A FISCAL REVOLUTION? PROGRESSIVITY IN THE SPANISH TAX SYSTEM, 1960-1990

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ABSTRACT: The main objective of this paper is to calculate the distribution of the tax burden across income levels in Spain between 1960 and 1990. The chosen period covers the final years of Franco's dictatorship and the first ones of the present parliamentary regime, and is thus meant to explore how political change was reflected on taxation. Does transition entail a fiscal revolution? Here is one case study developed and compared to other national experiences. Effective tax reform seems to have been politically blocked during the dictatorship, with public budgets growing fundamentally on the grounds of social security contributions. Democracy brought about a comprehensive transformation starting in 1977, which aimed at improving fairness (progressivity) and increasing revenue (to fund the development of the Welfare State). In this work I analyse whether the reforms entailed effective changes in the distribution of the tax burden, by imputing tax collection to taxpayers, based on income and consumption micro-data from Household Budget Surveys. The results show a persistent (albeit decreasing) regressivity in the tax system, which caused an increasingly negative redistribution of income. Pre-Tax incomes grew unequal during the period and net incomes even more so as a result: the tax reform did not fulfill its equalizing promises. The joint effect of the fiscal system, however, seems to have been slightly positive due to progressive social spending.

MAIN RESULT: The Spanish tax system is shown to overburden low income families, maybe negatively affecting their economic activity - in addition to social cohesion. A simpler design could attain a progressive distribution of the tax burden reducing costs in administration, incentives to evasion, or alienation of taxpayers.

JEL Codes: D31, N34, N44, H23

Keywords: Tax system, progressivity, redistribution, income inequality

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1 Introduction

> *"Do you think that, generally, taxes are fairly collected? That is, that the ones who own more pay more? Or do you think otherwise?"*[1]

During the last thirty years, approximately 80% of Spanish citizens would answer no to this question according to annual opinion polls. Back in 1994 the percentage was 75.8%; in the middle of the economic crisis it has risen until 88% (Alvira and García, 2005; Centro de Investigaciones Sociológicas, 2012). Spaniards do not seem to believe that their tax system is progressive, contrary to what was proclaimed during the political transition. But, are they right?

This paper cannot tackle the question of justice in the collection of taxes, since the answer would be based on normative stances. It will however analyse the distribution of the tax burden in the country, which is a prerequisite to make educated judgements.

The funding of the State is a significant flow of money in current economies, and not only on quantitative grounds. It is no doubt a political issue, which can shed light on the nature of power structures –together, of course, with the destination of those flows. It is also an economic issue, since the effects of taxing basic consumption or high incomes are not at all the same. And last but not least, it is a social matter: progressive taxation can reduce income inequality, which is itself a central concern of societies.

Progressivity is commonplace today in the debate about taxation, but that was not always the case in the past. The systems established at the beginning of the liberal era (in the first half of the 19th Century) were based on a different concept of equity, namely that proportionality would ensure the justice of taxes. The evolution of both economic thought and political scenarios brought about the idea that the tax burden should be progressive (i.e., represent an increasing proportion of taxpayers' income as this grows),[2] and that the overall system should redistribute income in order to mitigate social inequality. However, after the development of the Welfare States the validity of these opinions has been questioned, especially since the economic conditions of the 1970s-80s motivated a stronger emphasis on the incentive effects of taxation upon growth. In this sense, a strand of literature has related higher inequality to lower growth via increased redistribution; e.g. Alesina and Rodrik (1994) and Persson and Tabellini (1994). But, is this so? More unequal societies will redistribute more – as long as they are democratic?

The issue of the distribution of tax payments has caught the attention of scholars (as well as politicians and the population) for a long time. Literature calculating tax burdens for different segments of the population stems from the path-breaking studies of Barna (1945) and Nicholson

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[1] Author's translation for *"¿Y cree Ud. que, en general, los impuestos se cobran con justicia? Esto es, ¿que pagan más quienes más tienen, o no lo cree así?"*. This is a question posed in the surveys made by the *Centro de Investigaciones Sociológicas* (Center of Sociological Research), an official research center.

[2] The principle of progressivity arises from the ideas of ability to pay and equal sacrifice, together with decreasing marginal utility of income and minimum total sacrifice, as stated by Edgeworth in 1897 (Edgeworth, 1994). A comprehensive view on the topic can be found in Musgrave (1994).

(1965) for the UK and Musgrave (1951); Musgrave et al. (1974) and Pechman and Okner (1974) for the USA. The basic lines of their methodology are followed until today by several works, both from academia (de Kam et al., 1996; Piketty and Saez, 2007; Breceda et al., 2009) and by official statistical institutions (yearly estimations are made in the USA and the UK).

For the particular case of Spain several analyses have been carried out in the past, most of them focusing on particular taxes (especially on the personal income tax, IRPF; e.g. Argimón and Marín, 1989 and Onrubia et al., 2007). Some general estimations were performed for certain years in the late period of Franco's regime (Perona, 1972; Valle, 1974; Lagares, 1975) and also for 1990 (Manresa and Calonge, 2001). Regrettably, these are not directly comparable, since to a certain extent they follow different methodologies: so far, we do not have a long run description of the evolution of the tax burden distribution in the country. Estimating it, and comparing it with that of other countries, is the primary goal in this paper. The preliminary hypothesis arising from the previously mentioned works is that the Spanish fiscal system underwent a transition from a regressive to a somewhat proportional system.

This study is a necessary part of the historical interpretation of the Spanish transition to democracy. As soon as 1977 a broad tax reform was initiated, having among its main declared goals an improvement in equity. Progressivity and redistribution were explicitly introduced, even in the 1978 Constitution. I analyse to what extent such policy orientation was real, and was effectively applied in practice. The main finding is that regressivity was not eradicated from the tax system by the reform, although it was attenuated, after having increased during the 1960s. As a result, taxation effected an inverse redistribution of income, thus contradicting the political discourse and leaving the country far from convergence with the European Welfare State model.

The rest of the paper is organised as follows: section 2 describes the Spanish tax system and its main reforms, and presents the data series. In section 3 I explain the methodology used for the tax incidence analysis. Section 4 presents the results, while an international comparison is addressed in section 5. Finally, a general conclusion sums up the main contributions of the paper and also comments on further paths for research on the topic.

2   Reforms and persistence in the tax system

In the history of taxation in modern Spain, two main systems may be distinguished. Both of them were born in times of political change: in the first case, foundations were established in 1845, shortly after parliamentary politics stabilized in the country under dominance of the moderate party (which took several years of civil war). In turn, the current system came about in 1977, as Franco's dictatorship gave way to a new parliamentary regime. This coincidence provides a motivation for this paper, which follows the idea Schumpeter wrote about long ago:

> *"The public finances are one of the best starting points for an investigation of society, especially though not exclusively of its political life. The full fruitfulness of this approach is seen particularly at those turning points, or better epochs, during which existing forms begin*

to die off and to change into something new, and which always involve a crisis of the old fiscal methods" (Schumpeter, 1954).

The 1845 system followed the model of the French Revolution. Its main features were the predominance of indirect taxes (especially excises), the design of direct taxation as product taxes,[3] and a scarce revenue potential (which tended to stagnate). In spite of the huge change in some areas, there was a continuity with the *Ancien Régime* in several aspects, such as the maintenance of fiscal monopolies and collection techniques. These make the distinction between direct and indirect items unreliable as a significant guidance when it comes to incidence.

Such a structure was completed in the turn of the century with the addition of new taxes on capital and labour, following the evolution of the economy.[4] No substantial changes came about until those taking off in 1977. However, this long period did not lack reforms. During the 2nd Republic (1932) the first precedent of the personal income tax was introduced, albeit as a limited, "complementary" levy on very high incomes. During Franco's dictatorship (1939-1975) the main regulatory changes were Larraz's in 1940 (which reinforced the role of consumption excises) and Navarro Rubio's in 1957 and 1964. The latter are related to a major turn in economic policy: the abandonment of autarchic orientation with the 1959 Stabilization Plan.[5] The 1957 reform pursued an increase in revenues, together with the extension of incentives to investment, while in 1964 the alleged objective was redistributive. Nevertheless, collection procedures took a step backwards with the generalization of objective collective assessment of taxable bases (related to the lack of capacity in the tax administration). Redistribution does not seem to have found its way under the dictatorship, in spite of the propaganda filling the Minister of Finance's speeches.

Despite the lack of fundamental tax reform, there were indeed some significant changes in the financing of public administrations in Franco's Spain. Social Security was introduced in a 1963 law as the result of integration of different (public and private) social insurance programs.[6] As

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[3]Product taxation is directed upon each specific source of income regardless of the taxpayer's characteristics, as opposed to personal taxation, which aims to jointly consider the economic capacity coming from all sources.

[4]The government also attempted at the time to introduce progressive rates in the Inheritance tax, something which was rejected at the Senate (but finally passed in a similar fashion in 1910). The debate in Parliament shows the full validity of the idea of proportionality at the time: increasing rates were not defended as a redistributive tool (a socialist, subversive idea), but because of their revenue-increasing effect or, in any case, as a compensation for regressivity in other taxes (San Julián, 2011).

[5]The Stabilization Plan was a deflationary programme put forth in time of critical economic imbalances. It was meant to start a process of internal and external liberalization, and is generally used to signal the limits between the two main phases of the dictatorship. After this initial set of measures Development Plans were designed during the following decade, which some authors consider as the expression of reactions against liberalization (González, 1979).

[6]All along this paper Social Security Contributions will be considered as a tax. This might be arguable in some contexts, since it depends on the extent to which the system functions as an insurance, though publicly administered, or not. The answer is to be found in aspects such as its compulsory or voluntary nature, the level of budgetary autonomy (State's participation in the financing of Social Security was marginal during the dictatorship, and has been increased later), the actuarial or pay-as-you-go administration (we are in the second case), the proportionality between contributions and

a consequence, in the final years of the dictatorship public budgets did grow noticeably, but this was achieved without a (politically complicated) 'tax' reform, using an independent contributory system that increased pressure on labour (Fuentes Quintana, 1990).

Figure 1 shows that the share of Social Contributions in total tax revenue progressively grew during the late period of the dictatorship, becoming the main source of funding in the beginning of the 1970s. The shares of indirect and direct taxation got closer over these years: the absolute predominance of the first at the beginning (considered an indication of regressivity) gave way to both lines approaching each other and almost coinciding since 1978. Such a process can therefore not be seen as a result of the political transition, since it had started earlier. On the other hand, it does not necessarily imply an improvement in progressivity: direct taxes are not progressive per se, they *can be* if they are personal and have increasing rates. During Francoism the growth in direct taxation was led by a proportional tax on salaries. The evolution of big categories is therefore suggestive, but inconclusive. A deeper analysis is required.

Figure 1: Main categories as % of total Spanish tax revenue
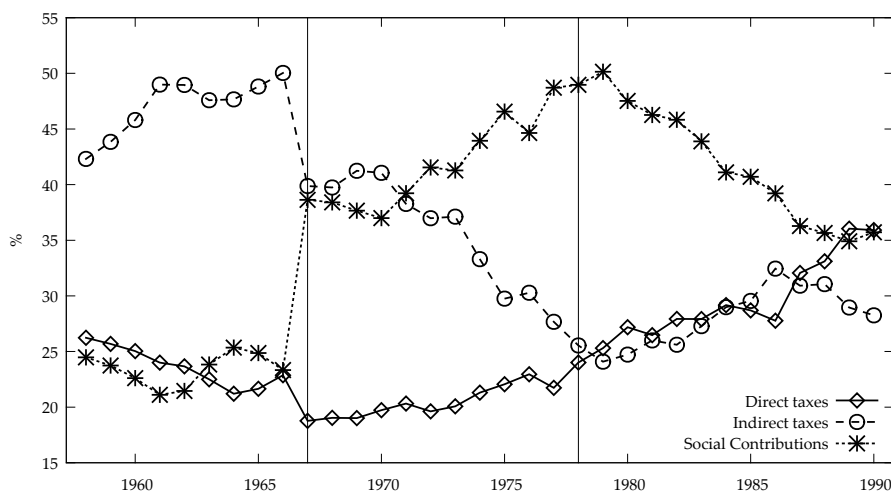
Source: Own compilation (see appendix).

The first vertical line represents the discontinuity in the series in 1967, due to the coming into force of the 1963 law (*Ley de Bases de la Seguridad Social*), which entailed the unification of the public social insurance system, the incorporation of some private insurance institutions and an improvement in aggregate accounting.

The second vertical line marks the reform year 1978, after which direct and indirect taxes grow in a balanced way, and social contributions lose participation in total revenue.

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benefits, or the existence of non-contributory pensions (which were developed in the democratic period). Bandrés and Cuenca (1996) showed how, in 1992, the 'transfer' component in Spanish public pensions was around 50% of the benefit received, as a result of the policy of minimum pensions and differential revaluations during the previous decades. This redistributive component was also not homogeneous across professional regimes: actuarial equilibrium was not followed, so it is justified to approach social contributions as a tax and pensions as benefits.

Transition to democracy brought about a comprehensive transformation of the tax system, which was thought of as a basic aspect of the regime change. The main political parties shared some central features of a reform program based on previous work by the Institute for Fiscal Studies[7] under the direction of E. Fuentes Quintana. It was therefore possible that only a few years after Franco's death direct taxation was personalised and organised around a progressive-schedule income tax, as part of the negotiations in the Moncloa Pacts.[8] The reform aimed at attaining a balance between direct and indirect taxes, thus improving the fairness of the system, and at increasing revenue, since it was to go hand-in-hand with the development of the Welfare State in response to social demands. All this meant a convergence with other European countries, which were taken as a model.

This 1977-78 reform is very perceptible in figure 2. The Personal Income Tax (hereafter, PIT) replaced a whole range of product taxes, especially the above-mentioned tax on salaries and wages (*Impuesto sobre los Rendimientos del Trabajo Personal*) and the tax on dividends and other capital income (*Impuesto sobre las Rentas del Capital*). When looking at collection data it is clear that PIT in Spain was something very different from its old precedents with similar names, which were taxes with very low revenue generation capacity and falling only on very high incomes.

A Wealth tax was introduced during the same years. Despite its widespread presence in academic and public debate, this tax always provided a small share of the public budget, as did the Inheritance tax. Both have gradually become irrelevant; a process related to widespread fraud and, in the last case, to normative changes after their cession to Autonomous Communities (Durán and Esteller, 2010).

The consensus period did not last long, and gave way to what some have called the "fiscal counter-reform"(Pan-Montojo, 1996). The culmination of the projected changes was delayed, especially in indirect taxes: VAT was not introduced until 1986, at the time of accession to the European Economic Community. It replaced a general (cumulative) Transactions Tax put into place in 1964 (*Impuesto General sobre el Tráfico de Empresas*) and the so-called Luxury Tax. Generally speaking, indirect taxation followed the lead of international integration and the harmonization in the construction of the common market (also affecting excises, public monopolies and tariffs).[9]

Social Contributions appear in figure 2 as a single category, but comprise flows administered by several organisms. Separate management was reduced in 1978 with the creation of some general institutions, but important differences across regimes remained (i.e., between the "general" workers and those of special sectors, such as agrarian, self-employed, or others – some extremely

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[7]The *Instituto de Estudios Fiscales* is a center of studies related to the Ministry of Public Finance.

[8]These were general agreements reached in the autumn of 1977 by the main parties (those who had presence in Parliament after the first elections of the new regime, celebrated in June). They focused for the most on setting a policy response to the economic crisis, but entailed also several points on taxation, as explained in Comín (2006).

[9]Tariffs had a considerable importance in the sixties (a general feature of underdeveloped countries, interrupted by autarchy), which was lost due to commercial liberalization. State monopolies, banned by EU legislation, had to disappear and were replaced by excises.

Figure 2: Composition of Spanish tax revenue
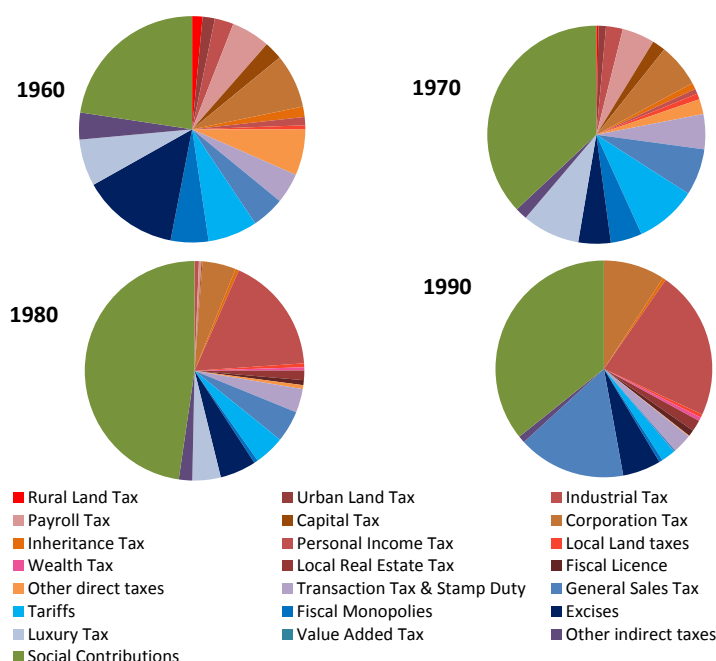
Source: Own compilation (see appendix).

specific). Legally, around 80% of these taxes was paid by employers.

After 1978 public budgets experienced a significant expansion, which made possible the funding of the nascent Welfare State (albeit insufficiently, causing the generation of major deficits).[10] The process of Spanish convergence with the most advanced countries that was made possible by the democratic transition remained nevertheless incomplete: as shown in figure 3, total tax revenue in terms of GPD approached that of the OECD countries, but this was to some extent driven by the short-run economic performance (and therefore not sustained after the current crisis set in). Furthermore, the tale is somewhat different if our reference is the European Union, which was really the "role model": in this case, even in the years of intense economic euphoria in the country, a considerable differential in levels stayed in place. Understanding this fact requires taking into account (among other things) that the economic context was different to the one that saw the original development of the European Welfare States, specially because of the consequences of the oil shocks and the turn taken by economic policies in the eighties. Emphasis moved from equity to efficiency.

The system put in place between 1977 and 1986 was undeniably simpler than the one that preceded it (figure 2): back in 1960 we had a large number of taxes contributing relatively little

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[10]Since the first years of democracy, the State deficit situated itself mostly over 2% of GDP, with a first maximum in 1985 when the budgetary cycle turns; after 1989 it started increasing again. The data can be found in Comín and Díaz (2005).

Figure 3: Tax revenue as percentage of GDP
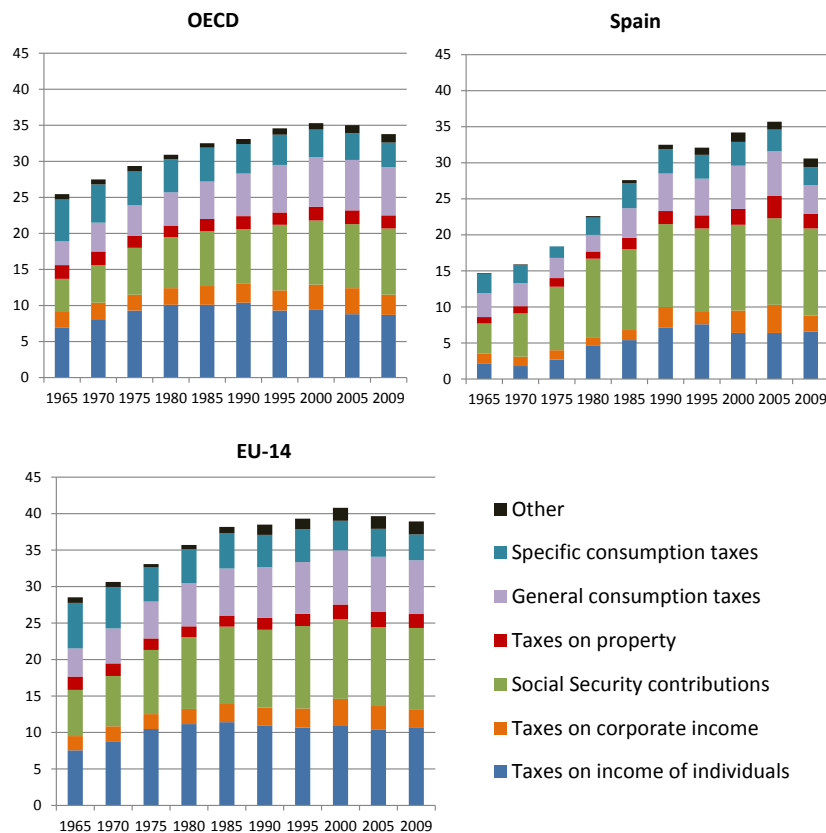
Source: *OECD Statistics* (unweighted average) EU-14: European Union of 15 members excluding Spain.

to the total, while in 1990 revenue was very much concentrated around three items: Social contributions, the Personal income tax and the Value added tax. But Spain remained different from Europe all along in the bigger relative share accounted for by Social contributions, and the lower role of PIT. This feature can be explained by the history of successive reforms.

After 1990 no global redesign has been undertaken. However, partial modifications have been abundant and in some cases have affected the central components of the system: the personal income tax (1991, 1998, 2006), the corporate income tax (1995, 2006) and the value added tax (1992, 1995, 2010, 2012). Increases in VAT rates have several times been implemented in conjunction with reductions in social security contributions (Alonso et al., 2011).

The democratic period also involved the decentralisation in favour of regional governments, both of expenditure and revenue: several minor taxes at first, and later on also partially the central items of the system have been decentralized. This process finally entailed also the transfer of regulatory capacities in 1996, which have brought about a partial differentiation among regions and a "race to the bottom" in some taxes like the Inheritance Tax (as was previously mentioned).

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What do these changes imply in terms of tax burden distribution? According to the predominant discourse, or to the *logic* of a transition from dictatorship to democracy, we should expect an increase in progressivity. That is what political economy models predict (Meltzer and Richard (1981) and subsequent literature). Nevertheless, aspects such as the constantly high weight of Social Contributions, or the more intense taxation of salary income in the Personal Income Tax,[11] sustain our hypothesis of a still regressive or near-proportional incidence in 1990, as Manresa and Calonge (2001) obtained. This culmination of the tax reform process is not consistent with the political discourses emanated from the government (which generally present the incidence of the tax system as that expected of its most familiar component, PIT), nor with the most extended opinion among citizens about fairness in taxation.[12] My objective is to explore the path by which such scenario was attained.

3   Calculating progressivity

This tax incidence analysis proceeds by imputation of tax revenue (actual payments can generally not be used, due to the lack of data) to the social groups assumed to have borne the corresponding burden. An extensive discussion on tax burden, incidence and other related concepts is not dealt with in this paper for space reasons; for a general survey see Fullerton and Metcalf (2002). I use the results of previous literature to assign tax payments and obtain a profile of effective tax rates by percentiles, and indices of progressivity and redistribution.[13] The methodology has some limitations, such as the uncertainty on the economic incidence of several taxes and the non-inclusion of possible dynamic effects.[14]

In what follows, I review the main aspects of the analysis: the temporal dimension, the taxes covered, the incidence hypotheses applied, the income concepts considered and the indicators that are calculated.

3.1   Time span of the analysis

I have chosen several years, on a more or less regular basis, that are representative of the evolution of the tax system between 1960 and 1990. The delimitation of these three decades comes first from the economic periodization of Franco's regime (as said before, a second phase opens around 1959),

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[11]Related to the bigger possibilities of fraud in other sources, and subsequently aggravated by the –incomplete– introduction of the dual model, which applies a reduced rate to capital income.

[12]I am following the conclusions of Alvira and García (2005) in this particular aspect, but it is fair to recognise that we lack more specific information on public attitudes towards progressivity. That is one point intended for future work.

[13]Progressivity is defined as the increase in the tax rate as income grows, while redistribution is the difference in inequality caused by taxation (Lambert, 2001).

[14]I am taking pre-tax incomes as given, without considering that taxes could have an impact on them through labour market/investment decisions. For a discussion on these effects, see Onrubia et al. (2005).

and closes in 1990 since the reform starting in the Transition was then completed (a different cycle begins thereafter, marked by internal decentralization). Finally, the choice of 1982 is due to the availability of micro-data for the Personal Income Tax, permitting a much more exact calculation than for the immediately previous years.[15]

The analysis performed here is annual all along: both the revenue and the income data refer to 12-month periods. A strand of literature has signalled the variability of income across the life-cycle, and considers that tax incidence is best analysed with yearly taxes on "permanent income" or in a lifetime perspective. Both are choices not taken here. In the first approach, permanent income is normally obtained with an econometric estimation or proxied by the level of actual consumption (Poterba, 1989), and taken as a better indicator of economic capacity, since it varies less. Such an approach would be valid if there were perfect capital markets, which allowed individuals to distribute their total incomes across life in an homogeneous, desired way. Nonetheless, taking this as a baseline assumption seems rather unrealistic.

The lifetime-income-lifetime-burden perspective is conceptually different. It attempts to calculate the total amount earned and paid in taxes by an individual throughout her life (Davies et al., 1984; Fullerton and Rogers, 1993). A weakness in this procedure is the inconsistency of tax policy in such a long term, so that it only reflects a hypothetical scenario. However, if it is thoroughly undertaken, the lifetime analysis would allow disentangling *interpersonal* from *inter-temporal* redistribution: its results would correspond only to the first one.[16]

This interpretation is emphasized in Bengtsson et al. (2012), who combine the annual and the lifetime perspectives: as is to be expected, in the second calculation the tax system appears less progressive. However, the Welfare State has an important dimension of inter-temporal, intra-personal redistribution ("income smoothing"; see e.g. Barr, 2004). Both aspects of redistribution are taken into account in this research; therefore, I adopt the annual perspective. It is also less demanding in terms of data (a hard constraint in this case) and more consistent in a context of changing tax policy.

It should be noted that this paper does not consider any dynamics: when discussing the effects of the tax system on income inequality, it is always inside the annual benchmark, between different "phases" of income (which are defined in subsection 3.4). I am not trying to assess the effects of taxation in one year on inequality in subsequent years.

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[15]These micro-data have been used for the years 1982 and 1990 (tax returns filed in 1983 and 1991). They represent a great source of information, but have some problems of their own. One is the possible miss-representation of the top taxpayers due to the absence of oversampling in the first years (something which has been fixed later on). I have worked with the data provided by the IEF and also with some files kindly sent to me by Jorge Onrubia.

[16]I am referring to inter-temporal "life-cycle" redistribution, not to redistribution between generations. Such a study would require different, further calculations.

3.2 Taxes considered

The intention of the paper is to present results representative for the whole of the tax system. I am therefore using data on taxes raised by all Public Administrations in Spain: the main ones by the central State (the most powerful taxing unit), and also those levied by the Social Security and sub-central governments (municipalities, provincial administrations and Autonomous Communities). A complete list can be found in table A.1 in the Appendix. Other non-tax public revenue is not included in the analysis.[17]

A complete disaggregation is not available, specially for local taxes at the beginning of the period (when the tax system was more complex and the statistics are of less quality). All in all, the study covers over 90% of tax revenue for most years.

3.3 Incidence hypotheses

As is well known, the long-term economic incidence of taxes does not necessarily coincide with the legal one. Regrettably, this is a matter which theoretical and empirical works still have not completely clarified (Fullerton and Metcalf, 2002). I have only considered one hypothesis regarding income, wealth and consumption taxes, since there is quite a wide consensus in applied literature. On the other hand, alternative possibilities are calculated for the most controversial cases: Social Contributions, the Corporate Income Tax and Real Estate taxes (see table 1).

Table 1: Tax incidence hypotheses

	BASELINE	ALTERNATIVES
Income	No shifting	-
Wealth	No shifting	-
Real Estate	Occupier	50% Owner - 50% Occupier
Social Contributions	Worker	50% Worker - 25% Employer - 25% Consumption
Corporate	34% Capital - 33% Labour - 33% Consumption	100% Capital 30% Capital - 70% Labour 70% Capital - 30% Consumption
Consumption	Consumer	-
Stamp Duties	Purchaser	-

Source: Author's compilation.

Social Contributions have been the centre of important debate in the country, specially in relation with the causes of unemployment. The question whether employers' contributions are borne by them or by the worker (via a smaller net salary) remains unsolved. International literature

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[17]Such as public fees or "special contributions" (occasional payments related to the benefit of a public action; e.g., infrastructure construction). The criterion is to circumscribe the analysis to compulsory payments that do not entail a direct benefit to the citizen.

concludes that workers would eventually assume the whole burden (Brittain, 1971; Gruber and Krueger, 1990; Gruber, 1997), but studies with Spanish data show no consensus. Most cited is Argimón and González-Páramo (1987), which states a 100% impact on workers; however, others have reached different results: for Toharia (1981) there would be shifting to prices, Escobedo (1991) found incidence on salaries around 40% and finally Melguizo (2007) concluded that this was a cost borne by enterprises.

Such diversity does not make it easy to decide on an incidence hypothesis to apply. Nevertheless, the institutional framework in which Social Security was introduced in the country, together with the evidence on the scarce initial resistance of employers to the contributions (Molinero and Ysàs, 1998) make me turn towards an incidence on workers. According to theory, this would be the result with a very rigid labour supply, which is close to the findings of national and international empirical work (Fernández Val, 2003; Blundell and MaCurdy, 1998). I therefore use total shifting as the baseline hypothesis, but in combination with a mixed alternative, since several studies point at Social Contributions among the causes of high unemployment in the country (something that would not be the case if they were completely paid by workers). In that sense, the political and institutional change of the years considered might have favoured a decrease in shifting, given that workers' bargaining power grew with the legalization of labour unions. Towards the end of the 1970s businesses started to make noisier complaints about the burden of social contributions (Cabrera and Del Rey, 2002). The alternative hypothesis imputes 50% of the tax to employees, 25% to the employer and 25% to consumers (see Appendix C.2).[18]

Concerning the Corporate Income tax, there is barely any empirical evidence for Spain: only a study from the seventies that concludes shifting to prices (Lagares, 1976). According to the author, such a result would be due to considerable oligopolization in the market. The conventional theoretical assumption is that in an economy with fixed capital supply, this factor will bear the burden of the corporate tax, while relaxing that condition makes a portion pass on to labour (Gravelle, 2010). Such shifting can be caused by effects on savings or international capital mobility. The degree of openness of the Spanish economy was increasing during our period of study, but departing from a very low level and being only considerable at the end (with the integration in the EEC). It could therefore be considered plausible that shifting towards labour was weak. However, the lack of solid evidence makes me turn to a balanced incidence between the three possible bearers of the tax. Estimations with the alternative incidence hypotheses are shown in Appendix C.3.

There has also been some discussion in the case of Real Estate taxes. They can be considered a tax on housing services, therefore borne by the tenant in rented properties (this is the "traditional" view). Other authors have maintained that a part of the tax could be falling on the owners and potentially shifted to other forms of capital: in that sense, Mieszkowski (1972) distinguished

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[18]Note that the same incidence hypotheses are applied to both workers' and employers' social contributions. Although studies have always considered the first paid by workers, it is inconsistent with incidence theory to make a distinction among them.

among the nationally homogeneous component in the tax (borne by fixed-supply capital) and the differentials among regions which would fall on the occupiers. In any case, applied literature has mostly imputed this tax on occupiers, be them owners or tenants. However, the Spanish housing market has for a long time had some particularities: since the 1920s rentals were rigidly regulated, with a near general freeze on prices (Artola, 2012; Betrán, 2002), until liberalization in 1985. This is the reason for the alternative estimation with 50% of the tax paid by owners (Appendix C.4).

3.4   Income and tax concepts

To analyse the incidence of taxation we need data on the distribution of income and wealth among the population. Detailed historical evidence about this issue is scarce until the last quarter of the 20th century. The main source are the Household Budget Surveys (HBS), conducted by the National Statistical Institute (INE, from now on) more or less on a ten-year basis since 1964. However, they suffer from severe under-reporting, which biases the results that can be obtained with the direct use of the data: therefore, I have previously carried out an upwards adjustment to National Accounts as is described in Torregrosa (2013). I have only used the micro-data from 1973-74, 1980-81 and 1990-91 (adjusted to the income and price levels of 1970, 1982 and 1990). The original files of the 1964 survey are lost and only aggregate published information can be found.

In this paper, income is used as an indicator of economic capacity by which to rank households (pre-tax incomes) and also to impute tax payments. The following phases are distinguished:

- PRE-TAX INCOME = Gross Monetary Income (Net Monetary Income + Factor Taxes & Social Contributions) + Imputed Income (Self-production + Owner-occupied housing)

- NET FACTOR INCOME = Pre-Tax Income – Factor Taxes & Social Contributions

- POST-TAX INCOME = Net Factor Income – Consumption Taxes

- DISPOSABLE INCOME = Net Factor Income + Public Benefits + Transfers

- POST-TAX-AND-TRANSFER INCOME = Disposable Income – Consumption Taxes

Factor taxes are those direct taxes falling on the households' production factors (e.g. wages or capital income), while consumption taxes are paid in the process of acquiring goods or services. This distinction is close to the legal definition of direct and indirect taxes, but does not match it exactly: among consumption taxes I include the share of direct taxes of corporations that are shifted onto consumers (following the incidence hypothesis of the Corporate tax).

The Post-tax income used here is a statistical construction, not perceived as such by the households, since indirect taxes are paid during consumption out of Disposable income. But it is a necessary concept for the goal of this paper: the comparison of inequality in Pre-tax income and Post-tax income, *before* adding public benefits and other similar flows, allows an assessment of the distributive effects of the tax system. This is contrary to what happens in real economic life, but it is the way to isolate taxation from public and private transfers. Gini indices for Disposable income and for Post-tax-and-transfer income are also shown in the paper, because of their

importance as a reflection of consumption capacity. But I do not consider them suitable to analyse *tax* incidence (this would be incomplete since it only includes personal direct taxation, and confounds the effects of public revenue and expenditure).

A further word has to be said about public benefits. A part of them corresponds to Pre-tax income (the capitalization component), while another (the redistribution one) is a transfer from the State and belongs only to Disposable income. It is out of the scope of this paper to distinguish among both: I have considered all of them as redistributive transfers.[19] However, an alternative estimation is performed in Appendix C.5 which places pensions as part of Pre-tax income.

One important question is household size: a sensible ranking should use "equivalent income" (household income divided by "equivalent household size" to obtain an adjusted per capita value that takes into account economies of scale within the family). Households are then weighted by their (real) size, so as to give the same importance to all individuals in the conclusions regardless of the family they belong to. I am using OECD's scale, which gives value 1 to the first adult, 0.7 to the subsequent ones and 0.5 to the minors in the household (up to 14 years old). The choice is consistent with empirical results based on Spanish data (Bosch-Domenech, 1991; Duclos and Mercader-Prats, 1999; Labeaga et al., 2004).

3.5 Indicators

I calculate the following indicators (most widely used in related literature):

- Average Effective Tax Rates by income range:

$$AETR_i = \frac{\Sigma(T_i/Y_i)W_i}{\Sigma W_i}, i = 1...N,$$

  where T_i is total tax payments by household i, Y_i her total pre-tax income, W_i her weight in the calculation (given by the product of sampling weight ρ and the household's real size S_i), and N is the total number of households in the range. The graphic profile of these $AETRs$ is a very illustrative approach to the distribution of the tax burden: a tax is progressive if they grow with income, as was first stated by Musgrave and Thin (1948).

- Kakwani index (1977): progressivity indicator based on the Lorenz curve. It is obtained as the difference between the concentration index of tax payments C_T and the Gini index of Pre-tax income G_Y:

$$K = C_T - G_Y$$

  It takes value 0 for a proportional tax, positive for a progressive one.

- Reynolds-Smolensky index (1977): redistribution indicator. G_Y being the Gini index for Pre-Tax income and G_{Y-T} the corresponding Gini for Post-tax income, it is defined as:

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[19]Recall the findings in that sense of Bandrés and Cuenca (1996).

$$RS = G_Y - G_{Y-T}$$

A tax is redistributive if $RS>0$. This change in inequality can be decomposed as follows:

$$G_Y - G_{Y-T} = (G_Y - C_{Y-T}) - (G_{Y-T} - C_{Y-T}) = VE - RR,$$

where C_{Y-T} is the concentration of Post-tax income with households ranked by Pre-tax incomes. Here the component VE captures the Vertical Effect (redistribution among households keeping them ranked by Pre-Tax income) and RR is the Re-Ranking Effect. If RR is positive (households get ordered differently as a result of horizontal inequity), VE overestimates (underestimates) the decline (increase) in inequality caused by taxation.[20]

The redistribution index RS is related to the progressivity index K in the following way:

$$RS = \frac{t}{(1-t)}K - RR$$

The preceding equation shows how redistribution is a combined result of progressivity (K) and tax burden ("level" effect given by t) – and the possible re-ranking. It is important to keep this relation in mind, since the different indicators can evolve in counter-intuitive ways (e.g., getting more progressive but less redistributive, as a result of a decrease in the tax rate).

For all calculations, I have taken Equivalent Pre-Tax incomes as a reference.[21] Related to this, one last caveat should be made: since my calculations for each year involve a different distribution of income along with different tax regulations, the evolution in all the indices is a joint effect of both. That is, an increase in progressivity cannot be directly attributed to changes in the normative system, since the evolution of tax bases also plays a role (which could be coincident, or counteracting). There are proposals in the literature to disentangle both effects, which is a point left for future work (Dardanoni and Lambert, 2002; Kasten et al., 1994; Seidl, 1994). The same issue, of course, is present when comparing the effect of tax systems in different countries.

4   Results

In this section I review the main findings of my calculations. First, the above-mentioned tax progressivity indicators are shown for the three benchmark years 1970, 1982 and 1990 (1960 is not included here because of data constraints). In a second subsection I turn to consider transfers together with taxes (as a negative tax), to make an approximation to the joint distributive effect of the fiscal system. Finally, the changes undergone in taxation during the 1960s are analysed, allowing some conclusions about the evolution of progressivity during the decade.

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[20] All indices have been calculated in Stata, using the 'progres' module available online (Peichl and Van Kerm, 2007).

[21] Making a sequential analysis might be misleading, since the order of the calculations has an impact on the results (we would not get the same indices for indirect taxes if we compared the tax payments with incomes net of direct taxation). Many taxes are simultaneously paid, so it would be an arbitrary choice. This point is made by Onrubia et al. (2013).

4.1 The tax system between 1970 and 1990

Average Effective Tax Rates by deciles of equivalent income are shown in tables 2, 3 and 4. The top decile is further disaggregated, in its two halves and also distinguishing the top 1% of households, because it presents a huge dispersion in incomes which makes the rates vary considerably inside it. This allows observing a continuity in the progressivity of direct taxation and the regressivity of the other components, which are driving the total. Focusing on the top is also important because these taxpayers concentrate a significant portion of total income, and of tax payments.

Table 2: Average Effective Tax Rates in 1970

	Direct	Social Contributions	Indirect	Total	Indirect over Disp. Income
Decile 1	11.01	6.05	87.28	104.39	*11.04*
Decile 2	3.36	11.48	13.48	28.33	*12.40*
Decile 3	3.43	12.82	11.58	27.84	*11.84*
Decile 4	3.63	12.81	10.89	27.34	*11.65*
Decile 5	3.74	11.65	10.53	25.94	*11.50*
Decile 6	3.85	11.33	10.04	25.22	*11.01*
Decile 7	3.92	10.68	9.63	24.24	*10.71*
Decile 8	4.06	9.32	9.22	22.61	*10.21*
Decile 9	4.30	7.88	9.29	21.48	*10.25*
Decile 10	5.50	5.52	7.77	18.79	*8.48*
Perc. 91-95	4.80	6.72	8.68	20.20	*9.55*
Top 5%	6.21	4.32	6.86	17.37	*7.40*
Top 1%	8.16	2.00	4.14	14.26	*4.45*

Source: Author's calculations.

Deciles of individuals by Equivalent Pre-Tax income. The rates are calculated dividing household tax payments by total pre-tax income, except in the last column, where the denominator for indirect taxes is household disposable income. This might be more intuitive since it is the flow they are paid out of, and can serve to make comparisons with specific works about indirect taxation.

'Direct' includes all taxes paid on income and wealth by households and corporations (of which the main are the Corporate Income Tax and the Payroll Tax), 'Social Contributions' includes those of employers, workers (including the unemployed), civil servants and the self-employed. 'Indirect' means all taxes incurred in the consumption of goods and services (the main being Tariffs, the Luxury Tax and the General Sales Tax). For a complete list, see table A.1.

The first feature in the tables is that total tax rates faced by families are bigger in the first deciles that in the upper ones. The rates estimated for the lower levels of income are very high, even above 100% in some cases, because such households are basically consuming out of public or private transfers and have very scarce or null market income. But even leaving the first decile aside, this downward slope in rates happens all over the period: taking as reference the second and tenth deciles, in 1970 the AETRs go from 28.33% to 18.79%, in 1982 from 45.29% to 32.32% and in 1990 from 67.37% to 43.85%. The tax system was regressive all along, placing more burden on low-income classes. This conclusion is even clearer if we turn to the greater disaggregation of

Table 3: Average Effective Tax Rates in 1982

	Direct	Social Contributions	Indirect	Total	Indirect over Disp. Income
Decile 1	18.15	10.84	96.02	125.01	*7.51*
Decile 2	5.55	22.45	17.29	45.29	*10.35*
Decile 3	6.55	18.17	11.71	36.43	*10.83*
Decile 4	7.19	18.12	10.32	35.63	*11.05*
Decile 5	7.67	18.29	9.30	35.26	*10.82*
Decile 6	8.04	18.55	9.31	35.90	*11.26*
Decile 7	8.39	18.37	8.51	35.27	*10.72*
Decile 8	8.73	17.98	8.15	34.85	*10.30*
Decile 9	9.27	17.20	7.52	33.99	*9.67*
Decile 10	11.06	15.11	6.15	32.32	*8.10*
Perc. 91-95	10.12	16.81	6.75	33.67	*8.84*
Top 5%	11.99	13.42	5.56	30.97	*7.36*
Top 1%	14.97	6.16	3.22	24.36	*4.06*

Source: Author's calculations.

Deciles of individuals by Equivalent Pre-Tax income. The rates are calculated dividing household tax payments by total pre-tax income, except in the last column, where the denominator for indirect taxes is household disposable income.

'Direct' includes all taxes paid on income and wealth by households and corporations (of which the main are the Personal Income Tax and the Corporate Income Tax), 'Social Contributions' includes those of employers, workers (including the unemployed), civil servants and the self-employed. 'Indirect' means all taxes incurred in the consumption of goods and services (the main being the General Sales Tax, Excises and Tariffs). For a complete list, see table A.1.

the tail of the distribution: the top 1% paid 14.26% of their pre-tax income in taxes in 1970, 24.36% in 1982 and 37.86% in 1990 – i.e., their rates where near half of those faced by the second decile of taxpayers.

Regressivity was the combined effect of very different taxes, driven by social contributions and consumption taxes. The latter fell overwhelmingly on the poor in spite of mitigating aspects in legislation such as the Luxury tax or the different tax rates in VAT.[22] This feature is an unsurprising effect of consumption being less unequally distributed in society than pre-tax income. Since disposable income is less concentrated, tax rates in the last column of each table appear less markedly decreasing, but they are still so because of the different propensities to save and consume.

Something similar happens with social contributions, which are considered here to fall on labour (alternative estimation in Appendix C.2). The burden of this tax is largely determined by

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[22]When it was first introduced in 1986 they were: 6% for foodstuff and other favourably treated goods, 12% for general goods and 33% for certain sumptuous consumption items.

Table 4: Average Effective Tax Rates in 1990

	Direct	Social Contributions	Indirect	Total	Indirect over Disp. Income
Decile 1	35.09	7.73	195.95	238.76	*17.00*
Decile 2	10.57	20.19	36.61	67.37	*20.89*
Decile 3	10.55	19.12	22.27	51.94	*20.45*
Decile 4	11.44	20.01	18.14	49.60	*20.13*
Decile 5	12.35	19.95	16.47	48.76	*19.67*
Decile 6	13.30	19.24	14.08	46.62	*17.82*
Decile 7	14.19	18.97	13.42	46.58	*17.42*
Decile 8	15.11	18.69	12.60	46.40	*16.95*
Decile 9	16.47	17.57	10.55	44.59	*14.52*
Decile 10	20.42	14.74	8.69	43.85	*12.53*
Perc. 91-95	18.44	16.85	10.44	45.74	*15.00*
Top 5%	22.39	12.63	6.94	41.95	*10.06*
Top 1%	28.65	5.31	3.91	37.86	*5.66*

Source: Author's calculations.

Deciles of individuals by Equivalent Pre-Tax income. The rates are calculated dividing household tax payments by total pre-tax income, except in the last column, where the denominator for indirect taxes is household disposable income.

'Direct' includes all taxes paid on income and wealth by households and corporations (of which the main are the Personal Income Tax and the Corporate Income Tax), 'Social Contributions' includes those of employers, workers (including the unemployed), civil servants and the self-employed. 'Indirect' means all taxes incurred in the consumption of goods and services (the main being the Value Added Tax and Excises). For a complete list, see table A.1.

the distribution of salary income. But it was not proportional to it, since the amount to be paid was not assessed on wages. Up to 1972, the social contributions payable were calculated upon a base (*Base Tarifada*) which was equal for everyone in the workforce of the same category (there were ten of these categories for industry and services workers, something which obviously did not correctly reflect differences in pay). During the seventies the system was reformed so that the base grew closer to real salaries, but the implementation of this idea took a long transitional period and was never really completed. Since 1977, the taxable base is the salary (but not all of its components), with both a lower and an upper cap for each category, which still distort proportionality for the lower and the better paid workers.[23]

Direct taxes had the opposite behaviour: they imposed a greater percentage burden on richer individuals. The first decile is an exception, though: here, the high burden is a result of very low pre-tax incomes combined with the shifting of Real Estate and Corporate taxes on the prices of housing and consumption goods. But from the second decile on, direct tax rates are increasing.

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[23]A good description of the Social Security contributory system can be found in Monasterio (1992).

This was already true in 1970, albeit slightly (the tax rate faced by the top decile was 5.50% while for almost all the rest of the distribution it was between 3% and 4.3%). In 1982 the upward trend across deciles was much more visible, and even more so in 1990 (top decile tax rates had gone up to 11.06% and 20.42%, while those in the second decile were 5.55% in 1982 and 10.57% in 1990). This component of the Spanish tax system was indeed progressive, specially after the reform in direct taxation undertaken during the political transition was consolidated. Several works have found so for the Personal Income tax (Argimón and Marín, 1989; Castañer, 1991; Onrubia et al., 2007).[24]

Progressivity and redistribution indices in table 5 confirm and clarify these observations. The tax system became less regressive between 1970 and 1990 (the Kakwani index is negative in all years, but its absolute value becomes smaller over time). This was mainly due to the 1977-78 reform in direct taxation and also to the above-mentioned changes in the Social Security contributory system. On the other hand, indirect taxes became more regressive, even during the seventies in the absence of significant reform. This result can thus be attributed to some extent to changes in the underlying structure of consumption: more households started consuming items that were taxed under the Luxury tax, and specially a reduction in overall expenditure inequality (favoured by the development of Welfare State transfers in the second sub-period) paradoxically had the same effect.[25] Tax regressivity was mitigated but persisted, being more intense at both ends of the income distribution.

Average Effective Tax Rates for each category are displayed in the second row to show how direct taxation was powerless to impact positively on the income distribution, when compared to the weight of the other components. Social contributions grew a lot, specially during the seventies, and consumption taxes were reinforced in 1979 and 1986 (introduction of VAT). The regressive elements outdid the progressive ones. All in all, this means that taxation effected an *inverse* redistribution not only in 1970 but also in 1982 and 1990, in the first years of the new parliamentary regime and after it was consolidated. The Reynolds-Smolensky index became larger in absolute value over time, because of the increase in the tax burden: in 1970 taxation increased the Gini index in around 3.7 points, 3.8 in 1982, and 6.9 in 1990. This is a very significant impact.[26]

Table 6 displays inequality along the previously defined income phases. The difference be-

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[24]This tax, however, was affected during the eighties by significant fiscal drag, which made it less progressive (by bringing up mostly the rates of taxpayers at the bottom), but also more redistributive (because of the increase in the average tax rate and therefore in the quantities involved). See e.g. González-Páramo (1988) and Salas (1997).

[25]The Gini index for total consumption among individuals was 35.09 in 1970 and had gone down to 33.13 by 1982 and 32.06 by 1990. Increasing regressivity in indirect taxation was already observed by Argimón et al. (1987) when comparing their results for 1980 with those of Perona (1972) for 1965. A similar observation on increasing negative impact of indirect taxation was made for the case of the UK in the 1980s and 1990s by Glennerster (2006).

[26]I have also calculated the progressivity indices excluding from the sample those households with very small ratio Pre-Tax Income / Total Expenditure (those who have rates well over 100%), to make sure their high AETRs are not driving the results. Choosing 0.05 as the cutting point means excluding 3-5% of the households for each year and does not change the conclusions of the analysis.

Table 5: Progressivity and redistribution over the period

		1970		
	Direct	Soc. Contr.	Indirect	Total
K	0.0981	-0.1629	-0.1428	-0.1016
AETR	4.65	8.65	9.48	22.78
RS	0.0047	-0.0180	-0.0173	-0.0369
		1982		
	Direct	Soc. Contr.	Indirect	Total
K	0.1012	-0.0829	-0.2055	-0.0595
AETR	9.66	15.97	8.08	33.70
RS	0.0106	-0.0199	-0.0194	-0.0384
		1990		
	Direct	Soc. Contr.	Indirect	Total
K	0.1121	-0.0748	-0.2601	-0.0586
AETR	16.89	16.67	12.98	46.54
RS	0.0220	-0.0186	-0.0431	-0.0687

Source: Author's calculations. Using Pre-Tax Equivalent incomes, and weighting by family size (thus reflecting the distribution over individuals). K: Kakwani index; AETR: Average Effective Tax Rate; RS: Reynolds-Smolensky index.

tween Pre-tax and Post-tax income Gini indices equals the RS index shown above. Both in 1970 and 1982, the first two differences (between columns 1 and 2, and between column 2 and 3) are negative: inequality increases. This is related to the scarce distributive impact of direct taxes, which are mostly accounted for in the difference between the first two columns.[27] In 1990, however, the story seems to have changed in this respect: Net Factor income is now less unequal than Pre-tax income, reflecting the increase in the redistributive effect of direct factor taxation (driven by the growth in the $AETR$). The general impact on Post-tax incomes, nevertheless, is still negative. So it can be said that what the tax system did in one phase, it undid in the following.

Table 6: Taxation and income inequality

	PRE-TAX	NET F.I.	POST-TAX	DISP.I.	P-TRANS
1970	39.20	40.39	42.89	36.02	37.69
1982	44.59	45.13	48.43	36.28	38.08
1990	44.54	43.06	51.41	35.01	39.59

Source: Author's calculations. The table displays Gini indices for the different (equivalent) income concepts, weighted by individuals. 'P-TRANS' stands for Post-Tax-and-Transfer income.

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[27]It is not possible to disentangle here direct taxes falling on factor income from social contributions, since they are simultaneous: for their distributive effect, see table 5.

Of course, this does not mean that the overall effect of the public sector towards the lower classes was extractive. Welfare State development was the other side of the coin to this augmented taxing power. Benefits were extended and public education and health systems were funded, so the expenditure side of the budget allowed for improvements in income distribution and towards equality of opportunity. I turn to this now.

4.2   Considering the effect of benefits

According to table 6 the distribution of disposable income did not change much in the period, as was obtained in Torregrosa (2013). The change in the Gini index from net factor incomes is only partly an effect of State benefits, since it arises from adding *both* public and private transfers (they are not disaggregated in HBSs until 1990, so 'transfers' can include e.g. remittances sent by emigrants). As a whole, these flows caused a decrease in inequality among individuals of around 4 Gini points in 1970, 10 in 1982 and 8 in 1990 (difference between columns 2 and 4 in table 6). So, what the fiscal system did in one phase, it undid in the following?[28]

Post-tax-and-transfer income is the net result of all these flows, the inequality finally existing in the country (in terms of consumption capacity). The total tax-and-transfer system had an equalizing effect; but, interestingly, this was higher in 1982 (6.51 Gini points) than in 1990 (4.95) – and 1970 (1.51) –, in part attributable to the increase in regressivity of indirect taxation. This "final" income has grown more unevenly distributed over the decades under study, but less than market incomes (1.90 vs. 5.34 Gini points).

Figure 4 tries to cast some further light on the issue. It plots tax rates computed including transfers as a negative tax. Working with the public-private aggregate means that progressivity is underestimated, since the distribution of total transfers is less concentrated on the lower classes than that of benefits. For the year 1990, I include two calculations, one with the total (comparable to those of the previous years) and one considering only public benefits (a better representation of the tax-and-transfer system in place at the time).

Here, the percentiles with positive rates are net contributors: approximately the upper 75-70% of individuals. The ones with rates under zero, on the contrary, received more money than they paid in taxes. These rates –contrary to the tax rates– are growing with income, entailing that the *fiscal* system did provide redistribution (as was shown by the Gini indices above). But we still can see a final negative-slope stretch in 1970 and also in the more recent years (although now circumscribed to the very top percentiles).

The fiscal system in 1970 was clearly less progressive than in later years, since the profile is flatter and the line crosses 0 earlier in the income distribution (which means that households

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[28]In 1990, public benefits were a very significant part of total transfers received by households: 89.5% according to the HBSs. It is however possible that for the earlier years this percentage was lower (given the development of the Welfare State after the political transition). This entails that the "redistribution" shown by the different Gini indices is likely to be an upper bound, higher than that caused solely by public funds, and that the bias is probably decreasing over time.

Figure 4: Average Effective Tax-and-Transfer Rates
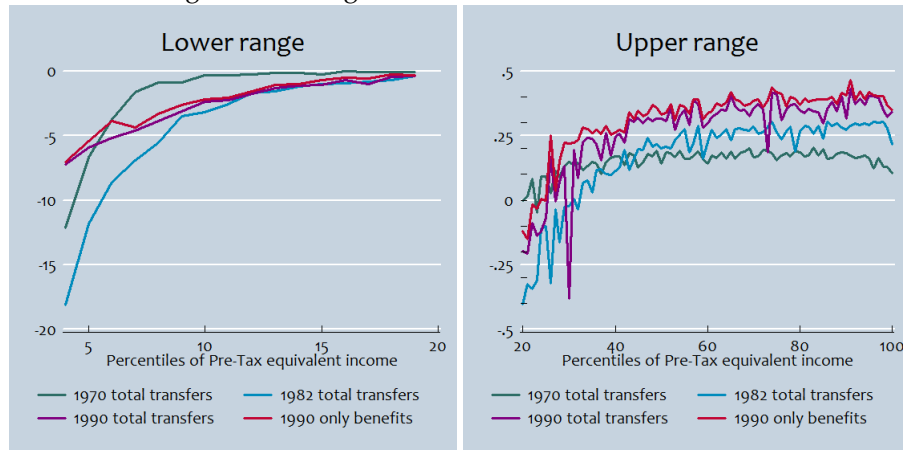
Source: Author's calculations.

The lowest percentiles are not included because their extreme values would make the first graph unreadable.

being net contributors back then were poorer than their counterparts in the following decades, both in relative and in absolute terms). We can also see that among net-recipient households the rates were clearly lower in 1982 than in 1990. This presumably is not so much the result of a loss of generosity in the welfare system, as of the increase in tax rates for the poorer households which followed the introduction of VAT. Thus reinforcing the convenience of analysing both aspects together: the distribution of tax payments as much as what they are financing.[29]

In-kind benefits, which are mostly considered as inequality-reducing, are not included in any of these calculations. Thorough approaches to the incidence of total social public expenditure can be found e.g. in Bandrés (1993), Estruch (1996) or Calero (2001). Following those authors, we know that expenditures on Health are highly progressive, those on Education are so to a lesser extent; and Social services are very concentrated on the lower deciles, but their scarce budget limits redistributive potential. According to Bandrés (1993), in-kind social expenditure would have reduced the Gini index in 3.61 points in the year 1980; the decrease would have been 0.74 in 1990 and 3.99 in 1994 (Estruch, 1996 and Calero, 2001 respectively). These impacts are in any case smaller than those of monetary benefits, which stand between 6 and 15 Gini points in the same studies.[30]

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[29]In fact, and quite surprisingly, if we compare the mean of post-tax-and-transfer incomes by deciles between 1982 and 1990 (in real terms) we can see that the poorest households actually *lost* net purchasing power during the decade. This does not seem so when looking at disposable income figures, but it comes through once taking into account the impact of indirect taxation.

[30]The cited works make an imputation of monetary public transfers that goes far beyond my simple exercise above using the data in the survey. Regrettably, their results cannot be readily integrated with mine because of a different procedure of adjustment of the original income data and other methodological choices. For an analysis on monetary benefits that takes into account the difference between contributory and non-contributory items, see Gimeno (1996).

It can therefore be said that the public sector as a whole impeded the increase in market-given inequality to be completely translated onto Post-tax-and-transfer incomes. But it certainly does not seem to have done so by means of the tax system, and did not manage to counteract the trend of rising inequality.

4.3 Some insights into the 1960s

What can be said about the evolution in the decade preceding my first estimation? We can get an impression by examining tax revenue data: probably, regressivity increased during this decade, due to two concurrent changes. On the one hand, a growth of indirect relative to direct taxation: the balance between direct and indirect revenue went from 68.9% to 53.3% (in the period 1960-70).[31] This change had already culminated by the middle of the decade, so it cannot be attributed to the 1964 tax reform: it could more likely be due to a loss of direct taxation efficiency, related to evasion and the "freezing" of tax bases resulting from estimation procedures.

Another composition effect arises from the Social Security Law and the consequent increase in social contributions, which caused a major transformation in the tax structure of the country (see figure 1). Because these taxes were borne by labour to a great extent, they had an undoubtedly negative impact on the distribution of net incomes (notwithstanding their being the basis to finance more generous pensions in the decades to come). However, as was said back in section 2, some of the apparent change is an effect of deficiencies in the data previous to the 1967 reform, which implied unified accounting of different insurance systems, so the real change in this sense might not be as intense as it seems.

The inner progressivity of the components of the tax system is difficult to evaluate without more detailed data (specially, on the distribution of income). In any case, a comparison with the work by Perona (1972) for the year 1965 allows getting a little closer to the question. In figure 5 I plot tax rates by income ranges for 1965 and 1970. The latter have been obtained replicating Perona's methodology, so they are not directly comparable to those in table B.1. I have left aside non-central taxes, established the household as the unit of analysis (as opposed to equivalization of incomes and individual weighting in my own estimations), grouped them based on disposable income (as opposed to pre-tax) keeping the same percentage of households in each range,[32] and used as denominator for the tax rates "wide" pre-tax income (which includes non-monetary items

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[31]In real terms, indirect tax revenue multiplied by a factor of 2.3, while direct taxation did by 1.8. This resulted in a slight loss of direct tax pressure relative to GDP (from 4.85 to 4%), whereas the opposite happened on the indirect side (7.03 to 7.48%).

[32]These are not deciles. Perona's work divided households by income ranges of around 30.000-60.000 ptas. Approximately, range 1 corresponds to the first decile, range 2 to deciles 2 and 3, range 3 to deciles 4 to 7, range 4 to deciles 8 and 9, and the three upper ranges to the top decile.

and all public and private transfers).[33] Some differences in the procedures remain, however.[34]

Figure 5: Average Effective Tax Rates over the 1960s
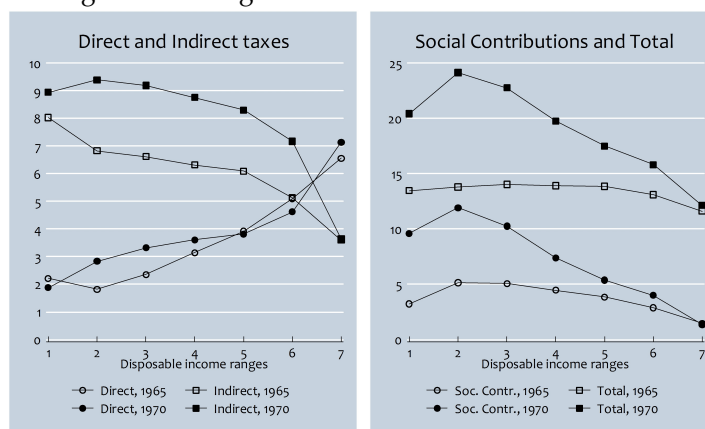
Source: for 1965, Perona (1972); for 1970, author's calculations.

Households are ranked by disposable income, but the denominator for the
tax rates is wide income (defined as total pre-tax income plus all transfers).

If we accept Perona's results as a good approximation to tax rates in 1965, we can see a lack
of change in direct taxes (neither in their profile nor in the average tax burden imposed), while
indirect tax rates grew over all ranges. Social contributions also experienced a very significant
increase (with the average tax burden going from 4% to around 8%), specially affecting the lower
income classes. In terms of total tax rates, what looked somewhat proportional in 1965 gave
way to a regressive profile in 1970.[35] We can therefore conclude that there was an increase in
regressivity during the decade, caused by the changing composition of the tax system.

5   How different was Spain from other countries?

Comparing my results to those of similar studies is the natural next step. How does the partic-
ular case of Spain compare with its geographical and cultural neighbours, the countries it has
economic relations with, and the ones it took as a model at the time of the tax reform? These were
countries with different levels of inequality, and contrasting political systems and histories. Not
only inter-temporal, but also international comparisons, are essential tools for trying to under-
stand socio-economic development.

The European countries are the first candidate for this, because they were taken as a model

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[33]This "wide" income definition is the same used in the alternative estimation in appendix C.5.

[34]Concerning incidence hypotheses and the details of the imputation procedure.

[35]Recall that this is over "wide" income: over pre-tax incomes, the system in 1965 would also be regressive, since
transfers represent a bigger percentage of income for the lower ranges (i.e., their pre-tax incomes are smaller than their
"wide" incomes by a bigger amount, bringing up their effective tax rates).

and also due to the importance of fiscal harmonisation in the process of European economic integration. Latin American countries today are also a case to consider, since there is an ongoing debate on the possible 'fiscal pact' to enhance development. In any case, the following discussion is dependent on the availability of comparable calculations for other countries.

First of all it is possible to contrast my results to those of a couple of recent papers on tax progressivity which take a historical perspective of a few decades. In figure 6 I plot Average Effective Tax Rates of direct taxes for the United States, Sweden, the United Kingdom, France and Spain (data for UK and France are only available for 1970). For the sake of comparability, only direct taxes and social contributions are considered here.[36] The AETR for Spain shown in the figure are also different from my baseline results because, out of coherence, the unit of analysis is the household instead of the individual, and pre-tax income excludes imputed income from owner-occupied housing. Special attention is paid to the upper percentiles, which are more disaggregated.

Figure 6: Direct Tax Rates. International comparison
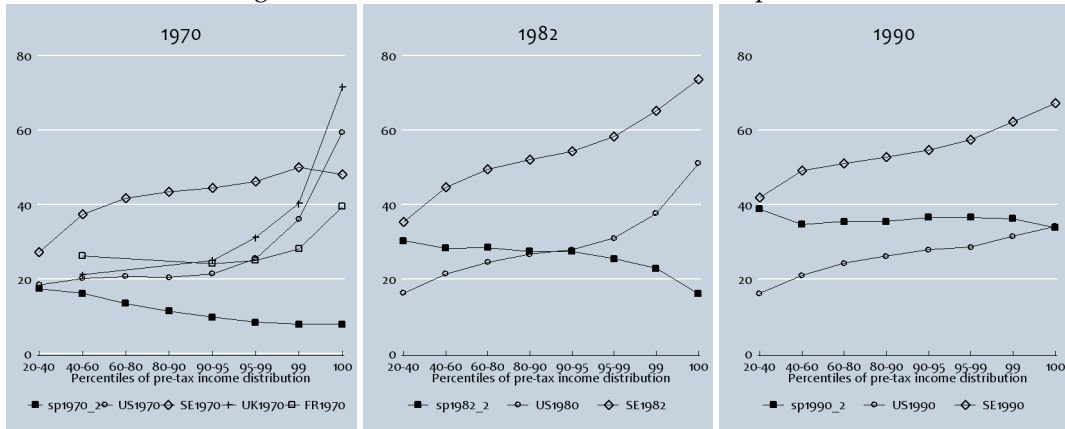
Source: for Spain (SP), author's calculations. US, UK and France (FR) from Piketty and Saez (2007). Sweden (SE) from Bengtsson et al. (2012).

(1) In the data for France, P40-60 is P0-90.

(2) In all data from Piketty and Saez, the last two values represented are respectively those for P99-99.5 and the mean of rates for P99.5-99.9, P99.9-99.99, and P99.99-100. Similarly, in the data from Bengtsson, the first value is P0-40 and the last two values P99-99.9 and P99.9-100. This means that my top rates refer to relatively lower percentiles, and might therefore be a little underestimated (overestimated) if there is progression (regression). Because of the imprecision of estimating such very disaggregated rates in my data, this presentation has been deemed preferable.

Spain stands out for its regressivity specially in 1970 and 1982. At the starting year, it looks somewhat similar to France, but at a lower level of rates and without any progression at the top. Towards the end of the period it contrasts less, due to the loss of progressivity in the other countries combined with the opposite path in Spain, which by 1990 had near-proportional *direct*

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[36]The Spanish case includes the Personal Income Tax (for 1970: adding taxes on labour and capital income), Social Contributions, the Corporate Income Tax, the Inheritance Tax and the Wealth Tax. CIT is not considered in the calculations for France, UK and Sweden.

taxation. Higher rates had arrived first to the middle-upper class (1982) and later (incompletely) to the top. It looks as if the evolution towards progressivity, delayed by the dictatorship, did not fully reach the levels seen in these other richer countries –something which can be related to the evolution both in economic thought and in the inner distribution of political power.

If we turn to more synthetic indicators, we can include a bigger range of countries in the comparison and also assess the joint effect of the tax system, including indirect taxes. In figure 7 I display my indicators of progressivity (K) and redistribution (RS), together with those of the United States and some Latin American countries. The data cover very different years due to availability of comparable estimates. It can be seen that the Spanish tax system of the period 1970-90 differs a lot from that of the federal system in the US,[37] while it stands quite close to several Latin American countries today in terms of regressivity. The bigger negative redistributive effects in Spain are due to higher tax pressure.

Figure 7: Tax Progressivity and Redistribution
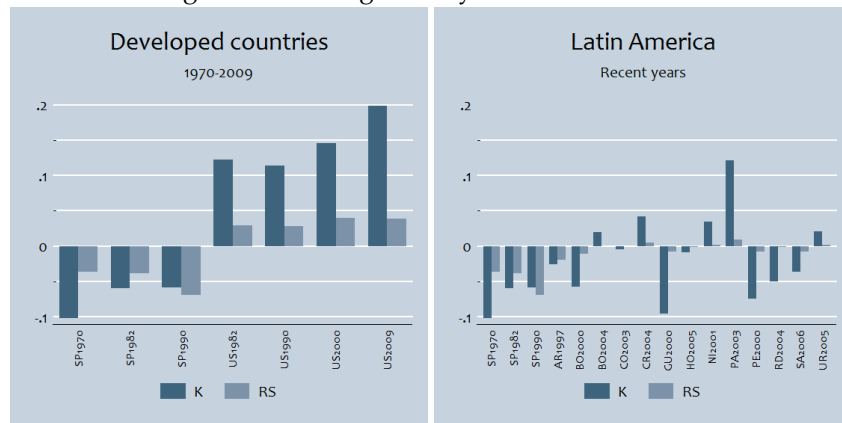
Source: for Spain, author's calculations. For the US, Congressional Budget Office (2012), supplementary tables. For Latin American countries, Barreix et al. (2006), Barreix et al. (2009); Barreix (2011); Gómez-Sabaini et al. (2002); Nina (2006).

Meaning of abbreviations: SP (Spain), US (United States of America), AR (Argentina), BO (Bolivia), CO (Colombia), CR (Costa Rica), GU (Guatemala), HO (Honduras), NI (Nicaragua), PA (Panamá), PE (Perú), RD (República Dominicana), SA (El Salvador), UR (Uruguay).

For the European countries, many studies on state redistribution have focused on direct taxes and (monetary) transfers, thus leaving aside indirect taxes. There are plenty of analysis exploiting the difference between inequality of Pre-tax and Disposable incomes. For contemporary studies, this partly arises from the availability of such information in comparable surveys (e.g. Luxembourg Income Study). The RS index shown in figure 8 is obtained as that difference.

Spain is a "laggard" in the first graph as compared to the other countries for which we have historical data (Sweden and the United Kingdom). Direct taxes and transfers tended in the period to be more redistributive and thus similar to the systems in the advanced neighbours. The story

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[37]The comparison is not completely accurate, since federal excises are included but not general sales taxes, which are collected by the states. Those have nevertheless lower rates than VAT, generally well under 10%.

Figure 8: Redistribution by Direct Taxes and Transfers
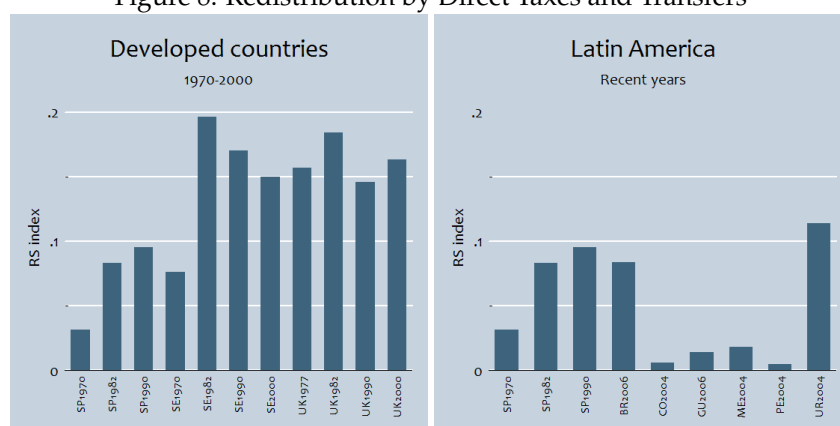
Source: for Spain, author's calculations. Sweden from Bengtsson et al. (2012), UK from Barnard et al. (2011), Latin American countries from Wang and Caminada (2011).

Meaning of abbreviations: SP (Spain), SE (Sweden), UK (United Kingdom), BR (Brazil), CO (Colombia), GU (Guatemala), ME (Mexico), PE (Perú), UR (Uruguay).

is once more one of incomplete convergence.[38] Again, if we turn to Latin American countries, our case does not stand out that much, being quite comparable to today's Brazil or Uruguay.

The most meaningful comparison would be that of the fiscal system as a whole, including all taxes and monetary benefits (figure 9). Spanish redistribution in 1970-90 stands clearly behind that of the UK or the US: convergence with these countries (which are considered by literature as small welfare states) was not attained throughout the period of analysis. Regrettably I have not found such data for other cases in Europe.

The last graph shows Spain compared to Latin America at near-present times. Here, Spain displays values similar to Bolivia, Chile, Brazil or Colombia. Among the big countries, Mexico lags behind, while Uruguay and Argentina lie ahead. In the last years there has been a trend towards increasing redistribution in this region (Lustig, 2011), a process comparable to the reform experienced in Spain during the seventies and eighties. A new "fiscal pact" is sought to contribute to a more equitable society, after the eighties witnessed the introduction of VAT and the flattening of income tax schedules. These early changes contributed to strengthen the tax administration, which may be a positive legacy to present developments (Bird and Zolt, 2013). The order is contrary to that of Spain, where direct taxation was reformed in a first step, following the economic thought of the sixties, and to a certain extent lacked the capacity to be enforced.

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[38]I have found data for around 1998 from Immervoll et al. (2007) which show Spain near the middle of EU-15 for direct redistribution. These results are obtained by a legal-simulation methodology and therefore are not directly comparable to mine (which depart from *actual* tax revenue). In Wang and Caminada (2011), Spain comes in the lower third.

Figure 9: Redistribution in Tax-Benefit systems
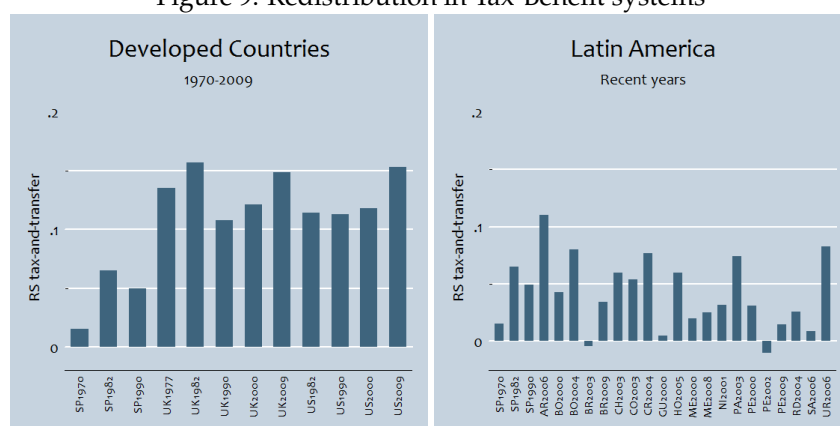
Source: for Spain, author's calculations. UK from Barnard et al. (2011), US from Congressional Budget Office (2012), supplementary tables. Latin America from Barreix et al. (2006, 2009); Barreix (2011); Nina (2006); Cornia et al. (2011); Goñi et al. (2011); Amarante et al. (2007); Bucheli et al. (2013).

Meaning of abbreviations: SP (Spain), UK (United Kingdom), US (United States of America), AR (Argentina), BO (Bolivia), BR (Brazil), CH (Chile), CO (Colombia), CR (Costa Rica), GU (Guatemala), HO (Honduras), ME (Mexico), NI (Nicaragua), PA (Panamá), PE (Perú), RD (República Dominicana), SA (El Salvador), UR (Uruguay).

6 Conclusions

During the years under study, very fundamental political changes took place in Spain. After forty years, dictatorship reluctantly gave way to parliamentarism. At the same time, a tax reform was initiated, promising to bring the country closer to its European neighbours and towards progressivity. But how big a change did it entail in terms of the tax burden distribution? Was convergence reached?

In this paper, I have shown that the tax system was regressive in 1970, probably more than in the previous years: the poor paid a bigger percentage of their income in taxes than the rich. This was still true twenty years later, albeit very much less so: there was an evolution towards progressivity, driven by direct taxation (fundamentally the Personal Income Tax). Social Contributions were closer to proportionality in 1990 than before, but remained regressive, and so was (increasingly) indirect taxation, mainly because of changes in the underlying distribution of consumption. The lack of overall tax progressivity contradicts the predominant political discourse of the time.

As a result, the tax system exacerbated income inequality: it effected an inverse redistribution. Moreover, this unequalising impact grew bigger over time, due to the increase in average effective tax rates. The expansion of public revenues over GDP is one of the most important features of the period: it increased from 18% in 1970 to 26% in 1982 and 33% in 1990.[39]

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[39] All calculations involving GDP levels are made with data from Prados de la Escosura (2003).

Both pre-tax and post-tax incomes grew more unequal over these decades. Disposable income inequality, however, was quite constant, and the same can be said of final post-tax-and-transfer income, which remained significantly less concentrated than the pre-tax distribution. This means that private and, especially, public transfers counteracted the growth in market inequality and the increasingly negative effect of taxation (as was found by Bandrés, 1993; Estruch, 1996 and Calero, 2001). The study of public expenditure reveals itself as an essential complement to my results.

Other aspects for further research arise. The methodology followed here does not account for tax evasion,[40] which might have not only an important quantitative impact on public revenues, but also on their progressivity. If tax evasion is more feasible to taxpayers on the top of the income distribution (because of capital incomes escaping control more easily), the tax system will de facto be less progressive than it looks on paper.[41]

Another issue is the explanation of these findings in a political economy framework, something for which the comparative perspective should help. According to the basic models (Meltzer and Richard, 1981), redistribution should increase after a transition to democracy. This has certainly not happened through the tax system here, although it might so if public expenditure is taken into account. In any case, the tax structure responds both to the actors' preferences and the decision making process, and the former do not seem to find the perceived distribution fair. An in-depth study of attitudes towards taxation and redistribution, and of their transmission to public policies, should follow.

Lindert (2003) signalled that tax progressivity and fiscal redistribution need not go hand in hand. He sustained that *large welfare-state transfers have been funded by more pro-growth and regressive taxes. [...] In the high-tax high-budget social democracies, the taxation of capital accumulation is actually lighter than the taxation of labour earnings and of leisure-oriented addictive goods*. Steinmo (1989) had already suggested the same idea in a comparison of the United States, Sweden and the United Kingdom, and a similar stance is taken by Breceda et al. (2009) when relating the systems in several Latin American countries more to a progressive-small-less redistributive Anglo-saxon tax model than to a regressive-big-redistributive European one. This might fit with the Spanish experience over the eighties, when a bigger welfare state was funded resorting to intensify consumption taxation and without culminating a progressive reform. However, both the UK and the US were more redistributive than Spain according to the data shown here. The relationship is not clear. A further comparative analysis of average tax rates, progressivity and redistribution indices obtained with a common methodological approach could help clarify the connections among them and with socio-political variables – helping us understand why Spain did not reach convergence with its more developed neighbours, and continued to fund its public sector with regressive taxation.

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[40]For example, factor taxes are imputed using the distribution of the related income (e.g. capital income for the Capital Income Tax). This procedure entails assuming a constant rate of evasion.

[41]Note, however, that the mere quantitative dimension already has a distributive impact, since it affects the funding of public services, whose demand most likely is not even across social classes.

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Appendices

A   Tax revenue series

The tax data I am using are on a accrual basis (i.e. not budgeted figures, nor cash flows either). In some cases, they have been obtained from those other budgetary phases which precede or follow, but applying the correspondent adjusting factor.[42]

The existence of regional tax autonomy in some regions has made several adjustments necessary. During the dictatorship, the provinces of Álava and Navarra had distinct taxing power on most items (generally, with high regulatory capacity in the direct ones and only collection management in the indirect ones). Of these they kept a part for themselves and transferred an annual payment to the State (*cupo*) as their share in the common budget. This means (apart from other aspects)[43] that the revenue of e.g. Land taxes in these provinces is not included in the general figure, so I had to disaggregate them from the corresponding provincial administrations' revenue to integrate them in the study. This has been done resorting to budgeted data or applying the general national structure: I am therefore not considering the difference that might exist in the tax burden distribution with respect to the rest of the nation.[44] For the post-transition period, a very similar regime persists in the Autonomous Communities of Navarra and País Vasco (which includes not only Álava but also its neighbour provinces Guipúzcoa and Vizcaya). Information on revenues is also not totally integrated, but improved enough for the purpose of this analysis (the central statistics do show now how much, say, income tax was raised in these areas).

On the contrary, three areas have been excluded from the computations because of their specific regime in indirect taxation: the Canary Islands and the cities of Ceuta and Melilla. It is considered that their presence would bias the results (since there is lighter indirect burden, it would supposedly mean to underestimate the regressivity of the general system – not too much, though, because of their small share in national income and tax revenue). So, in the results, 'Spain' refers to the Península and the Balearic Islands.

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[42]It might be conceptually more solid to use cash-flow figures, but the accrual criterion has been chosen because of various reasons; fundamentally the availability of consolidated data for all Public Administrations and the fact that it is the most widely used in international statistics. The difference between both quantities is insignificant in most cases.

[43]The *cupo* system was legislated upon for long periods of time, specially in the case of Navarra, and fixed in nominal terms. This obviously entailed a progressive reduction in the value of real central revenue coming from these territories, aggravated in times of high inflation (of which there were several episodes during the dictatorship).

[44]And which most likely does exist to a certain extent. In recent times, it is known to mean a lighter burden on corporations, for example.

Table A.1: Tax Revenue in the Península and the Balearic Islands

	1960	1964	1970	1976	1982	1985	1990
Land Tax / Real Estate Tax	3.142	3.859	6.297	17.421	57.873	74.745	275.955
Payroll Tax	5.273	8.287	21.393	124.174	-	-	-
Capital Income Tax	2.541	3.642	8.823	48.277	-	-	-
Industrial Tax: Fiscal License	1.165	2.765	4.330	9.506	-	-	-
Industrial Tax: Profits Tax	1.404	2.476	6.694	16.443	-	-	-
Inheritance Tax	1.438	2.199	4.163	10.911	27.077	37.372	81.005
Corporate Income Tax (1)	7.497	10.249	28.948	80.584	256.750	440.855	1.567.274
Personal Income Tax (2)	1.131	1.813	3.384	10.408	962.819	1.584.948	3.756.698
Local Land taxes	574	1.174	3.794	10.463	33.398	56.394	84.721
Wealth Tax	-	-	-	-	19.166	25.939	94.291
Local Fiscal License	-	-	-	-	62.640	83.095	156.259
Local Vehicles Tax (3)	-	-	-	-	-	-	94.028
Other	6.010	9.464	8.946	27.223	32.134	86.523	15.974
DIRECT TAXES	30.175	45.929	96.773	355.409	1.451.858	2.389.871	6.126.204
Stamp Duties	8.706	14.879	23.639	72.927	146.440	189.125	480.130
Tariffs	6.855	20.003	40.939	92.640	228.303	360.576	336.111
Oil Monopoly	2.908	6.070	13.798	31.169	0	0	90.887
Tobacco Monopoly	2.320	3.441	7.063	11.435	26.221	27.305	-
Luxury Tax	6.425	13.439	37.996	103.356	195.477	297.472	-
Expenditure Tax / Excises	13.317	16.709	21.396	29.925	240.203	441.955	970.140
General Sales Tax (IGTE)	-	2.496	31.732	62.377	317.427	694.346	19.914
Local Vehicles Tax (3)	-	-	-	-	18.995	41.391	-
Value Added Tax	-	-	-	-	-	-	2.774.119
Other	3.439	4.093	4.215	22.265	148.413	266.353	61.385
INDIRECT TAXES	43.971	81.130	180.779	426.093	1.321.479	2.318.523	4.731.538
Public Employees	241	269	2.155	4.375	15.836	29.220	59.343
Employers'	16.093	31.356	128.362	504.113	1.728.908	2.299.311	4.264.645
Employees	5.035	10.907	25.410	85.941	336.082	519.801	905.996
Self-Employed	-	-	4.389	21.552	131.884	231.226	402.840
Unemployed	-	-	1.186	12.669	104.980	175.900	302.071
SOCIAL CONTRIBUTIONS	21.369	42.532	161.502	628.649	2.317.690	3.255.458	5.934.895
TOTAL TAXES	95.515	169.591	439.053	1.410.152	5.091.027	7.963.852	16.792.636

All taxes in nominal million pesetas.

Source: Author's calculations, based on official publications and archival documentation, mainly *Cuentas de las Administraciones Públicas* and *Cuenta General del Estado*.

(1) Corporate Income Tax includes a tax on equity issuance in 1970 and 1976.

(2) Personal Income Tax includes its precedents *Contribución General sobre la Renta* (1960 and 1964) and *I. General sobre la Renta de las Personas Físicas* (1970 and 1976), although they were of a different nature, as is discussed in the text.

(3) The vehicles tax is classified in local budgets as indirect until 1989 and since then as direct.

B   Average Effective Tax Rates by tax

Here I present AETRs for deciles of individuals (ranked by equivalent income), for the main taxes in each year. Generally, I have chosen the ones representing at least 4% of total tax revenue. IGRPF in 1970 is an exception: it only meant 0.8% of revenue, and is presented precisely to show its insignificance. In 1982, the Luxury tax represented 3.8% but I still include it for coherence between the tables. The same reason is behind the inclusion of Tariffs in the last year.

Table B.1: Average ETR by deciles, year 1970

	IRTP	IGRPF	ISOC	CSTFE1	IGTE	LUJO	IIEE	CEXT
Decile 1	0.11	0.00	5.25	5.73	19.24	14.58	5.90	24.82
Decile 2	0.65	0.00	1.18	11.04	2.61	2.77	1.21	3.37
Decile 3	0.94	0.00	1.12	12.56	2.22	2.34	1.15	2.87
Decile 4	1.09	0.01	1.11	12.62	2.05	2.24	1.16	2.65
Decile 5	1.19	0.02	1.08	11.43	1.95	2.25	1.11	2.52
Decile 6	1.31	0.02	1.06	11.12	1.85	2.15	1.11	2.39
Decile 7	1.41	0.03	1.04	10.49	1.75	2.04	1.15	2.25
Decile 8	1.42	0.06	1.03	9.07	1.64	1.99	1.15	2.11
Decile 9	1.36	0.12	1.05	7.58	1.54	2.15	1.29	1.98
Decile 10	1.15	0.34	1.48	5.11	1.31	1.78	1.08	1.69
Perc. 91-95	1.32	0.21	1.21	6.36	1.46	1.99	1.19	1.89
Top 5%	0.97	0.47	1.75	3.87	1.16	1.57	0.97	1.49
Top 1%	0.59	0.87	2.54	1.62	0.70	0.94	0.59	0.90

Source: Author's calculations.

IRTP (*Impuesto sobre los Rendimientos del Trabajo Personal*): wages and salaries tax. ISOC (*Impuesto de Sociedades*): Corporate income tax. IGRPF (*Impuesto General sobre la Renta de las Personas Físicas*): complementary personal income tax. CSTFE1: Social Contributions under Hypothesis 1. IGTE (*Impuesto General sobre el Tráfico de Empresas*): General Sales tax. LUJO: Luxury Tax. IIEE (*Impuestos Especiales*): excises on alcohol, petroleum products, and so on. CEXT: Tariffs and other taxes on international trade.

Table B.2: Average ETR by deciles, year 1982

	IRPF	ISOC	CSTFE1	IGTE	LUJO	IIEE	CEXT
Decile 1	0.05	9.22	5.11	34.11	10.94	8.00	24.53
Decile 2	1.78	1.86	14.10	5.17	2.55	2.76	3.72
Decile 3	3.86	1.52	14.28	3.30	1.84	2.19	2.37
Decile 4	4.70	1.43	15.65	2.85	1.61	2.07	2.05
Decile 5	5.29	1.39	16.62	2.59	1.44	1.86	1.86
Decile 6	5.70	1.37	16.98	2.48	1.57	1.98	1.78
Decile 7	6.16	1.31	17.03	2.26	1.44	1.82	1.63
Decile 8	6.46	1.35	16.83	2.15	1.38	1.78	1.55
Decile 9	7.04	1.31	15.84	1.94	1.37	1.66	1.39
Decile 10	8.18	1.62	13.98	1.57	1.11	1.40	1.13
Perc. 91-95	7.80	1.36	15.68	1.75	1.17	1.54	1.26
Top 5%	8.57	1.88	12.28	1.40	1.05	1.27	1.00
Top 1%	8.72	3.23	5.24	0.82	0.51	0.73	0.59

Source: Author's calculations.

IRPF (*Impuesto sobre la Renta de las Personas Físicas*): Personal Income Tax. ISOC (*Impuesto de Sociedades*): Corporate income tax. CSTFE1: Social Contributions under Hypothesis 1. IGTE (*Impuesto General sobre el Tráfico de Empresas*): General Sales tax. LUJO: Luxury Tax. IIEE (*Impuestos Especiales*): excises on alcohol, petroleum products, and so on. CEXT: Tariffs and other taxes on international trade.

Table B.3: Average ETR by deciles, year 1990

	IRPF	ISOC	IEPPF	CSTFE1	IVA	IIEE	CEXT
Decile 1	0.01	20.38	0.00	2.18	92.23	65.56	12.99
Decile 2	0.81	5.64	0.00	12.20	20.91	8.12	2.76
Decile 3	3.73	4.40	0.00	15.17	12.41	5.46	1.57
Decile 4	5.49	4.01	0.00	17.38	10.16	4.37	1.30
Decile 5	6.63	3.94	0.01	17.65	9.35	3.83	1.18
Decile 6	7.89	3.74	0.01	17.05	8.15	3.13	1.01
Decile 7	8.66	3.86	0.02	17.09	7.87	2.91	0.95
Decile 8	9.69	3.78	0.04	16.93	7.33	2.84	0.87
Decile 9	10.87	3.88	0.09	15.93	6.51	1.97	0.76
Decile 10	14.05	4.32	0.34	13.37	5.48	1.54	0.61
Perc. 91-95	12.58	4.12	0.15	15.37	6.43	2.01	0.72
Top 5%	15.52	4.53	0.53	11.38	4.53	1.06	0.50
Top 1%	19.38	5.68	1.39	4.46	2.56	0.58	0.28

Source: Author's calculations.

IRPF (*Impuesto sobre la Renta de las Personas Físicas*): Personal Income Tax. ISOC (*Impuesto de Sociedades*): Corporate income tax. IEPPF: Wealth Tax. CSTFE1: Social Contributions under Hypothesis 1. IVA (*Impuesto sobre el Valor Añadido*): Value Added Tax. IIEE (*Impuestos Especiales*): excises on alcohol, petroleum products, and so on. CEXT: Tariffs and other taxes on international trade.

C Alternative (robustness) Estimations

C.1 Consumption Taxes

There is some better data for indirect taxation in the year 1980, disaggregated by INE for a study undertaken in the IEF in the course of preparations for the introduction of VAT. I have used these data to perform two alternative estimations that show no significant deviation from the baseline ones, thus reinforcing the general procedure.

- Domestic consumption taxation: Calatrava and Martínez-Aguado (1985) calculated rates by sector using the input-output table (in this way estimating the cumulative effect of IGTE), and those were used by Argimón et al. (1987) to obtain rates by consumption groups and calculate indirect tax incidence on the Household Budget Survey. They cover IGTE, ICGI, Luxury Tax, Excises, Fiscal Monopolies and Fiscal Licence. I have used their tax rates and compared the resulting AETR over Disposable Income by deciles with those from my baseline estimation. The results show the same trend, meaning that the impact of the different estimation procedure is not significant. AETRs are not very different from those given in Argimón et al. (1987), but mine display higher regressivity in the lower deciles: this is attributable to different procedures of correction of Disposable Income (which in that study was based on provintial-level income and expenditure data).

- Tariffs: INE also provided disaggregated tariffs revenue by sectors in 1980 (the only year for which I have been able to find this information). This allows to impute to the corresponding expenditures the taxes falling on final consumption, while maintaining other revenues on total monetary outlays (the disaggregated quantities are 47% of the total). The results are reassuring: AETRs by deciles change for the most in 0.09 percentage points. It can be concluded that using import taxes as a whole does not introduce a serious problem.

C.2 Incidence of Social Contributions

As is discussed in the methodological section, I have estimated an alternative scenario under different assumptions on the incidence of Social Contributions, because of the lack of consensus about their impact in the Spanish economy. Hypothesis 2 imputes 50% of the contributions to labour, 25% to businesses (income from individual ownership and capital) and 25% to consumption. This estimation may reflect a situation where workers have gained enough bargaining power to resist the full backwards shifting of this tax onto them, and could be more plausible for the post-transition period (and consistent with a negative effect of social contributions on the levels of employment).

The results are different from the baseline estimates shown in the text, because Social Contributions make up a very significant part of total tax revenue, increasingly during the beginning of the period. With a portion of them falling on capital, they seem a lot less regressive, and this drives the total to a considerable extent: the levels of progressivity and redistribution obtained under hypothesis 2 are higher (less negative) than under the baseline estimation.

Table C.1: Progressivity and Redistribution under Hypothesis 2

	Direct	Soc. Contr.	Indirect	Total
1970				
K	0.0892	-0.0421	-0.1510	-0.0609
AETR	4.65	8.60	9.49	22.73
RS	0.00043	-0.0049	-0.0183	-0.0239
1982				
K	0.0939	-0.0339	-0.2088	-0.0392
AETR	9.68	15.82	8.09	33.59
RS	0.0099	-0.0085	-0.0197	-0.0270
1990				
K	0.1109	-0.0513	-0.2605	-0.0508
AETR	16.92	16.51	13.00	46.44
RS	0.0221	-0.0117	-0.0433	-0.0619

Source: Author's calculations.

In 1982, Social Contributions were the most important tax in the system, representing 45.8% of that year's revenue (and 12.08% of GDP); therefore, with this alternative hypothesis the evolution in K over the decades changes (the system appears less regressive in the beginning of the eighties than at the end). However, the same general conclusion is still valid: the tax system was regressive (Kakwani index) and carried out an increasingly negative redistribution (RS index).

C.3 Incidence of the Corporate Income Tax

Three alternative estimations have been calculated concerning this tax, due to the uncertainty about its economic incidence:

- Alt. A: 100% on capital. This is an extreme possibility, done for comparability with (fundamentally earlier) works which consider it. Nunns (2012) reports that the Tax Policy Center in USA recently changed from 100% to 80% on capital.

- Alt. 2: 70% on capital, 30% on consumption. This follows the approach taken by Uriel (2003) for Spain.

- Alt. 3: 30% on capital, 70% on labor; according to several recent empirical work with data from US and Europe (Liu and Altshuler, 2011; Dwenger et al., 2011; Arulampalam et al., 2012; Fuest et al., 2013) and which fits the developments in theory (e.g. Randolph (2006)).

In all cases, the incidence considered for the Corporate Income Tax is also applied to the part paid by corporations of other taxes (Fiscal Licence, Equity Issuance Tax, Tax on the Income from Capital, and so on). As can be seen in table C.2, all alternative hypotheses are more progressive than the baseline, entailing a reduction in the RS index of 1-2 Gini points for the most in absolute

terms. Thus, the general conclusion of the analysis still holds: the tax system got less regressive, and also more negatively redistributive.

Table C.2: Alternative incidence of the Corporate Income Tax

	Alt. 1	Alt. 2	Alt. 3	Baseline
1970				
K	-0.0728	-0.0883	-0.0981	-0.1016
RS	-0.0275	-0.0326	-0.0354	-0.0369
1982				
K	-0.0405	-0.0514	-0.0552	-0.0595
RS	-0.0277	-0.0339	-0.0356	-0.0384
1990				
K	-0.0363	-0.0512	-0.0498	-0.0586
RS	-0.0455	-0.0612	-0.0581	-0.0687

Source: Author's calculations.

C.4   Other alternative estimations

Alternative calculations have been performed for the Real Estate Tax (with the hypothesis of 50% sharing of the burden between the owner and the occupier) and considering different percentages of assumption by households of the local taxes on land plots. The results are not shown here, since they change the indices very marginally. This is not surprising, given the small share of these taxes in total revenue (Real Estate Taxes: 1.1%, 1.1%, 1.7% in 1970, 1982 and 1990 respectively; local land plot taxes: 0.9%, 0.7%, 0.5%).[45]

C.5   Public Benefits as part of Pre-Tax income

Some studies (namely the official ones in the USA and the UK) make the methodological choice of using as income reference (denominator in the calculations of AETR and ordering variable for Gini indices) a "wide" gross income which includes public benefits. This is not done by Piketty and Saez (2007), while the criterion followed in Bengtsson et al. (2012) is to add only those which are subject to direct taxation.[46] I have also estimated all the indicators with this alternative framework, to establish if it is a potential driver of the results.

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[45]The prevalence of owner-occupied housing in Spain also contributes to the quantitative irrelevance of the alternative estimation in the case of the Real Estate Tax.

[46]In the case of Spain, and following the definition of the Personal Income Tax base, this would mean including retirement and sickness pensions, but not unemployment or disability benefits. However, unemployment benefits are liable to Social Security contributions.

Before going any further, I would like to briefly enter the discussion of the conceptual differences between both calculations. Using Pre-tax income as I have defined it in the text has the drawback of picturing the lower end of the distribution as extremely poor (with many households having very scarce or no market income at all, and thus above 100% or even infinite tax rates). Many of these families are led by old-age pensioners. Arguably, if the public benefit system did not exist, their income would be higher than 0 (they might have saved for a private pension); and furthermore a part of what they receive as a benefit is not a pure "transfer" but delayed salary income. In this sense, depicting them as households with null income is an extreme of two options. But it is the choice consistent with:

- Being able to abstract the incidence of taxation from that of public expenditure.

- Considering Social Contributions as a tax and introducing them in our analysis as such.

- Judging that public benefits are to a great extent a redistributive transfer; i.e., that recipient households would have significantly lower income if not benefiting from them (as found by Bandrés and Cuenca (1996) for pensions in Spain).

On the contrary, including public benefits in pre-tax income entails not being able to correctly separate the analysis of public expenditure, because it is already included in our reference income. It also means depicting society as less unequal than it is (public benefits being redistributive). The "true" pre-tax distribution probably lies somewhere in the middle of both scenarios.

As was said in the text, HBSs data do not allow to separate public benefits from private transfers for the first two years analysed.[47] Even though for 1990 it would be possible to do it (and to further distinguish contributory from non-contributory pensions), to keep consistency in table C.3, I have defined Pre-tax income as Gross Factor Income + all Transfers. I call these results Scenario B, while the baseline framework is Scenario A.

Resulting from this methodological change, inequality in pre-tax incomes is lower (35.03 in 1970, 36.09 in 1982 and 36.62 in 1990)[48]. The tax system appears less regressive, making the Gini index increase 2.7 points the first year, then around 2, then 3. The difference with Scenario A specification grows over time, as a logical consequence of public benefits developing during the period. However, the profile of effective tax rates by percentiles still shows significant downward-sloping stretches in the lower classes (first 10-20% of households) and at the very top.

Hypothesis 2 regarding Social Contributions makes a higher part of the burden fall on top deciles (via partial incidence on capital and employers' incomes; see section C.2). Therefore, under the alternative estimation, the tax system looks close to proportional in 1982 and 1990. Regressivity persisted, nevertheless, at the bottom of the income distribution and, for the case of 1990, also slightly at the top.

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[47] As was said before, 89.5% of total transfers received by households were public in 1990, a percentage that might have been lower in the preceding years.

[48] Equivalent Pre-tax incomes, weighting by household size.

Table C.3: Progressivity and redistribution under scenario B

	Social Contributions Hypothesis 1				Social Contributions Hypothesis 2			
				1970				
	Direct	Soc. Contr.	Indirect	Total	Direct	Soc. Contr.	Indirect	Total
K	0.1113	-0.1542	-0.1012	-0.0783	0.1013	-0.0178	-0.1099	-0.0321
AETR	4.10	7.64	8.37	20.10	4.10	7.59	8.37	20.06
RS	0.0046	-0.0151	-0.0115	-0.0266	0.0042	-0.0024	-0.0123	-0.0138
				1982				
	Direct	Soc. Contr.	Indirect	Total	Direct	Soc. Contr.	Indirect	Total
K	0.1275	-0.0565	-0.1277	-0.0208	0.0115	0.0222	-0.1379	0.0094
AETR	7.97	13.16	6.66	27.79	7.98	13.04	6.67	27.68
RS	0.0105	-0.0132	-0.0103	-0.0199	0.0091	0.0013	-0.0110	-0.0054
				1990				
	Direct	Soc. Contr.	Indirect	Total	Direct	Soc. Contr.	Indirect	Total
K	0.1616	-0.0516	-0.1787	-0.0096	0.1508	-0.0031	-0.1846	0.0021
AETR	13.87	13.69	10.66	38.22	13.89	13.56	10.68	38.13
RS	0.0247	-0.0127	-0.0252	-0.0297	0.0230	-0.0024	-0.0260	-0.0194

Source: Author's calculations.

Pre-tax incomes defined as gross market income + all transfers received.

2011

2011/1, Oppedisano, V; Turati, G.: "What are the causes of educational inequalities and of their evolution over time in Europe? Evidence from PISA"

2011/2, Dahlberg, M; Edmark, K; Lundqvist, H.: "Ethnic diversity and preferences for redistribution "

2011/3, Canova, L.; Vaglio, A.: "Why do educated mothers matter? A model of parental help"

2011/4, Delgado, F.J.; Lago-Peñas, S.; Mayor, M.: "On the determinants of local tax rates: new evidence from Spain"

2011/5, Piolatto, A.; Schuett, F.: "A model of music piracy with popularity-dependent copying costs"

2011/6, Duch, N.; García-Estévez, J.; Parellada, M.: "Universities and regional economic growth in Spanish regions"

2011/7, Duch, N.; García-Estévez, J.: "Do universities affect firms' location decisions? Evidence from Spain"

2011/8, Dahlberg, M.; Mörk, E.: "Is there an election cycle in public employment? Separating time effects from election year effects"

2011/9, Costas-Pérez, E.; Solé-Ollé, A.; Sorribas-Navarro, P.: "Corruption scandals, press reporting, and accountability. Evidence from Spanish mayors"

2011/10, Choi, A.; Calero, J.; Escardíbul, J.O.: "Hell to touch the sky? private tutoring and academic achievement in Korea"

2011/11, Mira Godinho, M.; Cartaxo, R.: "University patenting, licensing and technology transfer: how organizational context and available resources determine performance"

2011/12, Duch-Brown, N.; García-Quevedo, J.; Montolio, D.: "The link between public support and private R&D effort: What is the optimal subsidy?"

2011/13, Breuillé, M.L.; Duran-Vigneron, P.; Samson, A.L.: "To assemble to resemble? A study of tax disparities among French municipalities"

2011/14, McCann, P.; Ortega-Argilés, R.: "Smart specialisation, regional growth and applications to EU cohesion policy"

2011/15, Montolio, D.; Trillas, F.: "Regulatory federalism and industrial policy in broadband telecommunications"

2011/16, Pelegrín, A.; Bolancé, C.: "Offshoring and company characteristics: some evidence from the analysis of Spanish firm data"

2011/17, Lin, C.: "Give me your wired and your highly skilled: measuring the impact of immigration policy on employers and shareholders"

2011/18, Bianchini, L.; Revelli, F.: "Green polities: urban environmental performance and government popularity"

2011/19, López Real, J.: "Family reunification or point-based immigration system? The case of the U.S. and Mexico"

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