

# **Economic Life Cycle Deficit and Intergenerational Transfers in Italy: An Analysis Using *National Transfer Accounts* Methodology**

Marina Zannella, Graziella Caselli

Department of Statistical Sciences, "Sapienza" University of Rome

## **Extended Abstract**

### **1. Introduction**

A close and mutual relationship exists between demographic and economic dynamics. While on the one hand socio-economic development affects mortality and fertility levels, on the other, the latter - largely determining population age structure- impact on economic growth.

An important change has occurred in the population age structure of industrialized countries, namely aging. Population aging is one of the most important challenges of our times, especially considering that in the near future many less developed countries are expected to experience it.

Italy has one of the most significant aging process in the world. According to Eurostat (Population data 2010), among European countries, Italy has the second higher proportion of people aged 65 and over (20.2%) and old-age-dependency ratio (30.8%). This situation is expected to become even more serious in the future. In fact Eurostat projections for 2050 estimate that old-age-dependency ratio will nearly double, reaching the value of 59.25%.

Our study is motivated by the need for a careful reflection on this issue and its possible implications on the economic development of the country and on economic intergenerational relationships. In particular, this analysis is part of a wider project: *National Transfer Account* (NTA) for Italy. NTA is an international and collaborative project (which Italy has joined recently) with the aim to measure, analyze and interpret the relation between macro-economic conditions and age structure over the world.

Socio-economic implications of aging are still not well defined but there is a widespread attention for issues such as the increasing in tax burden, age at retirement, the decline of labor force participation and possible intergenerational tensions. Certainly, the effects of population aging depend greatly on policy responses and environment.

However, some relations between different ages and economic conditions (with particular reference to consume and labor income) are generally valid: children and the elderly experience long periods of economic dependency because they produce less than they consume, while working-age adults produce more through their labor than they consume. In other words, young and the old have an economic lifecycle deficit while working-age people have a surplus.

NTA main purpose is to provide for each participating country (ensuring comparability through the use of a common methodology) an estimate of the economic life cycle and of intergenerational transfers. This is of particular interest because the directions of economic transfers between age groups are not equal in all societies, but they mainly depend on their stage of socio-economic development and of demographic transition.

The economic life cycle deficit is sustainable only through the existence of intergenerational transfers, consisting in economic flows from surplus to deficit ages. These economic flows are mediated both by the public and the private sector. Public sector reallocates resources by implementing laws and regulations at local, regional and national levels. Education, pensions and health care programs are important examples. Private sector reallocations are mediated by institutions such as families, private charities, non-governmental organizations and other private institutions. In particular, NTA distinguishes private sector reallocations in two broad categories: inter-family and intra-family transfers (that is to say transfers between different families and within the same family). Quantification of intra-family transfers is one of the most

important innovations introduced by NTA methodology because, despite their growing importance, there are no data available in this regard. The application of this kind of analysis to Italy could be very interesting given the peculiar Italian family-model, known as the "*strong Mediterranean family*". In fact, this family pattern, characterized by close intergenerational ties, cohesiveness and solidarity, may suggest the presence of relatively important intra-household transfers compared with those of other countries. Moreover, family economic support to deficit ages -with particular regard to young ages that cannot rely on savings- may become even more relevant in the current Italian socio-economic environment characterized by economic crisis and relevant cuts on welfare expenditures.

## **2. Research questions and objectives**

In this paper we seek to answer questions such as: does an economic life cycle deficit exist in Italy, for which ages and to what extent? Does population aging affect the economic lifecycle? Which is the role of Italian families in supporting deficit ages? Does the economic life cycle affect intergenerational relationship from an economic point of view: which are the directions of intergenerational reallocations?

Our first objective consists in building age profiles of consumption and labor income. For this purpose data broken down by age on private and public consumption and on labor income are needed, but this kind of information is not available for Italy. In this paper, through our estimates, we aim to fill this gap in information. That will enable us to provide a new comprehensive data set with internationally comparable information; in fact NTA methodology is used for our estimates, ensuring the possibility to compare our results with those of other several participating countries

Once built these profiles, we aim to estimate the Italian economic life cycle, to verify the existence of a lifecycle deficit and to identify which ages contribute to it. These estimates will hence allow us to state the directions of economic reallocations across ages. Then we focus on intra-family reallocations, quantifying intra-household intergenerational flows and trying to give an insight of their role in the current Italian socio-economic environment.

## **3. Data and methods**

Aggregate values for National Transfer Accounts have been derived from the following Eurostat data sources: Annual National Accounts, Annual sector accounts, Government statistics, Consumption expenditure of private households, Social protection expenditure. Age profiles have been estimated using administrative records and the following data sources provided by the Italian National Institute of Statistics (ISTAT): Household Expenditure Survey (HES), Labour Force Survey (LFS), Income and Living Condition Survey (EU-SILC), Resident Population Statistics (RPS), System of National Accounts (SNA).

The HES is a survey conducted annually on a sample of about 28,000 families, for which we know the detailed expenditure data related to the whole household, the age of all its members and other socio-demographic characteristics.

The LFS is a large sample household survey, the sample includes about 70,000 households, that provides monthly, quarterly and annual work participation of people aged 15 and over, as well as on persons outside the labor force.

The EU-SILC is a survey panel conducted annually on a sample of about 26.000 households, aiming at collecting timely and comparable cross-sectional and longitudinal microdata on income, poverty, social exclusion and living conditions. Social exclusion and housing condition information is collected at household level while labour, education and health information is collected at individual level for people aged 16 and over.

The RPS provides population estimates for single-year age groups for Italy. The SNA provides the necessary information for macro controls.

The economic lifecycle is quantified in *National Transfer Accounts* by comparing age profiles of consumption and labor income. With regard to a given population, trends of consumption (C) and labor income ( $Y^l$ ) varying by age x define the economic life cycle and the difference between these two quantities provides a measure of the life cycle deficit (LCD) :

$$LCD(x) = C(x) - Y^l(x) \quad [1]$$

Dividing these quantities by the number of people aged x, we obtain per capita age profiles of consumption, labor income and life cycle deficit:

$$\frac{LCD(x)}{N(x)} = \frac{C(x)}{N(x)} - \frac{Y^l(x)}{N(x)} \quad [2]$$

The deficit LCD(x) must equal inter-age flows or reallocations that are given by:

$$LCD(x) = C(x) - Y^l(x) = \tau^+(x) - \tau^-(x) + Y^A(x) - S(x) \quad [3]$$

where  $Y^A(x)$  is asset income,  $S(x)$  is saving,  $\tau^+(x)$  and  $\tau^-(x)$  are respectively received and paid transfers at each age.

Age reallocations can be further disaggregated into public sector and private sector age reallocations (inter-household and intra-household transfers). An in-depth analysis of reallocations will allow us to estimate to what extent the life cycle deficit is financed through public or private transfers.

The following steps are necessary to estimate age profiles of consumption and labor income: i) preliminary estimate of per capita age-profile using micro-level survey data; ii) preliminary estimate of aggregate age-profile using population data; iii) final estimate of age profiles, adjusted with National Accounts data.

Consumption includes public and private spending distinguished by three main categories: education, health and other.

Data on private consumption are available only at the household level, hence it is necessary to allocate family expenditures among its members according to their age. Criteria of allocation vary depending on the nature of expenditure: a linear model is used to allocate expenditures for education among family members; an iterative procedure is used to allocate health expenditure; an equivalence scale is used to allocate other expenditures .

Estimates for public consumptions are mainly based on administrative records and data provided by System of National Accounts. Public consumption is distinguished in two components: collective public consumption and individual public consumption. Public collective consumption is addressed to the whole population and for this reason it cannot be allocated by age but it is equidistributed between population members, while public individual consumption is targeted to particular groups of population and hence can be allocated by age.

Labor income includes: employee compensation (labor earnings, employer- provided benefits, taxes paid to the government on behalf of employees), labor's share of entrepreneurial income.

Age profiles of labor income are estimated using micro data sources provided by Income and Living Condition Survey and Labour Force Survey. In the absence of information to the contrary, we assume that employers' social contribution is a constant proportion of wages and salaries and that two-thirds of the operating surplus of unincorporated enterprises is labor income. The share of entrepreneurial income allocated to capital assumed to be the same for each age of worker.

Public transfers inflows consist of benefits received through the social protection system (sickness and health care, disability, old age, survivors, family and children, unemployment, housing, social exclusion) and public consumption (education, health, other). Age profiles of social benefits are estimated using administrative data, micro data provided by EU-SILC and data provided by European System of integrated Social Protection Statistics (ESSPROS). Age profiles of public consumption are estimated as explained above.

Private transfers consist of transfers between households, direct or mediated by non profit Institutions, and transfers within the household. Inter-household transfers are estimated using micro data provided by EU-SILC, donations and gifts received (inflows) or given (outflows) are assigned to the household head. Constructing intra-household transfers requires the estimation of age profiles of private consumption, labor income, taxes, public transfers inflows and inter-household transfers. Estimates for private consumption and indirect taxes are based on HES, while those for labor income, other taxes and transfers are based on EU-SILC.

## 4. Preliminary results

### 4.1 The economic life cycle

Figure 1 shows per capita age profiles of consumption ( C ) and its two broad components: public (CG) and private (CF) consumption. Both private and public consumption are composed by education (E), health (H) and other consumption (X) . Total consumption has a peak at age 0 due to birth-related health costs. During younger ages, it is characterized by a stepped pattern, due to the education component. In fact age profiles for education have not been smoothed in order to better reflect changes in spending related to the transition to different levels of education. Public and private consumption make up respectively 29% and 71% of total consumption. Public consumption is composed for the 19% by education, the 35% by health and the 45% by other consumption. It is higher for young ages as a consequence of education expenditures, reaching a peak around age 12, and then starts to decline around age 14 (when compulsory schooling ends). It begins to rise again from age 60 due to the health component. Private consumption follows a different trend growing gradually from younger ages, reaching the value of about 15.000 euros at age 43 and then remaining constant until age 70 when it starts to decline. Differences in public and private consumption age patterns are mainly due to the existence in Italy of education and health programs almost entirely financed by the public sector. Moreover, the high levels of private consumption during adult ages are explained by the predominance of "other consumption" (96% of total private consumption), allocated to age according to an equivalence scale that assigns more importance to these age groups.

Figure 1 about here

Figure 2 shows labor income (YL) age profiles and its two components: earnings (YLE) and self-employment (YLS), which account respectively for the 81% and the 19% of the total. Earnings start at age 16, grow rapidly with age until they reach a peak at 49 years and begin to decrease around age 54. Self-employment rises and decreases slightly with age, becoming higher than earnings during older ages.

Figure 2 about here

Figure 3 presents per capita age profiles of consumption, labor income and life cycle deficit (LCD). Positive values of the LCD indicate the existence of a deficit due to higher levels of consumption than labor income. While negative values of the LCD indicate higher level of labor

income than consumption and, hence, a surplus that can be transferred to deficit age groups or saved. Surplus begins at age 27 and ends at age 58, lasting about 30 years.

The young (from age 0 to 26) and the old deficit (from 59 years and over) account respectively for the 68% and 29% of the total deficit. The young deficit reaches its peak (20.062 euros ) at age 14 and then begins to fall rapidly. While the elderly deficit settles around 18000 euros from about age 70 onwards, mainly due to high health consumption. Figure 4 illustrates aggregate age profiles of consumption, labor income and life cycle deficit . Total LCD is of 251.243 million euros. The aggregate deficit of the elderly, differently from the per capita profiles, reaches a peak of about 12.000 million euros at age 69 and then begins to decrease. Results for older ages show lower values of consumption and of the LCD, due to the smaller population size in these age groups.

Figure 3 and 4 about here

## 4.2 Intergenerational transfers

As mentioned before, the economic lifecycle deficit is sustainable thanks to the existence of a complex system of intergenerational public and private transfers. This section examines results for private transfers and, then, will focus on public transfer inflows. Hence, private and public inflows age patterns will be compared and discussed.

Figure 5 shows age profiles of private transfers inflows and outflows. Intra-household transfers make up 94% of total private transfers. Net intra-household transfers<sup>1</sup> are positive for young and old, while they are negative for working age adults. Although net transfers are positive for both young and elderly, there are important differences between these two age groups. In fact the young (until age 20) are only recipients of transfers within the household, while the old (from age 60 and over) are both beneficiaries and contributors.

Figure 5 about here

Figure 6 shows per capita age profiles of the most relevant public transfers inflows for Italy: education, health, pensions and “other” (in kind and social protection). Education and health are mainly in kind transfers and are respectively the 10% and the 19% of total inflows. While education is concentrated at younger age groups and is absent from about age 30, health is distributed through all ages and increases with it. Public pensions are an in cash transfer and are a major component of public inflows, representing the 33% of the total. “Other” inflows are divided in three categories: in kind, in cash and social protection. “Other in cash” are not reported here since they are just the 2% of total inflows, while “other in kind” and social protection are important components of public transfers (respectively the 22% and 14%). Other in kind inflows consist of not age-target collective services and, hence, are equally distributed among the whole population. Social protection (figure 7) includes: sickness and disability (27%), survivors (44%), family and children (18%), unemployment (9%)<sup>2</sup>. The first two components are concentrated at central ages, while the other two at older ages.

Figure 6 and 7 about here

---

<sup>1</sup> Net transfers are estimated as the difference between inflows and outflows at each age

<sup>2</sup> Social protection miscellaneous is not reported in figure 7 since it represents just the 1% of total social protection

The comparison between private and public transfers inflows (figure 8) highlights the existence for young and central ages of similar per capita age profiles and amounts received. Otherwise, for older ages (from age 55 and over ) it points out huge differences. In fact, while private inflows to the elderly decline gradually, public ones increase significantly. As mentioned before, this is mainly explained by the importance of old age social protection in the Italian system of transfers inflows.

Figure 8 about here

**Figure 1 Per capita age profiles of consumption**

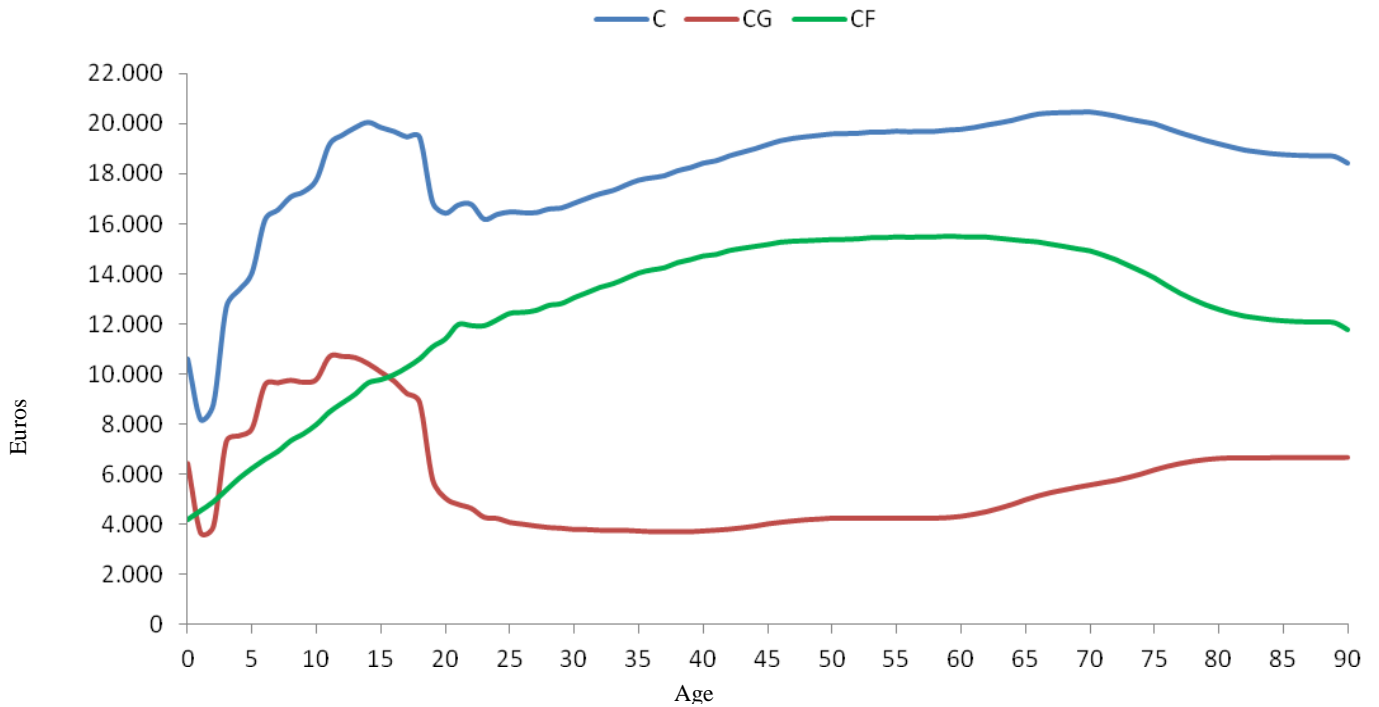


Figure 1 Per capita age profiles of consumption, Italy, 2008. Data source: own elaborations on Household Expenditure Survey (Istat, 2008), administrative records

**Figure 2 Per capita age profiles of labor income**

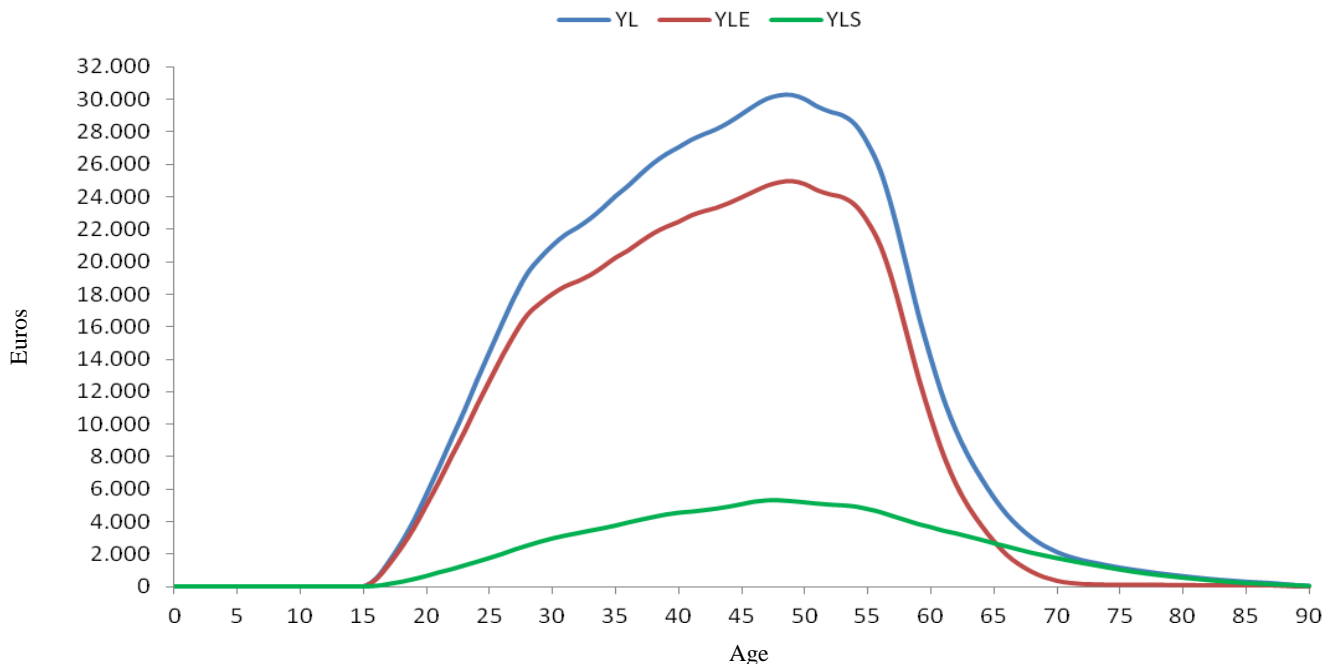


Figure 2 Per capita age profiles of labor income, Italy, 2008. Data source: own elaborations on EU-Statistics on Income and Living Conditions (Eurostat, 2009)

**Figure 3 Per capita age profiles of consumption, labor income and life cycle deficit**

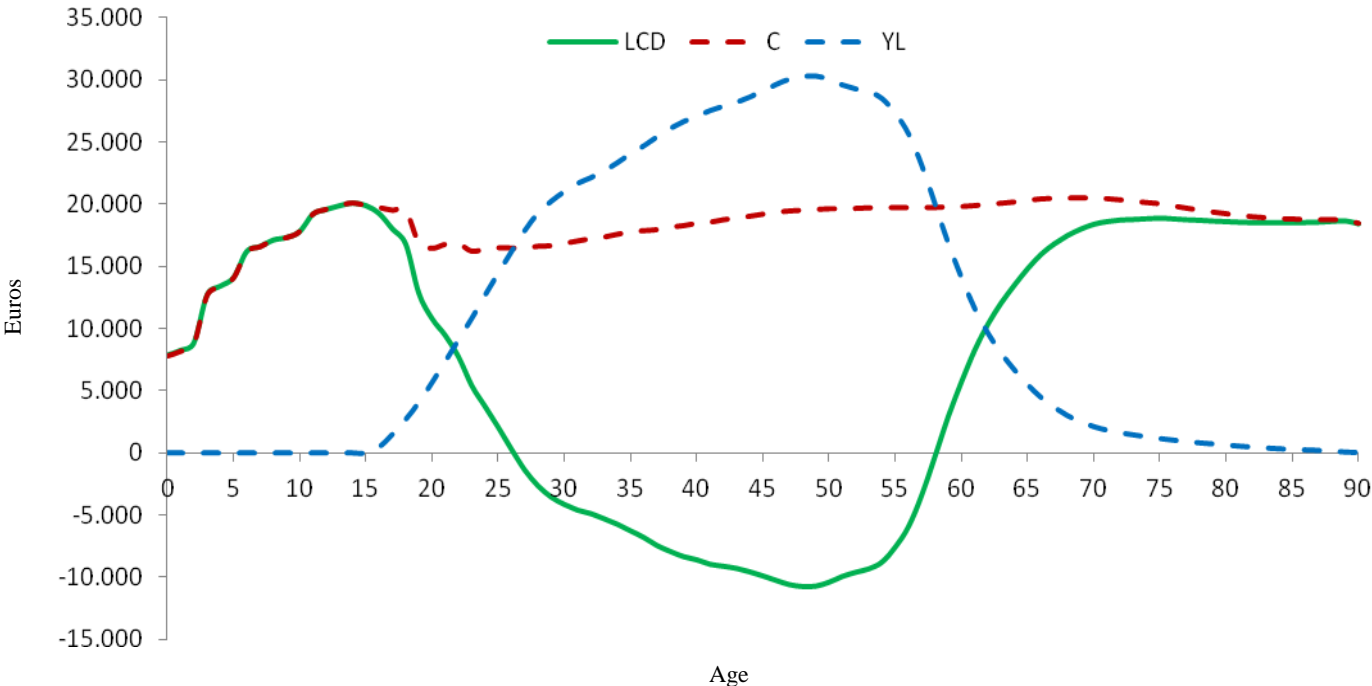


Figure 3 Per capita age profiles of consumption, labor income and life cycle deficit, Italy, 2008. Data source: own elaborations on Household Expenditure Survey (Istat, 2008), administrative records, EU-Statistics on Income and Living Conditions (Eurostat, 2009)

**Figure 4 Aggregate age profiles of consumption, labor income and life cycle deficit**

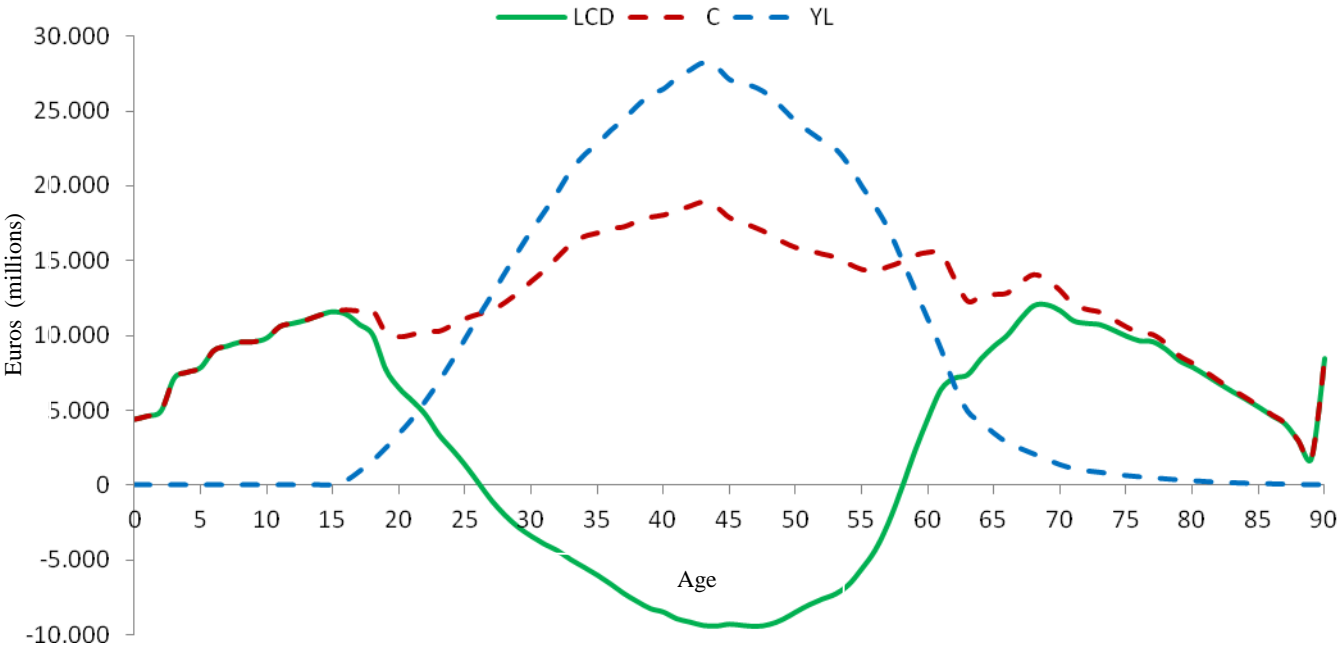


Figure 4 Aggregate age profiles of consumption, labor income and life cycle deficit, Italy, 2008. Data source: own elaborations on Household Expenditure Survey (Istat, 2008), administrative records, EU-Statistics on Income and Living Conditions (Eurostat, 2009), Resident Population Statistics (Istat, 2008)



**Figure 5 Per capita age profiles of private transfers**

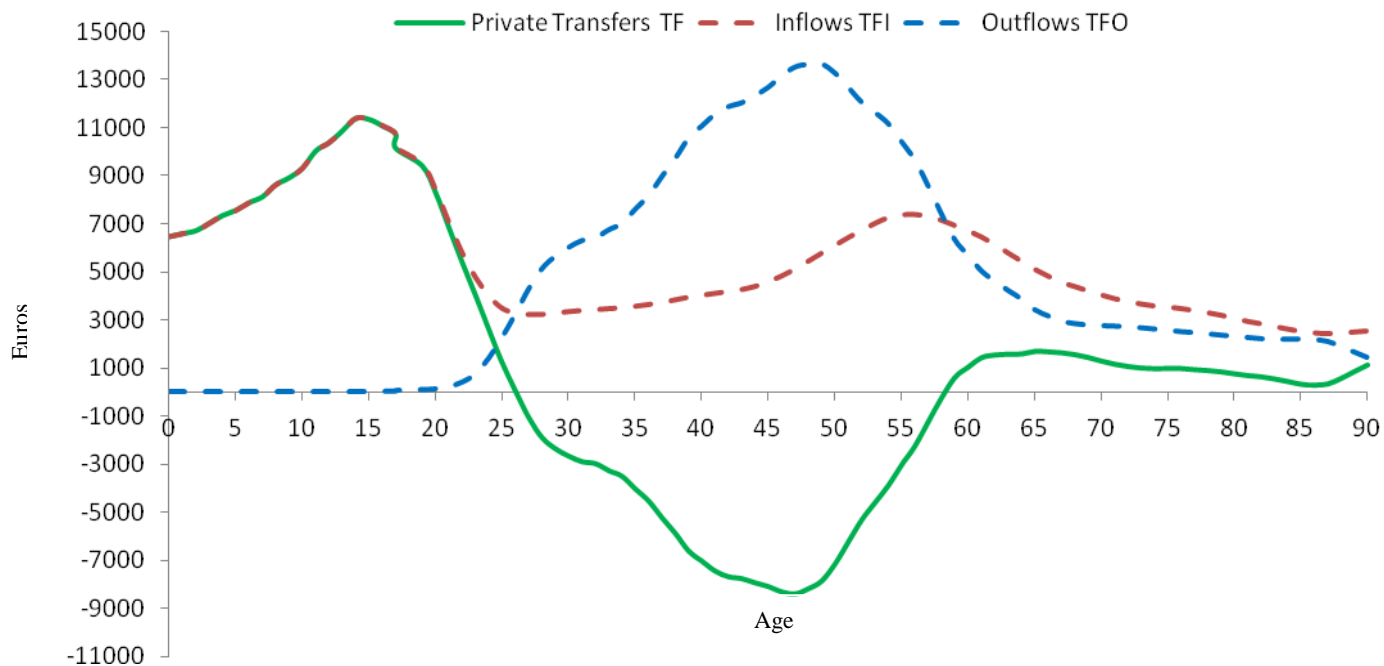


Figure 5 Per capita age profiles of private transfers, Italy, 2008. Data source: own elaborations on EU-Statistics on Income and Living Conditions (Eurostat, 2009), Household Expenditure Survey (Istat, 2008), administrative data

**Figure 6 Public transfers Inflows**

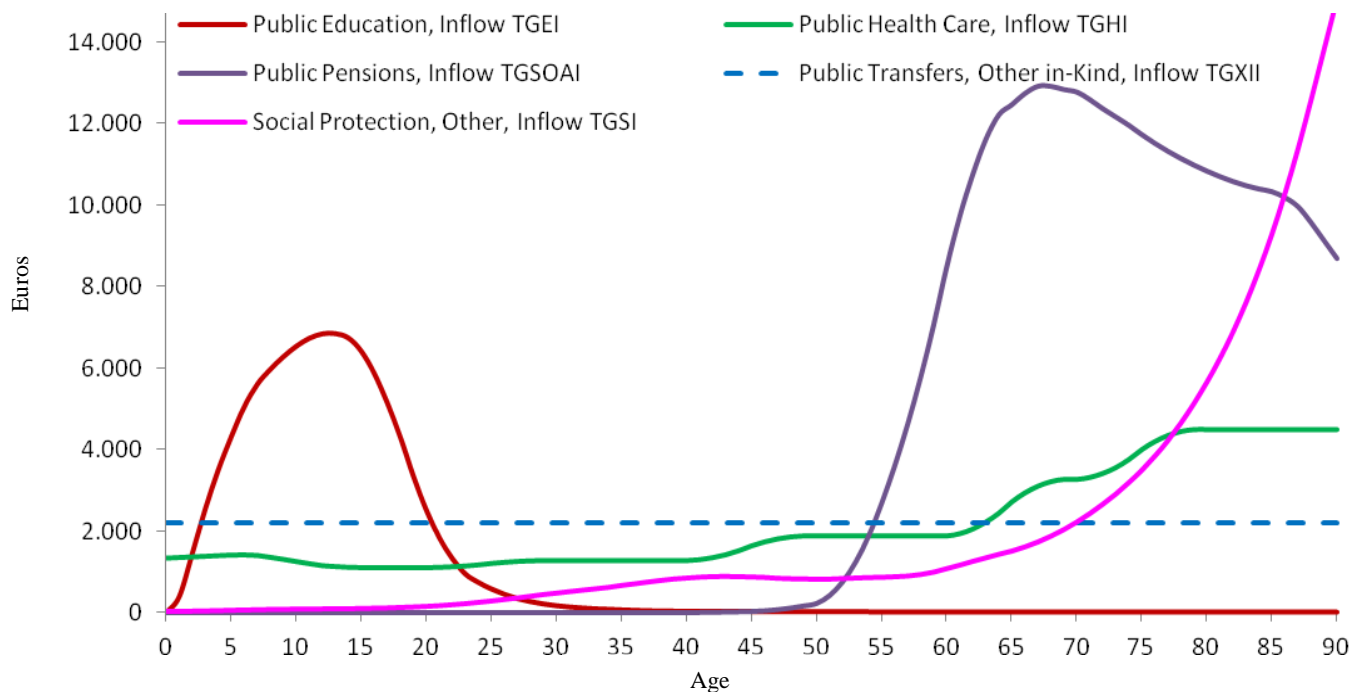


Figure 6 Per capita age profiles of public transfers inflows, Italy, 2008. Data source: own elaborations on EU-Statistics on Income and Living Conditions (Eurostat, 2009), administrative data

**Figure 7 Per capita age profiles of social protection inflows**

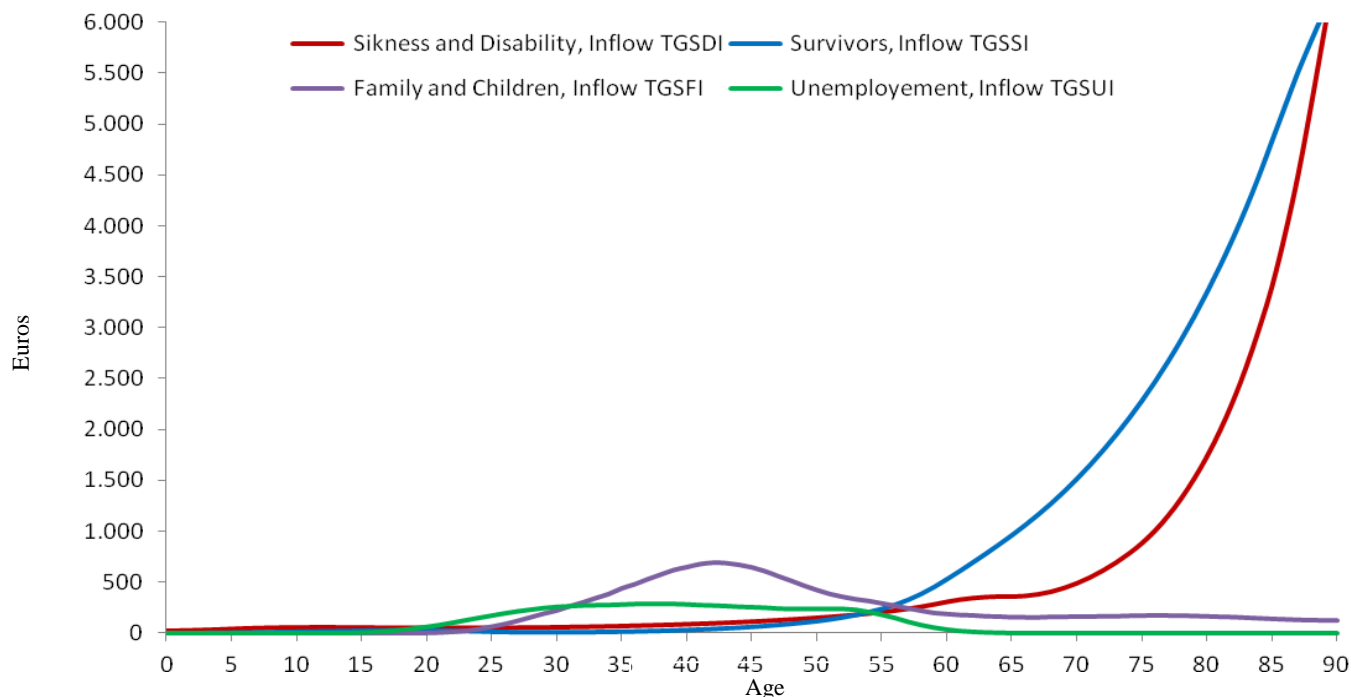


Figure 7 Per capita age profiles of public transfers “social protection” inflows, Italy, 2008. Data source: own elaborations on EU-Statistics on Income and Living Conditions (Eurostat, 2009), administrative data

**Figure 8 Per capita age profiles of private and public transfers inflows**

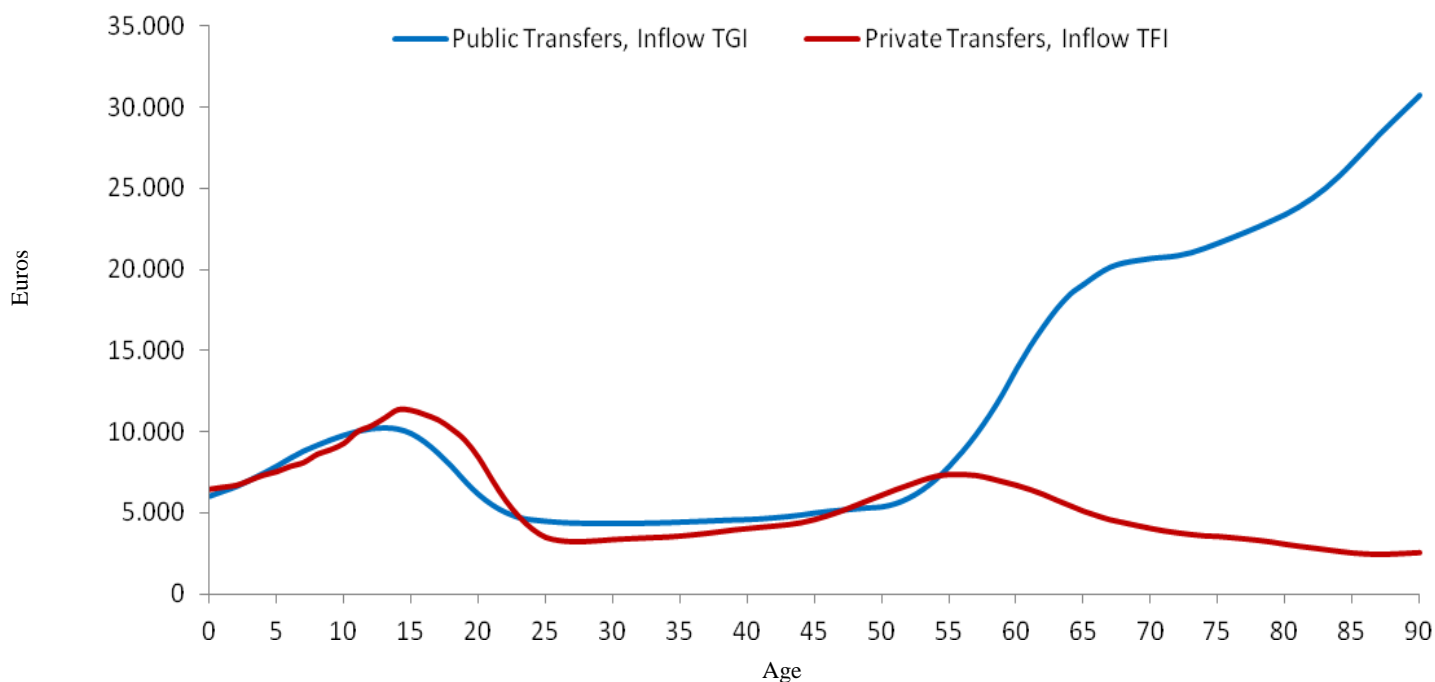


Figure 8 Per capita age profiles of public and private transfers inflows, Italy, 2008. Data source: own elaborations on EU-Statistics on Income and Living Conditions (Eurostat, 2009), Household Expenditure Survey (Istat, 2008), administrative data

