The inequality trap
A comparative analysis of social spending between 1880 and 1933

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It is often assumed that the fight against inequality played an important role in the rise of the Welfare State. However, using two alternative indicators of redistribution -*social transfers* and *social spending*- and two alternative proxies for inequality -the *share of non-family farms* and the *top income shares*-, this paper shows that, between 1880 and 1933, there was a negative correlation between inequality and social policy. Apparently, social policy developed more easily in countries that were previously more egalitarian. This suggests that unequal societies were in a sort of *inequality trap*, where inequality itself was an obstacle to redistribution.

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1. Introduction

In the early studies about the origins of modern social policy, "*the welfare state [was] seen as an erratic and pragmatic response"* to the problems brought about by industrialization (Fraser [1973]2003, p. 1). In that sense, the constant references –that we find in that literature- to the harsh conditions of life of the new industrial workers, the unhealthy environment of the cities, industrial unemployment or child labour, all this within a context of unprecedented economic growth, seem to suggest that (industrialization-led) inequality was one of those problems which had to be solved by the welfare state. Indeed, explicit references to inequality are often found in studies about the origins of modern social policy. Flora and Heidenheimer (1981), for example, say that equality along with socioeconomic security "*are interpreted as the core of the welfare state*" (p. 9).

However, despite these (more or less implicit) references to inequality, there are no studies analysing the impact of inequality on the early stages of the welfare state from a quantitative and comparative perspective. The aim of this paper is to help filling in this gap by analysing econometrically the impact of inequality on the evolution of social policy in a sample of more than 20 countries over the time-period 1880-1933.

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This may in turn contribute to today's debates about the relationship between inequality and redistribution, on which there is no consensus yet. While the median voter theories maintain that redistribution increases with inequality (Meltzer and Richard, 1981; Alesina and Rodrik, 1994; Persson and Tabellini, 1994), recent papers point in the opposite direction and suggest that inequality has a negative impact on redistribution (Bénabou, 2000, 2005; Lindert, 2004; Barth and Moene, 2009).

Analysing the time-period 1880-1933 has also several advantages. Differences in social spending levels over those years were quite large, possibly larger than today. For example, in 1930, social spending (as a percentage of GDP) in Germany was 10 times greater than in Spain and 8 times higher than in Italy. As for inequality, differences were also noticeable. Consequently, my sample includes countries such as Spain, Italy and Portugal with high levels of inequality, and others, such as Norway or Denmark, which were much more egalitarian.[1] Analysing this time-period has also certain advantages when dealing with the problem of endogeneity in the relationship between inequality and redistribution. In studies on present economies, one possible way to avoid this endogeneity problem is using pre-tax inequality indicators but, still, the possibility that current inequality (even before taxes) is not related to past redistributive policies cannot be completely ruled out. Between 1880 and 1930, however, social policy was still in its infancy, so it is reasonable to think that inequality was still an exogenous variable (or at least much more exogenous than it is nowadays).

As a dependent variable of my analysis, I have used the series of social transfers estimated by Lindert, which cover the time-period 1880-1930 and are available for more than 20 countries. The main limitation of those social transfers data is that they only include tax-funded public social spending but not state-subsidized occupational insurance benefits.[2] This may restrict the analysis somewhat, at least in the case of many European countries where the rise of modern social policy was linked to occupational insurance. For that reason I have made a new estimation of social spending in 1930 and 1933 for 22 countries, which do include the benefits of state-subsidized occupational insurance. This is based on information coming from the surveys of social services published by the International Labour Office in the 1930s, except in the cases of Portugal, where the figures are from Valerio (2001), and Spain, which have been estimated by myself from public budget sources and the statistics of

[1] More detailed information on the definition of social spending and inequality can be found in the following sections.

[2] State-subsidized occupational insurance programmes were funded via employers' and workers' contributions plus public subsidies. Lindert only includes government subsidies to these occupational insurance funds, but not the final benefits paid by these programmes.

the Spanish National Institute of Social Insurance. Finally, as well as the aggregate volume of social spending, I have analysed the influence of inequality on specific social programmes (pensions, health, welfare), for both Lindert's social transfers and my social spending data. This has enabled a more detailed analysis. The results indicate that inequality is negatively correlated with both social transfers and my new estimation of social spending, and that this applies for both democratic and non-democratic countries. Somehow, this means that unequal countries found themselves in a kind of *inequality trap*, since high levels of inequality were reinforced by ungenerous redistributive policies.

The paper is organized as follows. The next section summarizes some of the main theories on the relationship between inequality and redistribution. In section 3 I present my new estimation of social spending and compare it with Lindert's series of social transfers. Sections 4 and 5 analyse the impact of inequality on social transfers and social spending, respectively. In section 6 the results and its implications are briefly discussed. Finally, section 7 concludes.

2. Theories on inequality and redistribution

According to the median voter models, redistribution increases with inequality. If the median voter income is below the mean income (i.e. under high inequality levels) then a majority of voters (all those whose income is less than the mean) will support redistribution (Meltzer and Richard, 1981; Alesina and Rodrik, 1994; Persson and Tabellini, 1994). However, Perotti (1994, 1996) and Alesina *et al.* (2001) have provided empirical evidence suggesting that inequality not always leads to more redistribution. To explain this, Roemer (1998) has modelled an old leftist argument, suggesting that, besides redistribution, there are other dimensions in the political debate (such as debates on ethnic and religious issues, for example) that divide pro-redistribution voters. Similarly, Luttmer (2001) and Alesina *et al.* (2001) argue that ethnic divisions are harmful to redistribution because many individuals tend to oppose it when the beneficiaries are mainly members of other ethnic groups.

By contrast, other authors maintain that, far from increasing, redistribution decreases with inequality. Lindert (2004) calls this the *Robin Hood paradox* and says that support for redistribution does not depend on the gap between the median voter's income and the average earnings, but on the gap between the middle-income groups

(who are electorally decisive) and the lower-income groups. If the gap between both groups is small enough, then the middle-income groups will probably be more empathetic towards the beneficiaries of social policy. They can even feel that they themselves may at some point become potential beneficiaries of social policy and, therefore, they will be more willing to support redistribution.

The model by Kristov *et al.* (1992) also helps to explain why inequality could have a negative effect on redistribution. According to these authors, an individual's political participation depends on his or her absolute level of income. This is because (absolute) poverty increases the time preference for present consumption and reduces any type of saving, including investment in political activities (whether in the form of time or money). Therefore, if inequality involves an increase in absolute poverty levels, then social groups more willing to support redistribution will be excluded from the political process, and the political pressure in favour of redistribution will lessen.

According to Bénabou (2000, 2005), if there are market failures, then redistribution may generate efficiency gains.[3] These, in turn, can offset the cost of redistribution for a portion of those individuals who initially pay for it. In an egalitarian society, where the level of income of the wealthiest individuals is not much higher than the average, the cost of redistribution for the former will not be very high and will be easily offset by the efficiency gains. Consequently, resistance to redistributive policies will be low. By contrast, in a society with high inequality there will be a large number of sufficiently wealthy individuals for which the efficiency gains will not offset the cost of redistribution. As a result, political support for redistribution will be lower.

Moreover, Bénabou (2000, 2005) considers that, even in democratic countries, political power and influence depend on income levels,[4] so that the upper-income groups have more political influence than the lower-income groups.[5] This means that the decisive voter will not be the median voter but someone located at some point in the

[3] A good example would be public investment in education, which finances the education of many students with no access to private credit, increases the provision of human capital and stimulates economic growth.
[4] Using data from Rosenstone and Hansen (1993) and Bartels (2002) for the United States, Bénabou (2000) shows that the poorest and least educated individuals tend to vote less, contribute less to electoral campaigns (in economic terms), and participate less in time-intensive activities (such as writing to their Members of Congress, attending meetings or campaigning for their political choice). In addition, senators and congressmen are usually much more sensitive to the demands of higher-income groups. In developing countries, the bias in favour of higher-income groups is probably more acute due to practices such as vote-buying, graft and outright intimidation.
[5] Note that, according to Bénabou (2000, 2005), political influence depends on the relative level of income and not on its absolute level. If political influence depended on absolute income, once a certain income threshold had been crossed there would be no inequality of power between rich and poor; and inequality would only be able to reduce the political power of the poor if it involved an increase in absolute poverty.

distribution above him/her. This reinforces the negative relationship between inequality and redistribution described above. Thus, in a context of low inequality, the consensus that favours redistribution will be strengthened by the fact that political power will also be fairly distributed. In a context of increasing inequality, however, the pressures against redistribution will be strengthened because the relative political power of the wealthiest will also be higher.

Finally, Alesina and Drazen (1991) and Rodrik (1999) maintain that macroeconomic stabilizations are usually delayed in countries with high levels of inequality. The reason is that they have greater difficulties in reaching a consensus on how the stabilization costs should be shared. Similarly, Berg and Sachs (1988) argue that countries with higher inequality have to renegotiate their foreign debt more frequently because they find it more difficult to stabilize their budget in the long term. These theories do not explicitly refer to social policy. However, it seems reasonable to believe that countries with high inequality will also find it more difficult to reach agreements as to how social policy should be funded. In all likelihood, the redistributive implications of each funding alternative (basically direct taxes, indirect taxes and social security contributions) will become more acute. If inequality is high, for example, the regressive character of indirect taxes will be more pronounced, and the opposition of the poorest will also be more intense. The same could apply to direct taxes, but the other way round: their progressive character will become more pronounced and the opposition of the wealthiest will also be greater.

3. Social protection indicators before 1930-33

The social transfers database, created by Lindert, is no doubt the most comprehensive that exists for the pre-World War II period. It provides information for over 20 different countries in 10-year intervals between 1880 and 1930 (1880, 1890, 1900, 1910, 1920, 1930).[6] According to Lindert's definition, social transfers include tax-

[6] The data is available on Lindert's website (http://lindert.econ.ucdavis.edu/index.cfm?employeeid=17&currentNav=12). The information there is almost identical to that published in Lindert (1994) and the working-paper version (Lindert, 1992), though with slight updating. However, several countries for which Lindert (1994) warned there were problems with the data do not appear in the latest online version. These problems may have arisen because there was no information on certain relevant explanatory variables (Bulgaria, Rumania and Yugoslavia), because they were not independent countries for most of the period (Ireland, Czechoslovakia, Hungary, Poland), or because the exact level of social spending was not known (Germany and Switzerland). Moreover, in earlier versions, the information for most of these countries referred only to 1930. To keep homogeneity, the mentioned countries have not been included in the next section's econometric analysis. Therefore the countries included in the sample are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, the United Kingdom, the United States, Greece, Portugal, Spain, Argentina, Brazil and Mexico.

funded public provisions. However, occupational insurance benefits (which were funded by public subsidies plus employers and employees contributions) are not included in the estimations because they do not imply redistribution through public-budgets. Only government subsidies to these occupational insurance funds are included, but not the final benefits paid by these programmes (Lindert, 1992, 1994). Neither are provisions for civil servants included. Lindert considers these to be the result of the particular labour relationship existing between the State and its employees. Therefore they receive the same treatment as the private-collective insurance benefits that many companies offer their employees. Finally, social transfers are classified by programme (pensions, health, and welfare and unemployment), but this classification should be analysed with caution, because, as Lindert himself warned, it is difficult to be precise about the aim of many social programmes, which were often oriented towards the poor in general.

The definition of social transfers adopted by Lindert is aimed at capturing the impact of those social protection measures that implied redistribution via public budgets and were addressed to the population as a whole and not to specific groups (such as civil servants). However, the exclusion of occupational insurance benefits may seem more controversial. These played an important role in the configuration of modern social protection systems in many continental European countries, and have been the focus of much attention in a number of studies on the origins of the welfare state (such as Flora and Heidenheimer, 1981; Flora, 1983; Baldwin, 1990; and Hicks, 1999). As Lynch (2006) points out, it seems that during the late 19th century and early 20th century, when modern social policy was being shaped, there were two alternative forms of public intervention: one based on citizens' rights, predominant in Anglo-Saxon countries and Scandinavia, and another in which benefits focused on the needs of people with close ties to the labour market, predominant in continental Europe. In the former, the aim of social policy was to cover the gaps in private insurance and mutual-aid programmes run by unions. Consequently, the State offered tax-funded non-contributory provisions for children, the sick and the elderly who had no private coverage. Examples in this regard are the Danish and the New Zealand pension laws of 1891 and 1898, respectively.

In the latter, the state took over private forms of social protection, whether imposing mandatory insurance or regulating voluntary insurance. In Germany, for example, the state established mandatory workplace-accident, sickness and old-age insurance in the 1880s. The cost of these programmes was borne by employers and

employees, with more or less generous government subsidies depending on the programme. In other countries, instead of establishing compulsory insurance programmes, the state opted for subsidizing and regulating mutual-aid programmes run by unions. In Belgium, for example, the state started subsidizing voluntary sickness and old-age programmes in 1894 and 1900, respectively. France did the same in 1898 and 1900, respectively. Government regulations normally established benefit levels, premiums and qualifying conditions; and the degree of government control was considerable because public subsidies to unions and mutual-aid associations running these programmes were conditional to the acceptance of government regulations. Many of the countries that initially opted for regulating union programmes ended up imposing compulsory insurance programmes. However, in some countries, state-subsidized voluntary insurance became very important in terms of people insured (Huberman and Lewchuk 2003, Murray 2007).[7]

After World War II, under the influence of the Beveridge report, many countries tried to universalize their social protection systems, extending coverage beyond workers with jobs or who were union members. In fact, many countries' current social security funds are the descendants of the former state-subsidized occupational insurance. It seems therefore interesting to analyse the determinants of spending on social protection including these occupational insurance provisions too (particularly in the case of continental European countries, where these programmes were predominant). Moreover, at least at the time of their creation, state-subsidized occupational insurance must have had far-reaching redistribution implications (although not via the public budget). These programmes were typically financed through public subsidies plus employers' and workers' contributions, and these insurance contributions meant an obvious expense for both employers and employees, so that each of those groups must have tried to impose the largest possible burden of cost on the other. In some cases, these fights over redistribution even put the introduction of state-subsidized occupational insurance in jeopardy. For example, one of the reasons why the French law of 1910 establishing mandatory occupational insurance failed was because workers refused to pay the mandatory contributions (Ashford, 1989). Similarly, the Spanish Workers' Compulsory Retirement Act of 1919

[7] For figures on affiliates to state-subsidized occupational insurance (both compulsory and voluntary) from the end of the 19th century, see Flora (1983). For an overview on the development of state-subsidized insurance see Herranz (2010).

only imposed the obligation to contribute on employers, precisely to avoid labour opposition (Elu, 2006).[8]

With this in mind, I have made a new estimation of social spending levels in 1930 and 1933, which includes tax-funded benefits provided by the public authorities (typically public spending on health-care, poor-relief, unemployment, and non-contributory pensions) plus state-subsidized occupational insurance benefits, both mandatory and voluntary (basically workmen's compensation, pensions, sickness-leave and unemployment compensation).[9] The benefits for civil servants have not been included in the estimations; and provisions for workers in public companies have been included only when these workers were subject to general legislation on social protection and it was clear that those benefits were not the result of a private labour relationship with the public company. The sample incorporates 22 countries and the information comes from the reports on social protection published by the International Labour Office in 1933 and 1936, which distinguish between two types of social spending: spending on social security and spending on social assistance.[10] In the case of Portugal the information comes from Valerio (2001), while for Spain the information has been estimated directly from public budgets information, the Spanish statistical yearbooks and the reports and statistics of the Spanish National Institute of Social Insurance (*Instituto Nacional de Previsión*). For convenience, from now on the term *social transfers* will be used to refer to Lindert's estimations and the term *social spending* to refer to my alternative database[11].

Table 1 shows a comparison between the levels of *social transfers* estimated by Lindert for 1930 and my estimations of *social spending* for the same year. As expected, the levels of social spending are higher in my estimation, which includes state-subsidized occupational insurance benefits. Only in the cases of Finland and Yugoslavia, Lindert's figures are slightly higher than those presented here, which is

[8] In the long term, it is plausible to assume that social contributions are equivalent to a tax on labour, no matter whether they are paid by employers or employees (Bandrés, 1999). However, it does not mean that they did not involved redistributive fights at the time of their creation.

[9] State-subsidized voluntary insurance programmes (normally run by unions and tightly regulated by the state) should not be confused with *pure* private insurance. The latter could also cover social risks such as sickness or unemployment, but received no public subsidies (or very little) and were only subject to the general regulations governing friendly societies and/or insurance companies, but in no case to a strict specific legislation for each type of risk. The provisions of *pure* private insurance have not been included in the estimations.

[10] The countries in the sample are: Australia, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, Finland, France, Germany, the Netherlands, Hungary, Ireland, Italy, Japan, Poland, Portugal, the Soviet Union, Spain, Sweden, Switzerland, the United Kingdom and Yugoslavia. In some cases, the information for certain social spending items were not available for 1930 and 1933 but for other nearby years such as 1929, 1931 or 1934.

[11] Table A.1 in the appendix shows my new estimates of *social spending*.

probably explained by the fact that the sources used are not exactly the same. In some countries the difference between the two estimates is not very wide. For instance, my estimate for Ireland amounts to 4.48% of GDP as opposed to 3.87% in the case of Lindert's data. However, sometimes the difference is much bigger. For example, social spending in the UK in 1930 was 6.52% of GDP, according to my estimations, while according to Lindert's estimations it was just 2.32%. In the case of Czechoslovakia, my estimations of social spending are also much higher: 2.91% of GDP as opposed to 0.51%.

Table 1. Comparison of *social transfers* and *social spending* in 1930 (% of GDP)

	(Lindert's estimates)		(own estimation)	
	social transfers	Ranking order	*social spending*	Ranking order
Germany	4.96	1	11.15	1
Ireland	3.87	2	4.48	5
Denmark	3.11	3	4.80	4
Finland	2.97	4	2.11	10
Sweden	2.59	5	3.84	6
UK	2.32	6	6.52	2
Australia	2.11	7	5.79	3
Switzerland	1.17	8	2.18	9
Poland	1.08	9	2.03	11
France	1.05	10	2.49	8
Netherlands	1.03	11	1.61	14
Belgium	0.56	12	1.83	13
Czechoslovakia	0.51	13	2.91	7
Spain	0.49(a)	14	0.48(a)	18
Portugal	0.35(a)	15	0.35(a)	19
Canada	0.31	16	0.68	16
Japan	0.21	17	0.67	17
Hungary	0.10	18	1.88	12
Yugoslavia	0.09	19	0.07	21
Italy	0.08	20	1.40	15
Bulgaria	0.02	21	0.14	20

Sources: figures on *social transfers* for Australia, Belgium, Canada, Denmark, Finland, France, Netherlands, Italy, Japan, Sweden and the UK come from Lindert's web site. Figures on Germany, Bulgaria, Czechoslovakia, Hungary, Ireland, Poland, Switzerland and Yugoslavia come from Lindert (1994). Note that, as mentioned in footnote 6, the information for the latter group of countries is, in most cases, only available for 1930. For this reason, they have not been included in next section's econometric analysis. Here they have been included for comparative reasons only.
In order to express the *social spending* data as a percentage of GDP, Clark's (1957) estimations of current GDP have been used, except for Spain and Portugal, where GDP figures have been taken from Prados de la Escosura (2003) and Valerio (2001) respectively. The GDP of the Soviet Union is based on Allen (2003), who provides data on the Soviet GDP in 1937 roubles for the period 1928-1940 and gives information on the evolution of prices between 1927-28 and 1937.
Notes: (a) Spain's data have been estimated following Lindert's definition from public budget sources and the Spanish Statistical Yearbooks. Portuguese figures have been taken from Valerio (2001). Since his estimates only include public administrations' spending, his figures fit with Lindert's definitions.

If all the countries are ordered according to their level of generosity, no great differences can be seen, in the sense that the 10 most generous countries are still

practically the same: basically the developed countries of north-west Europe plus Australia. The 10 least generous countries, those occupying the bottom half of Table 1, are also still practically the same. However, there are a few changes in their relative positions when state-subsidized occupational insurance benefits are included. Germany's top position, for example, is more evident in the last column of the Table. Meanwhile the Scandinavian countries lose out to Great Britain and Australia, which move up into second and third position respectively. Italy, Hungary and Czechoslovakia (where state-subsidized occupational insurance benefits played a very important role) move up a number of places. In short, the new estimations produce noticeably higher figures for social spending than Lindert's estimations and also bring about changes in relative positions, with a relative improvement of those countries where state-subsidized occupational insurance played an important role.

Finally, as in the case of Lindert's data, my estimates can also be broken down by programme. However, the information contained in the ILO reports is not completely homogeneous. Classification criteria and the level of detail of the information varied from country to country. Despite the difficulties, I have been able to classify benefits into 3 categories of social spending: pensions, health, and welfare and unemployment. The first one includes old-age, survivor's and widow's pensions, plus workmen's compensation. The second awarded disability pensions and also temporary incapacity benefits. However, it was impossible to distinguish between them. Consequently they have all been grouped together under the pensions heading. Health spending includes health-care spending plus sickness and maternity leave benefits. Finally, spending on welfare and unemployment includes family allowances, benefits for the unemployed, and the traditional poor-relief which was often given to the sick, the unemployed or the elderly without distinguishing between them.

4. The determinants of *social transfers* between 1880 and 1930

4.1. Data and variables

The aim of this section is to analyse the role of inequality in the early stages of social policy. The basic model to be estimated is given by Equation (1):

$$(1) \quad REDIST = \alpha_0 + \alpha_1 INEQ + \alpha_2 Z + \varepsilon_1$$

where *REDIST* is the level of redistribution, *INEQ* is the level of inequality, and Z is a group of variables that are normally included in comparative studies on the determinants of social policy. The series of social transfers estimated by Lindert is used, in this section, as an indicator of redistribution. As mentioned earlier, it covers the time-period 1880-1930; the information is available for 10-year intervals (1880, 1890, 1900, 1910, 1920 and 1930) and embraces 21 different countries. In the case of Spain the figures are my own and in the case of Portugal they come from Valerio (2001).

Two alternative variables that capture the distribution of income before taxes have been used as a proxy of inequality: the area of non-family farms as a percentage of the total farm area (for simplicity the *share of non-family farms*) and the top income shares. Information on the former comes from Vanhanen (1997), who defines a family farm as one that provides work for a maximum of four people, including family members. The size of family farms can therefore change over time and from one country to another, depending on the technology or weather conditions. The purpose of this criterion is to separate family farms from big farms worked by paid employees. Note that it is the *share of non-family farms* (the opposite of Vanhanen's share of family farms) that is used here, because the aim is to have an indicator of *inequality*, not *equality*.

The *share of non-family farms* variable has the advantage of not being subject to problems of endogeneity, because there is no reason to think that *social transfers* had a direct influence on the distribution of land ownership. However, this indicator loses representativity as the industrialization process advances and agriculture loses weight in the economy. Even so, it appears to be a reasonable proxy, especially in a period such as the one analyzed here on which information is very limited and the agrarian sector was much more important than nowadays. In fact, this variable has been used in a number of earlier studies as a proxy for overall inequality (Vanhanen, 1997; Boix, 2003; Keefer and Knack, 2002). Similarly, Alesina and Rodrik (1994) used land inequality as a proxy for overall inequality.

Nevertheless, given the limitations of the *share of non-family farms* variable, the *top income shares* have also been used as an inequality proxy in order to make the exercise more robust. At first glance there should be no endogeneity problems here either since the *top income shares* are based on information that captures pre-tax income levels. Atkinson *et al.* (2009) maintain that *top income shares* can have a considerable influence on the evolution of the Gini coefficient and therefore they would

appear to be a reasonable indicator of inequality. However, their main drawback is that they refer to a very small percentage of population. Consequently, they do not capture those income variations that occur in the lower part or the centre of the distribution. Top income shares data come from Atkinson *et al.* (2007) and, in the case of Portugal, from Guilera (2010). Both sources provide information covering various percentages of the wealthiest population (the top 10%, 5%, 1% etc.). Here, the top 0.1% income share has been used because this was the band that offered the greatest number of observations, although the number is still small: 39 in the time-period 1880-1930. Nevertheless, this variable has been maintained to allow comparisons with the results obtained with the *share of non-family farms*.

The control variables (parameter Z in Equation 1) include the logarithm of GDP per capita, the ageing of population –measured by the percentage of population over 65– and the degree of political democratization. GDP figures come from Maddison, and the percentage of population over 65 has been taken from the Lindert website database, except for Spain, which comes from Nicolau (2005). The *polity2* index created by the Polity IV Project -which ranges from -10 (perfect autocracy) to 10 (perfect democracy)- has been used to measure the degree of democratization. The expected sign of the coefficients of the income level and ageing of population variables is positive. Actually, Pampel and Williamson (1989) and Mulligan *et al.* (2010) consider that they are the most important variables to explain the development of social policy. The expected sign of the degree of democratization, however, is less clear. Initially one might think that democracy should have a positive effect on social spending, since it guarantees the right to vote to lower-income groups and allows the existence of left-wing parties and workers' unions (Lindert, 1994; Hicks, 1999; Espuelas, 2012). Mulligan *et al.* (2010), however, maintain that social spending is mostly driven by economic and demographic factors and that democracy is not a key determinant of the development of social policy. Hence the expected sign of this variable is not clear.

4.2. Results

A. Share of non-family farms as an indicator of inequality

Columns 1 and 2 of Table 2 present the results of estimating the basic model of Equation (1). The estimation method used in the regressions is OLS (column 1). As in Lindert (1994), the results of estimating a *tobit* model are also reported (column 2),

because the endogenous variable, the level of *social transfers* as a share of GDP, is partially censored: there are several observations taking value zero, particularly at the beginning of the time-period. In the OLS regressions I have included country fixed-effects. In the *tobit* regressions, however, I have not, because *tobit* estimations with country fixed-effects could be inconsistent and biased.[12] As expected, both the level of GDP per capita and the ageing of population show a positive impact on total social transfers, but it is only significant in column 2, where the *tobit* regressions are displayed. Similarly, the coefficient associated to the degree of democratization is also positive, but again it is only significant in column 2. Inequality, on the other hand, approximated by the share of non-family farms, has a negative and highly significant effect, just the opposite of what would have been expected according to the median voter models. However, the sample includes both democratic and non-democratic countries, and median voter models apply only to democratic countries. Therefore, in order to strictly test the median voter hypothesis, the regressions have been re-run adding a multiplicative variable (democracy * inequality) in columns 3 and 4. Thus the new estimation becomes:

$$(2)\ REDIST = \alpha_0 + \alpha_1 INEQ + \alpha_2 INEQ \times Democracy + \alpha_3 Z + \varepsilon_1$$

where $INEQ \times Democracy$ is the new multiplicative variable and the rest of the parameters are the same as in Equation (1). The total marginal effect of inequality under democracy in this new estimation would be:

$$(3)\ \partial REDIST / \partial INEQ = \alpha_1 + \alpha_2 \times Democracy$$

[12] It is normal to consider that the maximum likelihood estimators in non-linear panel data models with fixed effects are biased and inconsistent. Greene (2004), however, maintains that the *tobit* estimators are unaffected by this problem. Thus the coefficients of the estimation are not biased, although the disturbance variation is, and this bias could be transmitted into the calculation of marginal effects. Although the results are not displayed here, I have also run the *tobit* equations including country dummies and the results confirm the negative correlation between inequality and social transfers observed in table 2.

Table 2. The determinants of total social transfers as a % of GDP, 1880-1930

	(1) OLS		(2) tobit		(3) OLS		(4) tobit		(5) OLS		(6) tobit		(7) OLS		(8) tobit		(9) OLS		(10) tobit		(11) OLS		(12) tobit	
C	0.489		-5.070	***	0.444		-4.802	***	0.553		-4.882	***	0.747		-4.320	***	0.312		-4.635	***	0.452		-4.010	***
	(1.327)		(1.150)		(1.328)		(1.144)		(2.248)		(1.167)		(2.266)		(1.183)		(2.161)		(1.167)		(2.184)		(1.201)	
Log(GDP per cap)	0.234		0.583	***	0.218		0.602	***	0.226		0.556	***	0.177		0.553	***	0.157		0.537	***	0.127		0.531	***
	(0.164)		(0.130)		(0.165)		(0.130)		(0.305)		(0.132)		(0.316)		(0.132)		(0.286)		(0.136)		(0.294)		(0.135)	
Elderly	0.082		0.257	***	0.079		0.248	***	0.081		0.251	***	0.074		0.232	***	0.067		0.246	***	0.063		0.225	***
	(0.078)		(0.043)		(0.078)		(0.044)		(0.073)		(0.041)		(0.073)		(0.043)		(0.072)		(0.041)		(0.072)		(0.042)	
Democracy	0.013		0.025	**	0.038		-0.028		0.013		0.024	**	0.039		-0.048		0.025	**	0.028	**	0.042		-0.049	
	(0.010)		(0.012)		(0.035)		(0.036)		(0.010)		(0.012)		(0.036)		(0.041)		(0.011)		(0.013)		(0.031)		(0.038)	
Non-family farms	-0.034	***	-0.010	***	-0.031	***	-0.015	***	-0.034	***	-0.010	***	-0.031	***	-0.017	***	-0.021	**	-0.009	***	-0.020	*	-0.016	***
	(0.009)		(0.004)		(0.010)		(0.005)		(0.009)		(0.004)		(0.010)		(0.005)		(0.011)		(0.003)		(0.011)		(0.005)	
Non-family farms*democracy					-0.0004		0.0008						-0.0004		0.0011	*					-0.0003		0.0012	**
					(0.0005)		(0.001)						(0.0005)		(0.0006)						(0.0004)		(0.0006)	
Time-trend									0.002		0.022		0.008		0.047									
									0.040		(0.040)		(0.041)		(0.044)									
Country fixed-effects	yes		no		yes		no		yes		no		yes		no		yes		no		yes		no	
Time fixed-effects	no		no		no		no		no		no		no		no		yes		yes		yes		yes	
Mean dep. variable	0.580		0.580		0.580		0.580		0.580		0.580		0.580		0.580		0.580		0.580		0.580		0.580	
Adjusted R-squared	0.794		--		0.794		--		0.792		--		0.792		--		0.801		--		0.799		--	
Log likelihood	-21.684		-96.026		-21.163		-95.441		-21.683		-95.895		-21.143		-94.977		-16.534		-94.139		-16.270		-93.031	
Standard error of regression	0.326		0.511		0.326		0.512		0.328		0.511		0.328		0.507		0.321		0.514		0.322		0.510	
Left censored obs.	--		39		--		39		--		39		--		39		--		39		--		39	
Left non censored obs.	--		81		--		81		--		81		--		81		--		81		--		81	
Total obs.	120		120		120		120		120		120		120		120		120		120		120		120	

Notes: dependent variable is total social transfers as a % of GDP. The sample is composed of 21 countries and six time-benchmarks (1880, 1890, 1900, 1910, 1920, 1930). A few observations are missing. Therefore, total number of observations is 120, instead of 126. Robust standard errors in brackets. *** significance at 1%, ** significance at 5%, * significance at 10%.

Notice that the democracy indicator is a continuous variable that ranges between -10 and 10 (where 10 is the maximum level of democracy), and that the inequality indicator is a percentage that ranges between 0 and 100 (where 100 is the maximum level of inequality). Therefore, if the predictions of the median voter models are correct, this variable should have a positive sign: the greater the inequality and the more democratic the political context, the greater the level of redistribution should be. As can be seen in table 2, in the case of the *tobit* regressions (column 4), the coefficient associated with the multiplicative variable is indeed positive. However, in the case of the OLS estimations (column 3) it is negative. Moreover, it is very small in absolute value and it is not significant in both cases. This suggests that the impact of inequality, even in democracy, continues to be negative. To confirm this, we can calculate, from Equation (3), the total marginal effect of inequality on social transfers under democracy. If the coefficients of the regression in column 4 (where the multiplicative variable has a positive sign) are taken, this would be:

$$(3.1)\ \partial REDIST / \partial INEQ = -0.015 + 0.0008 \times Democracy$$

Therefore, in a situation of perfect democracy (where democracy = 10) the marginal effect of inequality would be:

$$(3.1.a)\ \partial REDIST / \partial INEQ = -0.015 + 0.0008 \times 10 = -0.007$$

while in a situation of perfect absence of democracy (where democracy = -10) the marginal effect of inequality would be:

$$(3.1.b)\ \partial REDIST / \partial INEQ = -0.015 + 0.0008 \times (-10) = -0.023$$

This means that inequality is negatively correlated with social transfers in both democratic and non-democratic contexts.[13] The fact that there is a negative correlation between inequality and the development of social policy even in democracy is a particularly interesting result with important implications. Contrary to what many studies on the origins of the welfare state appear to implicitly suggest, inequality did

[13] If we calculate the total marginal effect of inequality from the OLS regression in column 3, we find a similar result. Under democracy, inequality's marginal effect would be: $\partial REDIST/\partial INEQ = -0.031 - 0.0004 * (10) = -0.035$; and under autocracy: $\partial REDIST/\partial INEQ = -0.031 - 0.0004 * (-10) = -0.027$. I have also run the regressions with only democratic countries in the sample, and the negative effect of inequality remained.

not favour the development of social policy even in its initial stages (when the level of social transfers was really low and social needs were therefore greater than today). However, the fact that social spending is negatively correlated with inequality suggests that unequal societies were in a sort of *inequality trap*, in the sense that inequality itself was an obstacle to redistribution.

Following Niskanen (1971), one might argue that once social programmes are established they have a tendency to grow by themselves (due to the aspirations of bureaucracy), giving rise to a kind of inertia effect. In other words, the growth of social transfers may be no more than the result of a simple time trend. Similarly, one might argue that the evolution of social transfers depends on shocks occurring at specific moments, such as the impact of the World War I or the *copycat effect* that may have come about after the pioneering countries introduced the first social protection measures. To test both possibilities and give more robustness to the analysis, I have repeated the previous regressions including a time trend and time fixed-effects that should capture the influence of specific shocks. As is shown in columns 5 to 12 in Table 2, the coefficient associated to the share of non-family farms (our variable of interest) continues to be negative and significant in all regressions. The rest of variables also maintain the expected sign and similar levels of significance. The only remarkable difference is the multiplicative variable (democracy * inequality), which becomes significant in columns 8 and 12 (where the *tobit* regressions are displayed). However, as before, the coefficient is very small, so that the total marginal effect of inequality remains negative even under democracy.[14]

B. Top income shares as an indicator of inequality

In order to corroborate the previous results, I have repeated the above analysis using the *top income shares* as an indicator of inequality (Table 3). However, the information available in this case is much more limited. There are only 39 observations involving 13 countries (Australia, Canada, Finland, France, Japan, The Netherlands, New Zealand, Norway, Sweden, the United Kingdom, the United States, Portugal and Argentina). The years available vary from country to country, although in most cases they are from the early decades of the 20th century. The estimation method is least squares,[15] and given the scant number of observations, I have used country random-

[14] From regression 8, the total marginal effect of inequality would be: $\partial REDIST/\partial INEQ = -0.017 + 0.0011 * (10) = -0.006$; and from regression 12: $\partial REDIST/\partial INEQ = -0.016 + 0.0012 * (10) = -0.004$.
[15] Instead of a *tobit* model, the least squares method was used because there is now a single censored observation.

effects instead of country fixed-effects, because the latter would have been very costly in terms of losing degrees of freedom. The Hausman test was applied and no evidence was found for rejecting the random-effects model. Finally, just as before, I also checked for time effects, introducing a time trend and time-dummies (columns 4 to 7).

Table 3. The determinants of total social transfers as a % of GDP, 1880-1930 (II)

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
C	-4.745	*	-5.051	*	-4.733	*	-6.097		-4.531		-6.061		-4.553	
	(2.767)		(2.929)		(2.622)		(4.193)		(4.028)		(3.944)		(3.739)	
Log(GDP per cap)	0.689	**	0.756	*	0.690	**	0.877		0.753		0.875	*	0.770	
	(0.317)		(0.393)		(0.287)		(0.527)		(0.506)		(0.484)		(0.459)	
Elderly	0.172	**	0.174	**	0.171	**	0.183	**	0.096		0.180	**	0.102	
	(0.083)		(0.086)		(0.082)		(0.088)		(0.102)		(0.087)		(0.099)	
Democracy	0.002		-0.034				0.000		0.018					
	(0.021)		(0.112)				(0.021)		(0.023)					
Top incomes (0.1%)	-0.136	**	-0.167		-0.138	**	-0.143	***	-0.129	*	-0.143	***	-0.147	**
	(0.053)		(0.112)		(0.053)		(0.052)		(0.068)		(0.050)		(0.059)	
Top incomes (0.1%)*democracy			0.005		0.0004						0.0003		0.002	
			(0.013)		(0.003)						(0.003)		(0.003)	
Time-trend							-0.047				-0.048			
							(0.077)				(0.075)			
Time dummies									yes				yes	
Adjusted-R2	0.399		0.386		0.399		0.390		0.458		0.390		0.457	
Standard error of regression	0.387		0.384		0.386		0.382		0.347		0.381		0.350	
DW	2.098		2.122		2.107		2.203		2.130		2.217		2.067	
Obs.	39		39		39		39		39		39		39	

Notes: dependent variable is total social transfers as a % of GDP. Estimation method is least squares with country random-effects. The sample is composed of 13 countries and six time-benchmarks (1880, 1890, 1900, 1910, 1920, 1930) conforming an unbalanced panel dataset. Robust standard errors in brackets. *** significance at 1%, ** significance at 5%, * significance at 10%.

In general the results are very similar to those obtained with the share of non-family farms. Both the log of GDP and the ageing of population had a positive effect, although when time-effects are included they tend to lose significance. Democracy also maintains its positive sign, but is not significant in any of the new regressions. As far as the *top income shares* variable is concerned, the results again confirm that inequality is negatively correlated with social transfers regardless of whether we test for time effects or not (columns 1, 4 and 5).

As in the case of non-family farms, I wanted to check whether the effect of inequality is different in democratic contexts. In order to do this, I added the interaction between inequality and democracy in column 2. As expected the coefficient sign is positive, but is very small in absolute value and not significant, which again suggest that inequality's effect is still negative in democratic contexts. However, it

seems that this new regression is affected by multicollinearity problems.[16] For this reason I repeated the estimation eliminating the democracy variable from the regression to confirm the results. As is shown in columns 3, 6 and 7, inequality had a negative effect on social transfers since the coefficient associated with the *top income shares* variable is negative and highly significant, regardless of whether or not we check for time-effects. The coefficient associated with the multiplicative variable is again positive but very small in absolute value and not significant.

C. Impact of inequality on social transfers by programme

If the *social transfers* are analysed by programme, the results are not very different from those obtained in the previous sections. However, some interesting extra details can be found. Table 4a shows the results of estimating a model only with the variable inequality and control variables, while Table 4b shows the results of estimating a model adding the interaction between democracy and inequality. As can be seen in both tables, inequality had a negative impact on the different types of spending, no matter whether the share of *non-family farms* or the *top income shares* are used as a proxy of inequality. However, inequality is not significant in the regressions where spending on welfare is the endogenous variable. It also appears that GDP per capita had no positive influence on welfare spending, since it is not significant in the regressions where spending on welfare is the endogenous variable. This might be suggesting that traditional welfare was the predominant form of social protection in the least developed and more unequal countries.

[16] To check for the existence of multicollinearity, a VIF test was applied on the democracy variable in the regression in column 2. It confirmed that there are problems of multicollinearity. In columns 1 and 3, however, the VIF tests applied confirmed that there is no multicollinearity.

Table 4a. The determinants of social transfers by programme, 1880-1930

dep. var.	Pensions		Health		Welfare	Pensions		Health		Welfare	
	(1)		(2)		(3)	(4)		(5)		(6)	
C	0,182		-0,028		0,334	-1.339		-1.430		-2.004	
	(0,563)		(0,557)		(0,702)	(0.826)		(1.289)		(1.619)	
Log(GDP per cap)	0,065		0,130	**	0,040	0.212	**	0.259	*	0.217	
	(0,076)		(0,063)		(0,085)	(0.089)		(0.149)		(0.186)	
Elderly	0,043		0,002		0,038	0.016		0.017		0.142	***
	(0,037)		(0,032)		(0,039)	(0.045)		(0.035)		(0.045)	
Democracy	0,014	***	-0,001		0,0002	0.016	*	-0.001		-0.012	
	(0,004)		(0,004)		(0,007)	(0.008)		(0.010)		(0.012)	
Non-family farms	-0,013	***	-0,012	***	-0,009						
	(0,003)		(0,005)		(0,006)						
Top incomes (0.1%)						-0.046	*	-0.0689	***	-0.020	
						(0.023)		(0.022)		(0.033)	
Adjusted-R2	0,674		0,711		0,770	0.431		0.300		0.121	
DW	1,225		1,774		1,895	1.752		1.927		2.184	
Standard error of regression	0,154		0,141		0,166	0.154		0.177		0.216	
Total obs.	120		120		120	39		39		39	

Notes: sample and estimation method in columns 1 to 3 are the same as in column 1 of table 2. I have also run the regressions using a *tobit* model and the results related to the variable inequality were the same. In columns 4 to 6, sample and method are the same as in table 3.

Table 4b. The determinants of social transfers by programme, 1880-1930

dep. var.	Pensions		Health		Welfare	Pensions		Health		Welfare	
	(1)		(2)		(3)	(4)		(5)		(6)	
C	0,171		-0,052		0,325	-1.393	*	-1.456		-1.885	
	(0,564)		(0,557)		(0,707)	(0.807)		(1.225)		(1.533)	
Log(GDP per cap)	0,060		0,121	**	0,037	0.232	***	0.261	*	0.193	
	(0,077)		(0,063)		(0,086)	(0.085)		(0.135)		(0.169)	
Elderly	0,042		0,000		0,038	0.018		0.017		0.139	***
	(0,037)		(0,032)		(0,039)	(0.045)		(0.035)		(0.045)	
Democracy	0,021		0,013		0,005						
	(0,015)		(0,010)		(0,018)						
Non-family farms	-0,012	***	-0,011	**	-0,008						
	(0,004)		(0,005)		(0,006)						
Non-family farms*democ.	-0,0001		-0,0002		-0,0001						
	(0,0002)		(0,0001)		(0,0002)						
Top incomes (0.1%)						-0.060	***	-0.067	***	-0.009	
						(0.022)		(0.023)		(0.031)	
*Top incomes (0.1%)*democ.						0.002	*	0.0002		-0.001	
						(0.001)		(0.001)		(0.001)	
Adjusted-R2	0,674		0,711		0,770	0.432		0.301		0.115	
DW	1,225		1,774		1,895	1.734		1.936		2.202	
Standard error of regression	0,154		0,141		0,166	0.154		0.177		0.218	
Total obs.	120		120		120	39		39		39	

Notes: sample and estimation method in columns 1 to 3 are the same as in column 3 of table 2, and in columns 4 to 6 are the same as in table 3. The variable democracy was removed in regressions of columns 4 to 6 because I detected multicollinearity problems. No multicollinearity problems were found in columns 1 to 3.

5. The determinants of social spending in 1930-33

As was seen earlier, in many countries the rise of the welfare state was closely linked to the development of state-subsidized occupational insurance. The aim of this section is to analyse whether the negative effect of inequality is maintained when state-subsidized occupational insurance provisions are included in the analysis. Therefore, the new estimation of *social spending* presented in Section 3 has been used as the endogenous variable for the analysis. The estimation method is least squares and, given the low number of observations (44 in total), it was considered best to include random effects instead of fixed effects since the latter would be very costly in terms of losing degrees of freedom. Also, some explanatory variables take the same value in 1930 as in 1933 because the information is only available for every 10 years or covers various years, and they therefore act as a *quasi* fixed-effect.

The explanatory variables are practically the same as in the previous section. The *share of non-family farms*[17] and *top income shares* are once again used as proxies of inequality. The percentage of population over 65 has been used to capture the effect of the ageing of population. The data come from Lindert's website, except in the case of Bulgaria, Czechoslovakia, Hungary, Ireland, Poland, the Soviet Union and Yugoslavia, for which they have been taken from Mitchell (1998). The polity2 index from the Polity IV Project has again been used to measure the degree of democratization. In order to avoid possible distortions brought about by the impact of the Great Depression, instead of GDP per capita I have included the percentage of the working population in agriculture, which is a more stable indicator of economic development. The information comes from Mitchell (1998), except for the USSR and Spain, for which it has been taken from Allen (2003) and Nicolau (2005) respectively. Finally, in order to capture the effect of the economic cycle and, especially, to account for the impact of the Great Depression, the rate of economic growth during the previous five years (taken from Maddison) has also been included in the estimation.

As in the analysis of *social transfers*, firstly I estimated a model only with inequality and control variables (columns 1 and 4 of Table 5), and then I added the interaction between democracy and inequality (columns 2, 3, 5 and 6). As can be seen

[17] In the Soviet Union the *share of non-family farms* takes value zero. In the 1930s, non-family farms basically belonged to the State and therefore they are not a good indicator of inequality or of the political influence of upper-income groups. In fact the political conditions in this country in the 1930s would make likely to assume that rural landowners had no political power and that the agrarian reform of 1917 and the subsequent collectivization brought about a radical decrease in inequality.

in Table 5, both the coefficient of the percentage of the working population in agriculture and the coefficient of percentage of population over 65 have the expected sign (negative and positive respectively). This means that economic development and the ageing of population had a positive effect on social spending (although this is not significant in all the regressions). The growth rate of GDP per capita over the previous five years, however, is highly significant and has a negative sign, which indicates that *social spending* had a counter-cyclical behaviour, as would be expected in the context of the Great Depression.

Table 5. The determinants of total social spending as a % of GDP, 1930-33

	(1)		(2)		(3)		(4)		(5)		(6)	
C	3.014		2.799		2.609		5.281		-8.280		5.528	
	(2.325)		(2.249)		(2.262)		(4.704)		(6.128)		(4.505)	
Agriculture population (%)	-0.054	**	-0.058	**	-0.048	**	-0.071		-0.094		-0.076	
	(0.022)		(0.023)		(0.019)		(0.057)		(0.073)		(0.058)	
GDP growth rate (5 years)	-0.230	***	-0.224	***	-0.232	***	-0.236	***	-0.198	***	-0.227	***
	(0.081)		(0.079)		(0.080)		(0.078)		(0.053)		(0.078)	
Elderly	0.633	***	0.674	***	0.623	***	0.868		1.937	***	0.859	
	(0.199)		(0.210)		(0.198)		(0.528)		(0.623)		(0.519)	
Democracy	0.011		-0.096				-0.001		0.907	***		
	(0.028)		(0.103)				(0.065)		(0.267)			
Non family farms	-0.042	***	-0.039	***	-0.038	***						
	(0.010)		(0.010)		(0.011)							
Non family farms *democracy			0.002		0.001							
			(0.002)		(0.001)							
Top incomes (0.1%)							-0.919	**	0.657		-0.893	**
							(0.325)		(0.565)		(0.329)	
Top incomes (0.1%)*democracy									-0.221	***	-0.005	
									(0.067)		(0.016)	
Adjusted R-squared	0.677		0.684		0.685		0.562		0.783		0.565	
S.E. of regression	0.908		0.915		0.911		0.702		0.447		0.700	
DW	2.030		2.074		2.021		2.082		2.069		2.117	
Obs.	44		44		44		24		24		24	

Notes: dependent variable is total social spending as a % of GDP. Estimation method is least squares with country random effects. In regressions 1 to 3, the sample is composed of 22 countries and two years (1930 and 1933), which sums 44 observations. In regressions 4 to 6, only 12 countries are included because the information on top incomes is much more limited. A dummy variable for Germany is included in regressions 1 to 3. According to the quartiles method that country is an outlier. Its levels of social spending in 1930 and 1933 are out of the range $[Q_1\text{-}k(Q_3\text{-}Q_1),Q_3\text{+}k(Q_3\text{-}Q_1)]$ where $k=1,5$ and Q_1 and Q_3 are the first and the last inter-quartiles respectively. Robust standard errors in brackets. *** significance at 1%, ** significance at 5%, * significance at 10%.

The econometric results also confirm that inequality had a negative impact on the level of *social spending* when state-subsidized occupational insurance benefits are included in the analysis. Both the *share of non-family farms* and the *top income shares* have a negative sign and are significant in almost all the regressions (the only exception being the regression in column 5, but everything indicates that it has problems of

multicollinearity).[18] However, neither the variable democracy nor the interaction between inequality and democracy are significant in the regressions, which again suggests that even in democracy there is a negative correlation between inequality and social spending.

As in the previous section, I have also analysed the relationship between inequality and *social spending* programme by programme. Table 6a shows the results of estimating a model only with the variable inequality and control variables, while Table 6b shows the results of estimating a model adding the interaction between democracy and inequality. As can be seen, democracy's effect varies from type to type of social spending, but it seems that it stimulated to a bigger extent the development of more modern forms of social protection such as health-care. Finally, the coefficient associated to the inequality variables (*non-family farms* and the *top income shares*) has a negative sign in almost all regressions (the only exception is column 4 in both tables). However, it is hard to find a clear pattern in the relationship between inequality and the different types of social spending. In the regressions where the share of non-family farms is used as a proxy of inequality, it is significant in the cases of pensions and welfare. In contrast, in the regressions where the top income shares are used as a proxy of inequality, it is significant in the cases of health and welfare. I do not have a clear explanation for that, but, in general, it seems that inequality's effect on social spending is also negative when specific social programmes are analysed.

[18] This is suggested by the change of sign in the *top income shares* variable and in the interaction of that variable with democracy. A VIF test was applied on the democracy variable and it confirmed the existence of multicollinearity. In the other equations, however, the VIF tests applied indicate that there is no multicollinearity.

Table 6a. The determinants of social spending by programme, 1930-33

	Pensions		Health		Welfare		Pensions		Health		Welfare	
	(1)		(2)		(3)		(4)		(5)		(6)	
C	1.113		0.173		1,962		0.471		0.161		5,243	*
	(0.775)		(1.065)		(1,486)		(1.244)		(1.093)		(3,059)	
Agriculture population (%)	-0.023	***	0.003		-0,032	**	-0.027	*	-0.003		-0,041	
	(0.008)		(0.008)		(0,015)		(0.015)		(0.013)		(0,035)	
GDP growth rate (5 years)	-0.057	**	-0.020		-0,130	***	-0.049	**	-0.013		-0,175	**
	(0.022)		(0.016)		(0,052)		(0.023)		(0.020)		(0,069)	
Elderly	0.231	***	0.114		0,208		0.241	*	0.194		0,296	
	(0.062)		(0.094)		(0,134)		(0.137)		(0.121)		(0,330)	
Democracy	0.002		0.036	***	-0,007		0.001		0.038	**	-0,058	
	(0.009)		(0.011)		(0,023)		(0.019)		(0.016)		(0,054)	
Non family farms	-0.015	***	-0.009		-0,015	***						
	(0.004)		(0.007)		(0,005)							
Top incomes (0.1%)							0.008		-0.145	*	-0,689	***
							(0.093)		(0.080)		(0,262)	
Adjusted R-squared	0.620		0.303		0,645		0.301		0.252		0,590	
S.E. of regression	0.352		0.162		0,726		0.216		0.183		0,652	
DW	2.094		2.231		1,992		1.621		1.571		2,347	
Obs.	44		44		44		24		24		24	

Notes: see table 5. Unemp.=unemployment. TI=*Top incomes*.

Table 6b. The determinants of social spending by programme, 1930-33

	Pensions		Health		Welfare		Pensions		Health		Welfare	
	(1)		(2)		(3)		(4)		(5)		(6)	
C	1.004		0.120		1,798		0.459		0.616		4,669	
	(0.785)		(0.997)		(1,470)		(1.214)		(1.079)		(2,957)	
Agriculture population (%)	-0.021	***	0.002		-0,029	**	-0.026	*	-0.002		-0,046	
	(0.008)		(0.007)		(0,013)		(0.015)		(0.014)		(0,036)	
GDP growth rate (5 years)	-0.058	**	-0.017		-0,132	***	-0.050	**	-0.011		-0,171	**
	(0.022)		(0.015)		(0,052)		(0.023)		(0.020)		(0,067)	
Elderly	0.228	***	0.126		0,197		0.239	*	0.169		0,344	
	(0.063)		(0.091)		(0,132)		(0.138)		(0.122)		(0,332)	
Non family farms	-0.014	***	-0.008		-0,014	**						
	(0.005)		(0.006)		(0,006)							
Non fam. farm*democracy	0.0002		0.0007	***	0,0001							
	(0.0002)		(0.0002)		(0,0004)							
Top income (0.1%)							0.008		-0.208	**	-0,586	**
							(0.095)		(0.085)		(0,264)	
*TI (0.1%)**democracy							0.001		0.008	**	-0,016	
							(0.004)		(0.004)		(0,012)	
Adjusted R-squared	0.625		0.321		0,587		0.303		0.206		0,492	
S.E. of regression	0.352		0.163		0,728		0.210		0.191		0,638	
DW	2.094		2.282		2,003		1.705		1.646		2,300	
Obs.	44		44		44		24		24		24	

Notes: see table 6a.

6. Discussion and implications

The findings of the previous sections seem to suggest that, between 1880 and 1930-33, inequality had a rather negative influence on the development of social policy, regardless of whether we use *social transfers* or *social spending* as an indicator of redistribution, and regardless of whether we use the *share of non-family farms* or *top income shares* as an indicator of inequality. Initially, this might look counter-intuitive. However, there are at least three theoretical arguments to explain this apparent paradox. 1) In the median voter theories it is assumed that redistribution implies dead-weight losses. However, if there are market failures, as Bénabou (2000, 2005) stresses, then redistribution can lead to efficiency gains. At the same time, (if inequality is low enough) these efficiency gains can compensate for the cost of redistribution. Instead, as inequality rises, so does the number of individuals rich enough not to be compensated for the cost of redistribution. Therefore, political support for redistribution will diminish. 2) In the median voter theories it is also assumed that, in democracy, political power is equally distributed, as all the citizens have the right to vote, and all the votes are worth the same. However, according to a number of recent studies, power and political influence depend on individuals' income level. This means that if inequality increases then the political power of the well-off will be also reinforced, so they will be able to stop redistribution more easily. 3) Finally, it also looks plausible to consider, as Lindert (2004) does, that political support for redistribution does not depend on the gap between the median voter income and the average income, but on the gap between the median-income groups (who are decisive in the elections) and the lower-income groups. The closer is the distance between these two groups and the more the median-income groups believe that they can become beneficiaries of social policy, the larger the political support for redistribution.

In other words, from these theoretical arguments we should expect social policy developments to be more controversial in more unequal countries, because of weaker political support from the median-income groups (arguments 1 and 3), and stronger opposition from upper-income groups (argument 2). Here I can only offer preliminary evidence, but there are some historical examples that seem to support this hypothesis. In Scandinavian countries, for example, early social policy measures were passed thanks to a broad political alliance between liberals, social democrats and agrarian interests. These early measures, as well as the post-world-war II reforms, were not simply the "imposition" of the needed poor, but had the support of the urban median-

income groups and the small and medium farmers. Furthermore, according to Baldwin (1990) these social groups played a crucial role in determining the key features of Scandinavian social policy. At the turn of the 19th century, Danish farmers favoured the establishment of a universal and tax-funded pensions system. The reason is that a *bismarckian* occupational insurance (financed through employers and employees contributions plus public subsidies) would have excluded small and medium landowners from social protection, and would have increased agrarian labour costs. Similarly, in post-World War II Sweden, the median-income groups were pioneers in demanding the suppression of means testing in the public pensions system, so they could become beneficiaries too.

In Southern European countries, in contrast, where inequality was higher, social policy development seems to have been more controversial. In Spain, for example, government social spending (basically on poor-relief and health-care spending to avoid epidemics) remained almost constant between 1880 and 1930, in levels around 0.4 % of GDP. This has been attributed mostly to opposition from upper-income groups to increasing taxation and (therefore) to increasing public spending (Comín 2001). As an alternative to tax-funded benefits, the central government tried to promote state-subsidized occupational insurance programmes, in line with Bismarck's reforms. However, these goals also faced strong opposition. Early proposals to introduce unemployment and sickness insurance dated back to 1910, but these were several times rejected (and postponed) until they were eventually passed in 1931 and 1944, respectively. Employers' opposition and government unwillingness to assume new social costs seem the main factors behind this delay (Cuesta 1988).

As a result, total social transfers in Spain in 1930 were 0.49% of GDP, while in Finland (a country with a similar share of elderly population and GDP per capita) were above 2% of GDP (table 1). As in Spain, spending on poor-relief in Italy remained at very low levels before World War II because of the unwillingness of the government to assume the cost of providing a broader social assistance. Similarly, in 1910 and 1919, proposals to establish comprehensive state-subsidized occupational insurance (covering all dependent workers, including those in agriculture) failed mostly because of employers' opposition (Lynch 2009). These examples suggest that political support from the middle-income groups was weaker and opposition from upper-income-groups stronger in more unequal countries. However, they only provide very indirect evidence, so that additional future tests would be useful to confirm that inequality lowered political support for redistribution during this time-period.

Finally, the findings of this paper have also some important implications for economic growth. According to Alesina and Rodrik (1994) and Persson and Tabellini (1994) inequality is harmful to economic growth because it leads to higher redistribution and taxation. However, if my results are correct, these theories fail to identify the mechanisms through which inequality hampers economic growth (because inequality does not appear to result in higher redistribution, but the opposite). In fact, there are a number of theories proposing alternative channels to explain why inequality is bad for economic growth. Bénabou (1996), for example, considers that, if there are market failures, inequality hampers human capital accumulation and, therefore, economic growth. Perotti (1996), however, suggests that inequality stimulates political violence, which, in turn, discourages investment. And Keefer and Knack (2002) maintain that inequality increases political polarization, provoking uncertainty on the protection of property rights and discouraging investment.

7. Conclusions

It is often assumed that the fight against inequality played an important role during the early stages of the Welfare State. However, not many studies have tested this hypothesis from a quantitative and comparative perspective. In this paper, the impact of inequality on social policy between 1880 and 1930 has been analysed, by using two alternative indicators of redistribution -*social transfers* and *social spending*- and two alternative proxies for inequality -the *share of non-family farms* and the *top income shares*-. Although it might look counter-intuitive, the econometric outcomes show that there was a negative correlation between inequality and social policy during this period. Curiously, it seems that more egalitarian countries were also pioneers in the rise of modern social policy. Somehow, this means that unequal societies were in a sort of *inequality trap*, in the sense that inequality itself was an obstacle to redistribution.

Additional research is still needed to determine the mechanisms through which inequality (potentially) lowered redistribution. But, as shown in the previous section, there are several theoretical arguments explaining why higher inequality may lower political support to redistribution; and preliminary historical examples seem to confirm that broad political consensus on social policy issues were easier to achieve in more egalitarian countries. Finally, the results of this paper not only have implications for social policy but also for economic growth. If inequality does not lead to higher

redistribution, this means that the median voter theories fail to identify the mechanisms through which inequality hampers economic growth. Therefore, alternative theories are needed.

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Appendix

Table A.1. *Social spending* (as a % of GDP), 1930 and 1933

	1930	1933
Australia	5.79	6.17
Belgium	1.83	5.85
Bulgaria	0.14	0.17
Canada	0.68	2.15
Czechoslovakia	2.91	4.72
Denmark	4.8	6.32
Finland	2.11	2.57
France	2.49	3.97
Germany	11.15	12.41
Hungary	1.88	1.61
Ireland	4.48	5.44
Italy	1.4	1.4
Japan	0.67	0.51
Netherlands	1.61	6.56
Poland	2.03	2.03
Portugal	0.35	0.58
Spain	0.48	1.05
Sweden	3.84	6.02
Switzerland	2.18	3.54
United Kingdom	6.52	7.7
URSS	1.81	2.55
Yugoslavia	0.07	0.14

Sources: see text.