The unequal impact of the crisis by age:
An analysis based on National Transfer Accounts*

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Abstract

The recent economic downturn in Spain starting in 2008 has had a big impact on society. The effects of the crisis on intergenerational distribution may be strong. A crisis leads to potential decreases in public expenditure, and these decreases spread out unequally across generations. This issue has been little explored in the literature, but its investigation can provide useful information for policy intervention. In this paper we estimate the National Transfer Accounts for Spain referred to 2012 (probably the worst year of the crisis), and we compare the results to previously available NTA for 2000, 2006 and 2008. In this way, we aim to construct a broad picture about the effects of the crisis on the intergenerational transfers, both public and privately implemented. Our results show that the crisis has affected differently different generations. In particular, clearly young people have been hit more severely.

1. Introduction

Crises, especially during the current and the previous century have become so frequent that could be considered a permanent component of the macro economy. The recent economic downturn in Spain starting in 2008 has had a big impact on society. There exists a large theoretical literature studying how a negative income shock affects the aggregate economy, as well as how the representative agent reacts to this shock, mainly through consumption smoothing, saving/dissaving, and by the level of labor participation. Also the different instruments which an individual can employ to smooth her consumption across time (financial markets, social protection, family and interpersonal cooperation) have been recognized for their key role. In most of the theoretical studies the way these decisions are modeled is through a representative agent, therefore any possible distributional effect both across income levels and age groups cannot be identified.

The economic crisis starting in 2008 is commonly referred as "the Great Recession" due to its severity, duration and its worldwide effect. It is considered to be the worst economic downturn since the great depression of the 1930s. It is worth noting that Spain has been one of the countries whose economy has been more severely affected, not only because of its strength but also because it has impacted the majority of population. Some studies have focused on analyzing different aspects of the crisis, and particularly have investigated income specific population age groups from different perspectives. For example, some studies have focused on the impact on income inequality, the levels of poverty and the standards of living.
On a more general level, Reinhart and Rogogg (2009) perform an analysis using historical data on the main macroeconomic indicators, while Deaton (2011) focuses on the impact of the 2008 crisis on the subjective well-being of Americans. An extensive study of the aftermath is performed by Hills et al. (2013) where the main findings indicate a widening of the gap between the two extremes of the income distribution, but also point out that at least in the UK, the young and old were better protected against the recession compared to other groups while young adults were the most severely impacted ones.

It is generally stated that children have suffered the most from the economic crisis. According to the UNICEF Childhood Report (UNICEF, 2014), the poverty rate of children has increased by 53% between 2007 and 2010. Data from the European Anti-Poverty Network (EAPN, 2015) go in the same direction: children below age 16 exhibit the largest poverty rate (30.1% in 2014) among all the age groups. On the other side, old people (aged 65 and more) seem so far to

have been better protected against the social impact of the recession and public finance crisis than other age groups (Holzmann and Hinz, 2005). This is mainly due to the fact that their income depends in most part of a relatively stable pension system. Indeed, the Ageing Report of the Economic Policy Committee (EC, 2015a) puts forward that pension systems, and in particular public pension schemes, have ensured that most old people in the majority of EU countries are protected against the risk of poverty and deprivation. In this respect, the Pension Adequacy Report of the European Commission (EC, 2015b) provides interesting indicators. As an example, the relative median income ratio of old people – measured as the median equivalised disposable income of persons aged 65 and more compared to the median equivalised disposable income of persons aged 0-64 - has increased in 20 of the 28 member states along the period 2005-2013. What is more, this increase was above 10 percentage points in many countries as Greece, Spain, Cyprus, Luxembourg, Portugal, Hungary, UK and France. In particular, Spain is among the European countries with higher relative median income ratio for old people (100% in 2013), which has increased more than 20 points between 2005 and 2013. Nevertheless, it is true that Spain has been hit particularly hard by the economic crisis, and many pensioners' households may have also suffered a deterioration of their financial situation as a result of sharing their resources with the younger generations in the family, which is something difficult to measure.

One critical component of an economy that is affected by a crisis is the public sector, which plays a key role both in terms of its contribution to aggregate GDP and employment, but also by the instrumental roles of social protection, redistribution and the provision of basic goods such as education and health. The welfare state was developed along the past century in most countries, extending their action from mere monetary transfers for poverty reduction to wider programs like providing basic social goods (as education and health) and income substitution programs with an insurance component, like pensions or unemployment benefits. Interestingly, in a way, this process has led to the gradual substitution of private intergenerational transfers. Nevertheless, this substitution was clearly imbalanced in favour of the elderly. Patxot et al. (2015) estimate that, in average, people aged 65 and more in Spain finance more than 80% of their consumption with public transfers (mainly pensions, but also with other public programs as health), while in the case of children (ages 0-19) this ratio is only 37%. The picture is not very different in other countries. In Sweden, for example, the elderly received 144% of their consumption in public transfers – being long-term care a big component –, while the children only 44%.

Interestingly, it is worth noting that public intervention through welfare state programs affects both intragenerational and intergenerational dimensions of distribution. The need for government intervention and the direction of the intergenerational transfers (more to children or to old population, the two economically dependent age groups) depends crucially on the motives for private transfers. The transfer motives might go from forward and backward altruism to strategic behavior or, following the recent literature on endogenous preferences, they can be due to reciprocity. For an extensive review of the existing theory of family transfers see Laferrere and Wolff (2006).

Overall, it seems clear that the effects of the crisis on intergenerational distribution may be strong. A crisis leads to potential decreases in public expenditure, and these decreases spread out unequally across generations. This issue has been little explored in the literature, but its investigation can provide useful information for policy intervention. Especially if we consider that the crisis has overlapped to a pre-existing strong demographic transition – decrease in fertility rate and the increase in life expectancy – leading to an ageing process. The literature on intergenerational transfers has experienced a strong development due to the demographic transition. Demographic variables interact with economic variables becoming endogenous to the economic system.

The literature of political economy has studied how different groups compete to determine how the budgetary cuts due to economic crises will be allocated, be that across different social groups, or different age groups. This literature somehow converges with the literature on intergenerational transfers by investigating the link between forward and backward intergenerational transfers. This link is quite intuitively present inside the family, but not necessarily in the public action. In this context emerge the so-called “generational conflict”. The intuition behind this hypothesis is simple: old population has probably different preferences to the young population and therefore they demand different allocations of public resources. In a framework of a representative democracy and population ageing, this means that policies would be mainly shaped by the desires of the older people (Ladd and Murray, 2001; Poterba, 1997; Grob and Wolter, 2007). This could be a plausible explanation to the observed trend in public transfers during the recent years in Spain, which have been more capable to protect the older than the younger from the effects of the crisis.

This paper investigates to what extend the 2008 crisis has affected different age groups. Most studies doing analysis by age groups are based on surveys containing data on income by age,

as the EU Survey on Income and Living Conditions (EU-SILC). In our case, we use a richer information source, the National Transfer Accounts (NTA). NTA provides per capita age profiles of income, consumption and all the components of the lifecycle deficit (public and private transfers and assed based reallocations). In this paper, we estimate the NTA for Spain referred to 2012 (probably the worst year of the crisis), and we compare the results to previously available NTA for 2000, 2006 and 2008. In this way, we aim to construct a broad picture about the effects of the crisis on the intergenerational transfers, both public and privately implemented. Our results show that the crisis has affected differently different generations. In particular, clearly young people have been hit more severely.

The rest of the paper is structured as follows. Section 2 summarizes the NTA methodology and describes the data needed to estimate NTA referred to 2012. Section 3 presents the results and finally, Section 4 concludes.

2. Methodological framework: The National Transfer Accounts

2.1. An overview of National Transfer Accounts

National Transfer Accounts (NTA) provide an accounting of economic flows to and from residents in a country in a given year, classified by age. NTA provides information about the economic lifecycle and age reallocations, giving a cross-sectional picture of the intergenerational transfers occurring in an economy. The aggregate values of NTA are consistent with National Accounts (NA), but providing information about how resources are allocated across ages. The construction of NTA started in the first years of this century as a collaborative international network. The first results for twenty three countries -including Spain- were published in 2011 (Lee and Mason, 2011). Nowadays, NTA project involves more than fifty countries over the world, and the methodology manual has been published by the United Nations Population Division (UN, 2013).

Individuals consume along their lifecycle while they can only produce resources during a limited period (typically working age), therefore, a system to transfer resources across ages is needed. NTA disentangles how resources move among the different age groups through family transfers, government intervention and capital markets. The starting point is a transformation of the NA identity for a given year as:

$$YL + YA + TG^{+} + TF^{+} = C + S + TG^{-} + TF^{-} \quad [1]$$

Left-hand side represents income sources – *YL* is labour income, *YA* is asset income and TG^{+} and TF^{+} are public and private transfers respectively, received by individuals. On the other side the income uses are represented: *C* is consumption, *S* stands for savings and TG^{-} and TF^{-} are transfers from individuals to the public sector and other individuals respectively. Rearranging, the following expression is obtained:

$$C - YL = YA - S + (TG^{+} - TG^{-}) + (TF^{+} - TF^{-}) \quad [2]$$

That is, the Lifecycle Deficit (*LCD*), defined as the excess of consumption over labour income, must be financed with reallocations that can occur in three different ways: asset based reallocations (*ABR*) – measured as the difference between asset income and savings – net public transfers (*TG*) and net family transfers (*TF*) – in both cases calculated as the difference between inflows (+) and outflows (+), that is:

$$LCD = ABR + TG + TF \quad [3]$$

It is worth noting that Equation [3] holds both for the whole economy and for each age-group in particular. During non-productive ages (mainly childhood and retirement), *LCD* is expected to be positive (deficit), while during a good part of the working age period it would be negative (surplus. When positive, *LCD* needs to be financed through the three mechanisms in the right-hand of equation [3]. For example, thinking in Spain one can expect that children mainly finance their *LCD* through family transfers (*TF)* and public transfers (*TG)* like education and health services. In the case of the elderly, they receive an important amount of *TG* (mainly pensions and health) and probably they use *ABR* (dissaving, asset income), while *TF* (mainly from younger members of the family) would be limited. When negative, *LCD* indicates that labor income is higher than consumption so typically they can save (*ABR* is negative) and they pay more taxes than public transfers received. Equation [3] show interesting features of the generational economy: the standards of living of the society depend crucially on the success of working-age population to generate enough resources to finance the LCD of the two economically dependent age groups (children and the elderly). That means that the population age structure plays a key factor in the analysis.

2.2. Constructing Spanish NTA for 2012

NTA have been estimated for Spain referred to years 2000 (Patxot et al., 2011), 2008 (Patxot et al., 2015) and 2006 (Rentería et al., 2016, in this case also disaggregated by level of education). All those estimations correspond to the pre-crisis period and hence, the possible changes due to the recession cannot be analyzed. In this paper we construct NTA profiles referred to year 2012, which can be considered one of the worst years of the crisis.[1]

In order to obtain all the age profiles of NTA a lot of information provided by different statistical sources is needed. The NTA methodology can be found in the NTA manual (UN, 2013). Below we provide details about the statistical sources and some specific procedures to the estimations for Spain referred to year 2012.

First, to create labor income profiles we use the European Union Statistics on Income and Living Conditions (EU-SILC) referred to year 2012. The survey is from Eurostat and aims to collect timely, and comparable cross-sectional and longitudinal multidimensional micro-data on income, poverty, social exclusion and living conditions.

Second, we estimate private consumption which is divided into three main categories: education, health and other consumption. The two first are estimated directly using the Encuesta de Presupuestos Familiares (EPF) referred to 2012. Regarding the 'other consumption category' it includes not only all the other categories different from education and health, but also the housing consumption of owner-occupants – that is, the value of the annual services resulting from owning a house, typically measured as the amount for which the house could be rented. Each component of private consumption for each household (*j*) has to be allocated to each household member (*i*). In order to do that, first an equivalence scale is used. This scale depending on the age [$\alpha(a)$] is standard in NTA, and assumes a value of one for adults aged 20 years and more, while declines linearly from ages 20 to 4, being a constant value of 0.4 for ages 0-4. Then, total consumption of the household (*CF*) is distributed among household members (being *M* the number of members) using the equivalence scale in the following way:

$$CF_{ij}(a) = \frac{CF_j \alpha(a)}{\sum_a \alpha(a) M_j(a)} \qquad [4]$$

[1] According to different macroeconomic indicators. For example, the unemployment rate reached is maximum record (25.77%), the risk premium of public debt went up to 600 point in July, bringing the country to the verge of a financial rescue from the European Union.

Third, public consumption profiles are estimated distinguishing education, health and other public consumption categories. The data needed come from different data bases directly provided by the Ministries of Employment and Social Security – MEYSS –; Education – MECD – and Health and Social Services – MSSSI) and the NHS (National Health Survey) produced by INE (National Statistics Institute).

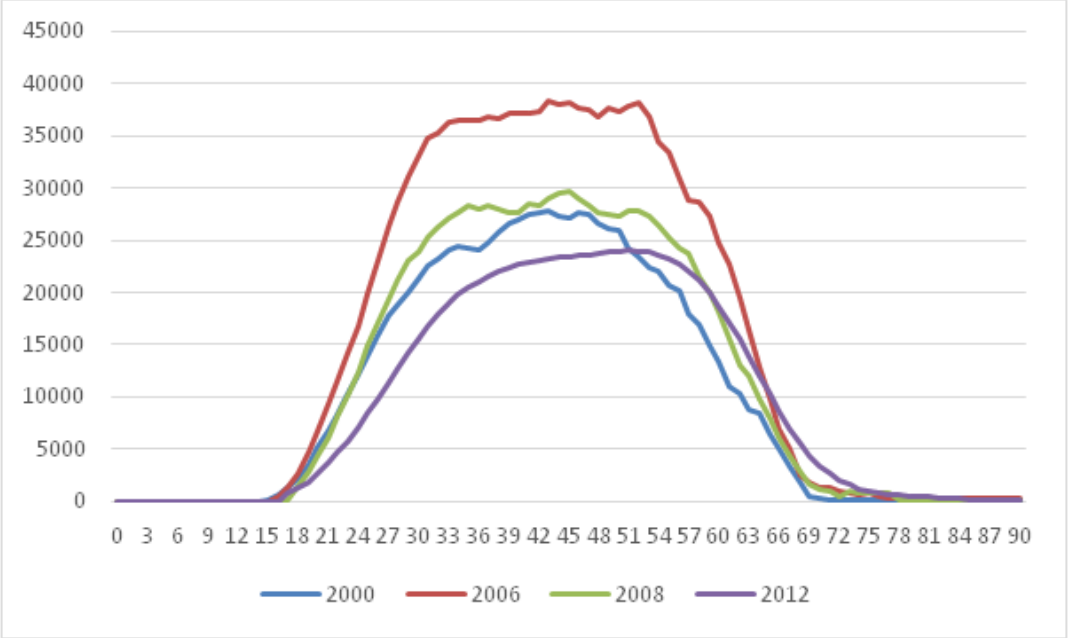
Finally, all the age profiles obtained are adjusted to the correspondent aggregates in Spanish NA provided by INE. This way NTA and NA are perfectly consistent.

3. Preliminary results: Analyzing the impact of economic crisis by age

In the following we present the NTA age profiles estimated for Spain referred to year 2012 comparing them to the previously available for years 2000, 2006 and 2008. We start showing the per capita labor income profile in Figure 3.1. As is to be expected, labor income concentrates clearly on the central ages of the working age period (25-50 years). However, evolution of the profiles along the period shows two main findings. First, the crisis has impacted strongly the labor income profile: while the aggregate level increased significantly from 2000 to 2006, it decreased dramatically in 2008 and 2012. Secondly, not only the level, but also the age pattern of labor income appears to be changing: labor income decreased more for younger workers (especially under age 50). Moreover, labor income for older workers (above 65) has increased in 2012 regarding the previous years, revealing probably that a part of these workers postpone have delayed their retirement.

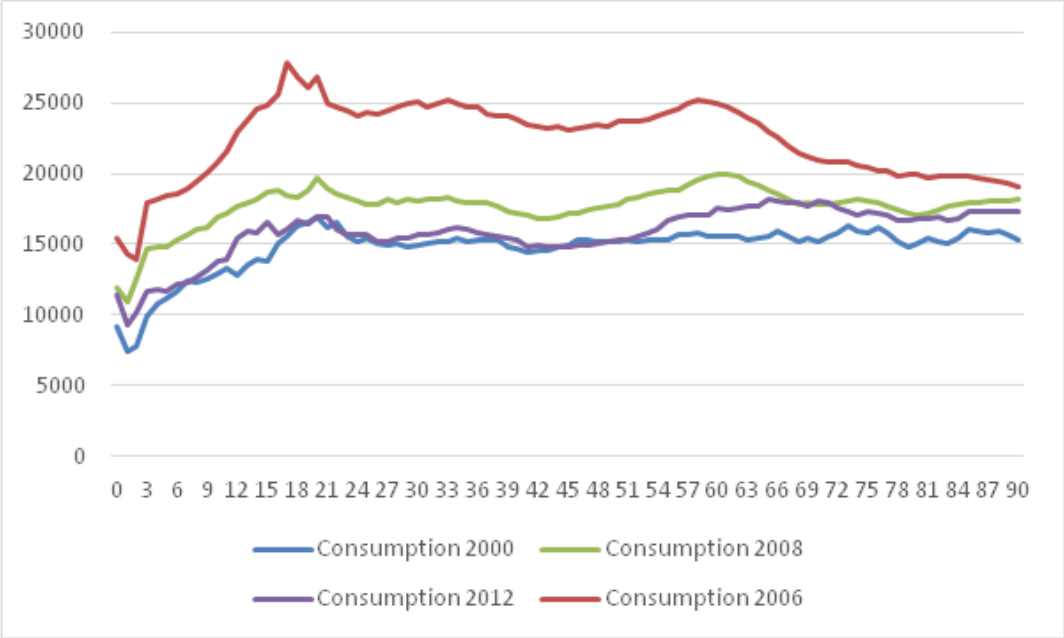
Figure 3.2 displays the consumption profile, where, again, some interesting features can be noted. In Spain, consumption age profile increases along the childhood and tends to be quite stable along the rest of the lifecycle, with a slight decrease at the end. This is a specific feature of Spain with respect to other countries which exhibit an important increase of consumption at older ages (as USA, Sweden, Finland or Germany). The reason is mainly that the long-term expenditure is much higher in those countries compared to Spain. As observed, consumption profile increased from 2000 to 2006 but, as the case of labor income, especially between 2006 and 2008. However, the strong impact of the crisis returned it close to the 2000 level. Again, we can observe that people over 50 years were less affected –in that case their level of consumption in 2012 is near to 2006 level.

Figure 3.1 Per capita labor income age profiles in Spain (2000, 2006, 2008 and 2012)



Note: Per capita labor income is measured in constant euros of 2012 per year.
Source: 2012 authors' elaboration; 2000 from Patxot et al. (2011); 2006 from Rentería et al. (2016); 2008 from Patxot et al. (2015).

Figure 3.2 Evolution of per capita consumption age profiles in Spain

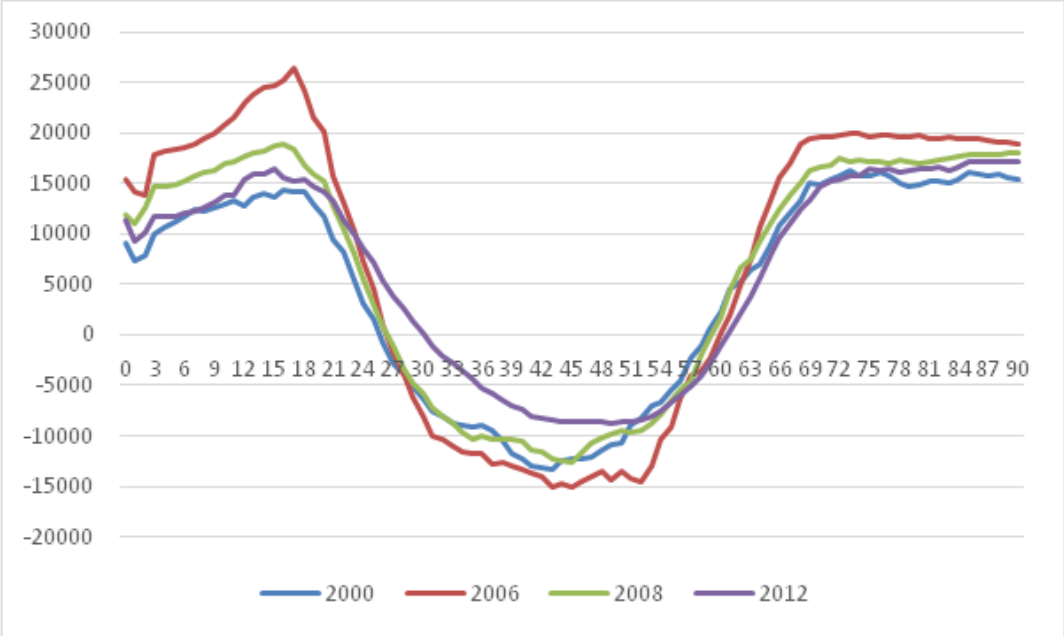


Note: Per capita consumption is measured in constant euros of 2012 per year
Source: 2012 authors' elaboration; 2000 from Patxot et al. (2011); 2006 from Rentería et al. (2016); 2008 from Patxot et al. (2015).

The evolution of the resulting lifecycle deficit (*LCD*) –estimated as the difference between consumption and labor income– is shown in Figure 3.3. While the age pattern results are quite

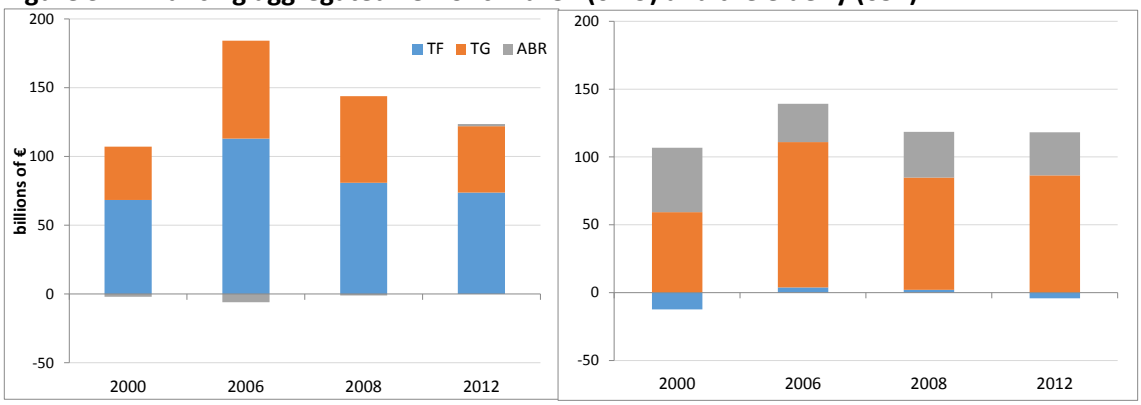
similar in all the periods, some interesting differences are present. On the one hand, it is worth noting that the surplus area has reduced significantly in 2012 regarding the previous years, while the deficit both during the childhood and the elderly is more similar. On the other hand, due to the strong impact of the crisis on labor income of the younger workers (below age 30) shown in Figure 3.1, the period of surplus has also shrunk significantly -labor income only surpasses consumption after age 30, while it increases slightly at the end of the working age.

Figure 3.3 Evolution of per capita lifecycle deficit (LCD) profiles in Spain



Note: Per capita lifecycle deficit is measured in constant euros of 2012 per year
Source: 2012 authors' elaboration; 2000 from Patxot et al. (2011); 2006 from Rentería et al. (2016); 2008 from Patxot et al. (2015).

Figure 3.4 Financing aggregated LCD of children (0-19) and the elderly (65+)

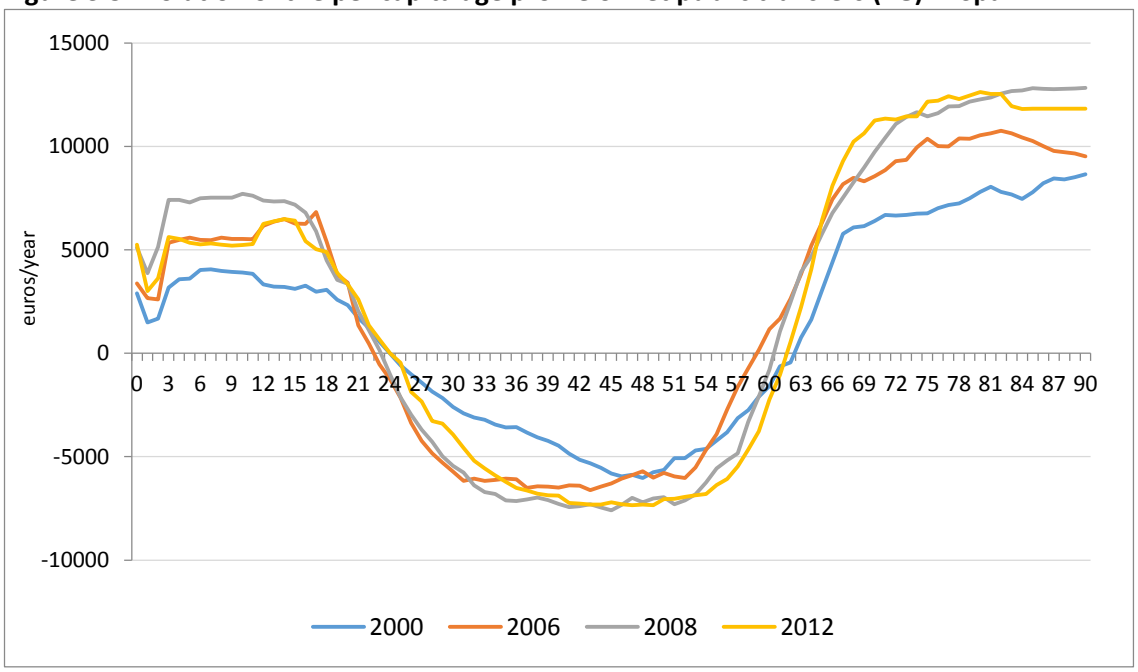


Source: 2012 authors' elaboration; 2000 from Patxot et al. (2011); 2006 from Rentería et al. (2016); 2008 from Patxot et al. (2015).

In Figure 3.4 we can observe the role of the three instruments (public and private transfers and asset based reallocations) in financing the LCD of the two economically dependent age groups, as stated in Equation 3. We define as children the population up to age 19, and old population those aged 65 and more. The observed pattern is very different for both age groups. In the case of children, asset based reallocations are negligible, being public and especially private transfers the main sources of founding. In turn, public transfers are clearly the most important source of financing for the elderly, followed by asset-based reallocations, while private transfers are very low. Interestingly, the role of private transfers in financing elderly's LCD has changed along time: while in 2000 they were negative, meaning that the elderly give resources to younger members of the family, in 2006 and 2008 they became slightly positive and turned negative again in 2012. What is more significant in Figure 3.4 is the observed evolution of total LCD and its components for both age groups. Between 2000 and 2006 aggregate LCD increased significantly, especially in the case of children. In 2008, which can be considered the starting year of the crisis, an important decline in the amount of public transfers received by the two age groups is observed. Nevertheless, the elderly recovered part of them in 2012, while they continued to decrease for children. Moreover, as a result of the crisis, private transfers received by children also decreased substantially and hence, they saw their main financing sources reduced. In turn, the source of financing for the elderly, asset based reallocations, remain practically constant. Overall, we can conclude that children have been clearly more affected by the financial crisis.

In order to go deep into the effects of the crisis for both age groups, Figure 3.5 displays the evolution of the per capita TG profiles. As observed, the net public transfers received by the children (less than age 20) decreased significantly in 2012 regarding 2008, while for the elderly they remain at a similar level. Interestingly, the profile of net public transfers remains also very similar for working age population. Only some differences are observed for younger workers (under age 35) who seem to pay fewer taxes in 2012 than before the crisis. On the opposite, older workers (above age 55) pay slightly more.

Figure 3.5 Evolution of the per capita age profile of net public transfers (TG) in Spain

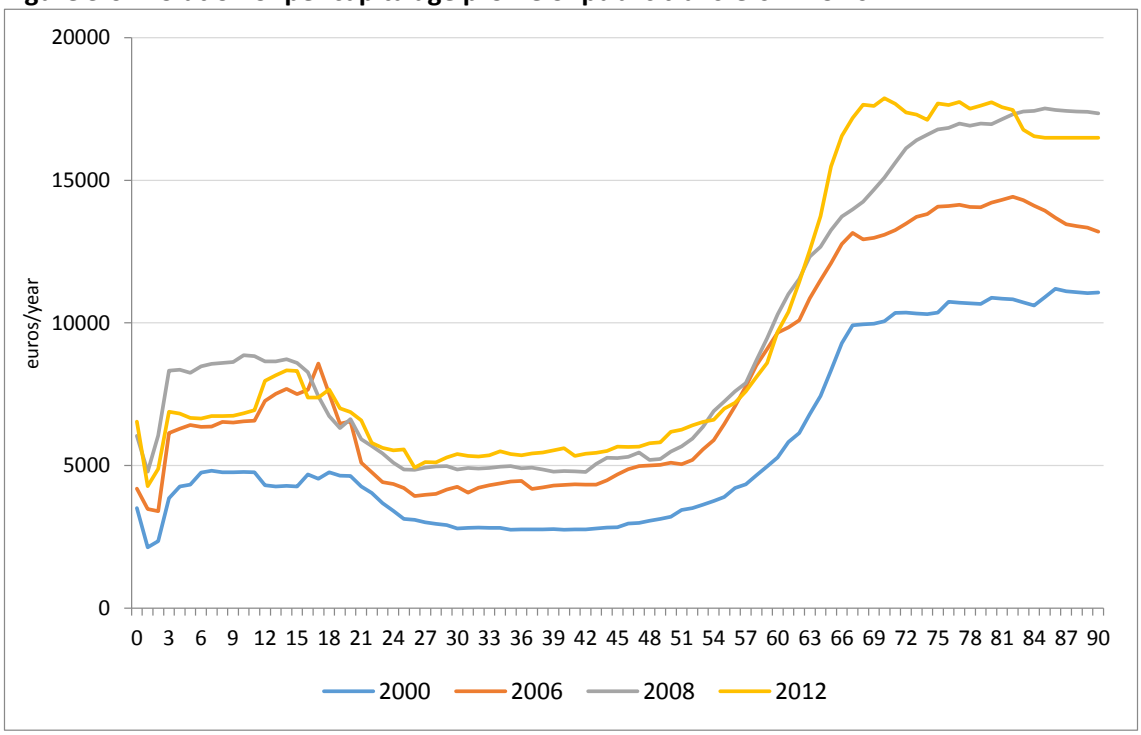


Note: Per capita age profile of net public transfers is measured in constant euros of 2012 per year
Source: 2012 authors' elaboration; 2000 from Patxot et al. (2011); 2006 from Rentería et al. (2016); 2008 from Patxot et al. (2015).

Figure 3.6 shows only the per capita age profile of TG inflows (flows received by individuals, without tax payments). One can clearly observe that younger ages are the most affected by the cuts in public expenditure. In 2008 children between ages 5 and 16 receive on average around 8,500 euros in public transfers, while this amount was reduced to 7,200 in 2012, (a reduction of 15%). On the contrary, people aged 65-80 received more public transfers in 2012 than in 2008, this increase being particularly high for ages 65-70 who received 20% more. It is worth noting that public transfers directed to working age population increased also with the crisis, as a consequence of the high unemployment.

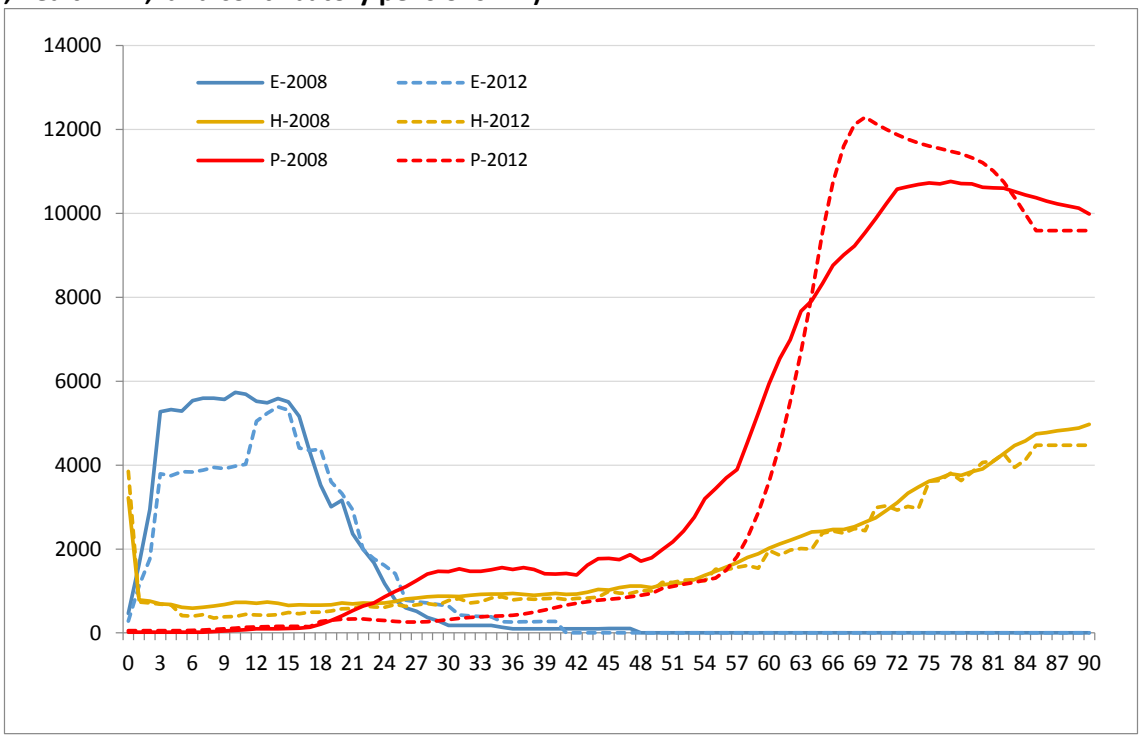
The decomposition of the main public transfer programs (contributory pensions, health and education) shown in Figure 3.7 confirms the reason why cuts in public expenditure had an uneven effect across ages. While education transfers reduced significantly between 2008 and 2012, contributory pensions for those aged 65 and more increased. Regarding health, although it is a program directed benefiting relatively more to old population, it has remained practically unchanged during the crisis, not affecting specifically any age group.

Figure 3.6 Evolution of per capita age profile of public transfers-inflows



Note: Per capita age profile of inflows of public transfers is measured in constant euros of 2012 per year
Source: 2012 authors' elaboration; 2000 from Patxot et al. (2011); 2006 from Rentería et al. (2016); 2008 from Patxot et al. (2015).

Figure 3.7 Evolution of per capita age profiles of main public transfers in Spain (education –E-, health –H-, and contributory pensions –P-)



Note: Per capita age profile of of public transfers is measured in constant euros of 2012 per year.
Source: 2012 authors' elaboration; 2000 from Patxot et al. (2011); 2006 from Rentería et al. (2016); 2008 from Patxot et al. (2015).

4. Conclusions

The economic crisis starting in 2008 is considered to be the worst economic downturn since the great depression of the 1930s. Spain has been one of the countries whose economy has been more severely affected, not only because of its strength but also because it has impacted the majority of population. One critical component of an economy that is affected by a crisis is the public sector, which plays a key role both in terms of its contribution to aggregate GDP and employment, but also by the instrumental roles of social protection, redistribution and the provision of basic goods such as education and health. A crisis leads to potential decreases in public expenditure, and these decreases spread out unequally across generations.

This paper investigates to what extend the 2008 crisis has affected different age groups**.** We have estimated the NTA for Spain referred to 2012 (probably the worst year of the crisis), and we compare the results to previously available NTA for 2000, 2006 and 2008. Our results show that the crisis has affected differently different generations. In particular, young people have been hit more severely as long as their two main financing sources -public and private transfers- have been seriously reduced. On the opposite, old population has been better protected by a public pension system which has acted as an insurance against the economic downturn. In the case of working age population, some age-effects are also appreciated: labor income profile shows that younger workers (below age 30) have been clearly more affected than the older ones (above age 50). Our results provide useful information for policy intervention, which should consider the implications of cyclical policies in times of crisis in terms of intergenerational equity.

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