WHY IS INCOME INEQUALITY SO HIGH IN SPAIN?

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Carlos Gradín

(Universidade de Vigo and EQUALITAS)

Abstract

We investigate the reasons why income inequality is so high in Spain in the EU context. Taking Germany as a reference, we first show that the inter-country differential in inequality is driven by inequality among households who participate in the labor market. Then, we conduct an analysis of different household income aggregates, and decompose the inter-country gap in inequality into characteristics and coefficients effects based on regressions of the Recentered Influence Function for the Gini index. Our results show that higher inequality in Spain, as compared with Germany, is largely associated with the lower employment rates, especially in part-time jobs, the lower size of working units, as well as the lower attained education. Only the higher prevalence of extended families in Spain prevents the inequality gap to be even larger. This is mainly because the pension system substantially reduces inequality among economically active households in Spain, compensating the weaker equalizing effect of taxes and the failure of other social benefits such as child or housing allowances. The analysis of the situation in 2008 helps to separate more permanent factors, such as the weak redistributive effect of the tax-benefit system or the role education and demographic variables, from the direct effects of the Great Recession on employment and the rise of unemployment benefits.

Keywords: Income inequality, employment, Spain, Germany, Gini, RIF, decomposition.

JEL Classification: D63, I32, J21, J82.

Address: Facultade de CC. Económicas e Empresariais, Universidade de Vigo, Campus Lagoas-Marcosende, 36310 Vigo, Galicia, Spain. E-mail: cgradin@uvigo.es; Phone: +34 986 813527.

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1. Introduction

Right before the recent Great Recession started, Spain already exhibited a relatively high level of inequality within the EU, but its level has increased after the collapse of the labor market, as has been previously documented in some recent studies (e.g. ILO, 2015; Ayala, 2014). In this paper, we follow a comparative approach to investigate why inequality is so high in Spain. For that, we exploit existing inter-country differences in the level and nature of inequality between Spain and Germany, as well as changes over time. Although Germany is not the champion of low inequality in Europe, it is a natural reference within the Euro area, with inequality below the EU average and the level of other large economies in the EU.[1] Furthermore, it went through the financial crisis with better records in terms of income distribution, and functioning of the labor market or the economy as a whole. These comparisons will allow us to discriminate between more permanent factors and the direct effects of the Great Recession. We undertake this analysis using EU-SILC data in 2008 and in 2012 (with incomes obtained in the previous year).

In order to assess the particular nature of inequality in Spain, we first analyze the role of different sources of income, like the labor market and the tax-benefit system, in shaping inequality. We then concentrate on people living in economically active households (i.e. with any member engaged in the labor market in the reference year, either employed or unemployed). We observed that it is there where the inter-country gap in inequality appears and where inequality increased between 2008 and 2012. We also analyze the role on household income inequality of different socioeconomic factors such as location, household composition by age, gender, or immigration status, as well as education or employment level and characteristics. For that, we use a Blinder-Oaxaca-type decomposition of the inter-country gap in inequality based on the Recentered Influence Function (RIF) of the Gini index (Firpo, Fortin, and Lemieux 2007 and 2009). This approach allows us to assess how inequality in each country and period is determined by households' characteristics using a linear approximation of the relationship they have with inequality. For the analysis we estimate a counterfactual distribution in which we give Spanish households the same average characteristics of German households, while keeping constant how these characteristics affect inequality.[2] Using this counterfactual distribution, we are able to decompose the inter-country difference in inequality into characteristics (explained) and coefficients (unexplained) effects.

In this context, the characteristics effect is the differential in inequality that can be explained by the lower employment levels, the lower attained education, higher recent immigration, or the particular sectorial composition of Spanish workers, among other things. This compositional effect is evaluated using the Spanish returns to characteristics, the specific association between

[1] Inequality, measured by the Gini index with EU-SILC statistics, is actually lowest in the Nordic countries, in Belgium, the Netherlands, Slovenia, Czech Republic, or Slovakia. However, Germany displays the lowest level of inequality amongst the largest EU countries, closely followed by France, the UK, and Poland, then Italy, with Spain standing out with the highest level.

[2] This approach is slightly different to the conventional Blinder-Oaxaca decomposition of the gender wage inequality in which women are typically given the wage structure of men (or equivalently, men are given the characteristics of women). This is done because in that case the convention is to believe that, under the no-discrimination scenario, those would be the returns that would prevail. Although it is also possible the alternative counterfactual in which Spanish households keep their characteristics but we change how they impact inequality, we believe that using German characteristics provides us with a more transparent counterfactual. This alternative counterfactual, however, is shown to provide similar qualitative results.

characteristics and inequality prevailing in Spain, as if nothing else changed, other than the average composition of households. The coefficients effect is the remaining unexplained inequality differential (evaluated using the average characteristics of German households) that could be attributed to differences in the way how these characteristics differentially affect incomes at different points of the income distribution. This distributional pattern might be influenced by the local institutional framework, such as the regulation in the labor market, the tax-benefit system, living arrangements, etc. Similarly, we also decompose the change in inequality over time taking 2008 as the reference distribution to assess the impact of the deep recession that affected the EU, but with particular disastrous consequences in the Spanish economy.

This exercise, like most counterfactual analyses, implies a strong assumption, the absence of general equilibrium effects (Fortin, Lemieux, and Firpo, 2011a). That is to say, that one can change the distribution of characteristics without changing how they impact on inequality (or the reverse). This means that we are not providing a realistic prediction of what would happen after the change in characteristics. Being aware of that, we believe this exercise can help us to better understand the sources of the higher inequality in Spain and the ways to reduce it. The advantage of this approach compared with the simple decomposition of inequality by subpopulation groups, common in inequality analyses, is that the former allows for controlling for several characteristics at the same time.

In what follows, the next section describes the data, then Section 3 discusses the level and trend of inequality in Spain. After that, Section 4 presents the decomposition methodology, while the following two sections discuss the results. The last section provides some final remarks.

2. Data and variables

2.1 Data

For our analysis, we use the 2008 and 2012 waves of cross-sectional microdata from the *EU Statistics on Income and Living Conditions* (EU-SILC, March 2014 version).[3] The original sources of this database are the Living Condition Survey (*Encuesta de Condiciones de Vida*) from the National Statistical Institute in Spain and microdata based on an access panel (*Dauerstichprobe*) to the Microcensus from the German Federal Statistical Office. The former is the main source for the analysis of income distribution in Spain since it started in 2004, the latter is used here for the sake of comparability within the EU-SILC project.[4] The Spanish 2012 sample is made of 33,573 (12,714) individual (household) observations. Out of them, 27,751 individuals live in 9,170 economically active households (those with at least one adult, 16 years or older, in the labor force), the main focus of our analysis. In the case of Germany the figures of individuals (households) are 27,938

[3] We have not used the revised version (of August 2014, recently released) with microdata for 2011-12 because it breaks the series for Spain (regarding how income was collected, using register data instead of the survey answers as the main source) and would not allow to properly compare 2008 and 2012.

[4] There are some concerns about how some particular groups are represented in this panel in Germany. In particular, Frick and Krell (2010) report differences with respect to the other main longitudinal source in the country (German Socio-Economic Panel Study, SOEP) in terms of the level and trends of measured inequality and poverty in 2005-07.

(13,145), with 20,893 (8,758) in active households.[5] EU-SILC provides rich information about households' characteristics, including income and demographic, educational and labor market related variables that are needed in our study.

2.2 Income variables

Total household income is measured in this study using five different aggregates defined over the income reference period (calendar year previous to the interview, i.e. 2007 and 2011 respectively). *Labor income* is total gross income (before taxes and social contributions) from wages and self-employment. *Market income* is the sum of all individual and household gross income components, except any kind of social benefit or pensions. *Market income plus pensions* is the result of adding old-age and survivors' pensions to market income. G*ross income* adds to the previous one any other social benefit (such as those from unemployment, family allowances, or disability), that is, it is income from all sources (including earnings and social benefits of any kind) before subtracting taxes and social contributions. Our main aggregate is *disposable income*, that is, total income from any source measured after subtracting taxes and social contributions from gross income. Each household aggregate is adjusted for household needs to obtain equivalized household income.[6] For that, the total amount is divided by the number of equivalent adults. We use the standard modified OECD scale, that assigns a weight of 1 to the first adult, .5 to consecutive adults, and .3 to each child (13 years old or younger), which is also the scale used by Eurostat in its reported statistics. Labor income was also measured at the individual level for people employed and for people in the labor market (either employed or unemployed).

In our analysis, we have not removed a few observations reporting zero or negative household disposable income in both countries because these are also used in all Eurostat reported statistics on income distribution and its removal might be an excessive correction measure as they are not necessarily data contamination. This imposes a limit on the indices of inequality that can be used because some measures based on logarithms (members of the Generalized Entropy and Atkinson families) are not defined for zero or negative incomes. This does not represent a problem for the Gini index, the one we will analyze here. The inclusion or not of these incomes does not significantly affect the results or the interpretation of the numbers of the Gini index.[7] Furthermore, the results about the higher inequality level in Spain are shown to be quite robust to the choice of a specific inequality index.

2.3 Households' characteristics

Among the explanatory variables in the regression model, we included those that might affect the equivalized household disposable income, and thus inequality, because they either affect the opportunities to obtain income or its needs. We define most of these characteristics as continuous variables (within-household proportions) in order to take into the situation of all household

[5] The Spanish 2008 sample is made of 35,970 (13,014) individual (household) observations, with 30,339 individuals living in 9,677 active households. In the case of Germany: 28,904 (13,312) individuals (households), 21,549 (8,770) in active households.

[6] In the German case, household income is also inflated by a within-household non-response inflation factor.

[7] Although the Gini index does not have an upper bound in the presence of negative incomes, this does not significantly alter its interpretation in our context because only a few incomes are negative. Thus, we do not apply any correction, such as the one proposed by Chen, Tsaur, and Rhai (1982).

members and not only the household head or the spouse. These characteristics of economically active households are defined as follows. Location is approximated using the degree of urbanization that distinguishes among densely populated areas, intermediate areas, and thinly populated areas. We measure household size (the number of members in the household) and household composition by different dimensions. Household composition by age is accounted for by measuring the number of 0-15 year-old children as a proportion of all household members, as well as the proportion of adults (aged 16 or older) falling in each interval (16-24, 25-34, 35-44, 45-54, 55-64, 65 or older). Other demographical variables are defined as the proportion of household members (aged 16 or older) who are married or in consensual union, women, immigrants with less/more than 10 years of residence[8], and experiencing limitations from health problems. Similarly, education is accounted for by the proportion of adults (either active or retired –it might be relevant for pensioners) with primary, lower secondary, upper secondary or non-tertiary post-secondary, and tertiary education.

Regarding labor-related variables of household members we consider the activity and employment rates, the level of experience, and job characteristics, such as occupation, industry, and type of contract. The activity rate is constructed as the proportion of moths during the income reference year spent by household members in the labor market out of household's potential (the number of adults 16 years or older, multiplied by 12). Employment rates are obtained by computing the number of months worked by household members (separately as full-time and part-time), as a proportion of the total number of months in the labor force. We measure the proportion of household members in the labor force (either employed or unemployed) falling in each interval of paid work experience (up to 1 year, 1-2 years, 3-5 years, 6-9 years, 10 or more years). Similarly, we also define the proportion of economically active household members reporting each occupation (ISCO classification at 1 digit, except armed forces), industry (Eurostat compact classification based on NACE groups), or having a temporary contract. The size of the working unit is considered using the proportion of active members falling in each interval of the number of persons working at the local unit (1-2 workers, 3-5, 6-10, 11-49, 50 or more). These variables reflecting the characteristics of the job report the situation at the date of the interview (first months of 2008 or 2012), not during the income reference period, and thus are used as proxies for the latter (with a separate category for those with missing data).

3. Inequality in Spain

3.1 General trend

The discontinuity in the data surveys used to measure households living conditions in Spain during the last decades makes it a difficult task to trace the long-term trend in inequality of disposable income across households. Cantó, Gradín and Del Río (2000) have reviewed the early literature of inequality in Spain. Ayala (2014) and Ferrer-i-Carbonell, Ramos and Oviedo (2014) are examples of more recent reviews of this growing literature. There is a certain consensus, however, that points to a reduction of inequality during the transition to democracy and the consolidation of the welfare state that started in the mid'1970s and ended with the recession in the early 1990s.[9] This particular

[8] In 2008 there is no information about immigration by time of residence, so the variable for this sample (as well as for 2012 when compared with 2008) refers to the proportion of foreign citizens instead.

[9] Torregosa (2014) has recently challenged this consensus, claiming that it was the result of the bias of underreported income not being homogeneous across income levels. After performing a two-step correction

trend made Spain a special case in the context of generalized long-term increases in inequality among most OECD countries (OECD, 2008, 2011). Regarding the most recent period, according to EU-SILC statistics, the Gini index of disposable income increased from 0.310 in 2004, to 0.319 in 2006-08. Right after the break of the current Great Recession, inequality substantially increased again to 0.350 in 2012, with much of the increase accounted for by changes in the distribution of wages and job losses (ILO, 2015).[10]

What is clear, is that right before the recession, Spain was a country with high levels of inequality (and relative poverty), at least compared with other EU countries. This was so even after a long-lasting economic boom between 1995 and 2007 that brought a strong reduction in unemployment and a massive expansion of sectors, such as construction and services, which significantly increased the economic opportunities of low-skilled workers (bringing to the country an unprecedented number of immigrants to fill those jobs). With the outbreak of the Great Recession, this situation could only be aggravated. The main drivers of this higher economic inequality, instability of the labor market and an ineffective redistribution due to the weak tax-benefit system, were dramatically deteriorated. The labor market suddenly collapsed, unemployment rocketed to above 20 percent, with much larger rates among young people, unskilled workers, and immigrants (e.g. Gradín and Del Río, 2013), and in southern regions. The unemployment spells, typically very short, significantly increased in duration, and a larger share of households faced severe employment deprivation (e.g. Gradín, Cantó and Del Río, 20015a,b)

The response of many households was an intensification of family support, an increase in the number of hours available for work (the added worker effect, especially from women), and a radical change in the direction of migration flows. The successive labor market reforms made firing easier and cheaper, but the chronical duality between temporary and permanent workers was essentially preserved with a more intensive use of short-term and (unwanted) part-time contracts.[11] This was combined with several budget cuts and tax raises to achieve fiscal consolidation constrained by the sovereign debt crisis, the restructuring of the financial sector, and the Euro membership. As a result, Spain is now one of the countries with the largest inequality across households in the EU, jointly with other countries strongly affected by the recession like the Baltics, Portugal, and Greece.

The story is not the same across all EU countries. The reaction of unemployment to the contraction of the GDP was larger in countries like Spain (or the US) in which the recession was caused by a boom-bust pattern in the housing market, but was much smaller in countries like Germany where

procedure, identifying under-reporting first with an Engel's curve approach and then with an aggregate adjustment to National Accounts, income inequality turned out to be higher and more persistent during the 1973-90 period than previously reported.

[10] These data corresponds with the EU-SILC data version of March 2014. The new updated EU-SILC data recently reported by Eurostat website broke the previous series for Spain in 2009. According to this, inequality in Spain was 0.329 in 2009, picked up to 0.342 in 2012, to decline again to 0.337 in 2013.

[11] Before the recession, about a third of workers had a temporary job in Spain, more than twice the EU average as the result of leading the known as flexibility-at-the-margin reforms since the 1980s. This percentage was later reduced to its minimum of 23 percent in 2013 because these workers were the first to be laid off in the recession. However, the great majority of contracts signed during the last years are temporary and with an increasingly shorter duration. Part-time workers were 16 percent of all workers in the last quarter of 2014 (8 percent of men; 26 percent of women), of which 63 percent wished a full-time job, but could not find any (1,769 thousands, compared with only 744 in 2007).

the downturn was driven by a sharp decline in exports (OECD, 2010). This produced a wide range of unemployment rates in the EU (e.g. OECD, 2010, European Commission, 2010; Gradín, Cantó and Del Río, 20015a,b). In some countries, especially Germany, the number of hours of work was widely reduced, thus avoiding a deeper reduction of employment (e.g. Brenke, Rinne and Zimmermann, 2013; Gradín, Cantó and Del Río, 20015a; OECD 2010). Indeed, the income distribution in Germany, that had shown growing inequality since the re-unification, showed a more stable picture after the second half of the 2000s despite the strong initial shock produced by the recession, with the role of the expansion of part-time jobs on this trend still being controversial (e.g. Rehm, Schmid, and Wang, 2014). Eurostat data shows that Germany, after increasing inequality from 0.261 in 2005 to around 0.304 in 2007, had a small decrease until 2012, 0.283 (0.297 in 2013). As a result, the gap between Spain and Germany increased from 0.017 in 2008 to 0.067 in 2012.

3.2 Inequality and income sources: the labor market and the tax-benefit system

The higher levels of inequality in Spain are mostly related with the low employment rates, but taxes and social benefits also play a significant role.[12] If we classify households according to whether they have any member engaged in the labor force (active households) or not (inactive households), we can easily check that the gap in inequality of disposable income between Spain and Germany is concentrated in economically active households (making up 85 and 76 percent of the total population, respectively). Figures 1.a-1.c display the density and Lorenz curves of disposable income for people in all households (1.a) and separately for individuals in inactive and active households (1.b and c) in 2012. The corresponding Gini indices are reported in Table 1. As a matter of fact, the densities and Lorenz curves of disposable income among inactive households in both countries are almost undistinguishable and inequality is slightly lower in Spain (0.276 versus 0.286).[13] It is when we focus on inequality within active households that the level of inequality in disposable income stands above in Spain (0.358 versus 0.276, a gap of 0.083), with the Lorenz curve always falling below that of Germany (except at the very top).[14]

Figures 2.a-2.f display the Lorenz curves comparing Spain and Germany in 2008, and Spain in 2012 and 2008, with the corresponding Gini indices reported in Table 1. It becomes clear that the increase in inequality in Spain was driven by the labor market (the 2008 Lorenz curve dominates that of 2012 for active but not for inactive households, except for very low incomes), while the differential in inequality between Spain and Germany was smaller in 2008 (and applied to both types of households).

The analysis of inequality for different income aggregates among economically active households and employed or economically active workers, reported in Table 1, helps to separate the role of the

[12] A recent detailed analysis of how the labor market influences income inequality in Spain can be found in Davia (2013).

[13] The level of inequality between active and inactive households (when each person is given the average income of her type) is also lower in Spain in 2012: 0.018 versus 0.037 in Germany. It was, however, larger in 2008: 0.047 versus 0.034.

[14] This means that the result is robust to the use of other Lorenz-consistent inequality indices such as Generalized Entropy or Atkinson families –most of them defined only for positive incomes-, except when they are extremely sensitive to inequality at the top of the income distribution. Other usual inequality indices based on specific quantiles (e.g. S80/S20, p90/p10, etc.) also generally imply higher inequality across active households in Spain than in Germany.

labor market and the tax-benefit system in shaping higher inequality in Spain in comparison with Germany. Let us first analyze the situation in 2012 and then see the changes over time.

There is virtually no inter-country gap in inequality when it comes to the distribution of individual annual (gross) labor income across the employed population – shown in the bottom of Table 1. That means that annual earnings inequality is similar in both countries within those actually working. The gap significantly increases to 0.068 after we add unemployed workers in the sample. Thus, it is at these stage when the inequality gap really arises, after including the population with no labor income because of massive unemployment in Spain. The gap increases further, to 0.080, if we measure inequality of household labor income across the population living in economically active households, thus after including children and adults out of the labor force, and pooling income within households. This gap is in fact similar to the gap found in disposable income (0.083). The addition of other sources of market income does not affect the inter-country gap.[15]

It is interesting to note, however, that the inter-country gap is substantially reduced (from 0.080 to 0.054) after including old-age and survivors' pensions because the resulting reduction in inequality is much larger in Spain (0.040) than in Germany (0.014). These pensions are known to be providing a substantial relief in families shocked by unemployment, indeed they reduce the relative inter-country gap in income in 3.4 percentage points – see Table A1 in the Appendix, reporting average income values. This is the result of extended families being more common in Spain.

The relative increase in household average income when we move from market income plus pensions to gross income, after including other social benefits, are similar in both countries, although the composition of these benefits is different. According to our data, but consistently with Eurostat statistics about social benefits by function, Spain devotes most of its resources to unemployment (57% of the total amount), and then to disability (22%), social exclusion (10%), with small amounts to child (6%) and housing (1%) benefits. In Germany the largest amounts are for child allowances (57%), unemployment (20%), disability (11%), and housing (7%). That is, the relative increase in income after computing social benefits is similar in both countries despite Spain having much larger unemployment rates, because of the lower direct benefits devoted to protect children or promote affordable housing in Spain. Furthermore, the coverage for unemployed workers is decreasing in Spain after most long-term unemployed workers exhausted their benefits, which were only temporarily extended in specific cases. Also the impact of including all these social benefits on reducing inequality is similar in both countries (0.045 and 0.048) and, as a result, they do not affect the income inequality gap. A recent assessment of the weaker redistributive effect of social benefits in Spain can be found, for example, in Cantó (2014). Thus, in 2012 social benefits and pensions, both contribute to reduce inequality in market income in Spain among active households in a similar magnitude (0.040 and 0.045 respectively) but only the latter is effective in reducing the inequality gap with Germany.

After discounting taxes and social contributions from gross income, obtaining disposable income, the gap in inequality between Spain and Germany raises from 0.057 to its final level of 0.083. This means that the impact of taxes in reducing inequality among economically active households is much less effective in Spain (0.011) than in Germany (0.037). The weak redistributive impact of the

[15] It is a well-known fact that households surveys tend to underestimate income from capital.

Spanish tax system has already been stressed in recent studies (e.g. Ayala, Martínez, and Ruiz-Huerta, 2013; Ruiz-Huerta, 2014).

In summary, the tax-benefit system does not reduce the gap in inequality between Spain and Germany in 2012 because the more equalizing effect of pensions in the former country is counterbalanced by the less equalizing effect of its taxes. Also because the higher amount of resources devoted to unemployment benefits, although with low coverage rates, is compensated with the smaller amounts for child or housing allowances.[16]

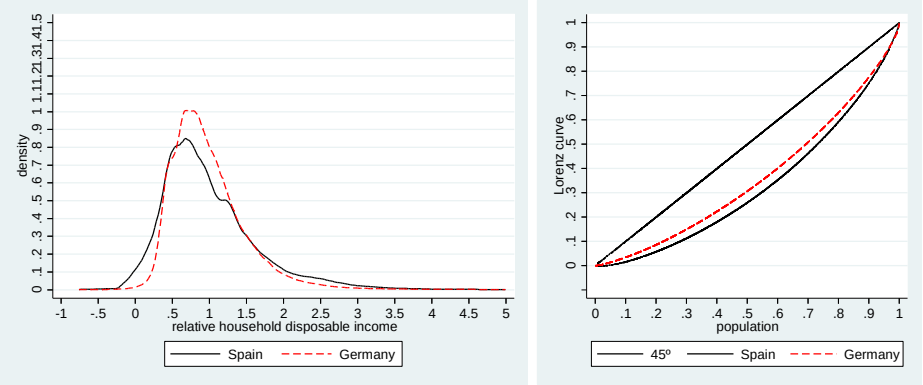
How much of this changed during the recession? Earnings inequality increased in Spain between 2008 –when it was actually lower than in Germany- and 2012, especially if measured for all people in the labor force. This increasing inequality was partially offset by the increasing equalizing effect of pensions and other social benefits (mostly unemployment) among economically active households (respectively from 0.033 to 0.040; and from 0.022 to 0.045). While the impact of pensions was already larger than in Germany in 2008, this was not the case for other social benefits because of the larger employment rates in Spain in 2008. On the opposite side, the equalizing effect of taxes and social contributions was already much smaller than in Germany (where it was 0.032) and was reduced between 2008 and 2012 (from 0.017 to 0.011). In summary, with the recession and the large increase in unemployment, inequality in gross labor income increased, the already weak equalizing effect of taxes was reduced, and this was only partially compensated by an increase in the equalizing effect of pensions and, especially, unemployment benefits.

The aim of the next sections is to investigate the nature of this higher inequality of income among economically active households, and see to what extent it is the result of differences in their households' characteristics.

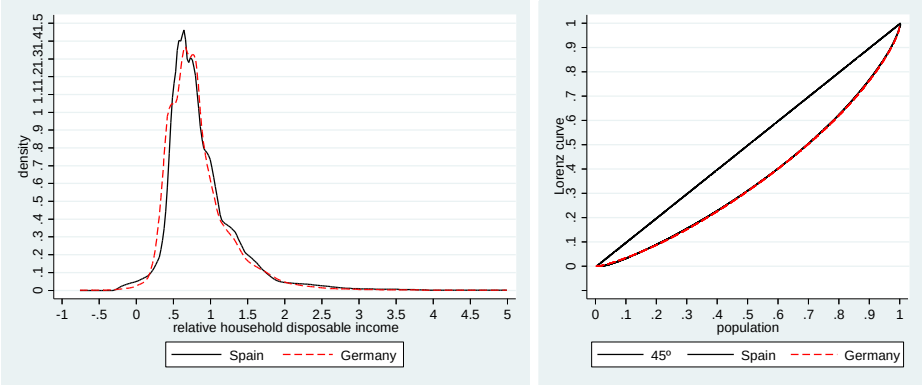
[16] Note that the larger equalizing effect of pensions in Spain only applies when we measure inequality for people in active households. If inequality is measured across the entire population, the equalizing effect of pensions is larger in Germany: reducing Gini by 0.131 in 2012 versus 0.118 in Spain (0.129 and 0.099 in 2008). However, the equalizing effect induced by other social benefits is similar in both countries in 2012 also if measured across all individuals. Similarly, the equalizing effect of taxes is also larger in Germany regardless if inequality is measured across active or all households.

Figure 1. Household disposable income in Spain and Germany: Densities and Lorenz curves, 2012

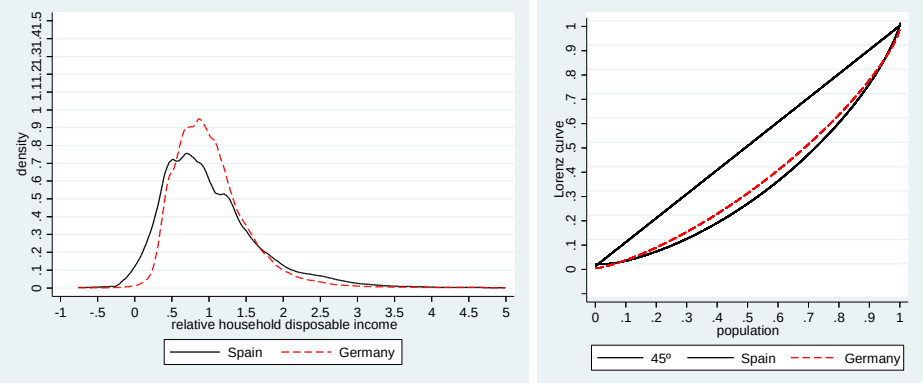
1.a All



1.b Population in inactive households



1.c Population in active households

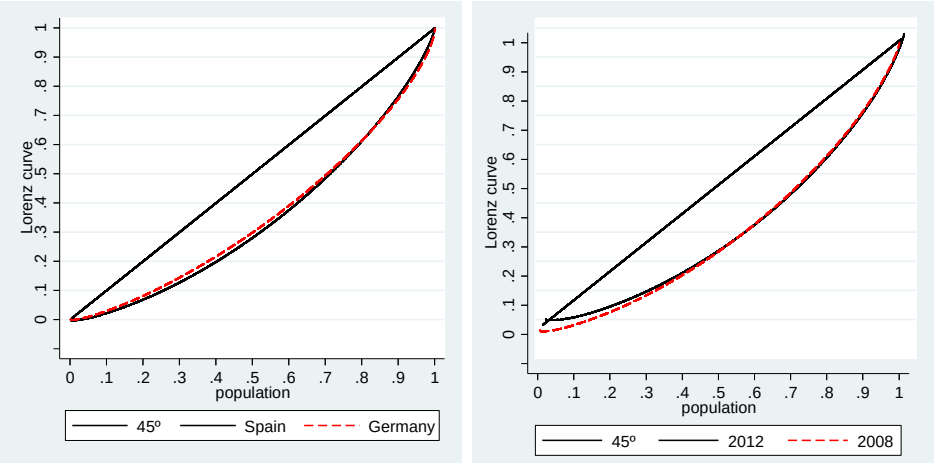


Notes:
- Relative household disposable income (equivalized using the OECD-modified scale) divided by country's average.
- A household is considered to be active (inactive) if it has at least one member (none) in the labor force in income reference year.
- Adaptive kernels with variable optimal bandwidth using a Gaussian kernel function.

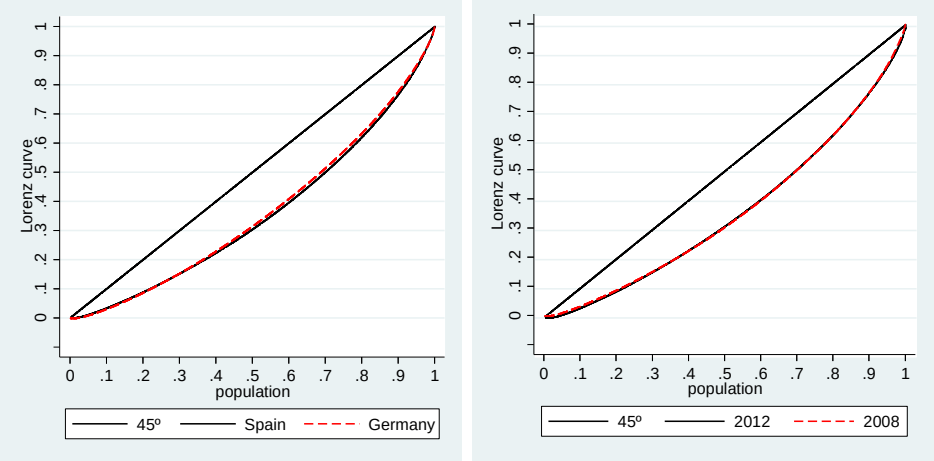
Source: Own construction using EU-SILC 2012 (2011 income).

Figure 2. Household disposable income in Spain and Germany in 2008, and Spain 2008-12

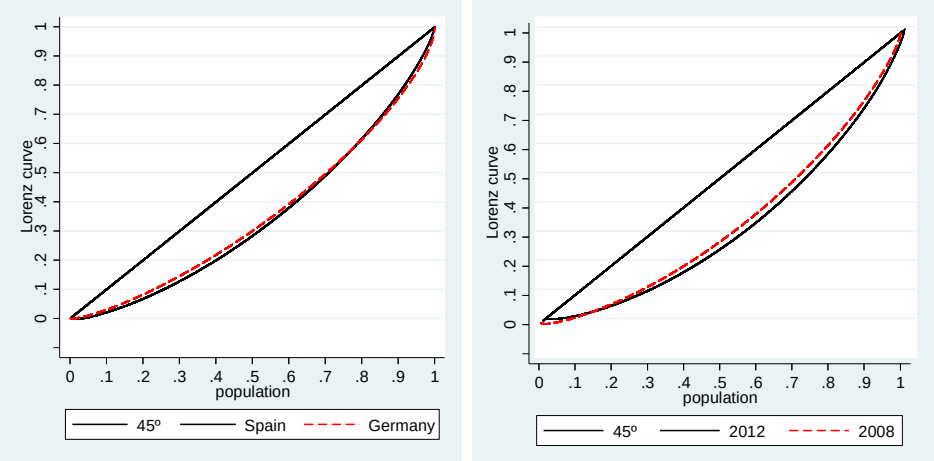
2.a All, 2008 **2.b All, Spain 2008-12**



2.c Inactive households, 2008 **2.d Inactive households, Spain 2008-12**



2.e Active households, 2008 **2.f Active households, Spain 2008-12**



Notes:
- Relative household disposable income (equivalized using the OECD-modified scale) divided by country's average.
- A household is considered to be active (inactive) if it has at least one member (none) in the labor force in income reference year.
- Adaptive kernels with variable optimal bandwidth using a Gaussian kernel function.

Source: Own construction using EU-SILC 2008, 2012 (2007, 2011 income).

Table 1. Income inequality in Spain and Germany

Equivalized household income		2008 Spain (ES)	2008 Germany (DE)	2008 Gap (ES08-DE08)	2012 Spain (ES)	2012 Germany (DE)	2012 Gap (ES12-DE12)	2012 Gap (ES12-ES08)
All population	Disposable income	0.319	0.302	0.017	0.350	0.283	0.067	0.031
		(0.003)	(0.004)	(0.005)	(0.003)	(0.003)	(0.005)	(0.005)
	Gross income	0.340	0.342	-0.002	0.365	0.326	0.040	0.025
		(0.003)	(0.004)	(0.005)	(0.003)	(0.003)	(0.005)	(0.005)
	Market income + pensions	0.363	0.391	-0.028	0.409	0.372	0.037	0.046
		(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)
	Market income	0.462	0.520	-0.058	0.527	0.504	0.024	0.065
		(0.004)	(0.004)	(0.006)	(0.004)	(0.004)	(0.006)	(0.006)
Inactive households	Disposable income	0.290	0.277	0.013	0.276	0.286	-0.009	-0.013
		(0.006)	(0.005)	(0.008)	(0.007)	(0.007)	(0.010)	(0.009)
Active households	Disposable income	0.315	0.301	0.014	0.358	0.276	0.083	0.043
		(0.004)	(0.004)	(0.006)	(0.004)	(0.004)	(0.005)	(0.005)
	Gross income	0.332	0.333	-0.001	0.370	0.312	0.057	0.037
		(0.004)	(0.004)	(0.006)	(0.004)	(0.004)	(0.005)	(0.005)
	Market income + pensions	0.354	0.386	-0.032	0.415	0.360	0.054	0.060
		(0.004)	(0.004)	(0.006)	(0.004)	(0.004)	(0.006)	(0.006)
	Market income	0.387	0.402	-0.015	0.455	0.375	0.080	0.068
		(0.004)	(0.005)	(0.006)	(0.004)	(0.004)	(0.006)	(0.006)
	Labor income	0.390	0.407	-0.018	0.459	0.380	0.080	0.070
		(0.004)	(0.004)	(0.006)	(0.004)	(0.004)	(0.006)	(0.006)
Individual income								
Labor force	Labor income	0.424	0.478	-0.054	0.518	0.450	0.068	0.094
		(0.004)	(0.004)	(0.006)	(0.005)	(0.004)	(0.006)	(0.006)
Employed workers	Labor income	0.384	0.426	-0.042	0.407	0.409	-0.002	0.023
		(0.004)	(0.004)	(0.006)	(0.004)	(0.004)	(0.006)	(0.006)

Notes:
- Bootstraps standard errors (1,000 replications) in parentheses (individuals clustered within households).
- A household is active (inactive) if any (none) member was in the labor force in the income reference year.
- Household income has been divided by the number of equivalent adults (OECD-modified scale).
- Income aggregates as defined in Section 2.1.
- Employed individuals are those who ever worked during 2011. Individuals in the labor force, also include those that were ever unemployed in 2011.

Source: Own construction using EU-SILC 2008, 2012 (2007, 2011 income).

4. Methodology: Decomposing the gap in inequality using the Recentered Influence Function

To obtain a decomposition of the gap in inequality between Spain and Germany (o Spain in 2008 and 2012) we use a generalization of the well-known Blinder (1973) and Oaxaca (1973) approach, proposed by Firpo, Fortin, and Lemieux (2007, 2009), based on the Recentered Influence Function.[17] This method applies the conventional Blinder-Oaxaca decomposition when the dependent variable in the regression (e.g. log income) is replaced by the Recentered Influence function (RIF) of the target statistic (e.g. a quantile, or an inequality measure). The advantage of this approach is that it allows the decomposition of any distributional statistic for which the RIF exists, and becomes the conventional Blinder-Oaxaca approach when this statistic is the mean (whose RIF is the income variable). Most applications of this approach referred so far to quantiles of the income distribution, but some also have decomposed the differential of Gini indices between two distributions (e.g. Becchetti, Massari, and Naticchioni, 2014; Ferreira, Firpo, and Messina, 2014; Firpo, Fortin, and Lemieux, 2007, 2011b; Groisman, 2014). We devote this section to discuss the details of the implementation of this approach in the specific case of Gini.

The decomposition for the inter-distributional gap in the Gini index is done using a linear approximation based on its influence function. The influence function IF (or Gâteaux or directional

[17] A throughout discussion of this methodology, comparing its econometric properties with other regression-based decomposition methods available in the literature, can be found in Fortin, Lemieux, and Firpo (2011a).

derivative, Gâteaux, 1913) is a tool used for robustness analysis in Statistics (introduced by Hampel, 1974) and measures the influence that a small contamination in y has on a particular statistic.

4.1 The Influence Function of Gini

Let F be the cumulative distribution of income y, with mean μ and Gini index $G(F)$. For $0 < \varepsilon < 1$, $T = (1-\varepsilon)F + \varepsilon\delta_y$ is the mixture distribution[18] obtained by the contamination of F in y, where δ_y is the cumulative distribution function for a probability measure which gives mass 1 to income y. Then, the influence function of the Gini index, $IF(y;G)$, first obtained by Monti (1991), is the directional derivative of $G(T)$ with respect to ε at $\varepsilon = 0$, has zero expectation, and can be represented as follows (e.g. Essama-Nssah and Lambert, 2012):

$$IF(y,G) = \frac{d}{\varepsilon}G(T)\Big|_{\varepsilon=0} = \lim_{\varepsilon\to 0}\frac{G(T)-G(F)}{\varepsilon} = 1 - \frac{\mu+y}{\mu}G - \frac{y}{\mu} + \frac{2}{\mu}\int_0^y F(x)dx. \quad \textbf{(1)}$$

Integrating by parts, $\frac{1}{\mu}\int_0^y F(x)dx = \frac{y}{\mu}F(y) - L_{F(y)}$, where $L_{F(y)}$ is the Lorenz curve at $F(y)$:

$$IF(y,G) = 2\frac{y}{\mu}\left[F(y) - \frac{1+G}{2}\right] + 2\left[\frac{1-G}{2} - L_{F(y)}\right]. \quad \textbf{(2)}$$

As Monti (1991) mentioned, the variability in $IF(y,G)$ increases with the distance between the abscissa (F) and ordinate (L) of the Lorenz curve from their corresponding weighted averages, that is, the areas above and below the Lorenz curve: $\frac{1+G}{2}$ and $\frac{1-G}{2}$. The first term is unbounded because it is increased by the factor $\frac{y}{\mu}$, while the second one is bounded between $G-1$ and $1+G$. These two terms cancel out each other in the case of perfect equality.

The recentered influence function, $RIF(y;G)$, is just obtained by adding G to $IF(y;G)$, so that its expected value $E(RIF(y,G)) = G$:

$$RIF(y,G) = IF(y,G) + G = 1 - \frac{y}{\mu}G - \frac{y}{\mu} + \frac{2}{\mu}\int_0^y F(x)dx. \quad \textbf{(3)}$$

The $IF(y,G)$ (and RIF) of a continuous function is continuous and convex in y, reaching its minimum when $F(y) = \frac{1+G}{2}$.[19] Given the usual ranges in developed countries for the Gini index of disposable income (around 0.3) and the rank of the average income (around the 60-70 percentiles), this minimum will typically happen near the mean. The function is unbounded from above.[20] As a result, extremely high incomes (and to a lower extent also low incomes) will have a disproportionally

[18] The mixture distribution attaches a probability $1-\varepsilon$ of y being generated by the distribution F and ε of being generated instead by δ_y.

[19] Note that the first and second derivatives of the IF are $\frac{2}{\mu}\left(F(y) - \frac{1+G}{2}\right)$, and $\frac{2}{\mu}\frac{dF}{dy} \geq 0$.

[20] This property was used by Cowell and Victoria-Fesser (1996) to show that the Gini index, like other inequality measures, is not robust to data contamination in high incomes. Cowell and Flachaire (2007) compared the rate of increase to infinity of the influence function of different inequality indices when y goes to infinity, which is equal to y in the cases of Gini, Atkinson, and Generalized Entropy ($\alpha \leq 1$). Note that the IF is usually defined for non-negative incomes. In our case, we have to take into account that the income distributions of Germany and Spain have a limited number of negative incomes that are going to be used in the analysis. In this context, the influence function is also unbounded from below.

large influence in the Gini coefficient, like in other inequality measures.[21] However, we will see in our empirical analysis that given that low incomes are more common than extremely high incomes, the former as a whole will more strongly influence the Gini index.

4.2 The RIF-Gini decomposition

The simplest version of the RIF approach assumes that the conditional expectation of $RIF(y;G)$ can be modelled as a linear function of the explanatory variables, given by matrix X, such that the β-coefficients can be estimated by OLS:

$$E(RIF(y;G)|X) = X'\beta. \quad \textbf{(4)}$$

Then, by the law of iterative expectations:

$$G = E\big(RIF(y;G)\big) = E_X[E(RIF(y;G)|X)] = E(X)'\beta. \quad \textbf{(5)}$$

Thus, the coefficients β can be interpreted as the marginal impact of a small change in $E(X)$ on the Gini index. These coefficients indicate, on average, how characteristics impact on income, but also take into account the distributional pattern of what incomes are affected most. A characteristic that has a large impact on extreme incomes will have a larger associated coefficient than another one affecting only the middle of the distribution, ceteris paribus.

Given that income and explanatory variables – described in the data section - are defined at the household level but observations are individuals, we obtained the estimations and standard errors on individual observations but allowing (perfect) correlation within households (clusters), which in this context is equivalent to use household observations weighted by their household size.

Based on **(5)** we can produce a linear decomposition of the Gini index into the total contribution W_k of each characteristic (including the intercept) x_k, $k = 0,1,\dots,K$, on inequality:

$$G = \bar{X}'\beta = \sum_{k=0}^{K} W_k = \beta_0 + \sum_{k=1}^{K} \bar{x}_k\beta_k. \quad \textbf{(6)}$$

Where the total contribution of the k^{th} characteristic is the product of its average value ($\bar{x}_k$) and the marginal impact of this characteristic on overall inequality (β_k).[22] Then the difference between the Gini of the reference and the target distributions (with superscripts 0 and 1) is:

$$G^1 - G^0 = \bar{X}^{1\prime}\beta^1 - \bar{X}^{0\prime}\beta^0 = \sum_{k=0}^{K} W_k^{\Delta X\beta} = \beta_1 - \beta_0 + \sum_{k=1}^{K}\big(\bar{x}_k^1\beta_k^1 - \bar{x}_k^0\beta_k^0\big). \quad \textbf{(7)}$$

Where $W_k^{\Delta X\beta}$ is the total contribution of the k^{th} characteristic to the Gini gap. These total contributions do not separate the impact of differences in average characteristics from the impact of differences in coefficients.

Let us consider the counterfactual situation in which we give households in the target distribution the average distribution of characteristics of the reference, while keeping their own coefficients. By

[21] As Cowell and Victoria-Fesser (1996) pointed out, this has not to be confused with the fact that the impact of a progressive transfer produces the largest increase in the Gini index when it takes place around the mode of the distribution.

[22] An alternative regression-based linear decomposition of Gini as the sum of the contributions of characteristics (and the residual) can be found in Morduch and Sicular (2002), based on the natural decomposition of this index and assuming (log-)linear conditional incomes.

adding and subtracting the inequality level in this counterfactual, $G^{01} = \bar{X}^0\beta^1$, and re-arranging terms, we can rewrite the inter-distributional differential in income inequality as:

$$G^1 - G^0 = (G^1 - G^{01}) + (G^{01} - G^0) = (\bar{X}^1 - \bar{X}^0)\beta^1 + \bar{X}^0(\beta^1 - \beta^0). \quad \textbf{(8)}$$

That is, the gap is the sum of $W^{\Delta X} = (\bar{X}^1 - \bar{X}^0)\beta^1$, that represents the *aggregate characteristics effect* (inequality gap explained by shifting characteristics valued at the coefficients of the target group), and $W^{\Delta\beta} = \bar{X}^0(\beta^1 - \beta^0)$, the *aggregate coefficients effect* (unexplained gap due to characteristics having a different impact on inequality for each group, valued at the characteristics of the reference group).[23]

Therefore, the evaluation of the individual contribution of each variable x_k to the characteristics and coefficients effects can be measured as $W_k^{\Delta X} = (\bar{x}_k^1 - \bar{x}_k^0)\beta_k^1$ and $W_k^{\Delta\beta} = \bar{x}_k^0(\beta_k^1 - \beta_k^0)$, so that the individual effects sum up the corresponding aggregate effects. Similarly, the sum of the characteristic and coefficient effect of each characteristic add up to the total contribution of that same characteristic, $W_k^{\Delta X\beta} = W_k^{\Delta X} + W_k^{\Delta\beta}$.

It is well-known that the detailed decomposition of the coefficients effect in the Blinder-Oaxaca approach suffers from an identification problem (Oaxaca and Ransom, 1999). This is because the contribution of a dummy variable to this effect will vary with the choice of the omitted category, while the contribution of continuous variables will vary with affine transformations that involve a location parameter. There are some solutions in the literature for dummies, such as Yun (2005, 2008) who uses normalized coefficients for the categorical variables, such that the sum of the coefficients of each set of dummies is 1, while the only solution for continuous variables is to rely on specifications that are widely accepted in the literature. However, as pointed out by Fortin, Lemieux, and Firpo (2011a), there is no general solution to this problem and those proposed in the literature are all ad-hoc. In our case, we only have one dummy set (degree of urbanization). The rest are continuous variables such as household size and a number of proportions across household members that have a natural normalization. However, these proportions come from dummy variables and we need to exclude some of them to avoid multicolinearity (e.g. the proportion of men in the household when we include the proportion of women), and there is no clear solution for this. For that reason, we are not using any correction here and, in any case, the estimates for the detailed decomposition of the coefficients effect should be taken with caution. Note, however, that the main focus of our study is to identify the detailed characteristics effect, which is not affected by this identification problem.

5. Empirical results: RIF and characteristics

Before proceeding with the decomposition of the inter-country gap in disposable inequality among economically active households, in order to better understand the results, we analyze first the ingredients and the outcome of the RIF regressions: the $RIF(y; G)$ values (the dependent variable in the regressions), households characteristics (the explanatory variables), and the estimated coefficients.

[23] Clearly, other counterfactuals are possible. For example, $G^{10} = \bar{X}^1\beta^0$, that takes average characteristics in the target group and the coefficients of the reference group.

5.1 Gini-RIF values

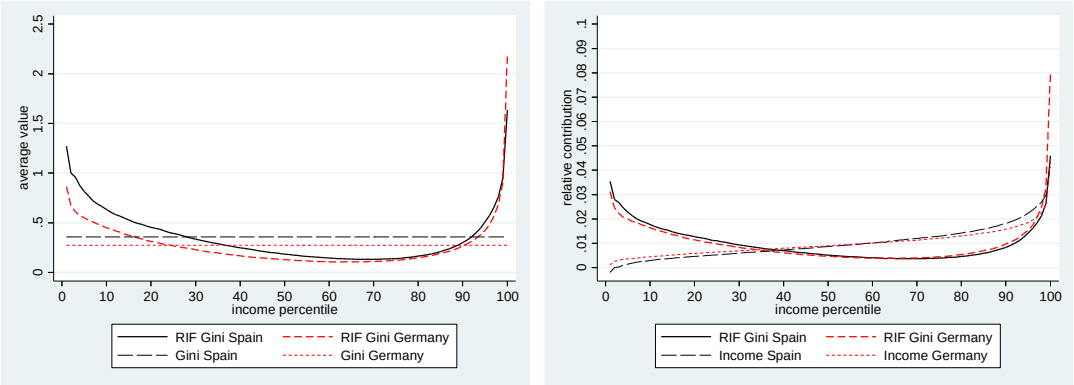
Figure 3a displays the distribution in 2012 of the average $RIF(y;G)$ by percentile in Spain and Germany in 2012. We added two horizontal lines indicating the value of the overall average (the Gini index in each country) in order to identify those observations with values above or below that average. As expected, the $RIF(y;G)$ values tend to be highest at both ends of the income scale. For example, the average RIF value of the bottom and top percentiles in Spain are 1.3 and 1.6, respectively (0.9 and 2.2 in Germany), more than three times the average. The RIF values fall below the average between the 29th and 91st percentiles in Spain, reaching its minimum at the 68th percentile. The corresponding figures for Germany are: below the average between 25th and 90th, with the minimum at 64th. These results do not contradict the finding from the robustness literature stressing that the influence in inequality indices, including the Gini measure, is disproportionally high for the highest incomes. For example, the four highest incomes in Spain (also the two lowest) have values between 4 and 5, and the highest 16 incomes in Germany have values between 4 and 14. But the proportion of people with values above the mean is much larger at the bottom than at the top.

Figure 3.b presents another way of looking at the influence of each percentile. It compares the relative contribution of each percentile to the Gini index (such that they add up to 1), with its contribution to the mean income, (recall that $RIF(y;\mu) = y$). Clearly, the relative contribution to Gini is disproportionally higher, compared with the contribution to the mean, for the lower tierce. For example, the poorest 1 percent of the population in active households in Spain accounts for 3.5 percent of the total Gini, the 50th percentile accounts for only 0.5 percent, and the richest percentile for 4.6 percent. However the contribution of the top percentile to Gini is not much larger than its contribution to the mean income (4 percent). In the case of Germany, with higher inequality at the top of the income scale, the contribution of the top percentile is 8 percent, almost twice its contribution to the mean income.

This implies that we expect those characteristics more strongly associated with incomes in the poorest tierce of the population to have a more substantial impact on inequality levels in both countries, but especially in Spain.

Figure 3. $RIF(y;G)$ in Spain and Germany by income percentile, 2012

3.a Average value **3.b Relative contribution**



Notes:
- Equivalized household disposable income among active households (OECD-modified scale).
- Active households (at least one member in the labor force).
Source: Own construction using EU-SILC 2012 (2011 income).

5.2 Households' characteristics

Table 2 shows the extent to which Spanish and German active households differ across a number of relevant dimensions. It reports the average and standard deviation of the explanatory variables across individuals in both countries and years, although all the characteristics, like income, are determined at the household level.

Compared with Germany, a higher proportion of people living in active households in 2012 in Spain resides in densely populated areas (50 versus 34 percent). The different demographic profile by country implies that Spanish people live in larger active households (3.4 versus 3 members on average), with a similar proportion of children (up to 16 years old) but with a higher proportion of middle-aged adults (25-44 years old) and of adults above 65 years old (7 versus 2.5 percent). However, fewer adults claimed to have limitations as a result of health problems (14 versus 21 percent). In Spanish active households, there is also a higher proportion of foreign citizens with less than 10 years of residence in the country (13 versus 2 percent), but a smaller proportion are immigrants with longer time of residence (3 versus 5 percent). The proportion of married adults and women are pretty similar in both countries. The main changes observed in Spain between 2008 and 2012 is the decline in the average household size, driven by a reduction in the proportion of young adults (16-34 years old).[24]

Spanish household also exhibit a lower attained education in 2012 compared with Germany. Spanish households have on average a higher proportion of people in the labor force or retired with only primary studies (15 versus 1 percent in 2012) and lower secondary schooling (27 versus 8 percent); this is at the expense of secondary or non-tertiary postsecondary (23 versus 52 percent), and tertiary (32.5 versus 39 percent). This educational gap is similar computing the proportions only for the people in the labor force.

The different situation of the labor market in both countries in 2012 is reflected by the fact that Spanish households have a lower activity rate (75 versus 80 percent of months were spent in the labor force), as well as lower employment rates than in Germany. The shortage in employment is larger in the case of part-time jobs (10 percent of moths in Spain, 25 percent in Germany), but also extends to full-time work (65 versus 67 percent). The structure of the labor market also differs in a number of issues. Spanish households have a higher proportion of adults in low-skilled occupations (elementary; craft and related trades; services and sales workers) and a smaller proportion of professionals and technicians. Similarly, a lower proportion of adults work in Spain in manufacturing, and a relatively higher number work in accommodation and food services or wholesale and retail trade. A higher proportion of adults are working in smaller firms (especially 1-2 employees: 13 versus 5 percent), and lower in larger firms (especially above 50 workers: 20 versus 48 percent), and they also accumulate less years of experience. Outstanding is the fact that the proportion of adults with temporary contract doubles the German level (29 versus 14.5 percent). The changes observed between 2008 and 2012 are, not surprisingly, important. There is a small increase of the activity rate (2 percentage points, probably the consequence of the additional worker effect), with a depression

[24] There was a net increase of about 0.25 million of individuals in active households between 2008 and 2012, with a substantial increase of almost 1.3 million people in the range of 35-64 years old and 0.3 of children, but a reduction of near 1.4 million of 16-34 year-old people. Similar changes are observed in the entire population (which increased by about 1 million), probably the result of the inversion of migration flows.

of full-time employment rates of 14 percentage points, but not of part-time, as expected. More profound changes in the activity and employment rates might be concealed by the loss of young adults in the population. The change in the structure implies a reduction of workers in larger working units and in elementary occupations, especially in the construction and manufacturing sectors. The proportion of temporary works is similar in both years, while more experienced workers represent a larger share in 2012.

Table 2. Mean and Standard deviation (SD) among active households: Explanatory variables

	Spain				Germany			
	2008		2012		2008		2012	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Densely populated area	0.516	0.500	0.504	0.500	0.484	0.500	0.337	0.473
Intermediate area	0.226	0.418	0.237	0.425	0.356	0.479	0.393	0.489
Thinly populated area	0.258	0.437	0.259	0.438	0.159	0.366	0.270	0.444
Household size	3.604	1.359	3.434	1.279	3.022	1.349	2.962	1.370
Age 0-16	0.180	0.211	0.188	0.217	0.191	0.232	0.186	0.233
Age 16-24	0.132	0.198	0.117	0.192	0.142	0.228	0.137	0.225
Age 25-34	0.240	0.335	0.210	0.320	0.191	0.350	0.196	0.355
Age 35-44	0.275	0.365	0.293	0.378	0.313	0.396	0.273	0.388
Age 45-54	0.176	0.267	0.200	0.286	0.214	0.318	0.237	0.333
Age 55-64	0.106	0.225	0.110	0.238	0.114	0.272	0.132	0.291
Age 65+	0.071	0.173	0.070	0.174	0.027	0.120	0.025	0.116
Married	0.660	0.344	0.659	0.363	0.661	0.401	0.642	0.410
Women	0.499	0.195	0.503	0.205	0.508	0.241	0.512	0.248
Foreign citizens	0.131	0.320	0.131	0.319	0.028	0.136	0.034	0.149
Immigrant (10 or less years)	-	-	0.129	0.314	-	-	0.020	0.120
Immigrant (>10 years)	-	-	0.029	0.132	-	-	0.046	0.175
Health limitations	0.161	0.255	0.139	0.244	0.207	0.317	0.209	0.324
Activity rate	0.730	0.258	0.749	0.259	0.773	0.250	0.795	0.245
FT employment rate	0.794	0.294	0.653	0.371	0.679	0.365	0.672	0.361
PT employment rate	0.092	0.207	0.098	0.222	0.217	0.307	0.252	0.322
Managers	0.050	0.186	0.047	0.178	0.055	0.195	0.049	0.181
Professionals	0.113	0.272	0.126	0.290	0.185	0.347	0.203	0.353
Technicians and associate professionals	0.098	0.241	0.098	0.243	0.257	0.369	0.256	0.368
Clerical support workers	0.112	0.250	0.109	0.257	0.120	0.270	0.128	0.279
Services and sales workers	0.160	0.290	0.176	0.309	0.106	0.252	0.120	0.273
Skilled agriculture, forestry, fishery workers	0.029	0.144	0.034	0.161	0.015	0.104	0.012	0.089
Craft and related trades workers	0.159	0.294	0.157	0.294	0.127	0.275	0.100	0.242
Plant and machine operators and assemblers	0.072	0.207	0.066	0.202	0.054	0.190	0.075	0.223
Elementary occupations	0.185	0.323	0.149	0.294	0.060	0.204	0.045	0.177
Occupation not available	0.017	0.101	0.032	0.139	0.022	0.118	0.013	0.095
Agriculture, forestry and fishing	0.038	0.163	0.036	0.162	0.010	0.088	0.015	0.106
Mining; manufacturing; electricity, gas and water supply	0.143	0.286	0.112	0.262	0.154	0.308	0.209	0.343
Construction	0.105	0.247	0.049	0.175	0.046	0.173	0.039	0.158
Wholesale and retail trade; repair vehicles	0.116	0.261	0.097	0.243	0.109	0.265	0.070	0.212
Transport, storage and communications	0.038	0.157	0.042	0.166	0.042	0.170	0.037	0.162
Accommodation and food service	0.056	0.190	0.047	0.176	0.017	0.109	0.022	0.123
Information and communication	0.024	0.125	0.019	0.114	0.034	0.160	0.044	0.178
Financial and insurance	0.025	0.126	0.022	0.121	0.044	0.176	0.042	0.173
Real state, professional, scientific, administrative and support service	0.061	0.193	0.062	0.199	0.076	0.225	0.066	0.211
Public administration and defense; social security	0.069	0.209	0.055	0.191	0.083	0.236	0.099	0.256
Education	0.051	0.184	0.050	0.179	0.068	0.218	0.071	0.219
Human health and social work	0.049	0.177	0.055	0.187	0.104	0.255	0.111	0.266
Other services	0.061	0.188	0.054	0.178	0.083	0.238	0.046	0.175
Industry not available	0.163	0.295	0.301	0.382	0.129	0.298	0.129	0.295
Unit size not available	0.195	0.320	0.309	0.384	0.133	0.301	0.133	0.299
Unit size: 1-2 workers	0.145	0.289	0.132	0.281	0.057	0.202	0.052	0.189
Unit size: 3-5 workers	0.110	0.254	0.094	0.241	0.062	0.200	0.055	0.189
Unit size: 6-10 workers	0.093	0.235	0.071	0.208	0.076	0.220	0.080	0.225
Unit size: 11-49 workers	0.221	0.334	0.193	0.324	0.207	0.344	0.196	0.335
Unit size: 50+ workers	0.236	0.353	0.201	0.337	0.466	0.426	0.483	0.428
Temporary	0.298	0.375	0.289	0.374	0.074	0.221	0.145	0.293
Experience <1 year	0.051	0.181	0.037	0.146	0.028	0.135	0.022	0.125
Experience 1-2 years	0.055	0.161	0.044	0.150	0.042	0.148	0.045	0.164
Experience 3-5 years	0.086	0.208	0.064	0.187	0.066	0.199	0.064	0.198
Experience 6-9 years	0.101	0.236	0.097	0.236	0.083	0.239	0.074	0.222
Experience 10+ years	0.707	0.350	0.758	0.338	0.781	0.344	0.794	0.338
Primary	0.196	0.324	0.154	0.296	0.013	0.098	0.012	0.092
Lower secondary	0.245	0.352	0.267	0.366	0.078	0.215	0.079	0.221
Upper secondary, non-tertiary postsecondary	0.231	0.335	0.233	0.338	0.496	0.428	0.518	0.424
Tertiary	0.301	0.391	0.325	0.401	0.412	0.432	0.392	0.427

Notes:
- Active households (at least one member in the labor force).
- See Section 2.3 for a description of variables.

Source: Own construction using EU-SILC 2012 (2011 income).

5.3 Gini-RIF Regressions

The estimated coefficients of the Gini-RIF regressions of household disposable income among active households are reported in Table 3 for Spain and Germany in 2012. These coefficients indicate the magnitude and direction of the expected change in the Gini index after a small increase in the corresponding variable, ceteris paribus. This effect will depend on the relationship between characteristics and household disposable income, taking into account its specific distributional pattern (which incomes are affected most). In general, characteristics whose incidence monotonically decrease or increase with income, will reveal the opposite relationship with RIF, as shown in Figures 4a-d. There, we represent the average value of selected characteristics along income (left) and RIF (right) deciles. While there are important coincidences, it is clear that the labor market and demographics work differently in both countries in terms of how they shape inequality. In both countries, there is a strong fixed effect given by the intercept, reflecting that, at the margin, an increase in most characteristics included as explanatory variables, such as education or employment, globally produce an equalizing effect.

Inequality in both countries decreases, ceteris paribus, with the size of the household. We do not find any statistically significant relationship between inequality and gender or civil status (although the effects are also negative), while health limitations decrease inequality only in Germany. Regarding age composition, inequality increases with the proportion of children -at the expense of the proportion of 35-44 year-old adults, the omitted category- more intensely in Spain. This is not surprising given that the proportion of children decreases with income, likely indicating the failure to protect households with children from low income and poverty (see Figure 4.a). In Spain, unlike in Germany, inequality increases also with the proportion of young adults (16-24 years old) which follows a similar distributional patterns as that of children, the likely consequence of massive youth unemployment and weak students' support. Inequality in Spain, however, is strongly and negatively associated with the proportion of 65 year-old people, a group with higher incidence among intermediate deciles, consistent with the equalizing effect of old-age and survivors' pensions already mentioned (see Figure 4.a). This effect in Germany is positive but statistically not significant. Inequality increases in both countries with a higher presence of recent immigrants, while only in Spain the same is true for immigrants with more than 10 years of residence (at the 10 percent level of significance), likely the consequence of the special incidence of unemployment among foreign workers. Inequality in Spain also decreases with the proportion of people living in less densely populated areas, while no locational effect was found in Germany.

There is also a negative relationship in Spain between inequality and the proportion of active household members that went beyond primary education –the omitted category. Not surprisingly, Figure 4.b shows that the proportion of adults with tertiary education strongly increases with the income level. Although a similar pattern can be found in Germany (Figure 4.c), this negative educational effect on inequality is only statistically significant in the case of upper-secondary or post-secondary studies.

Regarding labor variables, inequality is reduced with the activity and employment rates, more intensely in Spain. The negative association between employment rates and inequality is higher in the case of full-time employment, although the differential with part-time jobs is small. To be more precise, an increase in one percentage point in the average employment rate, either full or part-

time, reduces the Gini index in Spain around 0.5 percent, while a similar increase in the activity rate produces a smaller decline of 0.2 percent in inequality. The omitted category is the unemployment rate, so what the employment coefficients predict is a similar decline in inequality, after an increase of employment, regardless of the type, at the expense of unemployment (while keeping constant the activity rate and the other type of employment among other things).

The activity rate tends to be increasing with households' income (in Spain from 68 percent in the third decile to 82 percent in the top decile). Both types of employment are to a large extent substitutes (their linear correlation being -0.44 in Spain, -0.76 in Germany). While part-time employment has a lower impact on income[25], it mostly benefits poor and middle incomes: part-time employment rates increase between the first and third decile (from 7 to 13 percent), and then decrease above the median (from 12 to 6 percent) - Figure 4.d. The effect of an increase in full-time employment on income is larger, but it is more likely to benefit higher incomes. Full-time employment rates sharply increase with income (from 36 percent at the bottom decile to 90 at the top). As a result, the rates of both types of employment decrease for higher RIF deciles, but more sharply for full-time employment. Thus, this model is not predicting that a worker's transition from full to part-time employment will not significantly affect inequality. It says, oversimplifying, that if we take a full-time job from a relatively rich person and give a part-time job to someone poorer, the impact on inequality would be a small increase.

We do not find much evidence of a significant relationship between experience and inequality, although the effect of experience tends to be positive in Spain and negative in Germany, they tend to be poorly significant. The proportion of temporary workers increases inequality in Germany but not in Spain. This lack of association between the share of temporary workers and inequality in Spain might be surprising, as the duality between temporary and permanent contracts has been profusely identified as one of the major weaknesses of the labor market. There is a strong negative correlation between the share of temporary jobs and income and thus negative correlation with RIF (see Figure 4.e). It is after we control for other characteristics that this effect vanishes. A possible explanation is that temporary jobs are expected to affect inequality mostly through its impact on employment because they imply a rotation of workers between jobs and unemployment during short periods. Thus, this main effect on inequality will be captured by the employment rates, which are controlled for here. Temporary jobs are also highly correlated with unskilled workers, low-paid occupations, etc, variables also controlled for in the regression.[26]

Inequality is associated with the structure of the economy in Spain more strongly than in Germany. Inequality in Spain increases with the proportion of managers and professionals, or people working in the financial sector, as well as in small units, which also has a strong negative relationship with

[25] The estimated effect of full-time employment rate on household disposable (log-)income is stronger than that of part-time jobs (in Spain: 0.810 versus 0.594) after controlling for the same set of characteristics.

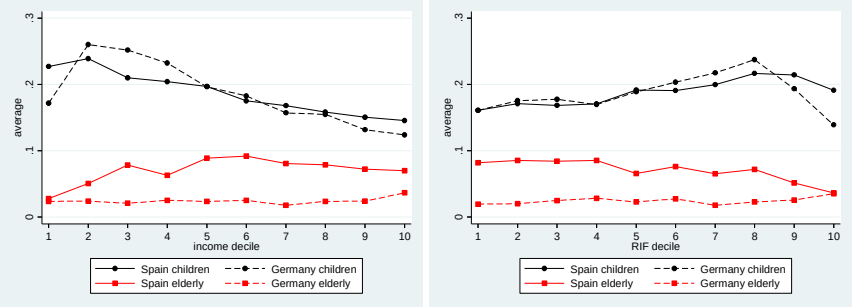
[26] However, there remains a direct and significant effect on income after controlling for all those other characteristics but not on inequality. In the case of a log-linear regression of household disposable income on the same set of characteristics the coefficient associated with temporary jobs in Spain is -0.075 and statistically significant.

income (see Figure 4.e). However, inequality tends to decrease with the proportion of technicians and clerks, and people in education and in other services.

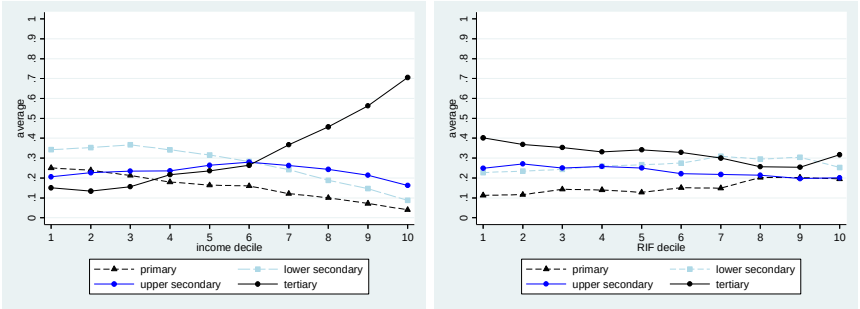
Table A.2 in the Appendix reports the coefficients for the regression that allow to compare 2008 and 2012 in Spain. They are pretty similar. Among the most salient differences, the positive effect of the proportion of young adults on inequality and the negative effect of tertiary education did not appear in 2008 and thus are likely the effect of the recession.

Figure 4. Selected characteristics by income and RIF deciles in Spain and Germany, 2012

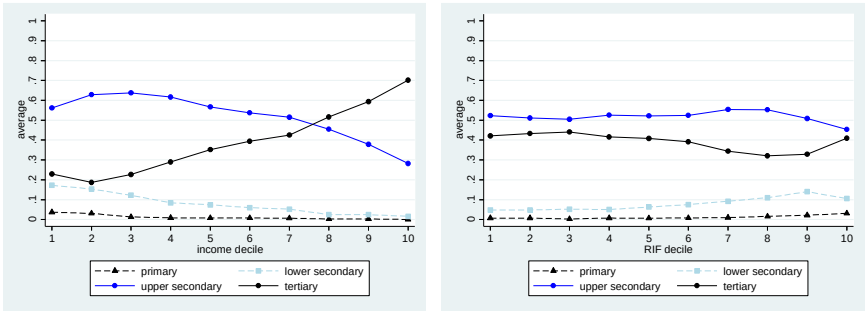
4.a Proportion of children and elderly in Spain and Germany



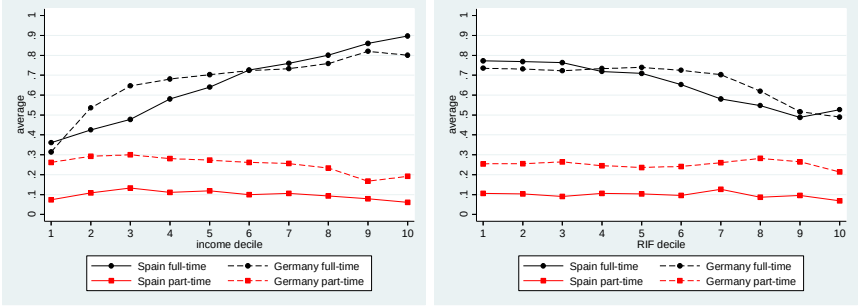
4.b Proportion of adults by attained education in Spain



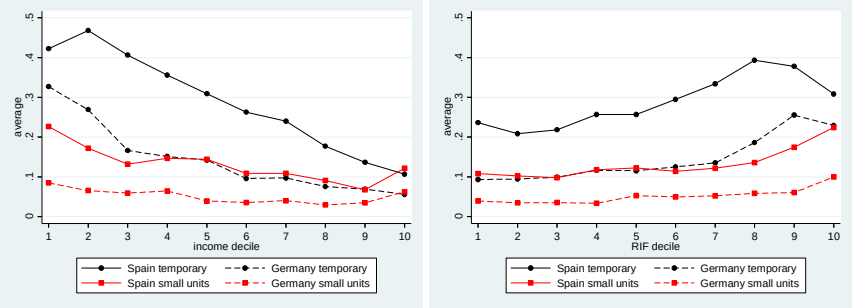
4.c Proportion of adults by attained education in Germany



4.d Employment rates in Spain and Germany



4.e Proportion of temporary jobs and small units in Spain and Germany



Notes:
- Equivalized household disposable income (OECD-modified scale) among active households (at least one member in the labor force)
- See Section 2.3 for a description of variables.
Source: Own construction using EU-SILC 2012 (2011 income).

Table 3. RIF **Regressions of disposable household income for active households, 2012**

	Spain		Germany	
	Coeff.	St. E.	Coeff.	St. E.
Intermediate area	-.0.020	0.008	0.008	0.008
Thinly populated area	-0.019	0.008	0.003	0.008
Household size	-0.016	0.004	-0.021	0.005
Age 0-16	0.091	0.029	0.061	0.026
Age 16-24	0.071	0.031	-0.018	0.019
Age 25-34	0.009	0.014	-0.011	0.012
Age 45-54	0.009	0.013	0.018	0.011
Age 55-64	-0.005	0.019	0.039	0.018
Age 65+	-0.161	0.026	0.056	0.065
Married	-0.005	0.011	-0.012	0.009
Women	-0.026	0.016	-0.018	0.012
Immigrant (10 or less years)	0.060	0.013	0.083	0.048
Immigrant (>10 years)	0.075	0.041	-0.009	0.015
Health limitations	-0.010	0.015	-0.021	0.009
Activity rate	-0.072	0.018	-0.039	0.022
FT employment rate	-0.195	0.019	-0.177	0.014
PT employment rate	-0.181	0.022	-0.162	0.015
Managers	0.232	0.028	0.196	0.045
Professionals	0.110	0.020	0.031	0.017
Technicians and associate professionals	-0.045	0.016	-0.027	0.015
Clerical support workers	-0.065	0.015	-0.026	0.017
Services and sales workers	-0.017	0.014	0.001	0.014
Skilled agric., forestry, fishery workers	0.034	0.041	0.001	0.035
Craft and related trades workers	0.013	0.014	-0.045	0.015
Plant and machine operators/assemblers	-0.054	0.015	-0.006	0.015
Occupation not available	0.058	0.027	0.013	0.048
Agriculture, forestry and fishing	-0.032	0.041	-0.006	0.048
Mining; manufacturing, ...	-0.049	0.029	-0.006	0.037
Construction	-0.046	0.033	-0.009	0.042
Wholesale and retail trade; repair vehicles	-0.026	0.031	-0.044	0.038
Transport, storage and communications	-0.029	0.033	0.025	0.043
Accommodation and food service	-0.023	0.033	0.000	0.041
Information and communication	-0.024	0.041	-0.024	0.039
Financial and insurance	0.133	0.049	0.008	0.040
Real state, professional, ...	-0.057	0.033	0.012	0.041
Public adm. and defense; soc. sec.	-0.053	0.031	-0.072	0.037
Education	-0.085	0.035	-0.101	0.038
Human health and social work	-0.011	0.034	-0.032	0.039
Other services	-0.106	0.033	-0.034	0.041
Unit size: 1-2 workers	0.169	0.030	0.136	0.047
Unit size: 3-5 workers	0.038	0.030	0.041	0.041
Unit size: 6-10 workers	0.002	0.030	0.048	0.041
Unit size: 11-49 workers	-0.023	0.028	-0.017	0.035
Unit size: 50+ workers	-0.009	0.027	-0.030	0.035
Temporary	-0.004	0.011	0.057	0.015
Experience 1-2 years	0.015	0.033	-0.023	0.050
Experience 3-5 years	0.052	0.030	-0.082	0.048
Experience 6-9 years	0.013	0.027	-0.037	0.049
Experience 10+ years	0.035	0.024	-0.061	0.047
Lower secondary	-0.032	0.012	-0.042	0.026
Upper secondary, non-tertiary postsecondary	-0.054	0.014	-0.053	0.024
Tertiary	-0.042	0.015	-0.032	0.026
Intercept	0.612	0.036	0.647	0.059
N	27,751	p-value	20,893	p-value
F	20.2	0	32.96	0
R^2	0.164		0.088	

Notes:
- Equivalized household disposable income (OECD-modified scale) among active households (at least one member in the labor force).
- See Section 2.3 for a description of variables.
Source: Own construction using EU-SILC 2012 (2011 income).

6. Empirical results: Decomposing the inter-country inequality gap among active households

6.1 Linear decomposition of the Gini index by household characteristics

The coefficients from the RIF regressions discussed in the previous section indicate the expected sign and magnitude of a small change in any households' characteristics on inequality, depending

on their distributive pattern and the institutional setting. By multiplying these coefficients by the average value of households' characteristics they add up the Gini coefficient. This linear decomposition of the Gini index provides a first glance of how important each characteristic is in shaping inequality in Spain.

First and third columns in Table 4 report the linear decomposition of Gini in Spain and Germany into the contribution of each group of characteristics to either reduce or increase inequality -summarized in Figure 5b. The fourth column quantifies the inter-country difference, which is the total contribution of each set of characteristics to the Gini gap. From these results we can infer that the labor market is the most effective way to prevent higher inequality in both countries, but more intensely in Germany. This points out to the failure of the Spanish labor market to push inequality down as the main reason that helps to explain its higher inequality levels. This is confirmed by the fact that the equalizing effect of the labor market was substantially reduced between 2008 and 2012 in Spain (while it was intensified in Germany) –see Figure 5a. The net equalizing impacts of all demographic factors and of education in 2012, despite their intensification after the recession, are also larger in Germany, indicating that these also play a role in explaining the inter-country gap. In the case of location, a lower degree of urbanization (the omitted dummy is densely population areas) contributes to reduce inequality in Spain, but not in Germany.

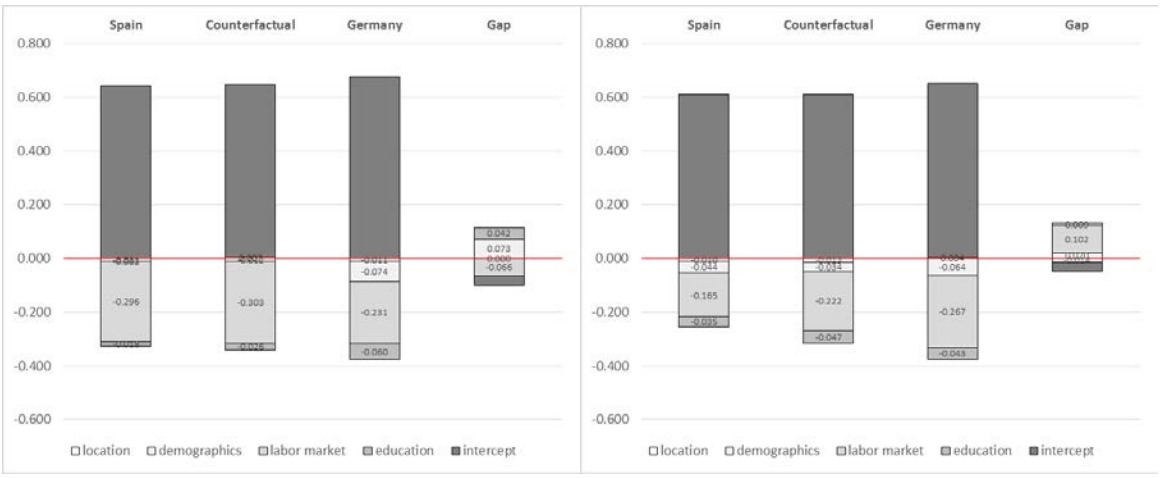
At this stage, however, we cannot separate in the total contribution of a characteristic to the inter-country inequality gap what is the contribution of the differential in the average value of that characteristic from the contribution of its associated coefficients. That is, we know that the labor market helps to explain about 0.102 Gini points of higher inequality in Spain (actually more than the entire gap, 0.083, but poorly significant), but we do not know how much of this is driven by characteristics, such as the lower employment level in Spain, and how much is the result of their different (dis)equalizing effect. Similarly, the demographic variables are responsible for a 0.020 gap, while education only for 0.009, and the gap is reduced by the contributions of location (0.014) and the intercept.

This linear decomposition can be used as the base for the decomposition of the inter-country inequality gap into characteristics and coefficients effects. For that we need to construct the counterfactual in which we combine the average characteristics of German households, with the coefficients estimated for Spain. The total contribution of each characteristic in the counterfactual is reported in the second column in Table 4 and also displayed in Figure 5. The resulting characteristics and coefficients effects are analyzed in the next epigraph.

Figure 5. Inequality and households characteristics

Linear decomposition of the Gini index using RIFregressions

5.a 2008 **5b 2012**



Note:
- Equivalized household disposable income (OECD-modified scale) among active households (at least one member in the labor force).
- Counterfactual: Spanish coefficients, German characteristics.
- See Section 2.3 for a full description of variables and Table 4 for a more detailed decomposition.

Source: Own construction using EU-SILC 2008, 2012 (2007, 2011 income).

6.2 Decomposition of the inter-country gap in inequality

In order to disentangle whether inequality among economically active households in Spain is higher because of the poorer average level of households' characteristics or is rather the result of less effective institutional setting and the specific distributional patterns, in this subsection we compare the 2012 distribution in Spain, in the counterfactual, and in Germany as described in the methodological section. The results are reported in the second panel in Table 4 (last two columns). The characteristics or explained effect is the change in inequality between the original distribution in Spain and the counterfactual (after shifting characteristics while keeping the coefficients). The coefficients or unexplained effect is the change in inequality between the counterfactual and the German distribution (after shifting the coefficients while keeping constant average characteristics).

Despite the inter-country differences in the way how the characteristics of the households shape inequality, discussed in section 5.3, these turned out to play a marginal role in explaining higher inequality in Spain. The inequality gap is largely associated with both countries having different average characteristics, as discussed in section 5.2. Indeed, three quarters of the Gini differential (0.062 out of the overall 0.083) can be entirely attributed to the aggregate compositional effect, while the Gini gap that would remain if active households in Spain had similar average characteristics to those in Germany is still significant but much smaller, 0.020 (corresponding to a Gini in Spain of 0.296). This is the gap that would be gone after shifting the coefficients. Let us explore the role of the differences in characteristics and coefficients that are responsible for this large compositional effect.

6.2.a The detailed explained or compositional effect in 2012

Looking at the decomposition by the different dimensions (location, demographic, labor, and education) it does not come as a surprise that the largest characteristics effect (0.057, 69 percent of the total gap) is related with differences in the set of labor market variables. Our results, thus, confirm that higher inequality in Spain is mostly associated with the poor functioning of the Spanish labor market. More specifically, the gap is mostly driven by the lower employment rates (0.032, 38 percent of the gap), especially the lower part-time employment among Spanish households as compared with German ones (0.028 gap, 34 percent). Only a small portion of the gap (0.003, 4 percent) is explained by the lower activity rate, of which an important part might be due to discouragement of the long-term unemployed given the lack of opportunities. The generally smaller size of Spanish working units is also responsible for a substantial gap in inequality (0.018; 21 percent). However, the large proportion of temporary jobs in Spain does not explain anything of the gap because, as we previously discussed, this characteristic was not found associated with higher inequality in Spain, ceteris paribus. The contributions of the overall distribution by occupations and experience are also negligible (and of negative sign). After the labor market, the lower attained education is the main driving factor of higher inequality in Spain compared with Germany. The gap in adults' attained education explains another 0.012 Gini points differential (15% of the gap), while the different degree of urbanization plays only a marginal role (0.003).

The difference in the demographic composition of households has a net negative contribution of -0.010, which indicates that it actually attenuates inequality in Spain (i.e. shifting to the demographic characteristics of Germany would increase rather than decrease inequality). Looking into more detail, we find that this negative contribution is due to the Mediterranean model of family. That is, the fact that Spain has larger economically active households and these cohabit with more people above 65 years old (each factor explaining -0.007, equivalent to 9 percent of the gap). If household size and composition by age in Spain were similar to that in Germany, inequality would increase about 0.016 Gini points (20 percent of the observed gap). This implies an equalizing effect larger than the disequalizing effect found for the lower attained education. These demographic effects are, however, partially offset by the positive effect of immigration on the inequality gap, due to a higher proportion of recent immigrants in Spain (0.005; 6 percent of the gap). In this case, like with education or the labor market, German immigration rates would imply lower levels of inequality in Spain.

On summary, average education and labor market characteristics jointly explain more than 80 percent of the observed higher inequality in Spain compared with Germany, although the equalizing role of Spanish extended families makes this gap smaller.

6.2.b The recession and the explained effect

Another question is to ask how much of this compositional effect has changed during the recession. For that, we obtain the decomposition for the inter-country gap in 2008 in Table 5 (left panel), when gap was much smaller (0.014). Most of the gap was explained by the lower activity and part-time employment rates in Spain, only partially compensated by the higher full-time employment rates. The net effect of employment was 0.11 (75 percent of the gap). The occupational distribution contributed to reduce the gap while the industrial composition increased it. In 2008 we do not find a significant impact of the size of the working unit on the gap in inequality (this was created by the

recession). Also the role of education increased during the recession, while the effect of the demographic factors was similar in 2008 and 2012.

The panel on the right of Table 5 also reports the result when we compare inequality in Spain in 2008 and in 2012, taking 2008 as the reference distribution. We measure the characteristics effect as the shift in characteristics (using the 2012 coefficients), and the coefficients effect by shifting the coefficients (with the characteristics of 2008). Our findings go in the same direction of identifying the labor market as the main responsible for the rise in inequality. Of the total increase in inequality, three quarters are associated with the change in all characteristics. More specifically, two thirds with the fall in full-time employment rates, and 18 percent with the change in the industrial and occupational mix. Although there is a decline in the proportion of workers in larger working units, this does not significantly contribute to higher inequality. This means that the importance of this factor in 2012 is the result of the change in the coefficients in Spain between 2008 and 2012, with larger units becoming relatively more equalizing than smaller ones. The reduction in the average size of households accounted for a small 6 percent of increase in inequality.

6.2.c The detailed unexplained effects

An inspection of the coefficients effects in Table 4 highlights the fact that the different impact of household characteristics on inequality in Spain and Germany in 2012 (valued at the average characteristics in Germany) is also playing a role, but with some counterbalancing effects. By main dimensions, the only significant effect is that of location, -0.017, because the less densely populated areas contribute to reduce inequality in Spain but not in Germany. The overall effects of labor and education are positive and large but statistically not significant, indicating a high degree of heterogeneity.

At the more detailed level of disaggregation, we observe some statistically significant effects. In the labor market, the more disequalizing effect of temporary workers in Germany, would produce, if brought to Spain an increase in inequality (the contribution has a negative sign) of 0.009 (about 11 percent of the gap). However, a large reduction of 0.090 (actually larger than the gap) would be produced by shifting the coefficients of experience, because experience reduces inequality in Germany but not in Spain, although its high variability implies that the coefficients in the regression and the coefficients and total effects are poorly significant and would need further investigation. Among the demographic factors, we also find that, as expected, the gap in inequality would be a 9 percent larger (0.005) if we import the effect of the share of elderly people in active households (which attenuates inequality in Spain but not in Germany), a similar effect is found in 2008.

Comparing the situation in Spain in 2008 and 2012, we find that most coefficient effects are poorly significant. Only at the most detailed level we find statistically significant negative changes (characteristics associated with a more equalizing effect in 2012) for tertiary education, large working units, or the percentage of women, among others.

6.2.d Using an alternative counterfactual

Finally, we address the question of robustness with the counterfactual. Would these results be different if we had chosen instead a counterfactual in which Spanish households in 2012 were given German RIF coefficients while keeping their own average characteristics? Repeating the same exercise but using the new counterfactual shows that the corresponding coefficients effect

(comparing the original Spanish distribution and the counterfactual) is even smaller (0.006) and statistically not significant (Table A1 in the Appendix). Thus, bringing to Spain the German association between characteristics and inequality, but maintaining the distribution of characteristics would no reduce any inequality at all. All the reduction in inequality would be produced going from this counterfactual to the German distribution of income (0.077, 93 percent of the gap), confirming the importance of the characteristics effect regardless if this is valued with Spanish or with German coefficients. The detailed effects show that the main contribution again is associated with employment, especially part-time, and working unit size, although the novelty of using German coefficients is the significant contribution of temporary workers. In the case of demographic variables, the contributions are also similar, the only differences due to the use of German coefficients being a smaller equalizing effect of the share of elderly people, and a higher impact of household size and immigration on the inequality gap. Also the contribution of education would be positive but smaller.

Table 4. Decomposition of Gini and Gini Gap, 2012

Equivalized household disposable income across active households

	Gini			Gini gap		
	Spain	Counter-factual	Germany	Total Effect	Characteristics Effect	Coefficients Effect
	(ES)	(C)	(DE)	(ES-DE)	(ES-C)	(C-DE)
Total	0.358	0.296	0.276	0.083	0.062	0.020
	(0.004)	(0.007)	(0.004)	(0.005)	(0.006	(0.008)
Urbanization	-0.010	-0.013	0.004	-0.014	0.003	-0.017
	(0.002)	(0.003)	(0.003)	(0.004)	(0.001	(0.006)
Demographic	-0.044	-0.034	-0.064	0.020	-0.010	0.030
	(0.017)	(0.016)	(0.016)	(0.023)	(0.003	(0.022)
Household size	-0.054	-0.046	-0.061	0.008	-0.007	0.015
	(0.015)	(0.013)	(0.014)	(0.020)	(0.002	(0.019)
Age 0-55	0.029	0.030	0.016	0.013	-0.001	0.014
	(0.012)	(0.012)	(0.010)	(0.015)	(0.001	(0.016)
Aged 65+	-0.011	-0.004	0.001	-0.013	-0.007	-0.005
	(0.002)	(0.001)	(0.002)	(0.002)	(0.001	(0.002)
Married	-0.003	-0.003	-0.008	0.004	0.000	0.004
	(0.007)	(0.007)	(0.006)	(0.009)	(0.000	(0.009)
Women	-0.013	-0.013	-0.009	-0.003	0.000	-0.004
	(0.008)	(0.008)	(0.006)	(0.010)	(0.000	(0.010)
Immigrant	0.010	0.005	0.001	0.009	0.005	0.003
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002	(0.002)
Health	-0.001	-0.002	-0.004	0.003	0.001	0.002
	(0.002)	(0.003)	(0.002)	(0.003)	(0.001	(0.004)
Labor	-0.165	-0.222	-0.267	0.102	0.057	0.045
	(0.029)	(0.031)	(0.051)	(0.059)	(0.005	(0.060)
Employment	-0.181	-0.188	-0.150	-0.031	0.035	-0.043
	(0.019)	(0.022)	(0.022)	(0.029)	(0.004	(0.031)
Activity	-0.054	-0.057	-0.031	-0.023	0.003	-0.026
	(0.013)	(0.014)	(0.017)	(0.022)	(0.001	(0.023)
Full-time	-0.128	-0.131	-0.119	-0.008	0.004	-0.012
	(0.013)	(0.013)	(0.009)	(0.016)	(0.001	(0.0169
Part-time	-0.018	-0.046	-0.041	0.023	0.028	-0.005
	(0.002)	(0.005)	(0.004)	(0.004)	(0.003	(0.007)
Occupation	0.012	0.010	0.001	0.011	0.002	0.009
	(0.009)	(0.011)	(0.012)	(0.015)	(0.003	(0.016)
Industry	-0.028	-0.033	-0.023	-0.005	0.004	-0.010
	(0.0209	(0.024)	(0.031)	(0.037)	(0.005	(0.040)
Unit size	0.020	0.002	-0.005	0.024	0.018	0.007
	(0.018)	(0.023)	(0.030)	(0.035)	(0.005	(0.038)
Contract	-0.001	-0.001	0.008	-0.009	-0.001	-0.009
	(0.003)	(0.002)	(0.002)	(0.004)	(0.002	(0.003)
Experience	0.032	0.033	-0.058	0.089	-0.001	0.090
	(0.023)	(0.023)	(0.046)	(0.051)	(0.001	(0.052)
Education	-0.035	-0.047	-0.043	0.009	0.012	-0.003
	(0.010)	(0.012)	(0.024)	(0.026)	(0.004	(0.027)
Intercept	0.612	0.612	0.647	-0.035		-0.035
	(0.036)	(0.036)	(0.059)	(0.069)		(0.069)

Notes:
- Equivalized household disposable income (OECD-modified scale) among active households (at least one member in the labor force).
- Counterfactual (C): Spanish coefficients, German characteristics.
- See Section 2.3 for a description of variables.
- See average characteristics in Table 2 and regression coefficients in Table 3.
- Standard errors in parentheses.

Source: Own construction using EU-SILC 2012 (2011 income).

Table 5. Decomposition of inter-country and inter-period Gini Gaps

Equivalized household disposable income across active households

	Gini Gap (ES2008-DE2008)		Gini Gap (ES2012-ES2008)	
	Estimate	*St. Error*	*Estimate*	*St. Error*
Total	0.014	0.006	0.043	0.005

Decomposition by characteristics	Characteristics Effect (ES-C*)		Coefficients Effect (C*-DE)		Characteristics Effect (2012-C+)		Coefficients Effect (C+-2008)	
	Estimate	*St. Error*	*Estimate*	*St. Error*	*Estimate*	*Estimate*	*St. Error*	*Estimate*
Total	0.007	0.006	0.007	0.008	0.032	0.003	0.011	0.005
Urbanization	0.001	0.001	-0.001	0.006	0.000	0.000	0.001	0.005
Demographic	-0.008	0.003	0.081	0.028	0.002	0.001	-0.042	0.026
Household size	-0.006	0.002	0.056	0.019	0.003	0.001	-0.017	0.021
Age 0-55	-0.002	0.001	0.004	0.019	0.000	0.001	0.014	0.017
Aged 65+	-0.006	0.001	-0.007	0.002	0.000	0.000	-0.002	0.003
Married	0.000	0.000	-0.002	0.011	0.000	0.000	-0.016	0.010
Women	0.000	0.000	0.026	0.013	0.000	0.000	-0.026	0.011
Immigrant	0.005	0.001	-0.001	0.001	0.000	0.001	0.005	0.003
Health	0.001	0.001	0.003	0.004	0.000	0.000	0.001	0.003
Labor	0.006	0.006	-0.072	0.055	0.032	0.003	0.106	0.044
Employment	0.011	0.002	-0.140	0.037	0.025	0.003	0.046	0.033
Activity	0.005	0.001	-0.081	0.024	-0.001	0.001	0.032	0.018
Full-time	-0.024	0.003	-0.041	0.021	0.027	0.003	0.009	0.024
Part-time	0.029	0.003	-0.018	0.007	-0.001	0.001	0.005	0.003
Occupation	-0.012	0.004	0.024	0.017	0.002	0.001	0.010	0.012
Industry	0.005	0.002	-0.033	0.058	0.006	0.004	0.033	0.030
Unit size	0.002	0.003	0.063	0.050	-0.002	0.003	-0.033	0.025
Contract	0.000	0.002	-0.001	0.001	0.000	0.000	-0.002	0.004
Experience	0.000	0.001	0.014	0.043	0.000	0.001	0.052	0.033
Education	0.008	0.004	0.034	0.032	-0.002	0.001	-0.015	0.013
Intercept			-0.035	0.070			-0.040	0.055

Notes:
- Equivalized household disposable income (OECD-modified scale) among active households (at least one member in the labor force).
- Counterfactual (C*): 2008 Spanish coefficients, 2008 German characteristics.
- Counterfactual (C^+): 2012 Spanish coefficients, 2008 Spanish characteristics.
- See Section 2.3 for a description of variables.
- See average characteristics in Table 2 and regression coefficients in Table A2.

Source: Own construction using EU-SILC 2008, 2012 (2007, 2011 income).

7. Concluding remarks

In this paper we have investigated the reasons explaining why inequality has recently increased in Spain, and why it is higher than in its neighbors, particularly in Germany. We have analyzed the role of different income sources and compositional effects and found that the high level of inequality that Spain exhibited in 2012 was related to the combination of permanent and circumstantial factors.

Our results point out at the generally weak redistributive effect of the tax-benefit system and the lower level of attained education as the main permanent driving factors of the higher inequality in Spain already present in 2008. The outbreak of the Great Recession brought a dramatic fall in full-

time employment levels and this shortage in employment accounts for most of the increase in inequality between 2008 and 2012, and for most of the inter-country gap in inequality in 2012. This was aggravated by the deeper destruction of employment in larger working units, those with a more important equalizing effect.

Two factors contributed to prevent inequality to be higher in Spain. As a permanent factor – intensified in the recession- we find the Mediterranean extended family structure. This reduces inequality among economically active households thanks to the pension benefits, a modest but stable income source, received by economically active households. The increase in unemployment benefits provided also a temporary relief for many households during the recession contributing to lower inequality.

As a result, in 2012, the tax-benefit system as a whole had virtually no effect in explaining this higher inequality of Spain among economically active households compared with Germany (although it did have an important effect to explain higher overall inequality). The more equalizing effect of old-age/survivors' pensions among these households compensated the less equalizing effect of taxes in Spain as compared with Germany. Similarly, the larger unemployment benefits compensated the small equalizing effect of the other social benefits. Higher inequality in 2012 is mostly associated with a large compositional effect among economically active households. More than 80 percent of the inter-country inequality gap would be gone if the average labor market and education characteristics of Spanish active households were similar to those prevalent in Germany.

An important lesson from these results is that there are three main sources through which inequality could be reduced in Spain. The main way is by increasing the level of employment, either full or part-time. Our results suggest that increasing part-time employment may have a significant impact on reducing inequality, provided it is the alternative to unemployment or inactivity, and provided it keeps it current distributional pattern. Increasing full-time employment, especially at the bottom of the distribution where it is currently scarce, is likely to have a much larger effect, however. There is room also to reduce inequality by increasing the average size of working units (for example removing the distortions in the tax system that prevent firms to grow).

A second way to push inequality down is by increasing the level of education of the labor force. This necessarily calls for a reduction of the large drop-out rates in secondary education and the recycling of those who abandoned the educational system to work during the housing bubble. The huge youth unemployment rates imply that a large part of the Spanish labor force is neither in education nor accumulating experience, while students in tertiary education face increasing costs with fewer scholarships. After a long debate about the convenience of the intense immigration flows, the country has witnessed a sudden flow of outmigration with especial incidence among young people with tertiary education.

Finally, inequality can be reduced through a more redistributive tax-benefit system. Most social benefits are devoted to unemployment and very few to child or housing support in comparison to Germany and other EU countries. The current equalizing effect of social benefits in Spain is strongly linked to the low employment levels and the extension of unemployment benefits. A reduction in unemployment if the economy returns to a normal situation, would then be accompanied by a reduction in social protection and its equalizing effect. Direct taxes, although nominally very

progressive, are full of loopholes and face large evasion levels, reducing its effectiveness in reducing inequality and its reforms suffer from continuous improvisation.

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APPENDIX

Table A1. Average income, current amounts in €

Equivalized household income		2008 Spain (ES)	2008 Germany (DE)	2008 Ratio ES/DE (x 100)	2012 Spain (ES)	2012 Germany (DE)	2012 Ratio ES/DE (x 100)
All households	Disposable income	14,214 (114)	21,086 (149)	67.4	13,885 (114)	22,022 (147)	63.1
	Gross income	16,745 (144)	28,503 (216)	58.7	16,151 (140)	29,998 (223)	53.8
	Market income + pensions	16,040 (148)	26,432 (223)	60.7	14,989 (143)	27,832 (230)	53.9
	Market income	13,681 (150)	21,901 (232)	62.5	12,089 (146)	22,915 (237)	52.8
Inactive households	Disposable income	10,665 (143)	16,926 (161)	63.0	12,208 (173)	18,632 (232)	65.5
Active households	Disposable income	14,777 (129)	22,405 (189)	66.0	14,181 (130)	23,094 (174)	61.4
	Gross income	17,604 (164)	31,346 (276)	56.2	16,711 (161)	32,605 (268)	51.3
	Market income + pensions	16,870 (167)	28,908 (285)	58.4	15,484 (165)	30,138 (279)	51.4
	Market income	15,645 (166)	27,958 (283)	56.0	14,022 (164)	29,209 (278)	48.0
	Labor income	15,231 (162)	26,848 (272)	56.7	13,654 (162)	28,266 (267)	48.3
Individual income							
Labor force	Labor income (annual)	16,281 (161)	28,243 (275)	57.6	14,681 (167)	28,988 (254)	50.6
Employed workers	Labor income (annual)	18,007 (160)	31,147 (282)	57.8	18,007 (179)	31,147 (259)	57.8

Notes:
- Bootstraps standard errors (1,000 replications) in parentheses (individuals clustered within households).
- A household is active (inactive) if any (none) member was in the labor force in the income reference year.
- Household income has been divided by the number of equivalent adults (OECD-modified scale).
- Income aggregates as defined in Section 2.1.
- Employed individuals are those who ever worked during 2011. Individuals in the labor force, also include those that were ever unemployed in 2011.

Source: Own construction using EU-SILC 2008, 2012 (2007, 2011 income).

Table A2. RIF Regressions of disposable household income for active households, 2008-12

	Germany 2008		Spain 2008		Spain 2012	
	Coeff.	St. E.	Coeff.	St. E.	Coeff.	St. E.
Intermediate area	-0.017	0.011	-0.023	0.009	-0.021	0.008
Thinly populated area	-0.031	0.009	-0.022	0.008	-0.019	0.008
Household size	-0.029	0.005	-0.011	0.004	-0.015	0.004
Age 0-16	0.058	0.030	0.109	0.028	0.091	0.028
Age 16-24	0.006	0.026	0.007	0.027	0.068	0.031
Age 25-34	-0.015	0.016	-0.013	0.015	0.008	0.014
Age 45-54	0.008	0.018	-0.006	0.016	0.013	0.013
Age 55-64	0.017	0.022	-0.008	0.021	-0.001	0.019
Age 65+	0.129	0.083	-0.129	0.030	-0.154	0.026
Married	0.020	0.013	0.018	0.011	-0.007	0.011
Women	-0.022	0.018	0.030	0.017	-0.023	0.016
Foreign citizens	0.090	0.049	0.049	0.013	0.088	0.015
Health limitations	-0.031	0.012	-0.014	0.013	-0.008	0.015
Activity rate	-0.010	0.027	-0.114	0.017	-0.070	0.018
FT employment rate	-0.147	0.020	-0.206	0.023	-0.194	0.019
PT employment rate	-0.150	0.020	-0.235	0.024	-0.179	0.022
Managers	0.138	0.033	0.207	0.033	0.241	0.028
Professionals	0.052	0.025	0.097	0.024	0.119	0.020
Technicians and associate professionals	-0.041	0.017	0.003	0.018	-0.036	0.015
Clerical support workers	-0.030	0.020	-0.050	0.016	-0.058	0.015
Services and sales workers	-0.042	0.018	-0.045	0.013	-0.013	0.013
Skilled agric., forestry, fishery workers	-0.013	0.061	0.044	0.026	0.034	0.041
Craft and related trades workers	-0.039	0.017	-0.026	0.013	0.016	0.014
Plant and machine operators/assemblers	-0.015	0.024	-0.031	0.016	-0.047	0.015
Occupation not available	-0.008	0.056	0.053	0.039	0.063	0.027
Agriculture, forestry and fishing	-0.005	0.147	-0.034	0.032	-0.032	0.041
Mining; manufacturing, …	-0.031	0.064	-0.092	0.026	-0.048	0.030
Construction	-0.004	0.067	-0.059	0.026	-0.046	0.033
Wholesale and retail trade; repair vehicles	-0.058	0.060	-0.088	0.026	-0.024	0.031
Transport, storage and communications	-0.053	0.063	-0.107	0.028	-0.027	0.033
Accommodation and food service	-0.016	0.063	-0.060	0.031	-0.022	0.033
Information and communication	-0.057	0.064	-0.072	0.042	-0.023	0.041
Financial and insurance	0.028	0.067	-0.007	0.045	0.134	0.048
Real state, professional, …	0.000	0.067	-0.028	0.032	-0.055	0.033
Public adm. and defense; soc. sec.	-0.108	0.067	-0.121	0.026	-0.049	0.031
Education	-0.130	0.065	-0.121	0.032	-0.087	0.035
Human health and social work	-0.006	0.067	-0.067	0.030	-0.011	0.034
Other services	-0.061	0.061	-0.102	0.027	-0.108	0.033
Unit size: 1-2 workers	0.114	0.063	0.126	0.021	0.167	0.030
Unit size: 3-5 workers	0.026	0.061	0.085	0.021	0.036	0.030
Unit size: 6-10 workers	0.063	0.064	0.048	0.020	0.001	0.030
Unit size: 11-49 workers	-0.031	0.056	0.031	0.018	-0.024	0.028
Unit size: 50+ workers	-0.038	0.056	0.064	0.018	-0.009	0.027
Temporary	0.009	0.015	0.001	0.010	-0.005	0.011
Experience 1-2 years	-0.031	0.038	0.004	0.031	0.015	0.033
Experience 3-5 years	-0.048	0.037	-0.028	0.030	0.052	0.030
Experience 6-9 years	-0.025	0.041	-0.048	0.029	0.013	0.027
Experience 10+ years	-0.036	0.036	-0.019	0.026	0.035	0.024
Lower secondary	-0.017	0.035	-0.029	0.011	-0.028	0.012
Upper secondary, non-tertiary postsecondary	-0.076	0.030	-0.051	0.012	-0.056	0.014
Tertiary	-0.050	0.031	0.003	0.017	-0.042	0.014
Intercept	0.677	0.057	0.642	0.041	0.602	0.037
N	21,549	p-value	30,339	p-value	27,751	p-value
F	22.8	0	14.9	0	20.2	0
R^2	0.053		0.118		0.164	

Notes:
- Equivalized household disposable income (OECD-modified scale) among active households (at least one member in the labor force).
- See Section 2.3 for a description of variables.

Source: Own construction using EU-SILC 2008 and 2012 (2007 and 2011 income).

Table A2. Decomposition of Gini and Gini Gap, 2012

Equivalized household disposable income across active households

		Estimate	St. Error		
Total		0.083	0.005		
Decomposition by characteristics		**Characteristics Effect (C*-DE)**		**Coefficients Effect (ES-C*)**	
		Estimate	***St. Error***	***Estimate***	***St. Error***
Total		0.077	0.010	0.006	0.012
Urbanization		-0.001	0.001	-0.013	0.005
Demographic		0.002	0.008	0.018	0.026
	Household size	-0.010	0.002	0.018	0.022
	Age 0-55	-0.001	0.001	0.014	0.015
	Aged 65+	0.003	0.003	-0.015	0.005
	Married	0.000	0.000	0.005	0.009
	Women	0.000	0.000	-0.004	0.010
	Immigrant	0.009	0.005	-0.001	0.006
	Health	0.001	0.001	0.002	0.002
Labor		0.067	0.005	0.036	0.060
	Employment	0.030	0.003	-0.038	0.028
	Activity	0.002	0.001	-0.025	0.021
	Full-time	0.003	0.001	-0.012	0.015
	Part-time	0.025	0.002	-0.002	0.003
	Occupation	0.000	0.003	0.011	0.014
	Industry	0.006	0.006	-0.012	0.032
	Unit size	0.021	0.007	0.004	0.031
	Contract	0.008	0.002	-0.017	0.005
	Experience	0.001	0.001	0.088	0.051
Education		0.009	0.005	-0.001	0.022
Intercept				-0.035	0.069

Notes:
- Equivalized household disposable income (OECD-modified scale) among active households (at least one member in the labor force).
- Counterfactual (C*): Spanish characteristics, German coefficients.
- See Section 2.3 for a description of variables.

Source: Own construction using EU-SILC 2012 (2011 income).