplementary Pension**

The Supplementary Pension is an allowance from State to pensioner, through INPS, when his contributions are not sufficient to reach the minimum income. In this case the amount of pension is integrated until reaching a threshold arranged every year. Supplementary pensions were (and still



are) the biggest mean tested benefit in Italy. In 1995, the average benefits was 5 600 000 LIT per year. It means that total expenditure was bigger than 30 billions LIT.

For the simulation, we assumed that benefits are paid for the lowest pension (data on aggregate expenditure for supplementary pensions are extremely difficult to find, official data were made available only in 1997 (for 1995) by the “Commissione Onofri”, an official commission that studied social assistance in Italy at that time).

### Eligibility

There are two different supplementary schemes, one for “Disability pensions” and one for “Other pensions”. In the first case, entitlement to receive *Supplement for Disability Pensions* exists for pensioners who receive a disability pension. In the second case, pensioners are eligible to receive *Supplement for Non-Disability Pensions*, if receiving other pensions except disability pensions. If retired before 1994, then relevant pension is not subtracted from personal income. At the same time, the relevant income is only pensioner’s income, and from January 1994 personal income added with spouse income is the relevant variable and it cannot be greater than five times the amount of the pension. If retired from January 1995, the limit of family income must be four times the amount of the pension.

The incomes that are not considered in the computation:

- income exempted from Irpef
- severance pay
- income from main house
- arrears subject to separated taxation
- the amount of pension that has to be integrated.

Table 18 Income limits 1998

	Entitled for Supplementary	Entitled for Supplementary (partially)		Not Entitled for Supplementary
		from	To	
<b>Personal Income</b>	£ 9.070.100	£ 9.070.101	£ 18.140.199	£ 18.140.200
<b>Family income(If retired before 1994)</b>	£ 36.280.400	£ 36.280.401	£ 45.350.499	£ 45.350.500
<b>Family income(If retired after 1994)</b>	£ 27.210.300	£ 27.210.301	£ 36.280.399	£ 36.280.400

### **2.3.2 Social Pension (*polSBEN\_SPEN\_IT*)**

Note that, although modelled in EUROMOD, in obtaining the model results reported below, social pensions are not currently simulated. Instead, the relevant amounts are taken from the data (for obtaining disposable income).

Social Pension is for people older than 64, who have very low income. If there is a partner in the household, the familiar means tested income has to be less than two times the upper income limit (*amount*), otherwise the upper limit.

### **2.3.3 State Non-Contributory Disability Pension (*polSBEN\_dis\_IT*)**

Note that, although modelled in EUROMOD, in obtaining the model results reported below, State Non-Contributory Disability Pensions are not currently simulated. Instead, the relevant amounts are taken from the data (for obtaining disposable income).

#### Eligibility

All residents older than 65 (*ge\_age1\_lt*) or younger than 18 (*le\_Age1\_lt*) are entitled to receive Disability Pension if personal income is less than 430.000 liras per month (*ge\_inc\_lt*) and if they are disabled. The Benefit is composed by two amounts, but in the model we computed just the sum of them (*SingPay*).

## **2.4 Deductions**

Net taxable income is obtained by subtracting from taxable income some deductible expenses: social contributions due by self-employed individuals; some medical expenses; alimony; donations to religious institutions; etc..

There is no information in the Survey on these deductible expenses that vary from household to household according to preferences and medical conditions. Nevertheless they significantly affect the fiscal revenue since they represent almost 4% of declared taxable income. The first and immediate solution would have been an imputation of a 4% deduction to all taxable incomes. However, the availability of the breakdown of these deductions made available by the Ministry of Finance shows that they significantly vary according to the level of income and the occupational status of the head of the nuclear family. While this information highlights that a proportional imputation on all taxable incomes would have biased the distribution, at the same time it suggests a

method (the estimation of different parameters according to the level of income) to obtain a satisfactory appraisal of the missing quantity. The amount of deductions is therefore approximated with a series of parameters representing their incidence at various levels of income, obtained elaborating the data of the fiscal accounts. These parameters, varying from 1% to 10%, are only approximations since they take into account only different level of income while they appear vary according to the source of income as well. There is a threshold under which deductions are imputed for a fixed amount.

#### 2.4.1 Deductions relevant for Income Tax (*pollT\_ded\_IT*)

##### Deduction for owner occupied house (*it\_it\_mh\_ded*)

If the partner haven't imputed rent from main house, the deduction is the Property Income if less than *it\_mh\_ded\_fix* (1.100.000 liras), otherwise the amount of deduction is just *it\_mh\_ded\_fix*. Instead, if imputed rent of partner is greater then zero, the deduction is always the Property (main residence) income, if it is lower than  $it\_mh\_ded\_fix/2$ , otherwise  $it\_mh\_ded\_fix/2$  is the deduction limit.

##### Approximate deductions which are not simulated, as a proportion of income (*it\_it\_imputed\_ded*)

Deduction from taxable income (if this is >0) is obtained comparing the taxable income before deduction (*tax\_inc\_bef\_ded*) with income brackets, establishing the relative rate (see table 19).

Therefore, the amount of deduction will be  $tax\_inc\_bef\_ded * rate$ .

Table 19 Imputed Deductions

Income	Perc
0	0.00445
3000	0.00234
4000	0.00196
5000	0.00156
6000	0.00140
7000	0.00072
9000	0.00100
11000	0.00099
13000	0.00080
15000	0.00074
17000	0.00063
19000	0.00050

22000	0.00048
25000	0.00054
30000	0.00063
35000	0.00078
40000	0.00102
50000	0.00134
60000	0.00174
80000	0.00211
100000	0.00251
125000	0.00279
150000	0.00291
175000	0.00294
200000	0.00296
250000	0.00298
300000	0.00315
350000	0.00368
400000	0.00307
450000	0.00338
500000	0.00303
550000	0.00257

## 2.5 Family Benefits

They represent the only cash family benefit of the Italian system, but since they are only categorical and of small amount their incidence on overall social protection expenditure is very limited. The allowance is given to the head of the family nucleus, provided that his/her work status be of dependent worker or pensioner, and that wage or pension earnings be the main component (greater than 70%) of total household taxable income. Their amount varies according to the level of income, the number of household components, and if both parents are present. The family allowance is instead reduced for the presence of each brother, sister or nephew of the head of the family nucleus (see Tables 20, 21, 22). No family benefit is allowed beyond the threshold.

In case of family nucleus with lone parent, the income brackets are increased by 3.158.000 Liras.

Table 20. Family Allowance according to levels of income (thousands). Family nucleus with both parents and at least one minor child.

Family Income brackets (thousands)	Number of family members						
	1	2	3	4	5	6	7
Up to 18,953	-	-	240,000	460,000	659,000	903,000	1,137,000
18,954 – 23,691	-	-	210,000	405,000	624,000	883,000	1,102,000
23,692 – 28,428	-	-	170,000	350,000	574,000	868,000	1,072,000
28,429 – 33,163	-	-	120,000	290,000	519,000	833,000	1,037,000
33,164 – 37,901	-	-	80,000	205,000	444,000	748,000	932,000
37,902 – 42,639	-	-	45,000	150,000	399,000	718,000	897,000

42,640 – 47,376	-	-	25,000	105,000	324,000	668,000	857,000
47,377 – 52,112	-	-	25,000	70,000	249,000	623,000	807,000
52,113 – 56,848	-	-	20,000	45,000	189,000	583,000	782,000
56,849 – 61,585	-	-	20,000	45,000	169,000	413,000	732,000
61,586 – 66,323	-	-	20,000	40,000	169,000	283,000	537,000
66,324 – 71,060	-	-	-	40,000	144,000	283,000	402,000
71,061 – 75,798	-	-	-	40,000	144,000	243,000	402,000
75,799 – 80,535	-	-	-	-	144,000	243,000	347,000
80,536 – 85,273	-	-	-	-	-	243,000	347,000
85,274 – 90,011	-	-	-	-	-	-	347,000

\* The family Allowance is reduced for each brother, sister or nephew of the head of the nuclear family according to table 3.10. The allowance is increased of 104,000 liras for each component above the 7th.

Table 21. Family Allowance according to levels of income (thousands). Family nucleus with lone parent and at least one minor child.

Family Income brackets (thousands)	Number of family members						
	1	2	3	4	5	6	7
Up to 22.111	-	175,000	325,000	725,000	975,000	1,275,000	1,570,000
22,112 – 26,849	-	140,000	290,000	655,000	935,000	1,260,000	1,530,000
26,850 – 31,584	-	95,000	240,000	585,000	865,000	1,235,000	1,485,000
31,585 – 36,321	-	40,000	180,000	510,000	800,000	1,190,000	1,445,000
36,322 – 41,060	-	35,000	130,000	405,000	710,000	1,085,000	1,310,000
41,061 – 45,797	-	35,000	85,000	335,000	650,000	1,045,000	1,270,000
45,798 – 50,533	-	-	60,000	280,000	555,000	985,000	1,220,000
50,534 – 55,270	-	-	60,000	240,000	460,000	930,000	1,160,000
55,271 – 60,006	-	-	50,000	210,000	390,000	880,000	1,125,000
60,007 – 64,745	-	-	50,000	210,000	360,000	665,000	1,065,000
64,746 – 69,483	-	-	50,000	180,000	360,000	500,000	820,000
69,484 – 74,219	-	-	-	180,000	310,000	500,000	650,000
74,220 – 78 957	-	-	-	180,000	310,000	430,000	650,000
78,958 – 83,695	-	-	-	-	310,000	430,000	560,000
83,696 – 88,433	-	-	-	-	-	430,000	560,000
88,434 – 93,171	-	-	-	-	-	-	560,000

\*The family Allowance is reduced for each brother, sister or nephew of the head of the nuclear family according to table 3.10. The allowance is increased of 104.000 liras for each component above the 7th.

Table 22 Reduction of family allowance.

	<b>Reduction</b>
Family nucleus with only one child	-20,000 for the first brother, sister or nephew -104,000 for each other brother, sister or nephew.
Family nucleus with more than one child	-104,000 for each other brother, sister or nephew.

Table 23. Family Allowance according to levels of income (thousands). Nuclear family without children.

<b>Familiar Income brackets (thousands)</b>	<b>Number of family members</b>						
	1	2	3	4	5	6	7
Up to 18,953	-	90,000	160,000	230,000	300,000	370,000	440,000
18,954 – 23,691	-	70,000	140,000	200,000	280,000	360,000	420,000
23,692 – 28,428	-	50,000	110,000	170,000	250,000	350,000	400,000
28,429 – 33,163	-	20,000	80,000	140,000	220,000	330,000	380,000
33,164 – 37,901	-	-	50,000	110,000	200,000	320,000	360,000
37,902 – 42,639	-	-	20,000	80,000	170,000	300,000	340,000
42,640 – 47,376	-	-	-	50,000	120,000	270,000	310,000
47,377 – 52,112	-	-	-	20,000	70,000	240,000	280,000
52,113 – 56,848	-	-	-	-	20,000	210,000	260,000
56,849 – 61,585	-	-	-	-	-	100,000	230,000
61,586 – 66,323	-	-	-	-	-	-	100,000

### **3. Data**

#### **3.1 General description**

The dataset used for Italy originates from the 1996 Survey of the Bank of Italy on 1995 Household Income and Wealth (SHIW95). During the period between May and September 1996, Families are interviewed about their income in the preceding calendar year (which coincides with the fiscal year). The dataset covers 8.135 households representative of the whole Italian population. About 44.8 % of the sample (3,645 families) is obtained by re-interviewing families already interviewed in 1994 (about their income in 1993).

Municipalities are first divided into 51 strata (17 regions and three classes of population size ) and then families are selected from the registry office records. The response rate was about 57 % and it tends to be inversely correlated with income, wealth and education of the head of the family. Data on wealth are considered to be less reliable than data on income. The selection bias is likely to generate a underestimation of the mean and dispersion of income, although the post stratification partially overcome the problem. Further, data inconsistencies are examined with particular attention and some questionnaires (e.g. those with savings greater than income and negative savings greater than consumption) were submitted to compatibility checks and were discarded if no explanation was found. Studies based upon the survey on 1989, show the selection bias to be moderate.

Missing values concerning some variables have been imputed (by researchers of the Bank of Italy). This procedure is necessary for elementary variables which are component of aggregate variables (i.e. it is necessary to impute the value of non-cash fringe benefits in order to compute the income of dependent workers).

The basic survey unit is the household, which is defined as “a group of individual linked by ties of blood, marriage or affection, sharing the same dwelling and pooling all or part of their incomes”. Thus in particular, only one unit is recorded where two or more nuclear families, as registered at the registry offices, are linked by ties and live together. This explains why the survey-based estimate of average family size tends to exceed the estimate based on records held at registry offices. The questionnaire does not provide all the information that would be needed to identify exactly each nuclear family. However, we used all the available information to overcome the problem by imputing the individuals to nuclear families. An alternative possibility is to divide the household in a nuclear family composed by the head of household and all the dependent persons, and single individuals who are part of the family, but declare their income separately (this method has been applied in MODIT94).

Survey data can be grossed up to aggregate values thanks to appropriate weights assigned to each household according to its probability to be included in the survey. The grossing up can be achieved at a household level - calculating the grossing up factor by dividing the total number of household (approx. 20 millions) by the number of households present in the survey-or at an individual level-total population divided by total number of surveyed. The former method is the one adopted in the model.

The available data used by the model refers to the year 1995 instead of 1998. Thus, in order to obtain data of the right order of size, all monetary variables have been up-rated to the year 1998 with different parameters obtained from Official National Accounts<sup>1</sup> according to the type of income. The up-rating factors, including both growth and the rate of inflation are as following:

<b>Updating Index</b>	<b>Updating Coeff.</b>	<b>Euromod Variables which updating factor applies</b>
E_ind	1.1446969	coEMPY
E_ind <sub>SE</sub>	1.1262135	coSLFEMY
I_ind	1.0922167	CoINVY, itDIVINC, itFINDEP, itFINOB, itFINSB, itPASINT
I_ind <sub>PR</sub>	0.8721036	CoPROPY, itIMPREH, itIMPREL, itIMPRET, itRENTYL, itRENTYT
P_ind	1.16495	itDEBT

The questionnaire defines the head of the household as “the person responsible of the family economy”. However in many cases in the data-set, while the person registered as the head of the family resulted not to earn any income, the consort had a positive income. In this cases data have been re-coded by ISTAT registering the consort as the head of the family. In SHIW95 dataset, all capital variables are collected at the household level instead of individual level and the capital is always imputed at the head of the household. Therefore income from non-financial capital is



considered as a component of the taxable income of the head of household (even if it belongs to different members of the household that are taxed separately). However the dataset provides information concerning the ownership of non-financial capital. Thus data have been re-coded by ISTAT in order to attribute the non-financial capital to the real owners. As a consequence, the number of income collectors has risen with respect to the original dataset.

A partial reconstruction of the dataset was needed to make it comparable with other countries. It has mainly concerned the redefinition of variables and codes. The transformations of Survey data needed to fulfil the common codes are shown in Tables 24.

The Italian survey collects data for up to nine members of the household. Variables 1...9 refer only to the members of the household over 16 years old.

Table 24 *Description of the variables*

Variable name	Definition	SHIW Variables used
<i>Idm</i>	Household identifier	
<i>Type</i>	Category of household	PARENT(see code C5)
<i>dpt</i>	Geographical code	IREG
<i>Ponder</i>	Weighting coefficient	PESOFI
<i>Monloy1</i>	Monthly rent payment	TFITTO
<i>Monloy2</i>	Gross mortgage interest	
<i>Kpital</i>	Total household investment income	KYC (gross value of YC)*
<i>ycf1</i>	Interests on Bank deposits	YCF1is (gross value of YCF1)*
<i>ycf2is</i>	Interests on Government bonds	YCF2is (gross value of YCF2)*
<i>ycf3is</i>	Interests on other bonds	YCF3is (gross value of YCF3)*
<i>ycf4</i>	Passive interests	YCF4
<i>Ycr</i>	Real capital	YCR
<i>Nbpers</i>	Number of persons in the household	NCOMP
<i>an 1...8</i>	Age of child 1...8	ANASC
<i>sex 1...5</i>	Sex of adult 1...5	SEX
<i>age1...5</i>	Age “	ETA
<i>csc1...5</i>	Work status	APQUAL, APNONOC (see C1)
<i>statut1...5</i>	Occupational status	APSETT, ASNONOC (see C2 )
<i>matri1...5</i>	Marital status	STACIV (see C3 )
<i>ysal_gross1...5</i>	Gross wage	
<i>ysal1...5</i>	Net wage (Gross wage-employees SIC)	KYL (gross value of YL)*
<i>Lbr_cost1...5</i>	Total Labour Costs	
<i>cho1...5</i>	Unemployment Benefit	CIG
<i>pen1...5</i>	Current state pension	KYTP(gross value of YTP)*
<i>inc1...5</i>	Self Employment Income	KYM*
<i>otres1</i>	Other income	(KYTA *-CIG)
<i>curred1...5</i>	Current Education Level	
<i>hrs1...5</i>	Weekly hours of employment	
<i>nmtb1...5</i>	Non mean tested benefits	
<i>tenure1...5</i>	Tenure	
<i>Propinc1...5</i>	Individual investment income	
<i>Privpens1...5</i>	Private pension	
<i>ecsect1...5</i>	Sector of activity	
<i>lien2...5</i>	Relationship with head of household	PARENT (see C4)

\*Gross values from Mastrict Model, see infra.

<sup>1</sup> See Istat (1980-97)

Table 25: RELTOHOH codification (Relationship with household head)

EUROMOD categorisation	SHIW variables code	Database variable (Reltohoh) code
0 = Self	Parent = 1	Reltohoh = 0
1 = Spouse (married)	Parent = 2 (Spouse/Partner ) and Staciv = 1 (legal marital status = married)	Reltohoh = 1
2 = Partner (cohabiting)	Parent = 2 (Spouse/Partner) and Staciv >1 (legal marital status = single, separated/divorced, widow)	Reltohoh = 2
3 = Son/daughter	Parent = 3 (Son, daughter)	Reltohoh = 3
4 = Parent	Parent = 4 (Parent)	Reltohoh = 4
5 = Grandparent 6 = Grandchildren 7 = Brother /sister 8 = Parent in law 9 = Son in law, daughter in law 10 = Other relative	Parent = 5 (other relative/relative in law)	Reltohoh = 10
11 = Other non-relative	Parent = 6 (other non-relative)	Reltohoh = 11

Table 26: MARSTAT codification (Legal marital status)

EUROMOD categorisation	SHIW95 variable code	Database variable (MARSTAT) code
1=Single	STACIV=2	MARSTAT=1
2=Married	STACIV=1	MARSTAT=2
3=Separated	STACIV=3	MARSTAT=3
4=Divorced		
5=Widowed	STACIV=4	MARSTAT=5

Table 27: EDUC codification (Education)

EDUC code = EUROMOD categorisation	SHIW95 variable code
EDUC=1 (Primary)	STUDIO=2
EDUC=2 (Lower secondary)	STUDIO=3
EDUC=3 (Upper secondary)	STUDIO=4, 5; (4 =Vocational School; 5=High School)
EDUC=4 (Tertiary)	STUDIO=6,7,8; (6=short degree; 7=degree; 8=Specialization)
EDUC=5 (None)	STUDIO=1

Table 28: CITID codification (Citizenship)

CITID code = EUROMOD categorisation	SHIW95 variables code
CITID=1 (this country)	ENASC="."
CITID=2 (Other EU)	ENASC=1,2; (1=Eastern Europe, 2=Western Europe)
CITID=3 (Other)	ENASC=3,4,5,6,7; (3=North America, 4=Suth and Central America, 5=Africa, 6=Asia, 7=Oceania)

\*Since individual citizenship could depend on parents place of birth or could change with marriage we could use also the information provided by ENASC for other household members.

Table 29: Aggregation of net income variables (SHIW95)

Name <sup>2</sup>	Description	Questionnaire reference: Section or annexes and name of disaggregated variables
y	Net disposable income (yl+yt+ym+yc)	
yl	Net income from employment (yl1+yl2)	
yl1	Net wage	B1: YLM
yl2	Non monetary integrations	B1: YLNM
yt	Pensions and net transfers (ytp+yta)	
ytp	Pensions and arrears (ytp1+ytp2)	
ytp1	Pensions	B5: TPENS × MESIPEN
ytp2	Arrears	B5: TARRET
yta	Other transfers (yta1+yta2+yta3)	
yta1	Cig	B6: YTB1, YTB2,
yta2	School 's grant	YTB3, YTC1, YTC2, YTC3, YTC4, YTC5, YTC6, YTC7.
yta3	Alimony cheques	B6: YTD1.
ym	Self-employment net income (ym1-ym2)	B6: YTD2, YTD3, YTD4.
ym1	Self-employment income	
ym2	Depreciation (-)	B2: YM. B3: YM. B4: COMPFISS+DIVIDUT (less than
yc	Capital income (ycf+ycr)	20 employed).
ycr	Real estate income (ycr1+ycr2+ycr3)	B2: AMMORT. B3: AMMORT
ycr1	Profits	
ycr2	Effective rents	
ycr3	Imputed rents	B4: COMPFISS+ DIVIDUT (more than 20 employed)
ycf	Financial income (ycf1+ycf2+ycf3-ycf4)	D1: AFFEFF. D2: AFFEFF.
ycf1	Interests on deposits	D: (TFITIMP× 12). D1: AFFIMP (excluding real estate
ycf2	Interests on State bonds	used in prod. activity by self employed)
ycf3	Interests on other bonds	
ycf4	Interest's payments (-)	C: (C41A1+C41A3+C41A4+ C41A5+C41A6+C41B1+C41B2)×(RATE1). C: (C41C1+C41C2+C41C3+C41C4+C41C5)×(RATE2). C: (C41D1+C41D2+C41E1+C41E2+C41E3+C41E4+C41E 5+C41F1+C41F2+C41F3+C41G1+C41G2+C41G3+C41 H)×(RATE3) C: (TDEB95A+TDEB95B)×(RATE3)

<sup>2</sup> The income variables listed below are included in the file MERGE95.

Table 30: OCCUP categorisation (Occupation)

Alternative categorisation: variable OCCUP	SHIW categorisation: variables APQUAL / ASNONOC
1 = Senior Officials and Managers (ISCO category)	ASNONOC / APQUAL = 5 (MANAGER, HEAD MASTER, MAGISTRATE, UNIVERSITY TEACHER)
2 = Professionals (ISCO category)	ASNONOC / APQUAL = 6 (PROFESSIONAL)
3 = Supervisor and Intermediate Decision Position (similar to the item 3 “Technicians and associate professionals” in ISCO categorisation)	ASNONOC / APQUAL = 4 (WHITE COLLAR (HIGH LEVEL)) ASNONOC / APQUAL = 3 (SCHOOL TEACHER)
4 = White Collar (low level) (Probably it covers the items 4 “Clerks” and 5 “Services and Sales Workers” in ISCO categorisation)	ASNONOC / APQUAL = 2 (WHITE COLLAR (LOW LEVEL))
7 = Employer or Self-employed non included in Professionals (Partially similar to the item 7 “Craft and Trades Workers” in ISCO categorisation)	ASNONOC / APQUAL = 7 (SOLE PROPRIETOR) ASNONOC / APQUAL = 8 (SELF EMPLOYED/CRAFTSMAN) ASNONOC / APQUAL = 9 (OWNER, ASSISTANT OF A FAMILY FIRM) ASNONOC / APQUAL = 10 (PARTNER/MANAGING AGENT IN A COMPANY)
9 = Blue collars (probably it covers the items 6 “Skilled agricultural”, 8 “Elementary occupations” and 9 “Plant and machine operators” in the ISCO categorisation)	ASNONOC / APQUAL = 1 (BLUE COLLAR AND SIMILAR POSITION)

The variable ASNONOC have the same categorisation as APSETT .

Caution: the SHIW95 and thus the alternative categorisation does not explicitly consider the item “ 0 “ (=Armed Forces) of the ISCO categorisation, thus correspondent individuals must be included in the other items (1,3,4 and 9 in the Alternative Categorisation).

Table 31: INDUS categorisation (INDUSTRY)

INDUS code = EUROMOD categorisation	SHIW95 variable code
INDUS =1 (Agriculture)	APSETT=1 (Agriculture, Hunting, Silviculture, Fishing, Fish-breeding and linked services)
INDUS =2 (Industry)	APSETT=2,3 (2=Mining, Food, Beverage, Textile, Clothing, Leather, Wood, Paper, Chemistry, Metals, Other Manufacturing; production and distribution of Energy, Water, Gas; 3=Building Industry)
INDUS =3 (Services)	APSETT=4 -10 (4=Trade, Shops, Hotels, Car and Motorcycle Repairs; 5= Transports, Storing, Communications; 6=Banking, Insurance, Finance; 7=real estate services, Hiring, Research, Computer and Other Managerial and professional activities; 8=Domestic Help, other Private Services; 9=Public Administration, Defence, Health, education, other public services; 10=International Organisations)

Table 32: EMPSTAT code (Employment Status)

EUROMOD categorisation	SHIW95 variable code	Database variable (EMPSTAT) code
1 = Farmer		
2 = Employer or Self Employed	APQUAL = 6-10 ( 6 = PROFESSIONAL MAN; 7 = ENTREPRENEUR; 8 = SELF EMPLOYED; 9 = OWNER, ASSISTANT OF A FAMILY FIRM; 10 = PARTNER IN A COMPANY.)	EMPSTAT= 2 (EMPLOYER OR SELF-EMPLOYED)
3 = Employee	APQUAL =1-5 (1= BLUE COLLAR, AND SIMILAR POSITION; 2=WHITE COLLAR (LOW LEVEL); 3=TEACHER; 4=WHITE COLLAR (HIGH LEVEL); 5= MANAGER, HEAD MASTER, MAGISTRATE, UNIVERSITY TEACHER).	EMPSTAT= 3 (EMPLOYEE)
4 = Pensioner	APQUAL = 15, 16 (15 = RETIRED FROM WORK; 16 =RETIRED NOT FROM WORK)	EMPSTAT= 4 (PENSIONER)
5 = Unemployed	APQUAL =11, 12 (11 = SEEKING FIRST OCCUPATION; 12= UNEMPLOYED)	EMPSTAT= 5 (UNEMPLOYED)
6 = Student	APQUAL =17	EMPSTAT= 6 (STUDENT)
7 = Inactive	APQUAL = 13, 14, 18 (13 = HOUSEWIFE; 14 = INDEPENDENTLY WEALTHY; 18 = PRE SCHOOL AGE CHILD).	EMPSTAT= 7 (INACTIVE)
8 = Other	APQUAL=19 (19 = SERVING IN THE ARMY)	EMPSTAT= 8 (SERVING IN THE ARMY)

Caution: the SHIW95 and thus the Database categorisation does not explicitly consider the item “ 1 “ (=Farmer) of the EUROMOD categorisation, thus correspondent individuals are possibly included in the other items (2, 3 in the EUROMOD/Database Categorisation)

Table 33: HOUSE code (Housing tenure)

HOUSE code = EUROMOD categorisation	SHIW95 variables code
HOUSE =1 (Social rented)	GODABIT=2 (RENTED) and TIPOAFF= 1, 5, 6 (1= CONTROLLED RENT, 5= SOCIAL, 6= COUNCIL HOUSE)
HOUSE =2 (Other rented)	GODABIT =2 (RENTED) and TIPOAFF=2, 3, 4, 7,,” (2= NOT CONTROLLED RENT, 3=RENT FOR USE OF GUESTS, 4= INFORMAL, 7= OTHER)
HOUSE =3 (Owned on mortgage (loan))	GODABIT=3 (WITH RIGHT OF REDEMPTION)
HOUSE =4 (Owned outright)	GODABIT=1 (PROPERTY)
HOUSE =5 (Other)	GODABIT=4, 5 (4=USUFRUCT, 5= FREE USE)

Table 34: Value of financial capital by type: categorisation

Categorisation: for the following 26 variables codes are:

- 0 if  $Z = 0$
- 1 if  $Z \leq 2\text{ml.}$
- 2 if  $2 < Z \leq 4\text{ml.}$
- 3 if  $4 < Z \leq 8\text{ml.}$
- 4 if  $8 < Z \leq 12\text{ml}$
- 5 if  $12 < Z \leq 16\text{m}$
- 6 if  $16 < Z \leq 24\text{m}$
- 7 if  $24 < Z \leq 36\text{m}$
- 8 if  $36 < Z \leq 70\text{m}$
- 9 if  $70 < Z \leq 140\text{m}$
- 10 if  $140 < Z \leq 300\text{m}$
- 11 if  $300 < Z \leq 600\text{m}$
- 12 if  $600 < Z \leq 1\text{bil}$
- 13 if  $1 < Z \leq 2\text{bil}$
- 14 if  $Z > 2\text{bil.}$

where Z is the amount the considered variable.

m=1,000,000. bil=1,000,000,000.

- c41a1 = Bank current account amount
- c41a3 = Personal savings book amount
- c41a4 = To bearer savings book amount
- c41a5 = Certificate of deposit amount
- c41a6 = Repurchase agreement amount
- c41b1 = Postal accounts, deposits amount
- c41b2 = Postal interest bearings bonds amount
- c41c1 = Treasury Bills (BOT) amount
- c41c2 = Treasury Certificate (CCT) amount
- c41c3 = Long Term Treasury Bonds amount
- c41c4 = Zero Coupon Bonds amount
- c41c5 = Other Government Bonds amount
- c41d1 = (non Government) bonds amount
- c41d2 = Investment funds shares amount
- c41e1 = Stocks of listed companies amount
- c41e2 = c41e1: of privatised companies
- c41e3 = Unlisted companies: stocks amount
- c41e4 = Shareholding (limited companies) amount
- c41e5 = Shareholding (partnership) amount
- c41f1 = Estate management at Bank amount
- c41f2 = Estate management at SIM amount
- c41f3 = Estate management trust companies amount
- c41g1 = Foreign Government bond amount
- c41g2 = Foreign stocks, holding amount
- c41g3 = Other foreign assets amount
- c41h = Lending to cooperative amount

The following five variables enter with negative sign.

- tdeb95a = Debts for real estate purchase, renewal amount
- tdeb95b = Debts for valuable goods purchase amount
- DEBCR951 = Building/estate long/medium run debts
- DEBCR952 = Firm investment long/medium run debts
- DEBCR953 = Financial trust/bank short run debts

Categorisation: amount.

Table 35: SELFEMP code (Self-employment activity type)

Database variable (SELFEMP) code	SHIW95 variable (PROF) code
SELFEMP=1 (entrepreneur)	PROF=1 (entrepreneur)
SELFEMP=2 (professional)	PROF=2 (professional)
SELFEMP=3 (self-employed)	PROF=3 (self-employed)
SELFEMP=4 (family firm)	non-defined
SELFEMP=5 (partner/manager in companies)	non-defined

### 3.2 Grossing-up and correction for Tax Evasion

The Bank of Italy’s Survey collects data on income values net of taxes (Personal Income Tax and contributions) and including benefits. The grossing up procedure from the net values to the gross ones, needed as an input for the microsimulation model is not straightforward given the high rate of under-reporting of income that characterises declarations to the fiscal authorities. Comparisons with the aggregate values, indicate that survey data benefit of a more truthful declaration of effective income. The value of Survey disposable income is therefore made of two components. The first one resulting from the amount of gross income that is declared to the Fiscal Authorities and on which taxes are paid (or benefits received). The second one which is the part of gross income hidden to the Fiscal Authorities but declared to the interviewers of the Bank of Italy<sup>3</sup>. When modelling the tax benefits system these behaviours are taken into account to avoid generating aggregate results of the fiscal revenue that reflect potential but not effective liabilities. One way of taking them into account is by the estimation of the evasive/elusive behaviour according to households’ characteristics- mainly level and type of income - in order to correct the income figures declared to the survey interviewers.

The gross income data are provided by ISTAT as results of a simulation with “Mastricht” microsimulation model using the Bank of Italy dataset. The model uses net income variables as input, the used variables are obtained by slightly modifying the original ones in the Bank of Italy dataset (see table 36).

The Mastrict model includes, along with personal income tax and capital taxation, rates of fiscal evasion which allow to derive tax liabilities consistent with fiscal data according to the following steps :

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<sup>3</sup> Part of the *non-declared* component, however, is probably due to elusion and tax-expenditure in general that are not easily detected within the microsimulation model.

Self-employment net Income from survey data is corrected for under reporting obtaining YNAUT\* (see table 37). YNAUT\* is corrected with the estimate rates to obtain the net values resulting to the fiscal authorities (YNDAUT). (YNAUT\*-YNDAUT) = EV is the amount of tax evasion estimated.

Adding YNDAUT to the other net incomes provides the total net income resulting to the fiscal authorities:  $YND = YNDAUT^* + YNDIP^* + ytp + yta + YLKR + YNKF^*$  (see table 37).

Since taxes and benefits are levied on the latter notion of income (YND) this value is grossed up to go from the net value to its gross one  $(YND + TAX) = YLD$ . Where TAX indicates the full system of taxes (Personal Income Tax and Contributions).

The actual value of gross income (YL) is obtained adding the estimated amount of tax evasion that was excluded from the declaration to the Fiscal Authorities.  $(YLD + EV = YL)$ .

Table 36: differences between SHIW95 and MASTRICT net income definition.

SHIW95	MASTRICK
$yl1 = \text{Net wage}$	$YNDIP^* = yl1$
$ym1 = \text{Self-employment income}$ This item includes also $ycr1(-20) = \text{COMPFISS} + \text{DIVIDUT}$ = “fixed income and dividends from activity of partner/manager”, restricted to firms with <i>less</i> than 20 employed.	$YNAUT^* = [ym1 + ycr1(+20)] \times 1,5$ (correcting for under-reporting) $ycr1(+20) =$ “fixed income and dividends from activity of partner/manager” restricted to firms with <i>more</i> than 20 employed. (=profits) That is, this definition includes the variable $ycr1$ without any restriction.
$ycr = \text{Real estate income}$ ( $ycr1 + ycr2 + ycr3$ ) There are three differences between $YLKR^*$ and $ycr$ : 1) $YLKR^*$ does not include profits ( $ycr1(+20)$ ) which are included in $YNAUT^*$ . 2) real estate incomes are attributed to the owner instead of the head of family (using $COMPRO^*$ ). 3) impute rents are restricted to the property (in strict sense) real estate.	$YLKR^* = z \times (ycr^{HF} - ycr3_{NO}^{HF}) - ycr1(+20)$ where: $z = F(\text{COMPRO}^*)$ ; $\text{COMPRO}^* =$ status of joint ownership of each real estate <sup>4</sup> . $ycr^{HF} =$ gross income from real estate attributed to the household head (in SHIW95). $ycr3_{NO}^{HF} =$ imputed rent not of property real estates (?)
$ycf = \text{Financial income}$ ( $ycf1 + ycf2 + ycf3 - ycf4$ ) $ycf = (\text{rates of interest}) \times (\text{financial activities})$	$YNKF^* = (\text{rates of interests}) \times (\text{financial activities corrected by “Servizio Studi” of Bank of Italy})$ $YNKF^*$ has been attributed to the HH, who is not always the one indicated by Bank of Italy.

\*Gross values from Mastrick Model.

MODIT98 uses the values of YL as input. The procedure followed within the model to obtain net disposable income from gross income follows these steps:

$$YL - EV = YLD \text{ (Income declared to the fiscal authorities)}$$

<sup>4</sup> The variable  $COMPRO^*$  has been calculated by ISTAT using the variables  $PRO_i$  (= owners: household member (i))  $i = 1, 2, 3, 4$ .



$YLD-TAX = YND$  (Disposable income as resulting from the declaration to the fiscal authorities )

$YND + EV = YN$  (Effective Disposable income)

Net aggregate figures from survey data, even if higher than those resulting to the Fiscal Authorities result to be far below the figures on Net Income given by the Official Statistics (ISTAT). There is a lot of evidence to believe that the Survey data also understates the official value of variables with different magnitude according to different types of income. While dependent income is only slightly under-reported and transfers seem not to be declared for approximately one fourth, almost a half of self-employed income is not declared. The phenomenon is even clearer for income from financial assets of which less than one third appears to have been declared in the survey<sup>5</sup>. On this base we used net figures provided by ISTAT were both income from self employment and income from financial assets were corrected for under reporting. While the precise quantification of the amount of underestimation is quite controversial<sup>6</sup> we believe that survey data as corrected by ISTAT are an acceptable proxy for reality. The remaining gap with National Accounts is taken into account in the calculation of the real Parity of Purchasing Power that brings all national survey figures to the standard coming from European economy/OECD statistics. This may implies a bias since all monetary values are grossed up by the same ratio while the amount of underestimation could still differ according to income sources.

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<sup>5</sup>The presumed rates of underestimation are due to a variety of previous studies on the rate of tax evasion (See Bernasconi Bernardi, Monacelli) and on the distance between Survey data and National Accounts (See Brandolini, Cannari D'Alessio, Marotta Pagliano).

<sup>6</sup> The precise estimation of the amount of non-declared income is object of continuous revisions since National Accounts estimations are based on assumptions that are not thoroughly accepted. See for example D.Rizzi et al. where indirect methods of evaluation of under-reporting of Survey data reduce this amount to only 10%.

## **4. Validation**

### **4.1 Data problem**

Aggregate figures from the original survey data, even if higher than those declared to the fiscal authority are far below the ones on income in the ISTAT National Accounts. The data understates the official value of variables in different proportion according to different types of income. While wage income is just slightly under-reported, almost half of the self-employment income is declared and less than one third of the income from financial assets. However ISTAT provides data on net self-employment income grossed-up to overcome the under-reporting phenomenon and data on net incomes from financial assets corrected for under-reporting by the Research Department of Bank of Italy. The gross income data provided by ISTAT as result of a simulation with the “Mastricht” microsimulation model are based upon these corrected variables.

### **4.2 Comparison**

In this section we compare some basic results from the Euromod baseline run with national statistics, in order to validate the aggregates produced by Euromod.

One of the main difficulty for validation of the model against National Accounts, in many Countries, regards effectiveness of input data, in particular of self employment income. In fact, in general the ratio between employment income from the model and that from National Accounts is more than 90%, otherwise the ratio for self employment income can vary from 30% to 70%. This problem is due to tax evasion and income under-reporting.

Table 37, for the main aggregates simulated by Euromod, reports the shares between output from the model and values of National Accounts for the year 1998.

The Social Insurance Contribution on employees aggregate produced by Euromod represent the 83% of the National Accounts aggregate, while Social Insurance Contributions of Employer is the 77% of the National Accounts aggregate. Both results are underestimated even if they are very close to aggregate values. It is reasonable to expect that contribution of employer should be most underestimated because it is consistent with an underestimation of self-employment income.

Regarding the income tax IRPEF, we used as external source *Relazione Generale del Ministero del Tesoro, del Bilancio e della Programmazione Economica* by 1998. The ratio between output from Euromod and external source is equal to 90%, despite the problem of under-reporting (in any case it is the same ratio of Italmod and external source).

For what concerns Income Tax for self-employed on income from production activities (IRAP) and Local Property Tax ('ICI'), at the moment the aggregates against which compare are not available. The IRAP was introduced in 1998 so for that year the estimate of aggregate is not significant. On

the other hand, for ICI the comparison with National Account is misleading because it includes the Local Property Tax of firms, Institutions, Families, Associations and so on.

The over-estimation of Family Allowances expenditure compare to aggregate statistics (144%) is a common feature of majority of Italian microsimulation models despite the under-reporting of employed income but we consider the result acceptable.

Regarding Supplementary Pension there aren't official data, but the Onofri Commission study by 1998 estimated around 30,000 thousand millions the amount of Supplementary Pensions in 1995. This datum seems to be in according with Euromod output.

Finally, the 66% of Disposable Income is coherent with a light under-estimation of National Income Tax (90%) and with a heavy under-estimation of Income (about 50%).

Table 37 Ratio between output simulated by Euromod and other sources.

Main Output	Aggregato (x10 <sup>9</sup> )	New Euromod Results (x10 <sup>9</sup> ). No Lump Sum Incomes	% Euro/Aggr No LumpY	Year
<b>National Income Tax</b>	<b>200,229</b>	181,184	90%	1998
<b>Financial tax</b>	<b>18,927</b>	21,490	114%	1998
<b>Tax on Severance Pay (TFR)</b>	-	-	-	-
<b>Tax on productive activity (IRAP)</b>	-	5,255	-	-
<b>EESIC Tot</b>	<b>90,173</b>	75,011	83%	1998
<b>ERSIC Tot</b>	<b>209,714</b>	161,465	77%	1997 updated to 98
<b>EESIC (Self Emp)</b>	<b>30,570</b>	28,112	92%	1997 updated to 98
<b>EESIC (Empl)</b>	<b>59,603</b>	46,604	78%	1997 updated to 98
<b>EESIC (Exec)</b>	-	295	-	-
<b>Total family allowances</b>	8,020	11,521	144%	1998
<b>Disposable Income</b>	<b>1,367,659</b>	897,623	66%	1997 updated to 98
<b>Supplementary Pension</b>	-	26,245 Standard ('Limit') Pen. Imputation 18,167 Alternative ('No Limit') Pen. Imputation	-	-

External Sources: Bank of Italy, National Account ISTAT (1998) and Ragioneria Generale (1998).