The Welfare State in Spain: An Impact Assessment

Gómez Bengoechea, Gonzalo

Universidad Pontificia Comillas - ICADE

Quan, Siyu

Tulane University

September 28, 2020

Abstract

We use the methodology developed by Lustig (2016) to analyze fiscal incidence in Spain in the year 2016. Data from the Survey on Life Conditions (ECV) is used to assess the effects of government taxation and public spending on income distribution, inequality and poverty. Our results show that Spain's redistribution system is more inefficient in reducing inequality, according to all the available metrics, than the other countries analyzed under CEQ Methodology. However, when compared with OECD countries, inequality is higher and redistribution lower.

1 Introduction

This paper[1] studies fiscal redistribution in Spain through central estate and regional mechanisms. Our research puts in place a comprehensive tax and benefit incidence analysis covering the principal redistributive instruments implemented in the year 2016, with results representative of the whole country, as well as of the different regions ("comunidades autónomas").

Contribution: final income and survey data.

Our methodological approach is based on the work by Lustig et al. (2014) and Lustig (2016). The use of a common methodology shared by the other studies in this series of articles allows us to establish a consistent comparative analysis covering a significant and growing number of countries. This is also the first article of this series that analyzes a European economy. This explains that our research approach and results are compared also, during the entire article, by those provided by Sutherland and Figari (2013) through their own methodological approach.

We use data from the ECV ("Encuesta de Condiciones de Vida") survey for the year 2017, published in July 2018. Respondents provided information about their individual and household conditions, like income or labor situation, during the year 2016. The survey has, then, a two year delay between data collection and the publication of the results.

Results show that Spain is a very efficient country in redistributing income. Gini coefficient fall from 0.44 on incomes after contributory pensions but before any fiscal interventions to 0.27 after taking into account all of them. The differences between regions in terms of fiscal regimes and social expenditure generate that some of the interventions are not totally progressive on aggregate.

This paper is structured as follows. Section 2 explains the main features of the CEQ approach and compares it with EUROMOD's methodology. Section 3 summarizes the main characteristics of the Spanish welfare state. Section 4 explains the particular

---

methodological approach followed for this paper and presents the main results. Section 5 stresses the main policy implications and recommendations. Finally, section 6, offers the main conclusions of the article.

2 Literature Review: The CEQ approach

The goal of the CEQ is to reduce inequality and poverty through comprehensive and rigorous tax and benefit incidence analysis. The first research papers under this series were published in 2012 (Lustig et al., 2014) and 2013 (Lustig and Pessino, 2013) and were focused on developing countries. This is the first research piece of the CEQ that captures fiscal redistribution in an advanced economy.

Authors at the CEQ use survey data to respond to the different research questions. Surveys may be income-based or consumption-based, depending on data availability in each country. Survey data is complemented with fiscal-administrative information that provides the necessary details for allocating fiscal interventions.

The fiscal-administrative data, when reliable, can also provide a check on whether household survey dataset records are consistent with administrative records. Macroeconomic data is also used as a third source of information to calibrate magnitudes of fiscal elements that are allocated across the individuals and households in the household survey.

This approach is very similar to the one used by EUROMOD. EUROMOD is a tax-benefit microsimulation model for the European Union (EU) that calculates the effects of taxes and benefits on household incomes and incentives for the population of each country and for the EU as a whole with the goal of producing the concept of disposable income; CEQ, on the other hand, proposes different methodologies and data strategies to derive the concept of final income.

While EUROMOD's approach is focused on assessing the impact of hypothetical or planned tax-benefit reforms on disposable income, CEQ's aim at determining the extent on which fiscal policy reduces poverty and inequality. Both goals require of different methodological strategies. While on EUROMOD's approach legal rules are

fully simulated, CEQ's relies on using the observed information in surveys, with the addition of specific simulations that can also be used if needed.

As a consequence of this, EUROMOD's results may differ from those declared in the survey. Furthermore, in-kind transfers and indirect taxes are not simulated in the standard version of EUROMOD, though there are extensions that can be used for that purpose (De Agostini et al., 2017). Other small differences appear through the whole estimation process. For example, for the definition of gross market income, EUROMOD doesn't include autoconsumption nor the imputed rent while CEQ does.

Regarding the study of fiscal incidence and income redistribution in Spain, literature agrees on two facts. The first one is that Spain is one of the OECD countries with higher levels of economic inequality (OECD, 2015). The second one is that the Spanish tax-benefit system is one of the least effective redistributing income across the European Union (Immervoll et al., 2006) (Paulus et al., 2009).

The lower redistributive capacity compared to other countries does not mean in any case that the system is not redistributive. The tax-benefit system has traditionally contributed to a much more progressive income distribution than the one that would have resulted from market income.

According to Ayala and Cantó (2018), transfers and pensions reduce the Gini in 16 points while in the Euro are the mean reduction is almost 5 points higher. The main difference between Spain and other European countries is the limited redistributive effect of each policy, with the exception of contributory pensions).

Regarding taxes, Spain has experienced the reduction of the rates in direct taxes and a gradual concentration on elements easier to control, such as labor income or consumption. These trends ignore e the redistributive effect of direct progressive taxation and the regressive one of indirect taxation, as it is also shown in this article. .

3   Welfare State in Spain

This section describes the main components of the Spanish welfare state. We explore, first, the tax system as a whole and the different taxes levied on individuals and

households. We don't consider corporate or other kind of taxes. Secondly, we describe the main categories of transfers: contributory pensions, cash transfers, subsidies and in-kind transfers on education and health.

3.1   Spanish Welfare State: Taxes

Figure 2 shows the international comparison of tax rates in some advanced countries. It highlights the fact that all-in tax rates for different income levels for households and individuals in Spain are similar to those in the United States, but slightly below those in France and Germany.

Figure 1: All-in Tax Rates for Different Income Levels as a % of the Average Wage.
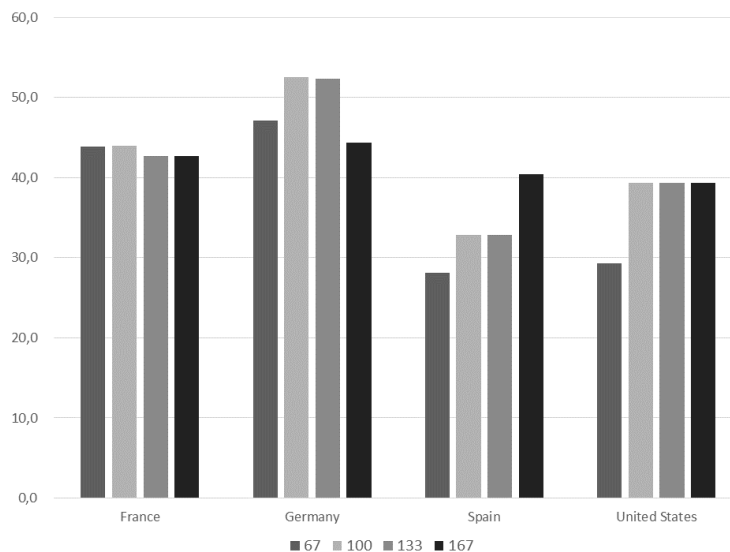
Source: OECD database.

Direct taxes levied on individuals and households in Spain are basically four: personal income tax ("Impuesto sobre la Renta de las Personas Físicas", IRPF), property tax, wealth tax and inheritance tax. The three last ones are transferred to the different regions and most of them have decided to remove them completely or partially.

As a consequence, IRPF is the main tax considered in this section, along with contributions to the social security and wealth tax. These contributions are separated

between those focused on financing the pension system and other social expenses, like unemployment benefits.

Taxable income under IRPF include all sources of income, including savings. For labor income, each region has its own tax schedule. Savings income is taxed in the same way at the national level with three different rates: 19 %, 21% and 23% depending on the income level. Legislation contemplates different deductions depending on familiar, personal or professional circumstances.

Indirect taxes are Value Added Tax (VAT or IVA for its meaning in Spanish) and special taxes (alcohol, tobacco and gasoline). Tax rates, depending on the product levied, are 21% (most of the products), 10% (some products on strategic sectors, like those connected with tourism) and 4% (first-need products). All of them are included in our analysis, thanks to the use of the EPF survey as a complement to the ECV.

In the simulation contained in this paper we have taken into account contributions to the social security, IRPF and property tax, as direct taxes, and VAT as indirect taxes. Other taxes are not simulated, including corporate tax, inheritance tax or other form of local taxes. Table 1 summarizes the main tax categories and whether they are included in our analysis.

Table 1: Main Categories of State Income in Spain

	% of expenditure	% of GDP	Included in Analysis
Total Revenue & Grants	100.00%	19.04%	-
Revenue	100.00%	19.04%	-
Tax Revenue	87.22%	16.61%	Yes
Direct taxes of which	45.92%	8.74%	Yes
Personal Income Tax	33.99%	6.47%	Yes
Corporate Income Tax	10.18%	1.94%	No
Other Direct Taxes	1.75%	0.33%	Yes
Total Contributions to Social Insurance of which	55.04%	10.48%	Yes
Total contributions to social security for old-age pensions of which	44.58%	8.49%	Yes
Total contributions to social security for other programs	10.46%	1.99%	Yes
Indirect Taxes of which	41.30%	7.86%	Yes
VAT	29.50%	5.62%	Yes
Excise Taxes	9.33%	1.78%	Yes
Customs Duties	0.87%	0.17%	No
Other Indirect Taxes	1.60%	0.30%	No
Other Taxes	1.08%	0.21%	No
Nontax Revenue	12.78%	2.43%	No

3.2 Spanish Welfare State: Spending and Pensions

Figure 3 shows the international comparison of social expenditure as a percentage of GPD in some advanced countries, as well as for the OECD group average. As it happened with taxes, Spain spends more on social issues than the US and than the OECD average, but less than France and Germany. All countries considered, have increased their social expenditure during the observed period.

Figure 2: Social Expenditure as % of GDP.
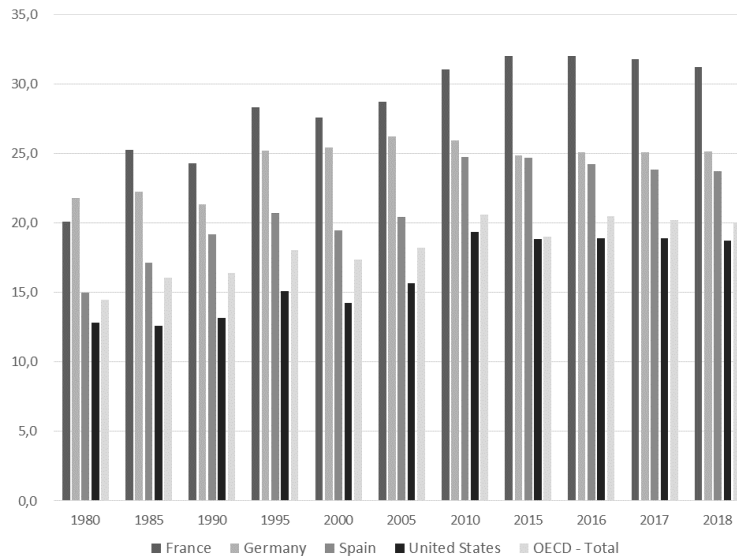
The structure of social spending in Spain can be grouped in four big categories. First, old-age pensions, both contributory and non-contributory. Second, direct transfers, such as unemployment benefits or regional minimum income guarantees. Third, food subsidies. Finally, in-kind transfers in the form of public education and health care. Table 2 summarizes the main categories of social spending in Spain, as well as whether it's included in our Analysis.

Regarding the pensions system, it works around five big principles. First, the social security payments of active workers finance the benefits that exist at that time. Second, benefits are related to the amounts contributed and to how long the contributions are carried out for. Third, anyone who has not contributed to the system will be able to

Table 2: Main Categories of Social Spending in Spain

	% of expenditure	% of GDP	Included in Analysis
Total Expenditure	100%	31.45%	-
Primary Government Spending	91.89%	28.90%	No
Defense Spending	1.69%	0.53%	Yes
Social Spending	74.85%	23.54%	Yes
Social Protection	46.11%	14.50%	-
Social Assistance of which	12.30%	3.87%	-
Conditional or Unconditional Cash Transfers	10.30%	3.24%	Yes
Noncontributory Pensions	0.65%	0.20%	Yes
Other	1.35%	0.42%	Yes
Social Insurance of which	33.80%	10.63%	Yes
Old-Age Pensions	33.80%	10.63%	Yes
Education	10.99%	3.46%	Yes
Health	17.03%	5.36%	Yes
Housing & Urban	0.17%	0.05%	No
Other social spending	0.55%	0.17%	-
Subsidies of which	8.06%	2.54%	-
Energy	1.55%	0.49%	No
Food	N/A	N/A	Yes
On Inputs for Agriculture	2.11%	0.66%	No
Infrastructure	1.70%	0.53%	No
Other non social spending	2.70%	0.85%	-

access the non-contributor level. Fourth, the Social Security system will be managed and financed by public institutions. Finally, the amount of the benefits must be enough to ensure the protected needs.

3.3 Spanish Welfare State: Transfers and Subsidies

Under CEQ strategy it's usually found (see Martinez-Aguilar et al. (2017)) that transfers include both cash and near-cash concepts. However, in the case of Spain, near-cash transfer programs only exist at the local level so we don't consider them in our analysis.

The Spanish transfer system is very decentralized. National transfers (IRPF related, unemployment benefits, family related transfers and non-contributory pensions) are complemented with a scheme of regional transfers that include the Minimum Income Guarantee (MIG) and other family-related transfers.

At the national level we consider, first, IRPF related transfers. Those taxpayers who have contributed throughout the year more than the amount they should pay in income taxes, have the right to get compensated for the difference by the Spanish Treasury.

Unemployment benefits include both the contributory transfers and the non-contributory subsidy for those unemployed citizens that exhausted the contributory level. In order to

be entitled to the contributory benefits workers must have contributed to social insurance covering unemployment and must have paid the required period of contributions, as it happens in many other economies.

Non-contributory pensions are designed for people over 65 years that find themselves in a state of need and lack enough means for subsistence. This is a family unit income-tested benefit. Finally, family-related transfers include dependent children, multiple birth, newly born babies in lone-parent or large families in low income households.

MIG is the largest regional transfer. It's designed to assist families with very low incomes. Even if each region has its own scheme, all of them take into account the actual size and income of the household. Benefit amount move, approximately, from around 4000 and 8000 euros a year.

Finally, other regional family-related transfers have a similar approach to the national ones. They are focused on protecting families going through financial difficulties or facing extraordinary circumstances. Table 3 summarizes the main categories of cash transfers described above and included in our analysis.

Table 3: Cash Transfers: Summary and Main Components

Program Name	Program	Taxable?	Target Population	Targeting Mechanism
IRPF	National	No	Individuals with a negative result on the IRPF statement	There is no a targeting mechanism.
Unemployment Benefits	National	Yes	Individual without a job and with the right to get the benefit	All individuals who have worked for a year, since the last time he or she got the benefit have right to it + 426 euros per month.
Non-Contributory Pensions	National	Yes	Old-age individuals with no right to perceive a contributory pension	All old-age individuals whose income is below 5150.6 euros per year, in one-individual households.
Family-Related Transfers	National	No	Individuals and families with low income and under particular circumstances	Individuals, not fulfilling the minimum income requirements, and under certain circumstances
MIG	Regional	No	Individuals with income below minium levels in each region, whose age is between 25 and 65 years old.	Individuals, not fulfilling the minimum income requirements. Income changing depending on the size of the household.
Other Regional Transfers	Regional	No	Individuals and families with low income and under particular circumstances	Individuals, not fulfilling the minimum income requirements, and under certain circumstances

Contrary to cash transfers, subsidies in Spain take the form of price reductions on two particular categories of goods: electricity and food.

Subsidies to electrical consumption are not considered in our analysis. The reason is that they are not, technically speaking, a subsidy. The government, who subsidizes electrical companies, establish a maximum price for vulnerable consumers (those whose income is below different "Indicador Público de Renta de Efectos Múltiples (IPREM)" levels). Retailers assume the cost of the subsidy and they are not compensated for that specific reason by the Government.

However, we do include food subsidies in our analysis, even if they are partially financed by the European Union. Food subsidies finance 5% of food expenditure for households "in need". We define them as those households that, according to the data taken from the survey, can't afford to buy meat, chicken or fish during the reference week.

3.4 Spanish Welfare State: In-kind Transfers

Education and health care are the two great groups for in-kind transfers in Spain. Both cover all the Spanish citizens and require from almost no co-payment, with the exception of certain educational expenses.

Almost 30 years ago, Spain regulated the current educational system based on the coexistence of three kind of centers: public, private and mixed ("concertados"). The state contributes to the financing of the three kind of centers to different degrees. Public centers are 100% publicly financed. Public Administration provided 54.2% of income in private non-universitary schools and 69.2% in partially subsidized schools.

The strong relation between the attendance to private schooling and income distribution (F. Javier Murillo, 2018) is a key feature of the Spanish education system. We have taken it into account to allocate public spending on each educational level to students, according to their household's income level.

Something similar happens with health care. It is a Universal system that is complemented with private plans by some citizens. Prices are pretty affordable, which makes

them relatively common for middle and high classes. Table 4 shows the percentage of individuals that complement public coverage with private plans. Social levels, as well as the information used for its simulation, are obtained from the National Health Survey ("Encuesta Nacional de Salud") in the year 2017.

Table 4: In-Kind Transfers: Health-Care

	% Public	% Private
Social Level I	67.25%	32.75%
Social Level II	68.08%	31.92%
Social Level III	78.47%	21.53%
Social Level IV	93.29%	6.71%
Social Level V	94.03%	5.97%
Social Level VI	96.11%	3.89%

4 Methodology and Approach

This section is structured as follows. First, we describe the data used for our analysis. Second, we summarize the main features of our simulation. Third, we present the main results obtained for the Spanish case on aggregate. Finally, we segregate them regionally.

The construction of the CEQ core income concepts require the combined use of data from surveys(in our case three: ECV, "Encuesta de Presupuestos Familiares (EPF)", for the simulation of indirect taxes, and "Encuesta Nacional de Salud" for health care in-kind transfers) together with the fiscal-administrative data.

The CEQ strategy for the construction of income concepts is summarized in Figure 1. Each concept is build on the previous one. On the Spanish case, we got data for Gross Market Income both at the individual and household level at the ECV. From that concept, adding and subtracting each transfer and tax concept, we obtained each of the income categories. Details on the content of each intervention are provided in section 3.2.

The main fiscal incidence analysis equation on which the whole analysis contained in this paper is based on is the following:

$Y_h = I_h - \sum_i T_i S_{ih} + \sum_j B_j S_{jh}$

Figure 3: CEQ Redistribution Strategy - Summary.
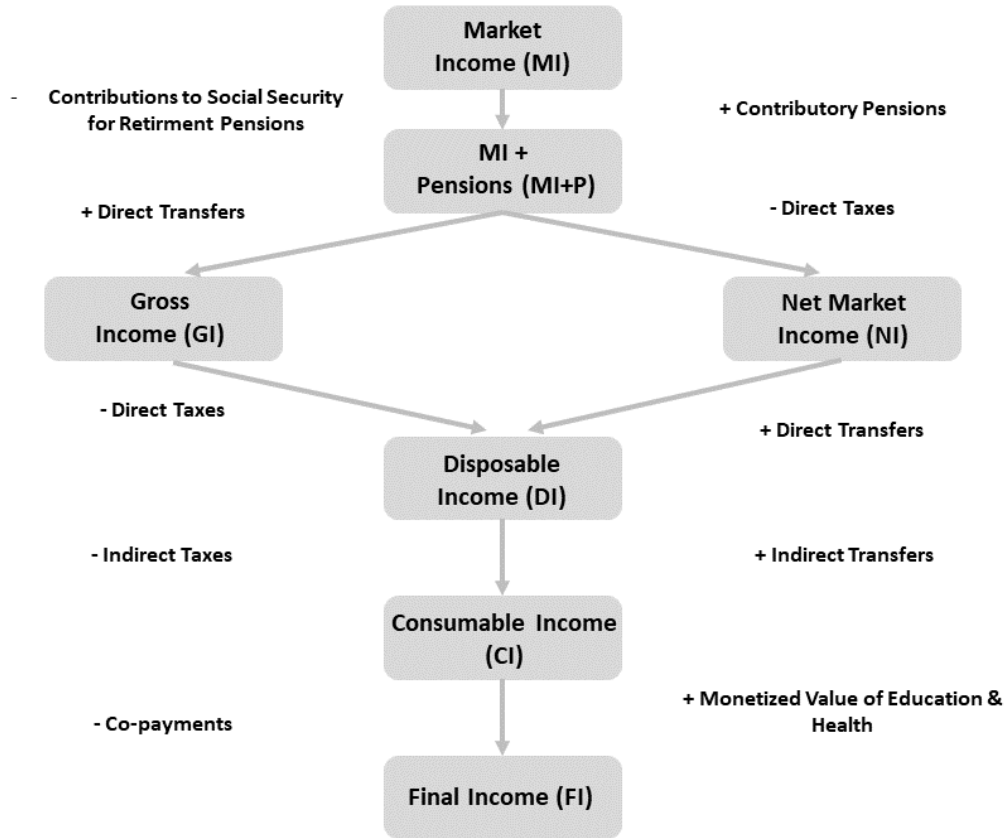
Where:

Y_h = Income after taxes and transfers.

I_h = Income before taxes and transfers.

T_i = Taxes.

S_{ih} = Share of Tax i payed by unit h.

B_j = Transfers.

S_{jh} = Share of Transfer j received by unit h.

Data has been obtained mainly from the ECV survey published by "Instituto Nacional de Estadística (INE)" on a yearly basis. ECV is an income-based survey. It gathers information from 34906 households and individuals and offers data both nationally and regionally. ECV does not include consumption-related questions.

ECV household data offers information on the composition, income, social exclusion and material needs of the unit, as well as the current state of the living place. With respect to individuals, ECV contains information on education, healh, labor conditions, income and material needs.

Two other surveys have been used for the construction of the different CEQ concepts. EPF is a consumption-based survey used for the estimation of the VAT payments done by Spanish individuals. It offers data about 24000 households and, as in the case of the ECV, it has a two-year delay between the publication of the results and data generation.

Finally, Encuesta Nacional de Salud (ENS), has been also used to obtain information about private health care plans and health services uses by the Spanish citizens. That information is necessary to allocate public spending on health care to each individual considered in our analysis.

Table 5: Estimation Strategy I

A. Transfers	Income Concepts	B. Taxes
	Market Income	
A.1. Contributory Pensions	MI + Pensions	B.1. Contributions to Pensions
A.2. Direct cash transfers	Gross Income / NMI	B.2. Direct Taxes
+ Non-contributory pensions + Unemployment benefits + National family transfers + Regional family transfers + MIG		- Personal Income Tax (IRPF) - Other contributions to social security - Property Tax
A.3. Indirect subsidies	Disposable Income	B.3. Indirect Taxes
+ Energy + Food		- Value Added Tax
A.4. In kind transfers	Consumable Income	B.4. Co-payments
+ Education + Health		
	Final Income	

Table 5 shows the main concepts included in our analysis, based on the CEQ approach contained in Figure 1. As it can be inferred from the previous information, the different surveys do not offer all the necessary information to construct the whole estimation process.

We have three ways to gather all the information necessary for the construction of all the income concepts and fiscal interventions contained in our analysis: survey data or direct identification, imputation or inference from the available data or the complete simulation of the interventions.

Table 6: Estimation Strategy II

	Estimation Strategy
A. Transfers	
A.1. Contributory Pensions	Inference + Simulation
A.2. Direct cash transfers	
+ Non-contributory pensions	Imputation + Direct Identification
+ Unemployment benefits	Direct Identification
+ National family transfers	Imputation + Direct Identification
+ Regional family transfers	Imputation + Direct Identification
+ MIG	Imputation + Direct Identification
A.3. Indirect subsidies	
+ Food	Imputation + Simulation
A.4. In kind transfers	
+ Education	Imputation + Simulation
+ Health	Imputation + Simulation
B. Taxes	
B.1. Contributions to Pensions	Inference + Simulation
B.2. Direct Taxes	
- Personal Income Tax (IRPF)	Imputation + Direct Identification
- Other contributions to social security	Inference + Survey Data
- Property Tax	Direct Identification
B.3. Indirect Taxes	
- Value Added Tax	Inference + Simulation
B.4. Co-payments	

Table 6 [2] shows that direct survey information is used only in three cases: contributory pensions, unemployment benefits and subsidies, and contributions to old-age pensions. Besides these interventions, survey data is also used for the construction of the market income. Market income includes labor income, capital income, private pensions income, self-consumption, imputed rent and other sources of income (remittances, for example).

Most of the interventions are built through the complementary use of the information contained in different variables in the survey. For instance, through the combined use of income data and family conditions we can infer whether a household or an indi-

---

[2]Direct Identification refers to data directly obtained from the main reference survey; In some cases, it might be possible to infer which families or individuals were affected by a policy or intervention based on whether the value they report in that for an specif question matches a possible value of the intervention; The imputation method uses information that directly identifies beneficiaries or payers from the survey; Simulation is used when both the information on beneficiaries (taxpayers) and benefits received (taxes paid) is absent from the survey, one can estimate the latter based on the program (tax) rules. See (Lustig, 2016) for further details

vidual has the right to get a direct transfer from the Government. This strategy has been used for all other interventions, with the exception of the VAT.

4.1 From Disposable Income to Final Income

The literature on fiscal redistribution in advanced countries usually focus its analysis on the evolution and estimation of Disposable Income. In this paper we go a step beyond and present results for Consumable Income and Final Income as well.

The estimation of Consumable Income requires the addition of indirect subsidies and the subtraction of indirect taxes. Most of the indirect transfers in Spain are allocated at the municipal level. In our estimation we consider only Food subsidies, which are allocated at the national level using Spanish and European funds.

To do that, we identify individuals in need using the variable HS050 from the ECV Survey. We try to capture, as the definition of the benefit establishes, individuals or households that are in a "situation of economic poverty". Variable HS050 captures households that can't afford to buy meat, chicken or fish during the reference week. We then assign 5% of average expenditure in each region per individual, according to MAPAMA (2016) data.

Regarding indirect taxes, we use data from Spanish Family Budget Survey (EPF Survey) which provides consumption and income information for around 24000 households and for all the consumption categories in ECOIPOP (European Classification of Individual Consumption by Purpose).

We first estimate VAT expenditure per household taking into account the different rates for each good and service purchased. Then, we estimate the average VAT expenditure per centile of household disposable income. Finally we merge data from the ECV with VAT results obtained from the EPF and we assign to each percentile of disposable income at the ECV the VAT expenditure obtained from the EPF.

We follow for this strategy, the methodology developed by Larrañaga et al. (2011). This hot-deck procedure ensures that the variables being imputed have the same average level of sampling observations. In order to do that, the imputation process needs to

15

be undertaken with the variables multiplied by the expansion factors of the respective surveys.

From Consumable Income to Final Income we don't include any relevant co-payments in our estimation. Regarding health-care they are almost non-existent and we lack the necessary data for estimating them for public education. We estimate the impact of both structural policies using complementary survey and other public sources data.

For the case of public education, we first group individuals by educational level depending on their age and on the response given to their current employment status, which includes the possibility of declaring themselves as students. We then stratify students by income level.

Using the results and data by Murillo et al. (2018), we randomly assign a percentage of students that, according to their income level (10th, 25th 75th and 90th percentiles) and their region, would attend a private or public educational center. Finally, using data from de Educación (2016), we allocate for each student the average public spending per region and type of educational center. We also scale-down results using total expenditure in education from public accounts and disposable income from National Accounts.

Health expenditure has been allocated using a different strategy. We have used two sources of information in this process. First, the European Health Survey ("Encuesta Europea de Salud") for the definition of income levels and for the random selection of individuals that, according their income and region, may complement public health care with private plans. Second, we have used data from Círculo de Salud (2016) and from EHS to allocate to each individual the public spending per head depending on their use public health care ("average number of visits to a specialized doctor") and the existence of complementary private plans.

4.2   Results

This section is structured as follows. First we present the summary statistics of the Spanish redistribution process. Second, we analyze the evolution of the different CEQ

income concepts. Finally, we present the impact of the fiscal interventions on individuals income.

4.2.1 Summary Statistics

Spanish households increased their average income from 2015 in 3.1 percentage points. Average household income in 2016 was 27558 euros. Average per capita income was 11074 euros in that same year, 3.4% higher than in the previous one.

Results in Figure 4 show the evolution of mean and median incomes for the different CEQ Income Concepts. Mean market income is 13453.45 euros per year. It grows 15110.8 euros after the inclusion of contributory pensions and direct transfers. When we move to disposable income, it falls to 13072.9 euros just to recover to 14063.2 euros with the addition of the in-kind transfers. A similar pattern can be found in the evolution of median incomes, moving from 9441.78 euros in market income to 11486.4 in disposable income and finishing at a median income of 12914.5 euros as final income.

Figure 4: Mean and Median Income for CEQ Income Concepts.
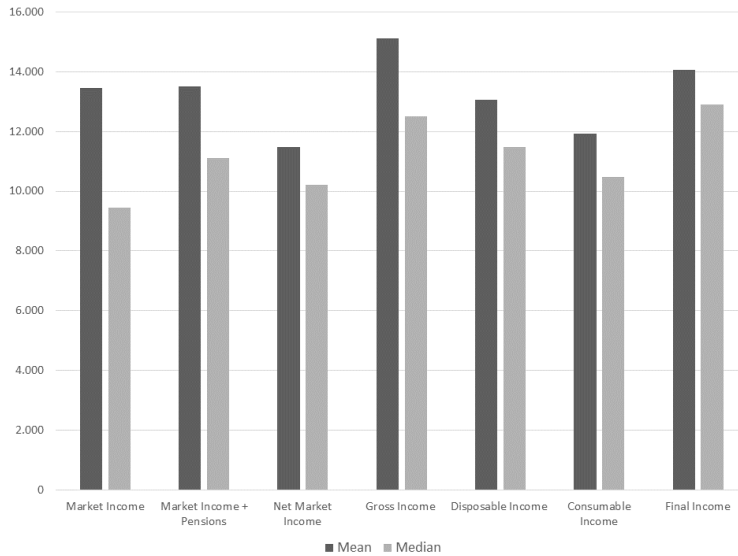
In our analysis, we are always considering market income plus pensions as the baseline income concept. Contributory pensions are, then, assumed to be a deferred income. That is what they are in fact when considered the Spanish "pay-as-you-go" defined-benefit public pension syste (Gimenez and Saavedra, 2014).

17

Figure 5(a) and 5(b) shows the evolution of total income concepts relative to market income plus pensions, both for mean and median incomes. As it can be seen, disposable income and final income are larger than market income plus pensions, which means that the positive impact on income of transfers and subsidies is larger than the negative one derived from taxation and co-payments.

Figure 5: % of Market Income plus pensions for CEQ Income Concepts.
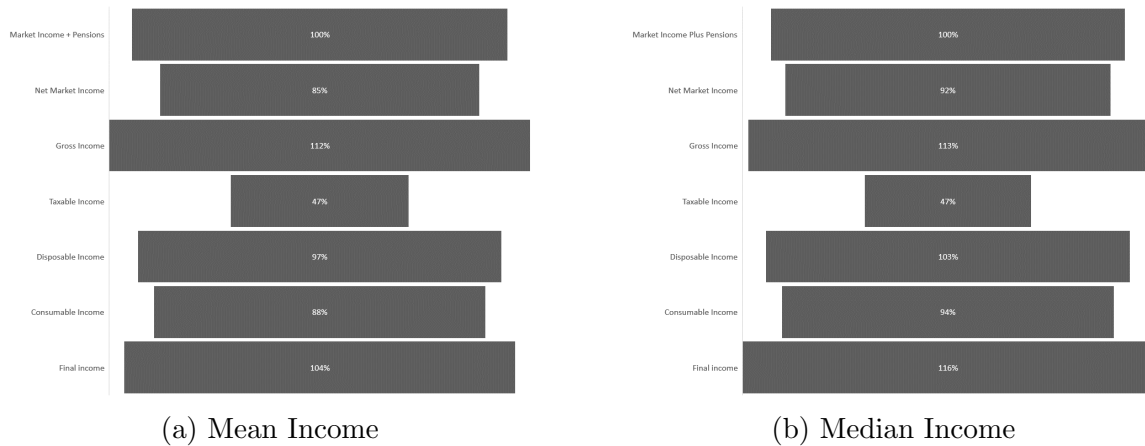
(a) Mean Income

(b) Median Income

The evolution of the percentage of individuals per income category shown in Figure 6 highlights three important facts about the income distribution in Spain. The first one is that the majority of the population lives in the middle and wealthy classes, as defined by the 10 to 50 or the above 50 PPP dollars parameters. The second one is that vulnerable and poor groups are almost non-existing when analyzed with an international perspective. Finally, the redistribution system seems to be having a positive impact on the Spanish society, since individuals seem to be moving from lower income groups to higher income ones.

Figure 6: % of Individuals per Income Category.
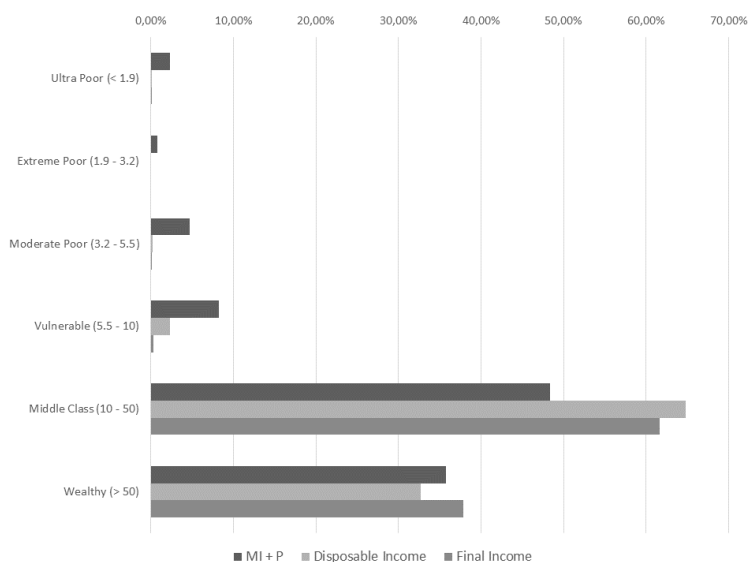
4.2.2 Core income concepts

The positive impact suggested in Figure 6 is confirmed by the evolution Gini coefficient. Gini for market income plus pensions is 0.44. It falls around 0.32 for disposable and consumable incomes, before finishing at the 0.27 at the final income concept. This results are very similar to those obtained by Tammik (2019).

Figure 7: Gini Index for CEQ Core Income Components.

19
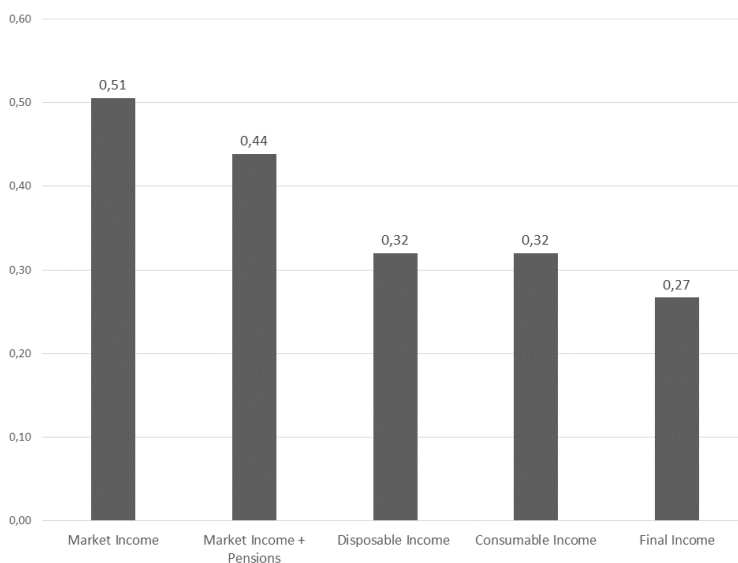
Figure 8 shows the different Gini indexes for capital and labor incomes. Capital income inequality is almost twice as high as labor inequality. This has two important consequences. The first one is that those individuals with the capacity and knowledge to participate in financial markets have a source of income that the rest of the individuals have not access to. The second one is that taxation should be focused in this particular income if it wants to tackle inequality issues efficiently.

Figure 8: Gini for Capital and Labor Income.
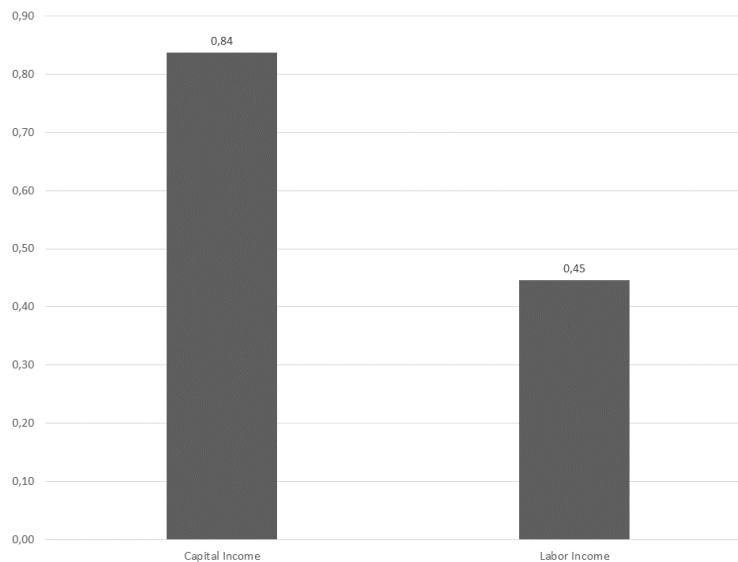
The positive results shown in Figure 7 for overall Gini index are confirmed by Theil Index and by the 90/10 ratio shown in Figure 9. Results for the 9/ 10 ratio show that income earned by individuals in the 90th percentile compared to income earned by individuals in the bottom 10% fall from above 14 percent to around 4%.

Poverty indicators offer less clear results, however. Headcount poverty ratios for core CEQ income concepts show that poverty almost disappears when fiscal redistribution is set into motion. Headcount index for the 1.9 PPP dollars a day poverty line, show that a 3% of the population is below that threshold for market income plus pensions. For the 3.2 line, it grows to 4 and for the 5.5 line to almost 9% of the population. On the other four income concepts analyzed in Figure 10, no significant amount individuals can be labeled as poor according to international standards.

Figure 9: Theil Index (left, bars) and 90/10 Ratio (right, line). .
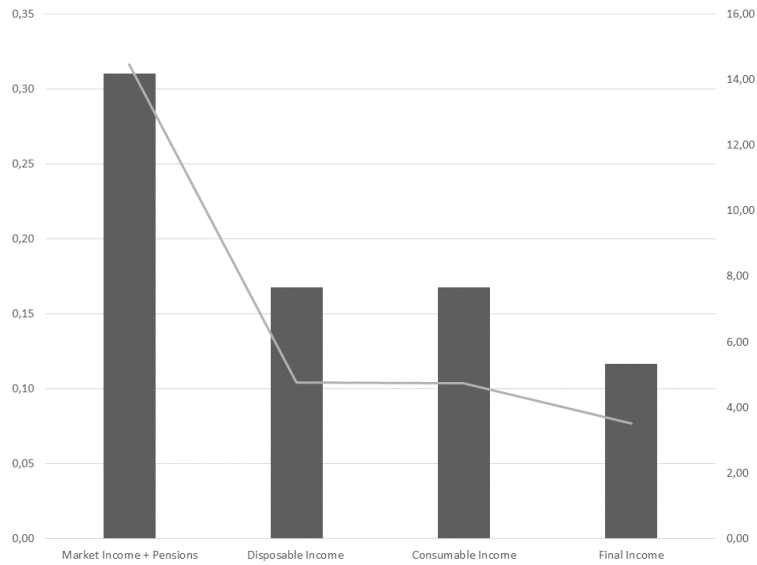
Figure 10: Headcount Poverty Ratios for Core CEQ Income Concepts. .
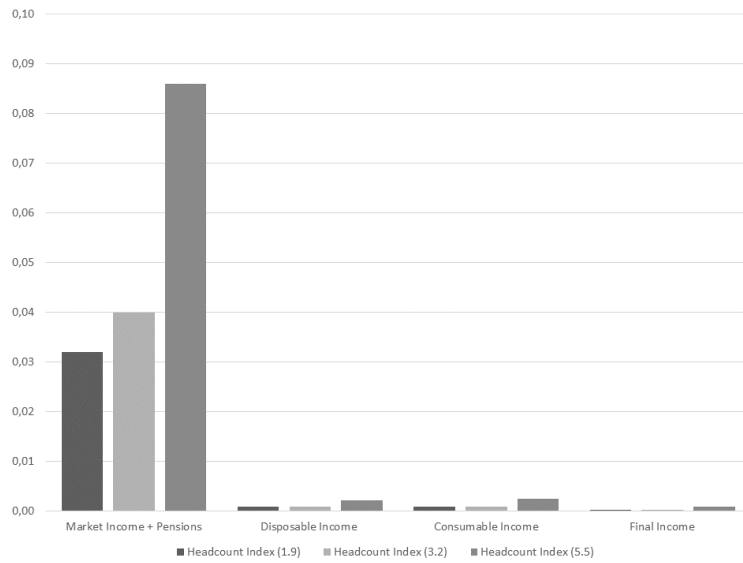
Relative poverty is measured using the standard poverty line for OECD countries. It is defined as the individuals living below 60% of the median income. The poverty rate is the ratio of the number of people (in a given age group) whose income falls below the poverty line; taken as half the median household income of the total population. For that line, 26% of the population live under poverty for the market income plus pensions concept. For disposable and consumable income it falls to 15%. When we

Figure 11: Relative Poverty for Core CEQ Income Concepts.
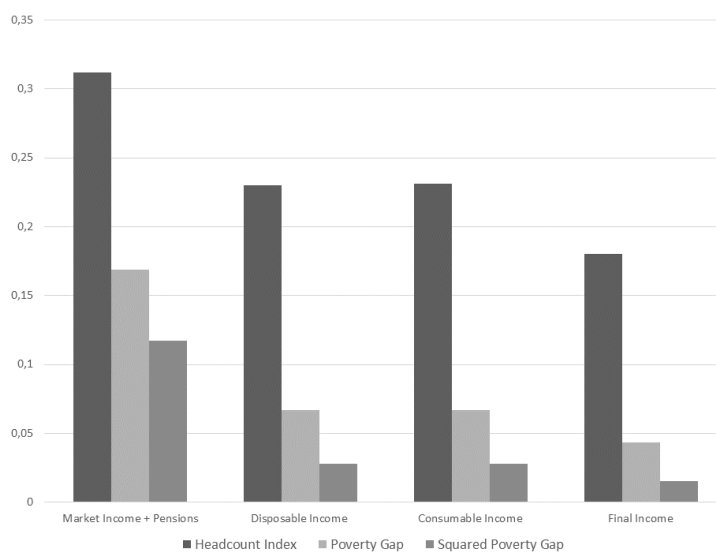
take into account also in-kind transfers, relative poverty rate drops to slightly above 10% of the population, as it can be seen in Figure 11.

Lorenz curve is a graphical representation of the distribution of income. The curve is a graph showing the proportion of overall income or wealth captured by each decile of income in the horizontal axis. Figure 12 shows the Lorenz curve for the main CEQ Income Concepts. The bisecting 45 degrees line would reflect the perfectly equal income distribution. The shape and the position of the three income lines considered show a reduction of inequality and better distribution of income thank to the different fiscal interventions.

Although fiscal interventions will be analyzed later in more detail, in Figure 13 we see how to the joint action of transfers and taxes on market income plus pensions reduces inequality; consumable income shifts closer to the perfect equality line.

Concentration for Core CEQ Income concepts per deciles show the explanation behind the decrease in income inequality already mentioned. Deciles 1 to 6 experience an increase from market income plus pensions to disposable income to final income. This rise in income diminishes up to decile 7, when it turns into a decrease.

From that point on, income starts to fall at a faster rate. That is compatible with the fact that deciles 7 to 9 accumulate around 15% of income and that in decile 10

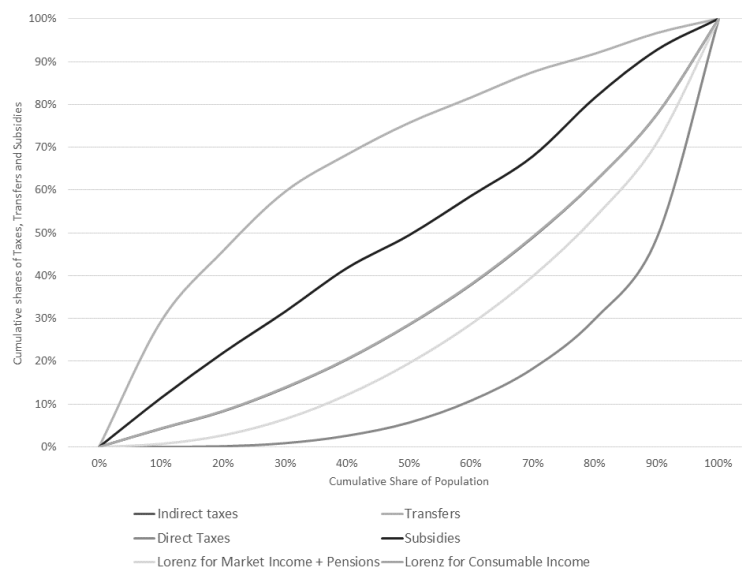Figure 12: Lorenz Curves for Core CEQ Income Concepts.
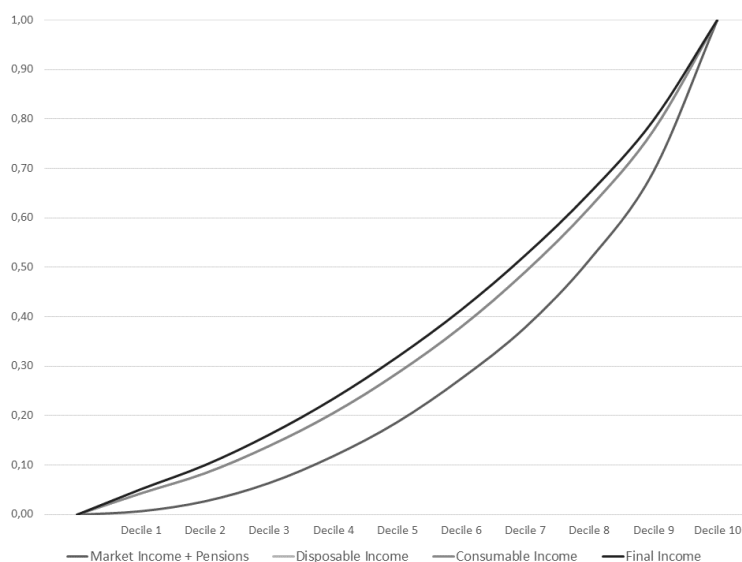
Figure 13: Lorenz Curves for Core CEQ Income Concepts.

it rises above 20%. For decile 10, there is a reduction in income of almost 10 points between market income plus pensions and final income, as it can be seen in Figure 14.

The changes in income distribution described in previous paragraphs are the consequence of taxes and transfers composition. Tax payments concentration is shown in Figure 15. As it can be inferred, progressivity is more accused for the case of direct taxes than for the case of indirect taxes. For deciles 1 to 8 we can see how the concen-

Figure 14: Concentration for Core CEQ Income Concepts.
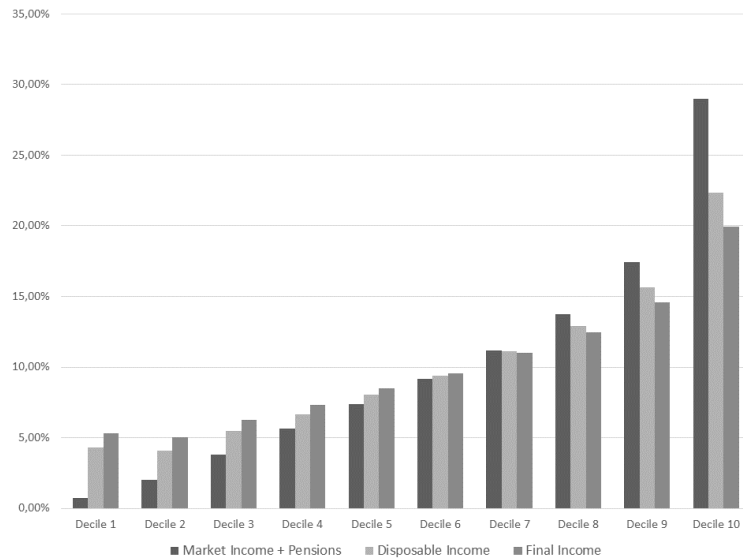
tration of indirect taxes is always higher that for direct taxes. That is not the case for deciles 9 and 10, for which the opposite happens.

Figure 15: Taxes Concentration.
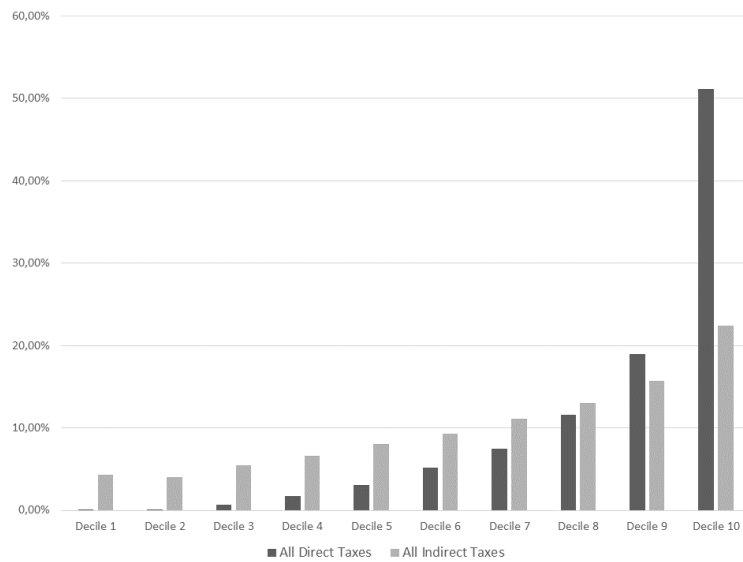
When we analyze transfers, subsidies and in-kind transfers concentration for the different deciles we observe several interesting facts. The first one is that direct transfers are not totally progressive. Individuals in decile 9 get higher transfers that those in decile 8. This a consequence, as it will be shown later, of transfers descentralization. Progressivity is also not properly operating for indirect subsidies and in-kind transfers.

Figure 16: Transfers and Subsidies Concentration.
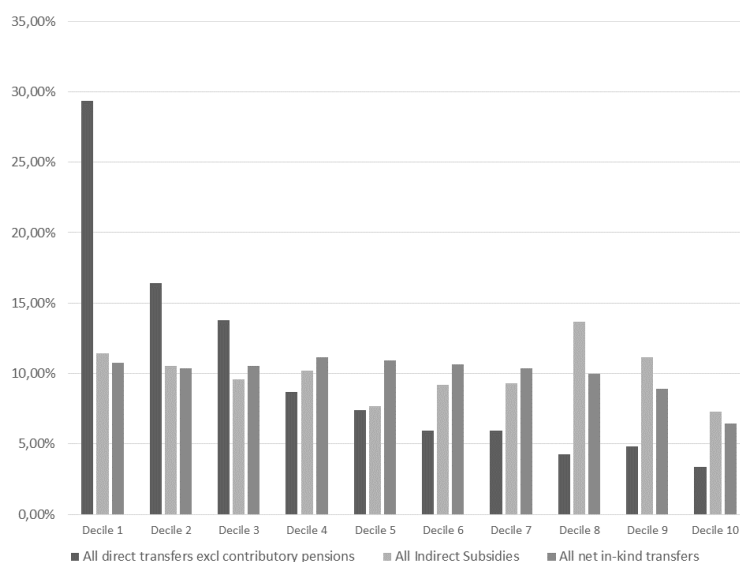
Results so far indicate that the Spanish redistribution structure works efficiently in reducing inequality and poverty. It seems, however, that is not totally progressive and that the different fiscal interventions could be, probably, better designed. Specially, given the different structure that each fiscal system has in regions with high income inequality.

4.2.3 Fiscal incidence

We take a step further to the analysis contained in Figures 15 and 16 to study the social groups that are getting more benefited from the Spanish redistribution system. If we compare the share of total direct transfers received by each income group with the share of total direct taxes payed and with the relative size of each group considered, we find middle-class and top-income earners are those more affected by redistribution policies.

From the tax side, wealthier individuals are paying almost 85% of direct taxes, while the middle and poor-vulnerable classes, by international standards, are paying around 15% of them.

Regarding transfers, middle class is receiving 43.7% of total transfers, while poor and vulnerable groups are getting 44.8% of them. Wealthier individuals receive 11.5%

of direct transfers. In terms of the size of the group, middle class and wealthy groups represent 47.6% and 34.6% of the survey population, followed by the vulnerable and moderate poor groups.
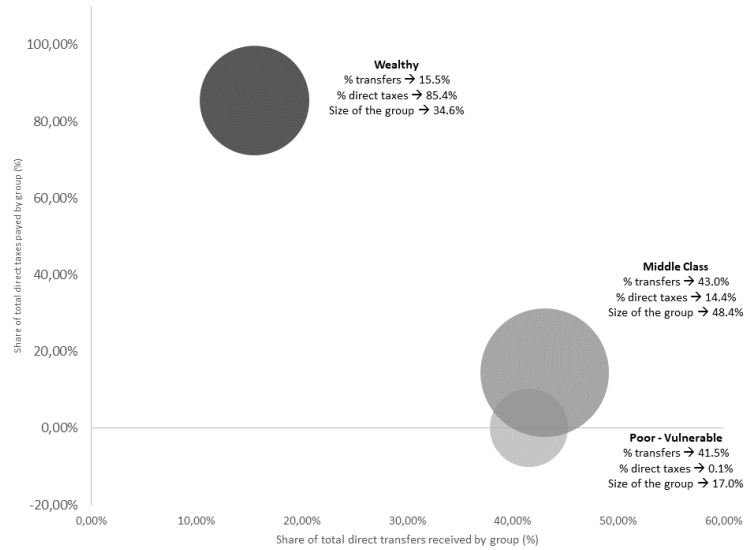
Figure 17: Transfers and Taxes by Income Group (I).

Figure 18 shows the same relationship than Figure 17 but for each decile of income. As it can be seen, there are clearly two outliers in the sample. Decile 1 of the income distribution is receiving almost 30% of direct transfers, while decile 10 is paying aroundg 50% of direct taxes. The distribution of both variables per decile, show that progressivity is a main feature of Spanish fiscal system.

Fiscal incidence with respect to market income show the percent change in income that each decile experiment with the different interventions considered. From the observation of Figure 19, two facts can be derived. The first one is that, as it has been already said, deciles 1 to 6 experience an increase in their incomes for the four concepts considered, as opposed to what happens in deciles 7 to 10. The second one is that there is a differential impact of taxation and transfers for each decile.

The differential incidence of taxes per deciles is captured in Figure 20. As it can be seen, decile 1 is particularly hit by indirect taxation. The incidence of direct taxation increases for all deciles. These two facts reflect, first, the progressivity of the direct tax system in Spain, even under the different tax schedules that operate in each re-

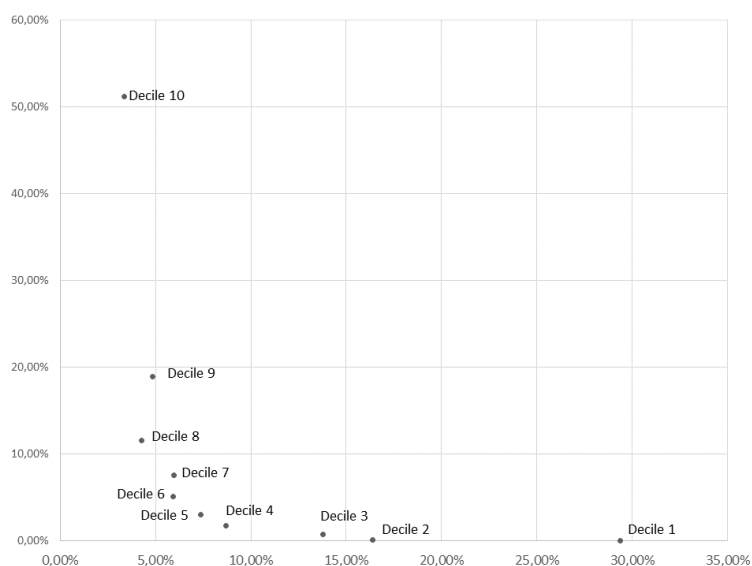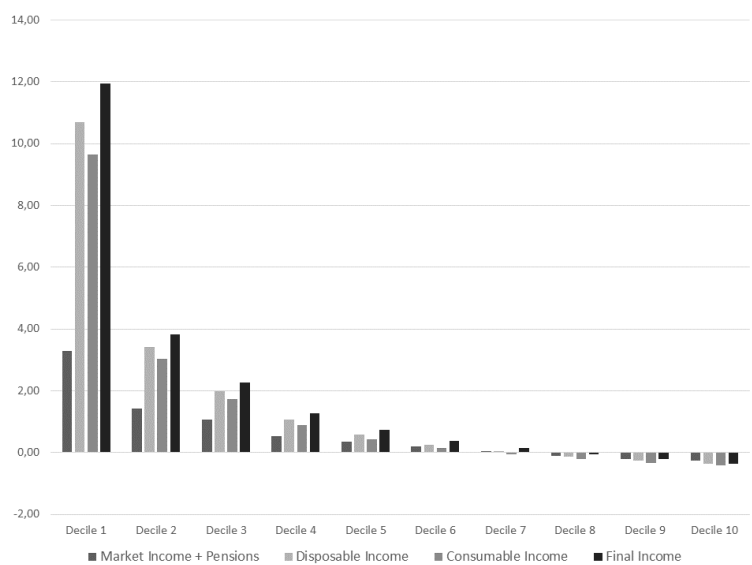Figure 18: Transfers and Taxes by Income Group (II).

Figure 19: Fiscal Incidence with respect to Market Income.

gion. Second, the relative size that consumption expenditure represent on total income decrease as we move from the first deciles of income to the last ones.

The Incidence of transfers, subsidies and in-kind transfers per deciles is captured in Figure 21. As it can be seen, decile 1 is particularly benefited from all of them. As in the case of taxes, incidence falls from the first deciles to the last one for two reasons: the progressivity of fiscal interventions and the smaller relative size that fiscal interventions have on total income.

27

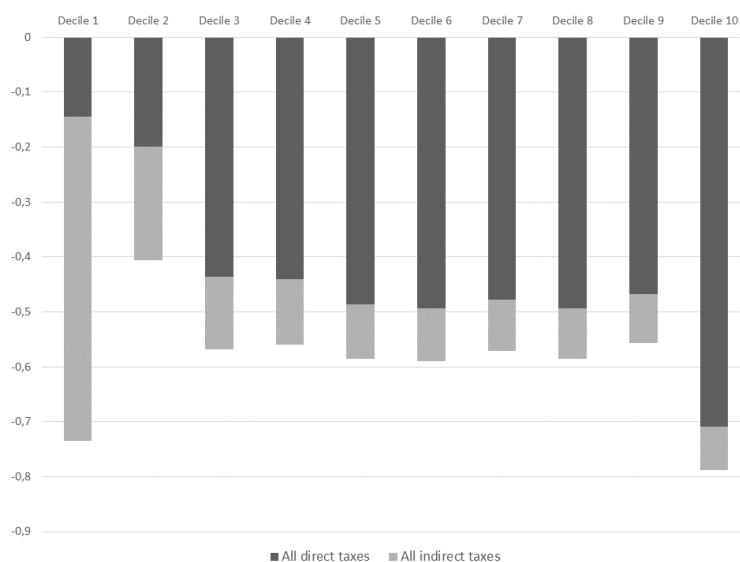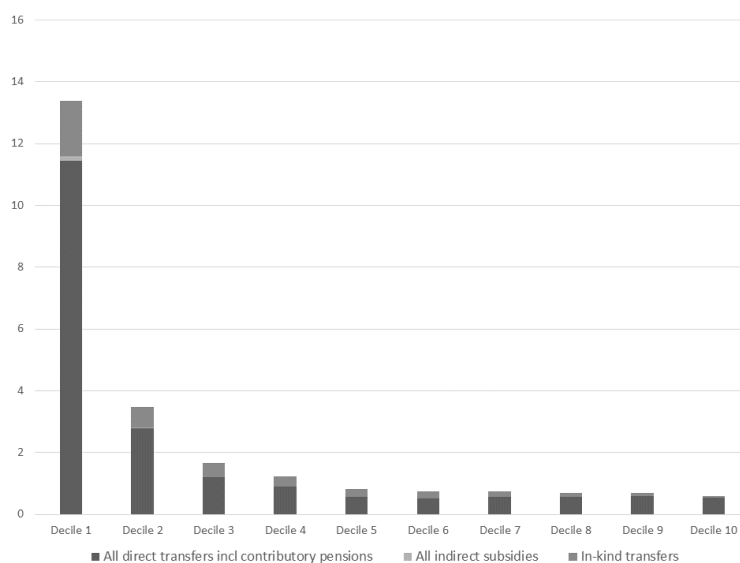Figure 20: Direct and Indirect Taxes Incidence per Deciles.

Figure 21: Transfers Incidence per Deciles.

In order to tell if these and other fiscal interventions make the whole fiscal system more equal, we analyze marginal contributions, which are equivalent to calculate the difference in inequality without and with a specific tax or transfer. We do it taking disposable income as the relevant end income concept, first, and using consumable income, secondly.

Direct tranfers and RMI are the most equalizing interventions, with a contribution between 0.04 and 0.1 Gini points. The other fiscal interventions contribute to gini

reduction between 0.02 and 0.04 points. If we consider consumable income as the end income concept, we find similar results. All direct transfers have a marginal impact on Gini reduction of 0.12 points. The other concepts considered in Figure 21 and Figure 22 have a marginal impact on Gini reduction of around 0.03 points.

Figure 22: Marginal Contributions to Income Inequality. Disposable Income as End Income Concept.
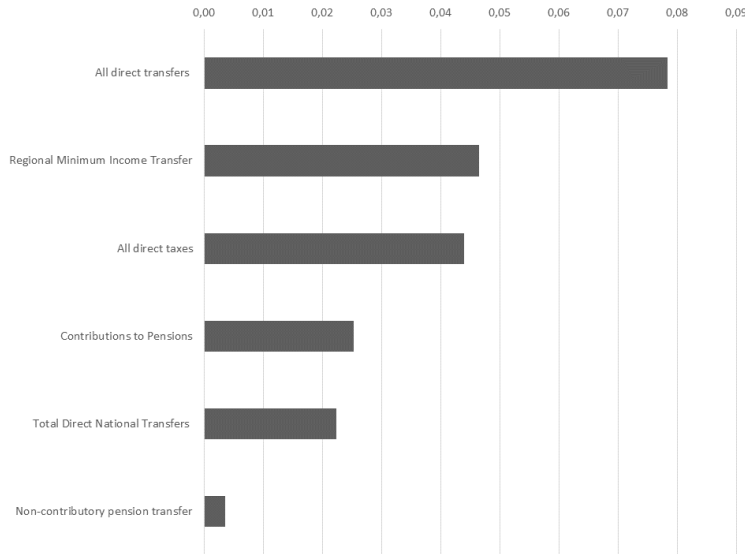

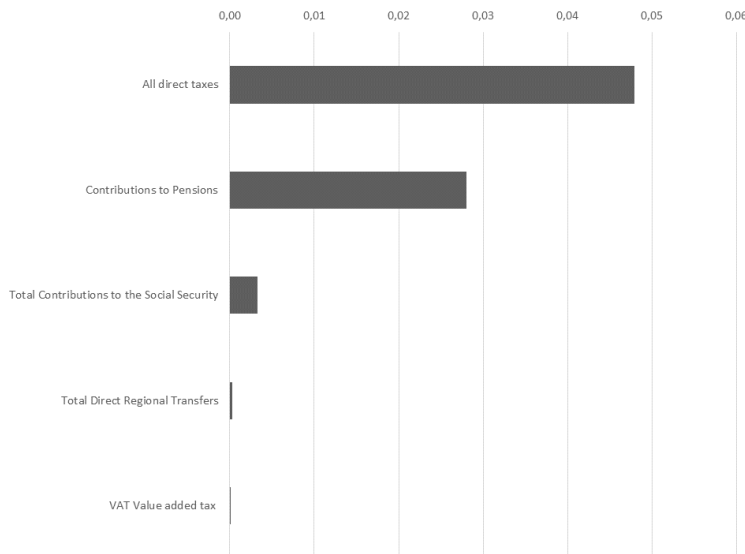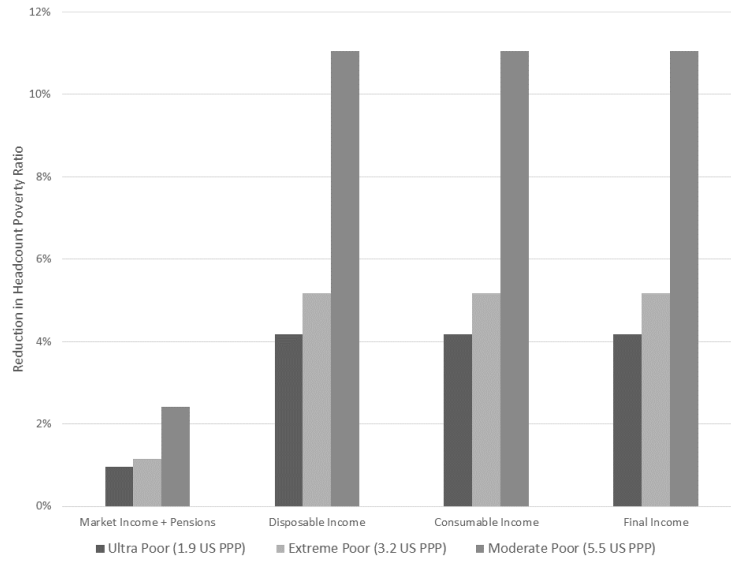Figure 23: Marginal Contributions to Income Inequality. Consumable Income as End Income Concept.

Figure 24: Fiscal Gains to the Poor With Respect to Market Income.

Fiscal gains to the poor with respect to market income are shown in Figure 24. Results show how the moderate poor are the most benefited individuals from fiscal interventions. Their income levels grow much faster than the other two groups considered (ultra poor and extreme poor) as income moves from market income plus pensions to final income.

The Kakwani index is a measure of the progressivity of a social intervention. It uses the Gini framework to measure how progressive a social intervention is. It is equal to the difference between the Gini index for the social intervention, and the Gini index for incomes before imposition of the policy intervention. Theoretically, the Kakwani index can vary between -1 to 1; the larger the index is, the more progressive is the social intervention.

Kakwani index for taxes is defined as follows:

$K^{tax} = D_m^{tax} - G^m$

D_m^{tax} represents the concentration coefficient of a particular tax when the population is ranked by market income. Kakwani index for transfers is defined as follows:

$K^{transfer} = -(D_m^{transfer} - G^m)$

$D_m^{transfer}$ represents the concentration coefficient of a particular transfer when the population is ranked by market income

30

Figure 25 shows that all the interventions considered in our analysis are progressive with the exception of indirect taxes. When we consider all taxes at the same time the result is barely progressive. The most progressive interventions are direct transfers and contributory pensions, considered together, as well as all transfers and subsidies.

Figure 25: Kakwani Index.
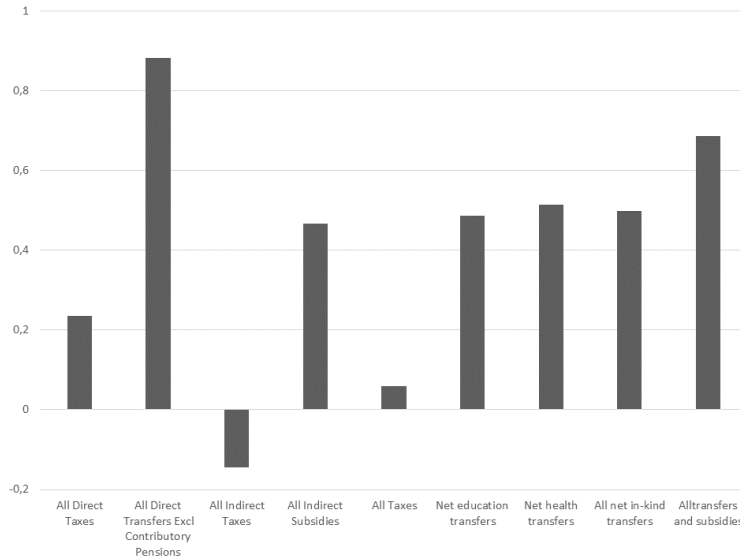
To confirm the result, we use the the Reynold-Smolensky (1977) index, which equals the difference between the Gini coefficient of pre-tax income and the concentration coefficient of post-tax income. The Reynolds-Smolensky index is then an indicator of vertical equity; it measures the total reduction of inequality that would occur if there were no reranking of income units. Reynold-Smolesky index is computed as follows:

$RS = G^m - D_m^{pf}$

D_m^{pf} represents the concentration coefficient of disposable, consumable or final income, depending on the RS that one is calculating when the population is ranked by market income. Recall that scaled up incomes must be used. Results are shown in Figure 26. Results show that all interventions are progressive when moving from original income to market income.

The redistributive effect (Gini market income minus Gini for post-fiscal income) can be written as $RE_N = (G_N) - (G_N)$. We can decompose the redistributive effect

Figure 26: Reynolds-Smolensky Index from different Original Incomes (Series) to Different End Incomes (horizontal axis) .
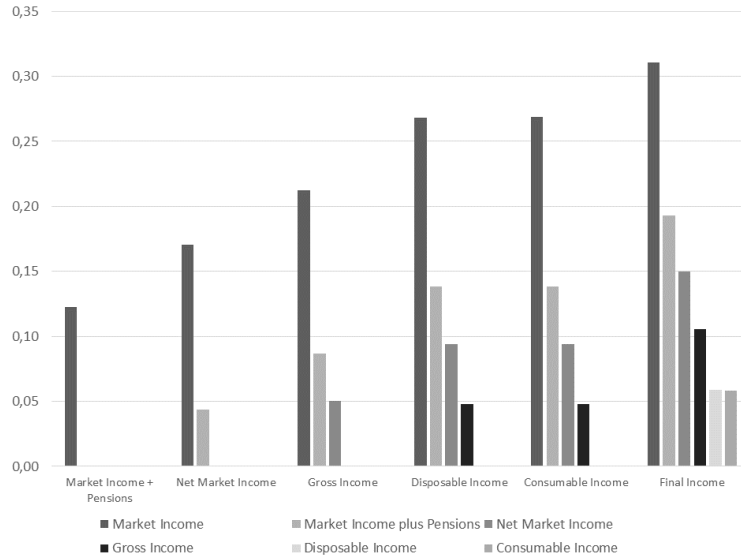

as: $RE_N = (G_N - CC_N^x) - (G_N - CC_N^x)$, where CC_N^x is the concentration coefficient for income after taxes and transfers.

Then the redistributive effect can be written as: $RE_N = VE - CR$, where VE is the vertical equity component, that is the RS index. If there was no re-ranking, then RE = VE, by definition, because the concentration coefficient for income after taxes and transfers will be identical to the Gini coefficient for incomes after taxes and transfers.

RR, the reranking component, is known as the Atkinson-Plotnick index of horizontal inequity. If there is no re-ranking, this term will equal zero. Then RR = VE - RE_N.

Vertical and horizontal redistribution (redistribution across groups not defined by income levels but by other, non-monetary variables such as age, occupation or household composition) results are shown in Figure 27. Vertical redistribution (that is, fostering redistribution from the rich to the poor) is much higher for all CEQ income concepts change, with the exception of the case of original income to taxable income.

Figure 27: Vertical and Horizontal redistribution.
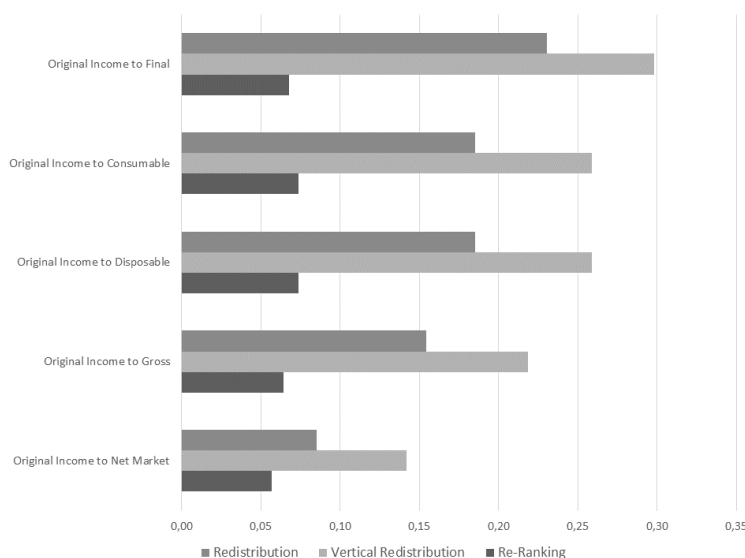
4.2.4 Regional Analysis

In this subsection we analyze some of the regional differences already mentioned in this paper. We analyze income differences across regions, as well as the differential impact that fiscal interventions have across them. The heterogeneity of the Spanish income distribution and the approach of regional governments towards taxation and transfers generate relevant differences between individuals.

Baleares, Extremadura and Cataluña are the most equal regions in Spain, with a Gini index below to 0.4 at the Market Income plus Pensions level. Regions clearly above the national average are Aragón, Cantabira, Asturias, Galicia and Navarra whose Gini indexes are above 0.45. Figure 28 shows the results for the Gini index regionally in Spain at the Market Income plus Pensions level.

When we consider final income, two regions are driving inequality higher than the national average: La Rioja and Madrid with values above 0.25. Gini is particularly low in Extremadura and Cataluña, where it almost falls to 0.2. It can be said, however, that the redistributive role of the Spanish fiscal interventions is pretty efficient for all regions.

The map in Figure 29 shows the most distributive regions according to the Gini index reduction experienced between market income and final income. Aragón, followed

33

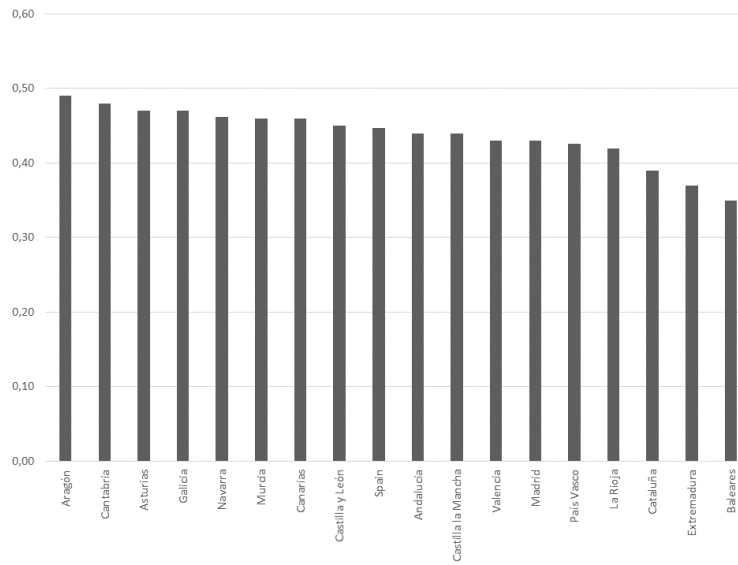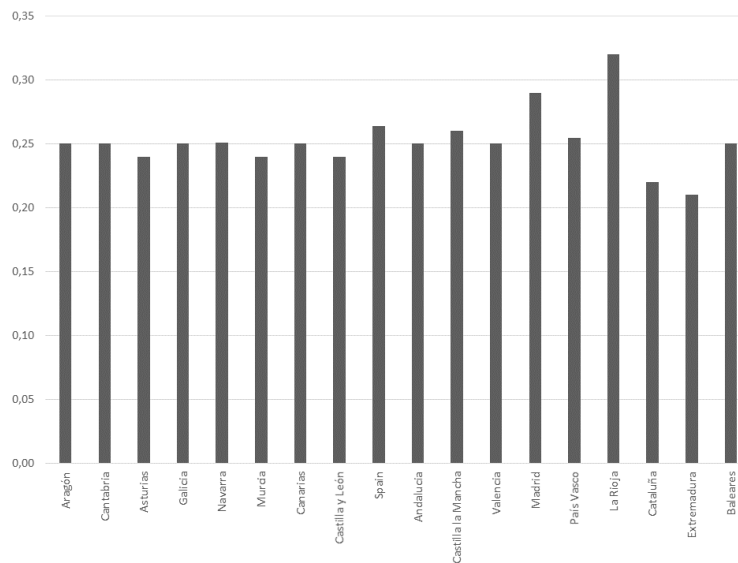Figure 28: Market Income + Pensions: Regional Gini Index.

Figure 29: Final Income: Regional Gini Index.

by Cantabria, Asturias, Navarra and Murcia, are the most redistributive regions. Further research is needed to stress the possible connection with the sign of the political parties that have governed those regions in the years previous to the one considered in our analysis. It would be welcomed, also, a temporal approach to this research question that could shed some light on the role played by different administrations in reducing in inequality in Spain across time.

Figure 30: Market Income - Final Income Regional Redistribution.

5 Conclusions

In this paper we use the methodology developed by the Commitment to Equity (CEQ) Institute to analyze fiscal incidence in Spain in the year 2017. Data from the Survey on Life Conditions (ECV) is used to assess the effects government taxation and public spending on income distribution, inequality and poverty.

The goal of the CEQ is to reduce inequality and poverty through comprehensive and rigorous tax and benefit incidence analysis. The first research papers to achieve this goal were published in 2012 (Lustig et al., 2014) and 2013 (Lustig and Pessino, 2013) and were focused on developing countries. This is the first piece of the CEQ series that tries to analyze fiscal redistribution in an advanced economy.

The structure of social spending in Spain can be grouped in four big categories. First, old-age pensions, both contributory and non-contributory. Second, direct transfers, such as unemployment benefits or regional minimum income guarantees. Third, subsidies for food buying. Finally, in-kind transfers in the form of public education

and health care. Table 2 summarizes the main categories of social spending in Spain, as well as whether it's included in our Analysis.

Direct taxes levied on individuals and households in Spain are basically three: personal income tax ("Impuesto sobre la Renta de las Personas Físicas", IRPF), property tax and inheritance tax. Both property and inheritance taxes are transferred to the different regions and most of them have decided to remove them completely or partially.

Most of the interventions are built through the complementary use the information contained in different variables in the survey. Through the combined use of income data and family conditions, for example, we can infer whether a household or an individual has the right to get a direct transfer from the Government. This strategy has been used for all the rest of interventions, with the exception of the VAT.

The evolution of the percentage of individuals per income category shown in Figure 6 highlights three important facts about the income distribution in Spain. The first one is that the majority of the population lives in the middle and wealthy classes, as defined by the 10 to 50 or the above 50 PPP dollars parameters. The second one is that vulnerable and poor groups are almost non-existing when analyzed with an international perspective. Finally, the redistribution system seems to be having a positive impact on the Spanish society, since individuals seem to be moving from lower income groups to higher income ones.

Results so far show that the Spanish redistribution structure works efficiently in reducing inequality and poverty. It seems, however, that is not totally progressive and that the different fiscal interventions could be, probably, better designed. Specially, given the different structure that each fiscal system has in regions with high income inequality.

Results show how the moderate poor are the most benefited individuals from fiscal interventions. Their income levels grow much faster than the other two groups considered (ultra poor and extreme poor) as income moves from market income plus pensions to final income.

The heterogeneity of the Spanish income distribution and the approach of regional governments towards taxation and transfers generate relevant differences between individuals.

References

AYALA, L. AND O. CANTÓ (2018): "The Driving Forces of Rising Inequality in Spain: Is There More to It Than a Deep Worsening of Low Income Households Living Standards," .

CÍRCULO DE SALUD (2016): "La sanidad española en cifras 2016," Tech. rep., Fundación Gaspar Casal.

DE AGOSTINI, P., B. CAPÉAU, A. DECOSTER, F. FIGARI, J. KNEESHAW, C. LEVENTI, K. MANIOS, A. PAULUS, H. SUTHERLAND, AND T. VANHEUKELOM (2017): "EUROMOD extension to indirect taxation: final report," *EUROMOD Technical Note EMTN*, 3.

DE EDUCACIÓN, M. (2016): "Sistema estatal de indicadores de la educación," Tech. rep., Ministerio de Educación.

F. JAVIER MURILLO, G. B. Y. L. P. R. (2018): "Segregación escolar público-privada en España," *Papers. Revista de Sociologia*, 103, 307–337.

GIMENEZ, J. D. AND J. D. SAAVEDRA (2014): "The Future of Spanish Pensions," The Papers 14/03, Department of Economic Theory and Economic History of the University of Granada.

IMMERVOLL, H., H. LEVY, C. LIETZ, D. MANTOVANI, C. O'DONOGHUE, H. SUTHERLAND, AND G. VERBIST (2006): "Household incomes and redistribution in the European Union: quantifying the equalizing properties of taxes and benefits," in *The distributional effects of government spending and taxation*, Springer, 135–165.

LARRAÑAGA, O., J. ENCINA, AND G. CABEZAS (2011): "Chilean microsimulation model," EGAP Computer Code, Tecnológico de Monterrey, Campus Ciudad de México.

LUSTIG, N. (2016): "Commitment to Equity Handbook. A Guide to Estimating the Impact of Fiscal Policy on Inequality and Poverty," Commitment to Equity (CEQ) Working Paper Series 01, Tulane University, Department of Economics.

LUSTIG, N. AND C. PESSINO (2013): "Social spending and income redistribution in Argentina during the 2000s: The rising noncontributory pensions," Commitment to Equity (CEQ) Working Paper Series 05, Tulane University, Department of Economics.

LUSTIG, N., C. PESSINO, AND J. SCOTT (2014): "The Impact of Taxes and Social Spending on Inequality and Poverty in Argentina, Bolivia, Brazil, Mexico, Peru, and Uruguay: Introduction to the Special Issue," *Public Finance Review*, 42, 287–303.

MAPAMA (2016): "Informe del consumo de alimentación en España 2016," Tech. rep., Ministerio de Agricultura, Pesca, Alimentación y Medio Ambiente.

MARTINEZ-AGUILAR, S., A. FUCHS, E. ORTIZ-JUAREZ, AND G. D. CARMEN (2017): "The Impact of Fiscal Policy on Inequality and Poverty in Chile," Commitment to Equity (CEQ) Working Paper Series 46, Tulane University, Department of Economics.

MURILLO, F. J., G. BELAVI, AND L. M. PINILLA (2018): "Public-private school segregation in Spain," *Universitat Autònoma de Barcelona Papers*.

OECD (2015): *In It Together: Why Less Inequality Benefits All.*

PAULUS, A., M. ČOK, F. FIGARI, P. HEGEDÜS, N. KUMP, O. LELKES, H. LEVY, C. LIETZ, S. LÜPSIK, D. MANTOVANI, ET AL. (2009): "The effects of taxes and benefits on income distribution in the enlarged EU," Tech. rep., EUROMOD working paper.

SUTHERLAND, H. AND F. FIGARI (2013): "EUROMOD: the European Union tax-benefit microsimulation model," EUROMOD Working Papers EM8/13, EUROMOD at the Institute for Social and Economic Research.

TAMMIK, M. (2019): "Baseline results from the EU28 EUROMOD: 2015-2018," EU-ROMOD Working Papers EM6/19, EUROMOD at the Institute for Social and Economic Research.