

The inequality trap

A comparative analysis of social spending between 1880 and 1930¹

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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 *social transfers* as an indicator of redistribution and three alternative proxies for inequality -the *top income shares*, the ratio of the GDP per capita to the unskilled wage, and the *share of non-family farms* -, this paper shows that inequality did not favour the development of social policy between 1880 and 1930. On the contrary, social policy developed more easily in countries that were previously more egalitarian, suggesting that unequal societies were in a sort of *inequality trap*, where inequality itself was an obstacle to redistribution.

According to standard theories on the political economy of redistribution, the higher is the income inequality, the greater are the political demands for redistribution. The logic is simple and compelling. The poorer is the median voter the more willing he or she will be to support redistribution.² Also, the fight against inequality is often considered crucial for the early development of the welfare state. Flora and Heidenheimer, for example, consider that equality (along with socioeconomic security) is “*the core of the welfare state*”³. And the constant references to the harsh conditions of life of the new industrial workers, industrial unemployment or child labour that we find in the literature on the historical origins of the welfare state -all this within a context of unprecedented economic growth-, seem to suggest that modern social policy was (at least partially) a response to (industrialization-led) inequality.⁴ However, a rapid comparative glance on the early stages of the welfare state suggests that modern social policy was developed first in more egalitarian countries (like the Scandinavian ones), and not in more unequal countries (like Spain or Portugal). Lindert calls this the *Robin Hood paradox*, as it seems that “*it was in the poorer and more unequal national settings before World War II that the least was given to the poor*”⁵.

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² Meltzer and Richard, 'A rational theory'; Alesina and Rodrik, 'Distributive politics'; Persson and Tabellini, 'Is inequality harmful'.

³ Flora and Heidenheimer, 'Preface', p. 9.

⁴ See, for example, Fraser, *Evolution*.

⁵ Lindert, *Growing public*, p.15.

Despite these apparent paradox and the (more or less explicit) 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 1880-1930. This may in turn contribute to today's debates about the relationship between inequality and redistribution, on which there is no consensus yet. As I said, the median voter theories maintain that redistribution increases with inequality. However, as is shown in the next section, recent papers point in the opposite direction and suggest that inequality has a negative impact on redistribution.⁶

Analysing the time-period 1880-1930 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, modern 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). Moreover, 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.⁷

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. As well as the aggregate volume of social transfers, I have analysed the influence of inequality on specific social programmes (pensions, health, welfare). This has enabled a more detailed analysis. The results indicate that inequality is negatively correlated with social transfers, 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

⁶ Bénabou, 'Unequal societies'; idem, 'Inequality, technology'; Lindert, *Growing public*; Barth and Moene, 'Equality multiplier'.

⁷ More detailed information on the definition of social spending and inequality can be found in the following sections.

by ungenerous redistributive policies. The paper is organized as follows. The next section summarizes some of the main historical explanations about the origins of modern social policy and the main theories on the relationship between inequality and redistribution. In section II, I present and discuss Lindert's series of social transfers, which is the data I use in the econometric analysis. Section III analyses the impact of inequality on total social transfers and programme by programme. Finally, section IV provides some historical examples to illustrate the results of the econometric analysis and concludes.

I

Before the rise of modern social policy, traditional poor relief was the most common form of public intervention. The role of the state was generally limited to establishing a general legislation, but the management of poor relief used to be the responsibility of local authorities. Benefits were granted on discretionary basis and in most cases were stigmatizing for the beneficiaries. Between the late 19th century and the early 20th century, new social programs (including workplace-accident compensation, old-age pensions, sickness-leave, unemployment insurance and public health for the poor) were gradually introduced in Europe and some European settler nations. Unlike traditional poor relief, these new programs ensured entitlement to benefits as a matter of right and not charity.⁸ According to Lynch, two alternative forms of public intervention were developed.⁹ In the first one, which was predominant in Anglo-Saxon countries and Scandinavia, the State offered tax-funded non-contributory provisions for people (basically 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 second form of public intervention, which was predominant in continental Europe, the state took over private forms of social protection, and benefits tended to focus on the needs of people with close ties to the labour market. In Germany, for example, the state established mandatory workplace-accident, sickness and old-age insurance in the 1880s. In other countries, however, the State opted for regulating and subsidizing voluntary insurance programmes run by unions. Examples are Belgium's sickness and old-age state-subsidized voluntary insurance programmes, established in 1894 and 1900 respectively.

⁸ Kuhnle and Sander, 'Emergence'.

⁹ Lynch, *Age*.

As a result of these increase in state intervention, social transfers grew gradually between 1880 and 1930. However, these changes did not affect all countries equally. Social transfers grew first in the developed countries of north-west Europe and in some European settler nations like New Zealand and Australia, but remained at virtually zero in low-income countries like Greece or Mexico.¹⁰ In fact, the rise of modern social policy has been often seen as a response to the “*problems of an industrialized society*”¹¹, which brought about new social needs as traditional systems of social support of agrarian societies eroded. These new needs were the result of mechanization and urbanization (which led to harsh working conditions in the new industrial factories and sanitation problems in the growing cities) and also the result of growing dependence on wage labour (which led to new vulnerabilities among the old, the sick and the unemployed).¹² Wilensky also concluded that economic development and especially the ageing of population, which is a by-product of the former, were the major causes behind the growth in social spending.¹³ However, explanations focused on economic and demographic forces have some limitations. While they account for the general trend to welfare state expansion in many advanced countries, they can hardly explain variations in social spending among countries with comparable income levels.¹⁴

Flora and Alber, meanwhile, argue that the development of social insurance in Western Europe was the combined result of growing social problems (due to economic development and urbanization) and increasing political pressure from the working-class.¹⁵ Similarly, the so-called “power resource theory” suggests that modern social policy is a working-class instrument to modify the market income distribution. Hence, variations in social protection levels across countries depend on the ability of workers to organize in unions and class-based parties and impose redistribution.¹⁶ From this perspective, a pre-condition for the rise of modern social policy is the existence of democracy. Lindert, in fact, has found that extending the voting rights had a strong positive effect on the rise of social transfers between 1880 and 1930.¹⁷ The line of reasoning is similar to that of the “power resource theory”. Support for redistribution increased as the lower-income groups became more integrated in the political process. The difference is that this not necessary happened through labour parties. Potentially, also other parties could try to meet lower-income groups’ demands for redistribution.

¹⁰ Lindert, *Growing public*.

¹¹ Fraser, *Evolution*, p.1.

¹² Kerr *et al.*, *Industrialism*; Pampel and Weiss, ‘Economic development’.

¹³ Wilensky, *Welfare State and equality*.

¹⁴ Harris, *Origins*; Myles and Quadagno, ‘Political theories’.

¹⁵ Flora and Alber, ‘Modernization’.

¹⁶ Korpi, *Democratic class struggle*.

¹⁷ Lindert, *Growing public*.

However, it seems that the development of social insurance was not simply the result of the demands of workers and/or the needed poor. According to Baldwin, the middle-income groups played a crucial role in the configuration of the social policy measures introduced in Scandinavia between the late 19th century and the early 20th century.¹⁸ Similarly, the middle-income groups became more willing to support the expansion of the welfare state in many developed countries after 1945. The Great Depression and the World War II taught many people that they could also fall into poverty through no fault on their own. This led to a sense of shared *fears* and common *risks* that prompted the development of social policy.¹⁹

As for the theoretical perspective, there is no consensus yet on the impact of inequality on redistribution. According to the median voter models, increased inequality leads to greater political demands for redistribution. The argument (modelled by Meltzer and Richard) is straightforward. If the median voter income is below the mean income (i.e. if there are high inequality levels) and all the citizens have the right to vote, then a majority of voters (all those whose income is less than the mean) will support redistribution.²⁰ This same logic has also been used to explain why higher inequality is bad for economic growth. Alesina and Rodrik and Persson and Tabellini, for example, suggest that higher inequality translates into higher redistribution, which in turn discourages investment and economic growth.²¹ However, empirical evidence about the Meltzer-Richard (MR) hypothesis is inconclusive. Alesina and Rodrik and Persson and Tabellini, for example, documented a negative relationship between inequality and economic growth, but they did not explicitly test the link between inequality and redistribution. The first empirical test of the MR hypothesis is a paper by Meltzer and Richards, who concluded that the evolution of government spending in the US was correlated to the ratio of the mean to the median income.²² Similarly, Kenworthy and Pontusson observe a strong positive association between changes in market inequality and changes in redistribution in several OECD countries during the 1980s and 1990s.²³ Milanovic, meanwhile, has also found a positive correlation between inequality and redistribution. His results, however,

¹⁸ Baldwin, *Politics*.

¹⁹ Harris, *Origins*; Lindert, *Growing public*.

²⁰ Meltzer and Richard, 'A rational theory'. If all individuals (or voters) are ordered according to their incomes, the median voter is the voter who is at the centre of the distribution. The number of individuals who are richer than the median voter and the number of individuals who are poorer than him or her is exactly the same. Since the median voter is assumed to be decisive in the elections, if his or her income is below the mean income then a majority of voters (the median voter and all the individuals who are poorer than her or him) should be willing to support redistribution.

²¹ Alesina and Rodrik, 'Distributive politics'; Persson and Tabellini, 'Is inequality harmful'.

²² Meltzer and Richards, 'Tests'.

²³ Kenworthy and Pontusson, 'Rising inequality'.

indicate that the middle-income groups gain little or nothing from redistribution, suggesting that the MR hypothesis fails to explain the mechanism through which redistribution occurs.²⁴

On the other hand, comparative studies by Perotti, Bassett *et al.* and Alesina *et al.* have provided empirical evidence suggesting that inequality not always leads to more redistribution.²⁵ To explain this, Roemer 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.²⁶ Yet, this means that when redistribution is placed at the centre of the electoral debate, we should still expect a positive association between inequality and redistribution (as the MR model predicts). Other authors, by contrast, maintain that, far from increasing, redistribution decreases with inequality. Lindert 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.²⁷

The model by Kristov *et al.* 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.²⁸

²⁴ Milanovic, 'Median-voter hypothesis'.

²⁵ Perotti, 'Income distribution and investment'; idem, 'Growth'; Bassett *et al.*, 'Income distribution'; Alesina *et al.*, 'Why doesn't the United States'.

²⁶ Roemer, 'Why the poor'.

²⁷ Lindert, *Growing public*.

²⁸ Kristov *et al.*, 'Pressure groups'.

According to Bénabou, if there are market failures, then redistribution may generate efficiency gains.²⁹ 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 considers that, even in democratic countries, political power and influence depend on income levels,³⁰ so that the upper-income groups have more political influence than the lower-income groups.³¹ This means that the decisive voter will not be the median voter but someone located at some point in the 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 and Rodrik 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.³² Similarly, Berg and Sachs 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.³³ These theories do not explicitly refer to social policy. However, it seems reasonable to believe that countries

²⁹ Bénabou, 'Unequal societies'; idem, 'Inequality, technology'. 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.

³⁰ Using data for the United States, Bénabou, 'Unequal societies'; and idem, 'Inequality, technology' show 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.

³¹ Note that, according to Bénabou, 'Unequal societies' and idem, 'Inequality, technology', 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.

³² Alesina and Drazen, 'Why are stabilizations delayed?'; Rodrik, 'Where did all the growth go?'

³³ Berg and Sachs, 'Debt crisis'.

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.

II

What are the Social protection indicators available 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. As was shown in the previous section, social transfers started growing in many advanced countries in the 1880s. Lindert's database provides information in 10-year intervals between 1880 and 1930 (1880, 1890, 1900, 1910, 1920, 1930), for over 20 different countries, including countries where social transfers grew rapidly (like the Scandinavian countries) and countries where social transfers barely grew (like Italy or the US).³⁴ According to Lindert's definition, social transfers include tax-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. 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

³⁴ The data is available on Lindert's website (<http://lindert.econ.ucdavis.edu/index.cfm?employeeid=17¤tNav=12>). The information there is almost identical to that published in Lindert, 'Rise', and its working-paper version, though with slight updating. However, several countries for which Lindert, 'Rise', 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.

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.³⁵

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.³⁶ The redistributive impact of occupational insurance benefits is less obvious than that of tax-funded social transfers. 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, which meant an obvious expense for both employers and employees. Therefore, 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.³⁷ In the long term, however, it is plausible to assume that social contributions are equivalent to a tax on labour, no matter whether they are formally paid by employers or employees.³⁸ Nonetheless, many countries' current social security funds are the descendants of the former state-subsidized occupational insurance. From this perspective, it seems interesting checking whether including occupational insurance provisions involves a significant change with respect to Lindert's figures.

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 (like public spending on health-care, poor-relief, and non-contributory pensions) plus state-subsidized occupational insurance benefits, both mandatory and voluntary.³⁹

³⁵ Lindert, 'Rise'.

³⁶ See, for example, Flora and Heidenheimer, 'Historical core'; Flora, *State*; Baldwin, *Politics*; and Hicks, *Social democracy*.

³⁷ 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, *Aparición*). Similarly, the Spanish Workers' Compulsory Retirement Act of 1919 only imposed the obligation to contribute on employers, precisely to avoid labour opposition (Elu, 'Primeras pensiones').

³⁸ Bandrés, 'Gasto público'.

³⁹ 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

Note that Lindert's figures only include government subsidies to these occupational insurance programmes. 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 28 countries and the information comes from the reports on social protection published by the International Labour Office in 1933 and 1936. In the case of Portugal the information comes from Valério,⁴⁰ 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 database⁴¹.

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 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%.

TABLE 1 OVER HERE

There are also a few changes in the relative positions of some countries. Germany's top position, for example, is more evident in the last column of the Table. Similarly, Italy, Hungary and Czechoslovakia move up a number of places, suggesting that there is a relative improvement of those countries where state-subsidized occupational insurance played an important role. However, if all the countries are

specific legislation for each type of risk. The provisions of *pure* private insurance have not been included in the estimations.

⁴⁰ Valério, *Estatísticas*.

⁴¹ 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. Table A.1 in the appendix shows my new estimates of *social spending*.

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. Therefore, in the next section's econometric analysis I focus on Lindert's database, which covers a longer time span and has more observations available.

III

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

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

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 come from Valério.⁴²

Three alternative variables that capture the distribution of income have been used as a proxy of inequality: the *top income shares*, the ratio of the GDP per capita to the unskilled wage, and the area of non-family farms as a percentage of the total farm area (for simplicity the *share of non-family farms*). According to Atkinson *et al.*, the *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.⁴³ At first glance the top income shares should not be affected by endogeneity problems since these are based on information that captures pre-tax income levels. It also seems reasonable to think that the small and newly evolving social protection systems of the late 19th and early 20th century did not have a big influence on top income shares. The main drawback of the top income shares, as a measure of inequality, is that they refer to a very small percentage of population. Consequently, they do not capture those

⁴² Valério, *Estatísticas*.

⁴³ Atkinson *et al.*, 'Top incomes in the long run'.

income variations that occur in the lower part or the centre of the distribution. The data on the top income shares come from Atkinson *et al.* and, in the case of Portugal, from Guilera.⁴⁴ 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: 40 in the time-period 1880-1930 involving 14 countries.⁴⁵ The years available vary from country to country, although in most cases they are from the early decades of the 20th century. Given these limitations, I have complemented the analysis by including two additional proxies of inequality: the ratio of the GDP per capita to the unskilled wage and the *share of non-family farms*. Nevertheless, the results with the top income shares variable have also been reported to allow for comparisons.

The ratio of the GDP per capita to the unskilled wage is a measure of inequality that was initially proposed by Williamson.⁴⁶ The underlying idea is that changes in this ratio reflect changes in the economic distance between the average citizen in the middle of the distribution and the low-income worker near the bottom of the distribution. Its advantage is that it provides a reasonable alternative to Gini coefficients in periods on which information is limited. Prados de la Escosura, for example, has recently shown that, in 1850-1954 Spain, the ratio of the GDP per capita to the unskilled wage was closely correlated with the Gini coefficient.⁴⁷ However, the main drawback of this ratio is that it does not capture income variations in the upper part and the center of the distribution. I have been able to gather information on the evolution of unskilled wages in 14 countries between 1880 and 1930. The data comes from a wide range of sources that are detailed in footnote 48. The information on the GDP per capita has been taken from Maddison.⁴⁸ Given my model, one possible concern regarding the ratio of the GDP

⁴⁴ Atkinson *et al.*, *Top incomes over the twentieth century*; Guilera, 'Evolution'.

⁴⁵ These countries are: Australia, Canada, Finland, France, Japan, the Netherlands, New Zealand, Norway, Sweden, the United Kingdom, the United States, Spain, Portugal and Argentina.

⁴⁶ Williamson, 'Globalization'.

⁴⁷ Prados de la Escosura, 'Inequality'.

⁴⁸ For Belgium, France, Italy, the Netherlands and the UK, wage information between 1880 and 1910 has been taken from Allen, 'Great divergence', while in 1920 and 1930 it comes from Scholliers, 'A century', Sicsic, 'Wage dispersion', Scholliers and Zamagni, *Labour's reward*, Vermaas, 'Real industrial wages' and Feinstein, 'Changes', respectively. Wages in 1920 and 1930 have been rescaled to make them equal to those from Allen, 'Great divergence', in 1910. Wage data for Canada, Denmark, Norway and the United States comes from the historical statistics of the respective country. For Sweden, wage information comes from Björklund and Stenlund, 'Real wages'. For Spain, the information in 1880-1900 comes from Reher and Ballesteros, 'Precios', while in 1910-30 it comes from Vilar, 'Mercado'. As for Portugal, the data has been taken from Martins, 'Trabalho'; and for Australia and New Zealand it comes from ILO, *Year-book of labour statistics*, and Mitchell, *International*. Information on New Zealand for 1880-1910, Australia for 1880-1900, and Portugal for 1920-30 is missing. Therefore, the total number of observations is 75. Most of my wage data refers to unskilled labour in the construction sector. On the other hand, between 1880 and 1930 there was a considerable variation in working hours. Therefore, to make the international comparison more informative, I have computed the annual disposable income of unskilled workers. To make the

per capita to the unskilled wage is that this variable might be affected by endogeneity problems, because the unskilled wage might be affected by social programs. As is shown below, I have applied some endogeneity tests and there is no evidence suggesting that this indicator is significantly affected by endogeneity problems. Perhaps, this is because the social programs implemented in 1880-1933 were not big enough to affect market inequality in a significant way.

Lastly, I have also used the *share of non-family farms* as a proxy of inequality. The information has been taken from Vanhanen, 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 technology or weather conditions.⁴⁹ 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*. Apparently, the *share of non-family farms* variable has the advantage of not being subject to problems of reverse causality, 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 industrialization 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 analysed here on which information is very limited and the agrarian sector was much more important than nowadays. Actually, this variable has been used in a number of earlier studies as a proxy for overall inequality.⁵⁰ Here, I have decided to keep this variable to make the exercise more robust and to allow comparisons with the results obtained with the *top income shares* and the ratio of the GDP per capita to the unskilled wage. Moreover, this is the proxy for which I have more observations available. However, one needs to keep in mind the limitations of this variable when interpreting the results.

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

calculations, working-hours data has been taken from Huberman and Minns, 'Times'. Next, nominal wages have been deflated by using the price index of Maddison, *Dynamic forces*, (this should help to keep consistency with Maddison's GDP figures). And national real wages have been transformed to US dollars to calculate international real wage indices for which the real wage in the US for 1910 has been set equal to 100. Maddison's GDP figures have also been indexed by setting US real GDP per capita in 1910 equal to 100.

⁴⁹ Vanhanen, *Prospects of democracy*.

⁵⁰ Vanhanen, *Prospects of democracy*; Boix, *Democracy and redistribution*; Keefer and Knack, 'Polarization'; Alesina and Rodrik, 'Distributive politics'.

the percentage of population over 65 has been taken from the Lindert website database, except for Spain, which comes from Nicolau.⁵¹ The expected sign of the coefficients of both the income level and the ageing of population variables is positive. Pampel and Williamson, and Mulligan *et al.*, in fact, consider that these are the most important variables to explain the development of social policy.⁵² The degree of democratization, meanwhile, has been measured as the extension of voting rights –calculated as the number of registered voters as a percentage of the population over 20 years old-.⁵³ Since voting rights only are effective when certain conditions of political freedom and political party competition are fulfilled, when the *autocracy* index of the Polity IV Project was higher than the *democracy* index, I have set my democracy variable equal to zero (that is, I have assumed that the situation was similar to that in which there were no voting rights –one example in my sample is Portugal in 1880-1900).⁵⁴

The expected sign of the degree of democratization, however, is less clear than in the case of the level of GDP per capita and the ageing of population. 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.⁵⁵ Mulligan *et al.*, 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.⁵⁶ Hence the expected sign of this variable is not clear.

Results

The results of estimating the basic model given in equation (1), using my three alternative proxies of inequality, are shown in Table 2. The estimation method used in the regressions is least squares with country random-effects. Particularly in the regressions in which the top income shares are used as a proxy of inequality the random-effects model is preferred to the fixed-effects model. Given the scant number

⁵¹ Nicolau, 'Población'.

⁵² Pampel and Williamson, *Age, class*; Mulligan *et al.* 'Social security'.

⁵³ Data on registered voters has been taken from the Bank's cross-national time-series database, completed with Mackie and Rose, *International almanac*. When calculating my index of the extension of voting rights for countries and time-periods in which voting rights were limited to the male population, I have used the male population over 20 years old as the denominator. When voting rights were extended to women, then I have used the whole population over 20 years old.

⁵⁴ I have also estimated the model: 1) without this correction for the quality of democracy, just taking the percentage of registered voters over the adult population, and 2) including a crude dummy (1-0) controlling for democracy and the results are very similar.

⁵⁵ Lindert, 'Rise'; Hicks, *Social democracy*; Espuelas, 'Are dictatorships'.

⁵⁶ Mulligan *et al.*, 'Social security'.

of observations, the latter would have been very costly in terms of losing degrees of freedom. The Hausman test was applied and no evidence was found to reject the random-effects model. Following Niskanen, 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.⁵⁷ 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 also estimated the model including a time trend (that should capture the inertia effect) and time fixed-effects (that should capture the influence of specific shocks). Finally, as in Lindert,⁵⁸ the results of estimating a *tobit* model are also reported (columns 10 and 11), because the endogenous variable, the level of *social transfers* as a share of GDP, is partially censored. Particularly at the beginning of the time-period, there are several observations taking value zero.⁵⁹

TABLE 2 OVER HERE

As expected, the level of GDP per capita shows a positive impact on total social transfers. The coefficient of the ageing of population is also positive but it is only significant in 4 out of 12 regressions. As for the coefficient associated to the degree of democratization, it is also positive and significant in most of the regressions. This suggests that the advent of democracy and the subsequent incorporation of low-income groups into the political process stimulated the development of social policy. Inequality, on the other hand, has a negative and significant effect, no matter whether it is approximated by the top income shares, the ratio of the GDP to the unskilled wage or the *share of non-family farms*. This is just the opposite of what would have been expected according to the median voter models. Moreover, the results hold when controlling for time fixed-effects and a time-trend, suggesting that the observed negative correlation is not the result of the passage of time or an inertia effect. However, the main potential concern is that the results in table 2 might be biased because of the existence of endogeneity. On the one hand, both the top income shares and the ratio of the GDP to the unskilled wage might be influenced by (past) social

⁵⁷ Niskanen, *Bureaucracy*.

⁵⁸ Lindert, 'Rise'.

⁵⁹ The results of the *tobit* model with the top income shares variable are not reported because there is only one single censored observation.

transfers, which would lead to inverse causality and endogeneity problems. On the other hand, the *share of non-family farms* is less likely to be affected by current or past social transfers. However, its evolution is unlikely to be random. On the contrary, one might argue that the *share of non-family farms* is likely to diminish over time (because of the introduction of new technology, for example, allowing families to work bigger extensions of land without hiring employees).

To test for the existence of endogeneity, I have implemented the Durbin-Wu-Hausman (DWH) specification test. The models tested are the specifications given in columns 3, 6 and 9 of Table 2. In the instrumental variable (IV) estimates, I have used the lagged values of social transfers and inequality as the instruments for inequality (the IV estimates used in the test are shown in Table 3). The results of the DWH test are the following. In the case of the specification with the *top income shares* as a proxy of inequality the statistic associated to the DWH test is chi-squared (1) = 1.59, which indicates that there is weak evidence against the null that the regressor is exogenous. This result, however, should be interpreted with caution because of the scant number of observations. In the case of the ratio of the GDP per capita to the unskilled wage, the statistic associated to the DWH test is chi-squared (1) = 0.21. Again, no evidence is found to reject the least squares model. As suggested before, these results seem to indicate that social programs of the late 19th and early 20th centuries were not big enough to affect market inequality in a significant way.

In the case of the *share of non-family farms*, however, there is evidence of endogeneity. The DWH-test statistic is chi-squared (1) = 6.03, which is significant at 5%. Therefore, the null hypothesis is rejected. This means that the estimations with the *share of non-family farms* variable might be biased and inconsistent. In this context, the problem is to find a proper instrument, correlated with the *share of non-family farms* and uncorrelated with the disturbances. Since I do not have that instrument, here I report the results of the instrumental variable estimation used in the DWH-test. As is shown in Table 3 (column 3), the coefficient associated to the *share of non-family farms* in the IV estimates is similar in size to the coefficients of the least-squares estimates. And the sign remains negative and significant, which seems to confirm the previous results. However, this should be interpreted with caution, given the lack of a more exogenous regressor.

TABLE 3 OVER HERE

As I said before, the results obtained with the *top incomes shares* variable and the ratio of the GDP per capita to the unskilled wage do not seem affected by endogeneity problems. It seems, therefore, that there is weak empirical support for the predictions of the median voter models. However, my sample includes both democratic and non-democratic countries, and median voter models apply only to democratic countries. In order to strictly test the median voter hypothesis, the regressions of table 2 have been re-run adding a multiplicative variable (democracy * inequality). 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:

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

Notice that my democracy indicator is a continuous variable that ranges between 0 and 1 (where 1 means that the whole adult population is enfranchised), and that my inequality proxies grow with inequality. Therefore, if the predictions of the median voter models are correct, the new multiplicative 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. However, the results of the econometric regressions do not seem to confirm this hypothesis. As is shown in Table 4, the coefficient associated with the multiplicative variable is not significant in most of the regressions. This suggests that the impact of inequality, even in democracy, continues to be negative. The only exception is the regression of column 6 in which the interaction between democracy and inequality has a positive sign and is statistically significant. The coefficient, however, is too small to compensate for the negative effect of inequality. If we calculate the total marginal effect of inequality on social transfers under democracy, this would be:

$$(3.1) \partial REDIST / \partial INEQ = -0.798 + 0.626 \times Democracy$$

TABLE 4 OVER HERE

Therefore, even in a situation of perfect democracy (where democracy = 1) the marginal effect of inequality would be negative (-0.172). This means that inequality has a negative effect on social transfers in both democratic and non-democratic contexts. 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 not favour the development of modern 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 transfers are 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.

If the *social transfers* are analysed by programme, the results are not very different. However, some interesting extra details can be found. As is shown in Table 5, the coefficients associated to my alternative proxies of inequality have a negative sign in all regressions. Notice, however, that the negative coefficient of inequality is only significant in the case of pensions and health regressions. This suggests that inequality was an obstacle for the development of the more modern types of social programs (like pensions and health), while in the case of welfare (which in this time-period largely includes traditional poor-relief) the impact of inequality is not significant. In other words, it seems that, in more unequal countries, traditional welfare programs persisted longer as the predominant forms of social protection.

TABLE 5 OVER HERE

In summary, the findings of this section suggest that, between 1880 and 1930-33, inequality had a rather negative influence on the development of social policy, no matter the variable we use as a proxy of inequality. This has some important implications for economic growth. According to Alesina and Rodrik, and Persson and Tabellini inequality is harmful to economic growth because it leads to higher redistribution and taxation.⁶⁰ 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

⁶⁰ Alesina and Rodrik, 'Distributive politics'; Persson and Tabellini, 'Is inequality harmful'.

is bad for economic growth. Bénabou, for example, considers that, if there are market failures, inequality hampers human capital accumulation and, therefore, economic growth. Perotti suggests that inequality stimulates political violence, which, in turn, discourages investment. And Keefer and Knack maintain that inequality increases political polarization, which increases uncertainty on property rights and discourages investment.⁶¹

IV

But, what are the mechanisms through which inequality lowered redistribution? As we saw in section I, there are several theoretical arguments explaining this apparent paradox. According to Bénabou, for example, redistribution may generate efficiency gains, which, in egalitarian contexts, can offset the cost derived from higher taxation and redistribution for a large portion of individuals (even if they are not direct beneficiaries of social policy).⁶² However, if inequality increases, so does the number of wealthy individuals that will not be compensated by the efficiency gains. In fact, social policy supporters in the past tended to emphasize the potential positive effects that the introduction of new social programs could have on economic growth. In Britain, for example, concerns for the poor health conditions of the working-class and their potential negative impact on Britain's "national efficiency" increased in the early twentieth century. According to Hay, the 1911 health insurance indeed arose as a response to these concerns. At least, supporters of the insurance put strong emphasis on its capacity to enhance economic growth by improving the health of the workforce.⁶³ Similarly, Spanish social reformers in the early 20th century maintained that social insurance could improve the functioning of the national industry. Social insurance, they argued, would reduce social unrest, and this would lead to a safer environment for investment.⁶⁴ Perhaps, as Bénabou predicts, the number of individuals willing to buy this pro-redistribution arguments was higher in less unequal contexts. However, it is hard to know how many people effectively supported social policy, because they expected the cost derived from higher taxation would be offset by the efficiency gains.

The second theoretical argument explaining why inequality lowers redistribution focuses on the role of middle-income groups. According to Lindert, when

⁶¹ Bénabou, 'Inequality and growth'; Perotti, 'Growth'; Keefer and Knack, 'Polarization'.

⁶² Bénabou, 'Unequal societies'; idem, 'Inequality, technology'.

⁶³ Hay, *Origins*.

⁶⁴ Cuesta, *Hacia los seguros sociales*.

the income-gap between the middle-income groups (which are decisive in the elections) and the lower-income groups is small, then the middle-income groups will probably be more empathetic towards the beneficiaries of social policy, and political support for redistribution will be higher.⁶⁵ In fact, the change in attitudes towards social protection that arose in Europe and North America after the great depression and the World War II largely responds to this logic. Since a large share of the population realized that they could also fall into poverty through no fault on their own, more people became more willing to support lower-income groups' demands for social protection. There is evidence suggesting that this mechanism also acted before 1930. The case of the Scandinavian countries, which were pioneers in the rise in social transfers before 1930, is an interesting example in this regard. It shows that, effectively, middle-income groups were crucial for the development of Scandinavian social policy.

Take the case of pensions. In both Denmark and Sweden, non-contributory, tax-funded pensions, aimed at the entire population, were introduced in 1891 and 1913 respectively. In both countries, these reforms were the result of broad political coalitions including the social-democrat and liberal parties. What is interesting is that the universalism of the reforms was largely the result of the demands of middle-income groups (especially small and medium-sized farmers), who not only supported social policy but also wished to be included in the new state-subsidized social protection programs. Therefore, they pressured to extend coverage beyond low-income wage-earners.⁶⁶ Somehow, this suggests that urban wage-earners and many farmers (as a well as other urban independent workers who also supported these measures) had, in fact, quite similar interests. Therefore, it seems that, in line with Lindert's predictions, homogeneous interests facilitated the rise of extensive social protection in Scandinavia.

In southern European countries, by contrast, inequality was higher and social policy development was more controversial. In Italy, for example, there were several attempts, first in 1910 and then in 1919, to introduce comprehensive social insurance (including old-age pensions and sickness insurance). However, these attempts failed because of employers' opposition and the unwillingness of the government to assume the cost of new social programs.⁶⁷ In Spain, even when new social programs were introduced (like the 1919 old-age insurance) the enforcement of the law was threatened

⁶⁵ Lindert, *Growing public*.

⁶⁶ Baldwin, *Politics*.

⁶⁷ Lynch, 'Italy'.

by the lack of public funding and continued business opposition.⁶⁸ There are many factors explaining the development of social policy in each individual country. But, perhaps, if income distribution had been more homogeneous and the middle-income groups had been somewhat closer to the lower-income groups, political support for redistribution would have been greater in southern European countries. In Britain, in fact, it seems that the levelling of incomes antedated Lloyd George's social reforms, suggesting that decreasing inequality may enhance the development of social policy.⁶⁹

Finally, there is a third theoretical argument that may explain the lack of political support for redistribution in unequal societies. In the median voter models, it is assumed that political power is evenly distributed. However, political power is likely to be related with individuals' income level.⁷⁰ Wealthy individuals tend to have more political power than poor individuals. Therefore, in highly unequal societies, upper-income groups' opposition to redistribution may be reinforced by their greater political influence. In fact, Boix maintains that the consolidation of democracy in the late 19th century and the 20th century was slower in more unequal countries,⁷¹ and this allowed the economic elites to avoid redistribution. However, sometimes, even after the extension of voting rights, upper-income groups were able to retain a big share of political power. In Spain, for example, male universal suffrage was introduced in 1890. However, lower-income groups' political influence was limited by the existence of widespread political clientelism (especially in the rural areas) as well as by political corruption and electoral fraud.⁷² Even in more democratic contexts, in the absence of political corruption, the poor tend to vote less and be less involved in the political process than the upper-income groups.⁷³ In the United States, for example, the share of electoral participation has been low since the beginning of the 20th century, and this has probably lowered redistribution.⁷⁴

More research is still needed to clarify the exact mechanisms through which inequality lowered redistribution. Nonetheless, the empirical evidence analysed in this paper shows that inequality hindered the development of modern social policy even in its early stages, between 1880 and 1930. This result is confirmed no matter whether we use the *top income shares*, the ratio of the GDP per capita to the unskilled wage, or the *share of non-family farms* as proxies of inequality. It is often assumed that the fight

⁶⁸ Comín, 'Modestas realizaciones'.

⁶⁹ Lindert, 'Three centuries'.

⁷⁰ Bénabou, 'Unequal societies'; Bénabou 'Inequality, technology'.

⁷¹ Boix, *Democracy and redistribution*.

⁷² Linz *et al.* 'Elecciones'.

⁷³ Bénabou, 'Unequal societies'.

⁷⁴ Lindert, *Growing public*.

against inequality played a crucial role in the origins of modern social policy. However, it seems that more egalitarian countries were indeed pioneers in the rise of the welfare state. Somehow, this means that unequal societies were in a sort of *inequality trap*, in the sense that inequality itself was an obstacle to redistribution.

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Tables

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

	(Lindert's estimates)		(own estimation)	
	<i>social transfers</i>	Ranking order	<i>social spending</i>	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* come from Lindert. Note that, as mentioned in footnote 7, the information for Germany, Bulgaria, Czechoslovakia, Hungary, Ireland, Poland, Switzerland and Yugoslavia is, in most cases, only available for 1930. Therefore, they have not been included in next section's econometric analysis. Here they have been included for comparative reasons only. In order to express *social spending* as a percentage of GDP, I have used the estimations of current GDP of Clark, *Conditions*; except for Spain, Portugal and the Soviet Union, where GDP figures have been taken from Prados de la Escosura, *Progreso*; Valério, *Estatísticas*; and Allen, *Farm*, respectively.

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 Valério, *Estatísticas*. Since his estimates only include public administrations' spending, his figures fit with Lindert's definitions.

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

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Top incomes (0.1%)	-0.113** (0.0520)	-0.122** (0.0526)	-0.0945* (0.0575)								
ratio gdp/unskilled wage				-0.310** (0.130)	-0.328** (0.133)	-0.482*** (0.145)				-0.466*** (0.126)	
Non-family farms							-0.0180*** (0.00664)	-0.0178*** (0.00639)	-0.0122** (0.00536)		-0.00987** (0.00379)
Log(GDP per cap)	0.537*** (0.190)	0.747** (0.346)	0.628* (0.375)	0.698*** (0.271)	0.760*** (0.264)	0.723*** (0.273)	0.329*** (0.122)	0.198 (0.168)	0.253* (0.145)	0.714*** (0.214)	0.485*** (0.167)
Elderley	0.150 (0.0922)	0.160 (0.102)	0.0659 (0.119)	0.131* (0.0712)	0.147** (0.0684)	0.115 (0.0720)	0.0855 (0.0681)	0.0723 (0.0587)	0.0578 (0.0534)	0.194*** (0.0525)	0.235*** (0.0455)
Democracy	0.350 (0.283)	0.331 (0.272)	0.618* (0.339)	0.331** (0.161)	0.333** (0.166)	0.385*** (0.123)	0.330*** (0.0966)	0.297*** (0.107)	0.422*** (0.0897)	0.0399 (0.218)	0.263 (0.207)
Time trend		-0.0545 (0.0601)			-0.0150 (0.0402)			0.0347 (0.0257)			
C	-3.736* (1.974)	-5.169* (2.833)	-4.125 (3.401)	-5.327*** (1.758)	-5.849*** (1.792)	-5.028** (2.062)	-1.371 (1.020)	-0.405 (1.265)	-0.786 (1.213)	-5.284*** (1.919)	-3.897*** (1.440)
Time fixed-effects			Yes			yes			yes	yes	yes
R-squared/ <i>pseudo R-squared</i>	0.443	0.432	0.438	0.419	0.420	0.449	0.410	0.415	0.448	0.284	0.343
Left censored observations										10	32
Total observations	40	40	40	75	75	75	110	110	110	75	110

Notes: dependent variable is total social transfers as a % of GDP. Robust standard errors in parentheses. *** significance at 1%, ** significance at 5%, * significance at 10%.

In addition to the control variables listed here, I have also considered the impact of globalization. Initially, one might expect that globalization leads to a “race to the bottom”, resulting in lower taxes (Mishra, *Globalization*). However, Rodrik, *Has globalization*, maintains that globalization generates higher demands for social protection and, therefore, higher social transfers. Actually, Huberman and Lewchuk, ‘European’, found empirical evidence confirming this for the period before World War I. Acemoglu and Robinson, ‘Inefficient redistribution’, meanwhile, consider that “redistribution often takes an inefficient form” (p. 649). Tariffs, for example, are a redistribution method which is less efficient than direct transfers to workers who are currently unemployed because of international competition. Therefore, social transfers in less open economies might be lower simply because these countries are redistributing in an alternative (and inefficient) way (that is, via trade protectionism). To control for globalization’s impact, I have run regressions including trade openness (measured as exports plus imports divided by GDP). The results, however, show no significant effect of trade openness on social transfers; and inequality’s effect remains negative and significant after controlling for trade openness. I have also run separate regressions including the unionization rate, the Labour Regulation Index devised by Huberman and Lewchuk, ‘European’, and the enrolment rates to primary and secondary education. All these variables might be correlated with social transfers and are likely to be correlated with inequality. However, the results show that the effect of inequality remains negative and significant after controlling for these variables. This suggests that my inequality proxies are not simply capturing the (hidden) effect of any of these variables. Yet, the number of observations available for these additional variables is very limited. Therefore, the basic model shown in Table 2 was preferred. All these results are available upon request.

Table 3. Instrumental variable estimates

	(1)	(2)	(3)
Top incomes (0.1%)	-0.277** (0.133)		
ratio gdp/unskilled wage		-0.443** (0.185)	
Non-family farms			-0.0161** (0.00647)
Log(GDP per cap)	-0.0252 (0.810)	0.855*** (0.282)	0.189 (0.208)
Elderly	0.151 (0.143)	0.142 (0.0929)	0.0313 (0.0577)
Democracy	0.340 (0.565)	0.487*** (0.120)	0.494*** (0.156)
C	2.051 (6.759)	-6.446*** (2.285)	-0.168 (1.856)
Time fixed-effects	yes	yes	yes
R-squared	0.552	0.433	0.447
Obs.	26	61	91

Notes: dependent variable is total social transfers as a % of GDP. Instruments for inequality are: the lagged values of inequality and of total social transfers.

*** significance at 1%, ** significance at 5%, * significance at 10%.

Table 4. The determinants of total social transfers as a % of GDP, 1880-1930 (II)

	(1) Least squares	(2) Least squares	(3) Least squares	(4) Least squares	(5) Tobit	(6) Tobit	(7) IV
Top incomes (0.1%)	-0.146*** (0.0455)	-0.151*** (0.0578)					
Top incomes (0.1%)*democ.	0.0284 (0.0302)	0.0589 (0.0381)					
ratio gdp/unskilled wage			-0.276* (0.155)	-0.399** (0.159)	-0.721*** (0.211)	-0.798*** (0.205)	
ratio gdp/unskilled wage*democ.			-0.197 (0.195)	-0.166 (0.189)	0.530 (0.320)	0.626** (0.311)	
Non-family farms							-0.0140* (0.00842)
Non-family farms*democ.							-0.00318 (0.00762)
Log(GDP per cap)	0.859*** (0.315)	0.767** (0.334)	0.670*** (0.187)	0.611*** (0.185)	0.776*** (0.217)	0.704*** (0.209)	0.191 (0.209)
Elderly	0.170* (0.1000)	0.0937 (0.112)	0.143* (0.0778)	0.117 (0.0819)	0.179*** (0.0545)	0.168*** (0.0527)	0.0377 (0.0600)
Democracy			0.551 (0.353)	0.582** (0.295)	-0.735 (0.494)	-0.821* (0.477)	0.696 (0.514)
Time trend	-0.0603 (0.0550)		0.00580 (0.0468)		0.0645 (0.0586)		
Constant	-5.855** (2.712)	-4.936 (3.198)	-5.252*** (1.295)	-4.220*** (1.508)	-5.834*** (1.757)	-4.492** (1.913)	-0.353 (1.937)
Time fixed-effects		yes		yes		yes	yes
R-squared/ <i>pseudo R-squared</i>	0.417	0.424	0.419	0.445	0.276	0.306	0.447
Left censored observations					10	10	
Total obs.	40	40	75	75	75	75	91

Notes: regressions 1 to 4 include country random-effects. The democracy variable was dropped in regressions of columns 1 and 2 because multicollinearity problems were detected, after applying a VIF test. Multicollinearity problems probably arose because of the scant number of observations in these regressions. No multicollinearity problems were detected in the new top-income-shares regressions without the democracy variable or in the regressions in which the ratio of the GDP per capita to the unskilled wage is used as a proxy of inequality. However, in the case of the latter variable, the coefficient associated to inequality in regressions 5 and 6 (tobit) is higher than in regressions 3 and 4 (least-squares). At the same time, the positive effect of democracy disappears in regressions 5 and 6. In fact, in regressions 5 and 6, democracy's effect only becomes positive for high levels of inequality due to the positive correction of the interaction term. This suggests that inequality, democracy and the interaction term are partially correlated. As I said, this does not involve a problem of multicollinearity (the value of the VIF test is below 10 for all the variables). But, it seems that, in tobit regressions, inequality is capturing part of the effect that the least-squares regressions attribute to the democracy variable. In the instrumental variable regression, instruments for the *share of non-family farms* are the lagged values of the *share of non-family farms* and of total social transfers. Robust standard errors in parentheses for regressions in columns 1 to 6, *** significance at 1%, ** significance at 5%, * significance at 10%.

Table 5. The determinants of social transfers by programme, 1880-1930

	Pensions	Health	Welfare	Pensions	Health	Welfare	Pensions	Health	Welfare
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Top incomes (0.1%)	-0.0157	-0.0717***	-0.00490						
	(0.0450)	(0.0184)	(0.0301)						
ratio gdp/unskilled wage				-0.183**	-0.131*	-0.111			
				(0.0798)	(0.0758)	(0.0764)			
Non-family farms							-0.00399*	-0.00561**	-0.00302
							(0.00241)	(0.00256)	(0.00344)
Log (GDP per cap)	0.198	0.316**	0.0616	0.151	0.306***	0.165**	0.109	0.110	-0.0225
	(0.176)	(0.133)	(0.210)	(0.115)	(0.108)	(0.0776)	(0.0827)	(0.0868)	(0.111)
Elderly	0.0145	-0.0179	0.0811	-0.0186	0.0352	0.0964**	-0.0162	-0.00895	0.0690**
	(0.0383)	(0.0594)	(0.0675)	(0.0308)	(0.0341)	(0.0376)	(0.0224)	(0.0236)	(0.0308)
Democracy	0.326	0.153	0.154	0.169**	0.109**	0.0872	0.225***	0.101	0.175**
	(0.227)	(0.126)	(0.188)	(0.0744)	(0.0447)	(0.0577)	(0.0747)	(0.0759)	(0.0846)
C	-1.481	-1.757	-0.552	-0.508	-2.291***	-1.436**	-0.496	-0.293	0.252
	(1.341)	(1.277)	(2.094)	(0.982)	(0.820)	(0.729)	(0.720)	(0.759)	(0.990)
R-squared	0.388	0.359	0.315	0.419	0.333	0.383	0.365	0.310	0.387
Obs.	40	40	40	75	75	75	91	91	91

Notes: in columns 1 to 6, estimation method is least squares with country random-effects. In columns 7 to 9, estimation method is instrumental variables. The instruments are the lagged values of the *share of non-family farms* and of social transfers. All the regressions include time-fixed effects. I have also run regressions including the interaction between inequality and democracy. The results confirm that inequality has a negative impact on social transfers when they are analyzed program by program. However, multicollinearity problems appear in regressions with the *top income shares* and the *share of non-family farms* as proxies of inequality, and the democracy variable has to be removed from the analysis. Robust standard errors in parentheses for regressions in columns 1 to 6, *** significance at 1%, ** significance at 5%, * significance at 10%.

Appendix

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

	1930	1933
Australia	5.79	6.17
Austria		8.70
Belgium	1.83	5.85
Brazil		0.00
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
Greece		0.50
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
New Zealand		5.45
Norway		4.72
Poland	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
United States		3.21
URSS	1.81	2.55
Yugoslavia	0.07	0.14

Sources: see text.