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**AN EMPIRICAL ANALYSIS OF WEALTH TAXATION:
EQUITY VS. TAX COMPLIANCE**

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AN EMPIRICAL ANALYSIS OF WEALTH TAXATION: EQUITY Vs. TAX COMPLIANCE ^{*,†}

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Abstract: Capital taxation is currently under debate, basically due to problems of administrative control and proper assessment of the levied assets. We analyze both problems focusing on a capital tax, the annual wealth tax (WT), which is only applied in five OECD countries, being Spain one of them. We concentrate our analysis on top 1% adult population, which permits us to describe the evolution of wealth concentration in Spain along 1983-2001. On average top 1% holds about 18% of total wealth, which rises to 19% when tax incompliance and under-assessment is corrected for housing, the main asset. The evolution suggests wealth concentration has risen. Regarding WT, we analyze whether it helps to reduce wealth inequality or, on the contrary, it reinforces vertical inequity (due to especial concessions) and horizontal inequity (due to the *de iure* and to *de facto* different treatment of assets). We analyze in detail housing and equity shares. By means of a time series analysis, we relate the reported values with reasonable price indicators and proxies of the propensity to save. We infer *net tax compliance* is extremely low, which includes both what we commonly understand by (gross) tax compliance and the degree of under-assessment due to fiscal legislation (for housing). That is especially true for housing, whose level of net tax compliance is well below 50%. Hence, we corroborate the difficulties in taxing capital, and so cast doubts on the current role of the WT in Spain in reducing wealth inequality.

Keywords: Wealth tax, wealth distribution, tax compliance.

JEL Codes: H24, H71, D31.

Resumen: La imposición sobre el capital es un tema actual de debate, básicamente debido a los problemas de control administrativo y de la correcta valoración de los activos gravados. Ambos problemas son analizados centrándonos en el impuesto sobre el patrimonio (IP), el cual solo se aplica en cinco países de la OCDE, siendo España uno de ellos. Concentramos nuestro análisis en el 1% más rico de la población adulta, lo cual nos permite describir la evolución de la concentración de la riqueza en España a lo largo del período 1983-2001. En promedio, el 1% más rico posee alrededor del 18% de la riqueza total, aumentando hasta el 19% cuando se tiene en cuenta el incumplimiento fiscal y la infravaloración del principal activo sujeto a imposición, la vivienda. La evolución sugiere que la desigualdad ha aumentado. En relación al IP, analizamos también si éste ayuda a reducir la desigualdad de la riqueza o, por el contrario, refuerza la inequidad vertical (debido a tratamientos fiscales específicos) y la inequidad horizontal (debido al *de iure* y al *de facto* tratamiento diferente de los activos). El caso de la vivienda y de las acciones se analiza en detalle. Así, mediante un análisis econométrico de series temporales, relacionamos los valores declarados con indicadores razonables de los precios de los activos, así como de la propensión a ahorrar. Inferimos que el *nivel neto de cumplimiento fiscal* es extremadamente bajo, el cual incluye tanto lo que comúnmente conocemos como cumplimiento fiscal (bruto) y el nivel de infravaloración de los activos (sólo para vivienda). Este hecho es especialmente acusado para vivienda, cuyo nivel neto de cumplimiento fiscal está muy por debajo del 50%. Por consiguiente, corroboramos las dificultades de gravar el capital, generando serias dudas sobre el papel actual del IP en España respecto de la reducción de la desigualdad de la riqueza.

Palabras clave: Impuesto sobre el patrimonio, distribución de la riqueza, cumplimiento fiscal.

Clasificación JEL: H24, H71, D31.

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1. Introduction

The future of capital taxation plays an important role in the public economic literature. Countries face increasing difficulties in taxing capital income and only a declining number of economists see a future for this source of income taxation (Auerbach, 2006; Becker and Fuest, 2005). As a result most countries give a preferential treatment to capital income in the personal income tax (IT), particularly to the highest mobile capital, through special rebates, reduced rates or even full exemption. The Schanz-Haig-Simons comprehensive income tax, in principle majority in the OECD countries, seems in fact to have been abandoned. Important efficiency issues regarding its impact on savings or economic growth are raised in the debate. Administrative difficulties in taxing capital income also appear to be an important factor to justify preferential treatments. In this sense, to tax what you can tax in practice is becoming a more important principle than what in theory ought to be taxed (Lodin, 2000). Nonetheless, those more worried about equity concerns point out the possible negative impact on income distribution (vertical equity) and the discrimination it represents against other sources of income, especially wage income (horizontal equity). But the fact is capital income receives a preferential treatment compared to other sources of income¹.

The debate on capital taxation becomes even tougher when inheritance and gift tax (IGT) is considered probably because important value judgments are taken into account. Progressivity has long been a principal justification for that old capital tax (Gale and Slemrod, 2000)². Inheritance and gift tax has been seen by some as a key mean of reducing inequalities and, therefore, of guarantying equality of opportunities. This justification appears more compelling because income concentration has been growing in many countries over the last 20 years (Slemrod and Bakija, 1999; Auerbach, 2006; Alvaredo and Saez, 2006). And as long as capital income is leniently taxed, inheritance taxation reinforces its progressivity role. Indeed, capital gains are taxed at lower rates in the IT and only when the underlying assets are sold. Furthermore, gains are not taxed at death, so only the IGT can assure they will finally not escape taxation (Gale and Slemrod, 2000)³. However, the very existence of IGT is also under debate both in the literature and in the public opinion. Italy and Portugal have quite recently

¹ We concentrate on personal income tax, but in fact capital is also taxed in the corporate income tax. From the person perspective, the corporate tax could be deemed as a capital tax at source.

² In fact there are two types of transfer tax: on inheritances or on estates, but the arguments given may refer to both.

³ In a study for the US, Poterba and Weisbenner (2001) estimate that in 1998 more than half of all estates whose value was above \$10 million had over 50% of their wealth in the form of unrealized gains.

eliminated it⁴, and in the US there is currently a heated dispute about the future of estate tax and its possible abolition.^{5,6} Nevertheless, the fact is most countries still levy IGT.

The literature and the tax systems have also considered another tax on capital, the annual net wealth tax. This is levied each year on the net value of wealth, besides income tax and inheritance tax, with the aim, among others, to reinforce the final redistributive effect of the whole tax system⁷. The wealth tax (WT) has usually been considered a complementary tax of income and inheritance taxes, although it could also be a substitutive for capital income taxes. Thus, as it taxes all wealth, it imposes a more uniform burden on the returns to saving compared to capital income taxes (Auerbach, 2006). However, this might encounter some difficulty as problems of assessment and/or of administrative control impede the desired uniformity in the tax treatment among assets (Smith, 2001). In fact, problems of assessment and of control along with efficiency issues have progressively taken most countries to repeal WT⁸.

The aim of this paper is precisely analyzing whether those two problems are present in practice, and most important we will try to quantify them. We will do it for the Spanish WT, one of the few OECD countries that still applies this tax. In order to analyze the importance of assessment and control issues, we will focus on reported wealth by top 1% of adult population. Thus, and not least relevant, from this (fiscal) data we will also be able to analyze the evolution of wealth concentration in Spain following the flourishing literature in this field carried out for other countries (see, *e.g.*, Atkinson and Piketty, forthcoming)⁹.

⁴ In the eighties, Australia and Canada removed the IGT, although in both cases the elimination was the final result of a “race to the bottom” competitive process among regions. See Bird (1991) and Cooper (2006).

⁵ Despite generating only about 1.5% of federal revenues and hitting only fewer than 2% of decedents the dispute is quite passionate. See, among others, Auerbach (2006); Kopczuk (2006); Kopczuk and Lupton (2005); Kopczuk and Slemrod (2000, 2003, 2005); Gale and Slemrod (2000, 2001a, 2001b).

⁶ In the US current law foresees a gradual reduction of the tax which would finally be repealed only for 2010, and then reinstated it in its pre-reform structure at the following year.

⁷ According to the Meade Report (1978), the possible introduction of an expenditure tax would reinforce the redistributive role of the WT, and therefore would provide a stronger argument for its inclusion in the tax system.

⁸ When a general tax reform process started in the eighties, only half of the OECD countries levied the tax. Nonetheless, the situation is quite different nowadays and as a steady process of eliminating the WT seems to have started since the nineties. In 2007 only one out of six OECD countries does apply it, which means only five countries. In the last ten years approximately, seven countries repealed the tax.

⁹ In fact, the results derived from this analysis for Spain are not fully new, as Alvaredo and Saez (2006) have recently done a similar exercise. However, we will argue that given the nature of the fiscal data for the Spanish case a different technique of interpolation – necessary in all these studies to “transform” the fiscal data tabulated by wealth brackets into percentiles – might be more appropriate, and in any case we will comment some legal issues not explicitly taken into account by them (*e.g.*, the change of tax unit since 1988) or will try to correct the reported values by the level of tax non-compliance and the degree of under-assessment of the main asset under taxation, real estate property. In this sense, our results can be considered as complementary to theirs, who additionally also focus on the evolution of income concentration.

In order to obtain the reported wealth of top 1%, we follow an interpolation methodology proposed by Atkinson (2004). We show top 1% holds on average almost 18% of total wealth for the 1988-2001 period. The evolution, albeit not linear, illustrates a slight increase in wealth inequality. The studies that estimate wealth (or income) concentration from fiscal data, however, do not take into account the level of tax compliance, which might be especially relevant for top rich taxpayers. From our empirical estimates obtained in quantifying the importance of tax compliance and under-assessment, we are able to correct the reported values for the main asset under taxation, housing¹⁰. Once we do that, the conclusions regarding the evolution of wealth concentration do not change much (*i.e.*, tax compliance and the degree of under-assessment do not vary much along time), but the concentration levels rise on average up to 19%. If the aim is reducing inequality, the question to be answered is whether the (current) WT is a right mean to achieve a less unequal wealth concentration¹¹.

To respond the question, we have carried out an empirical analysis for the two main assets taxed in the WT, real estate property and equity shares, for the period 1983-2001¹². Our empirical methodology is very simple. In a multivariate regression analysis, we relate the reported values by top 1% - calculated from interpolation – with representative price index and control variables that attempt to account for the propensity to accumulate each kind of asset. From the results of the econometric exercise, we are able to estimate the level of tax compliance, and as far as real estate property is concerned, also of the degree of under-assessment. Although the results in both cases (must) lie within a range, we obtain very low levels of tax compliance, which are especially low for the case of housing. Therefore, the current WT does not seem an appropriate mean to reduce inequality (given the high level of tax incompliance in both assets), while at the same it seems to distort between assets (given, for example, the even higher level of tax incompliance in housing). The conclusions obtained from this analysis are not new, especially regarding to the under-assessment of real estate property, but the novelty is that we have achieved to quantify them. Among other issues, our empirical framework also permits us to

¹⁰ Our estimates would also permit to correct the level of tax compliance for equity shares traded in organized markets, but the effect on the wealth concentration would be very small.

¹¹ In Spain, as we will explain in section 3, an IGT decentralized to the regions (AC's) is also present. However, a "race-to-the-bottom" seems to have started among AC's. If this process regarding the IGT goes on, and wealth inequality is still increasing, the WT would be the only tax instrument that could contribute to reducing wealth inequality. However, that potential role of the WT is in doubt given the presumably low levels of tax compliance and the under-assessment of the main assets under taxation, among other legal factors that will be discussed in section 3.

¹² In fact, we could have added year 1982 and year 2002. However, in the former case, the data is not reliable at all, while regarding 2002, it has not been possible to consider the owner-occupied-dwelling exemption. Therefore, our analysis of wealth concentration has to restrict to 1983-2001 period, while the analysis of the performance of WT in taxing real tax capacity regarding equity shares and real estate property spans for 1983-2002 and 1983-2001, respectively.

quantify a “tax on tax revenue”¹³ present by 1988, the monetary impact of the owner-occupied-dwelling exemption established in 2000, or simulate alternative tax policies aimed at increasing the level of tax compliance in the case of real estate property.

The rest of the paper is organized as follows. In the next section, we briefly explain the recent evolution of WT in the OECD countries and the key elements of the tax where applied. Section 3 describes the case under study (the Spanish WT) since its introduction in 1977 paying especial attention to its most important legal aspects. The interpolation process and how evolves the concentration of wealth is in section 4. Section 5 develops the empirical framework and presents the results of the empirical analysis. The paper ends with a section of conclusions.

2. The Annual Net Wealth Tax in OECD Countries

Countries have traditionally levied capital through personal and corporate income taxes, inheritance and gift tax and immovable property tax, but only a few have had an annual net wealth tax. In the mid eighties, half of the twenty-four OECD countries possessed a WT, while the other half did not. Nonetheless, in 2007 only five of the thirty OECD countries possess the tax (Table 1)^{14, 15}. This noteworthy change is due to a process started in the mid nineties of removal of the WT. Following, we analyze the reasons for the introduction and elimination of WT and what the features of the tax are in those countries that still levy it, or have done it until recently.

¹³ By a “tax on tax revenue”, we refer to that situation in which the government responsible for the administration of a certain tax only keeps a fraction of each monetary unit collected. The rest of the fraction is transferred (either directly or via the central government) to other governments of the same level as a means of equalizing fiscal capacity. That is, this situation generates a substitution effect in favor of diminishing the efforts in collecting taxes. Baretto *et al.* (2002) were the authors that first named this effect in this way. In Spain, until 1988 the fraction to be transferred for equalization purposes via the central government was 100%.

¹⁴ Before 2006 Luxembourg levied WT on both individuals and corporations. Since 2006 the tax is abolished on individuals but it continues to apply to corporations. Nowadays, only Switzerland taxes corporations. Therefore, in this paper we only consider WT on individuals, which seems more reasonable for an international analysis. Probably, the peculiarities of the tax system in Luxembourg and in Switzerland may explain why they also taxed corporations.

¹⁵ In Sweden, the government has announced WT will be phased out during the current electoral period and as a first step the tax rate has been halved from to 1.5 to 0.75% on business capital from 2007.

Table 1. WT in the OECD countries

1985	2007
◆ Austria	◆ France
◆ Denmark	◆ Norway
◆ Finland	◆ Spain
◆ France	◆ Sweden
◆ Germany	◆ Switzerland
◆ Iceland	
◆ Luxembourg	
◆ Netherlands	
◆ Norway	
◆ Spain	
◆ Sweden	
◆ Switzerland	

Source: OECD (1988) and International Bureau of Fiscal Documentation (constantly updated database); year of elimination: Austria (1994); Denmark and Germany (1997); Netherlands (2001); Iceland (2005); and Finland and Luxembourg (2006).

The WT was first levied by some Nordic and Central European countries according to a tax system historically more based on direct taxation. The tax had usually been introduced at the early stages of the twentieth century, although in the Swiss cantons and in the Netherlands the origin comes from the XIXth (OECD, 1988). Later on, Spain and France introduced a WT in 1977 and in 1982, respectively, although the latter country eliminated it for a short period (1986-1987). In the meantime, Japan introduced a WT for a brief period (1950-1952) as well as Ireland (1975 to 1977). In conclusion, apart from few changes, the WT had remained for a very long period in some tax systems, while other countries had never considered suitable to adopt it.

What are the reasons to adopt a WT? The answer is not easy, since several factors usually play a role, not necessarily the same in all countries. Besides, the reasons may differ over time. However, based on the previous literature, an OECD report on taxation on net wealth (OECD, 1988) suggests some reasons: the administrative convenience of taxing something which is visible, particularly for the earliest WT when the bulk of wealth consisted of immovable property; the taxation of the additional ability which wealth confers on its possessor, so that reinforces horizontal equity; and the reduction of inequality, especially in those countries where the tax was later introduced. In conclusion, half of the OECD countries found enough reasons to justify a WT.

Nevertheless, the situation changes since the mid nineties, when an increasing number of countries started to eliminate the tax. Consequently, we wonder what the reasons are behind the recent elimination of the tax. However, again, it is not easy to give a single reason to the question, since several factors play a part, and frequently they are related to own political issues of each country. Nonetheless, we find one main reason: the difficulty of taxing capital. “The tax base associated with capital income and high-wealth individuals is becoming increasingly geographically mobile” (Owens, 2006, p. 161). Taking away WT often seeks to give a better treatment of capital so that makes tax systems more competitive. Therefore, if in the past a reason to justify the tax was the administrative convenience of taxing something visible, today the situation goes in the other way around. An important part of wealth consists of high movable property, not visible at all and therefore difficult to tax in a personal WT. The analysis of some countries’ reforms demonstrates this situation.

In Austria the elimination of WT must be seen in a broader context, the reform of capital income taxation started in 1993. The reform introduced a final withholding tax on some capital revenues, with the aim to improve the taxation of economic activities and so the international competitiveness within the single European market (Genser, 1996). The suppression of a specific wealth tax in the Netherlands also took place in a broader reform of the IT, which after 36 years of applying the same tax was changed in 2001. The new Dutch IT offers a more favorable treatment of capital income, which is levied by a reduced proportional rate, 30%, considerably smaller than the rates on labor income^{16,17}. In Iceland the removal of the WT in 2005 is one of the measures of a wider tax reform to improve competitiveness of the tax system and stimulate the economy. In Finland the final abolition of WT comes just after several changes introduced in 2005 to improve the better treatment of investment income (both in the personal and corporate income taxes) and to reduce WT (a threshold increase from 185,000 € to 250,000 € and tax rate fall from 0.9% to 0.8%). In Luxembourg, the main objective of the bill that eliminates WT is to make the tax regime which applies to Luxembourg residents more attractive, and for that reason also introduces a withholding tax in full discharge of tax on savings income in the form of interest payments¹⁸. In conclusion, an important aim to eliminate WT is to “improve” capital taxation, that is, to reduce it.

¹⁶ Income is divided in three independent boxes. Box 1 consists mainly of labor income items, although also some kind of capital income, such as imputed rent from owner-occupied dwellings, and it is taxed at progressive rates up to 52%.

¹⁷ As the 30% rate on capital income levies a presumptive return of 4% on the value of taxable assets, the new IT equals an implicit WT with a nominal tax rate of 1.2% (Meussen, 2000). However, expressed as a percentage of the *actual* return, the tax liability differs between assets, depending on the actual return (Cnossen and Bovenberg, 2001).

¹⁸ The Act from 23 December 2005 introduces a withholding tax of 10% on interest income of residents in excess of € 250 per year.

Nonetheless, the above mentioned OECD report also points out two other reasons for the introduction of the tax: the additional ability to pay that wealth confers and the reduction of inequality. But the international experiences suggest WT also fails to achieve both objectives, quite frequently as a consequence of inherent problems of the tax caused by assessment difficulties and special concessions.

For instance, in Germany, the Constitutional Court declared unconstitutional the WT in 1995, because the law gave an unequal treatment to different types of wealth¹⁹. Some assets and rights were valued according to their market value, while others were assessed according to other values well far away from the market price. The used valuation of real property dated from 1964, because since that year revaluations, scheduled to occur every six years, had not been carried out. The Court declared the tax unconstitutional and gave to the legislative power a period to reform the tax. But, in addition, the court introduced two limitations (Wendt, 1997). On the one hand, the tax may not lead to a taxation of the substance, that is, it may not cause a reduction of the property itself. On the other hand, property that serves the personal needs and sustenance of the taxpayer and his family had to be exempted. In 1997, once concluded the period given by the Constitutional Court, as the Parliament had not approved a new law, the WT became inapplicable, disappearing from the German tax system²⁰.

In Iceland, two years before eliminating the WT, the government reduced the tax rate from 1.2% to 0.6% on both individuals and companies and increased the tax-free threshold by 20% to counter the effects of the recent general review of real property values, with the aim the revision should not lead to an increase in net wealth taxation. At the same time it decided to do away with the net wealth surtax on net wealth exceeding a certain amount. On the other hand, the Icelandic tax was considered to be discriminatory between different assets (Herd and Thorgeirsson, 2001). Bank deposits were exempt to the extent that they did not exceed the indebtedness of an individual. Equities were taxed, but when held by individuals, only up to the par value of the shares. Companies were liable to pay the tax when the book value of their equity exceeds the par value of their shares, and no wealth tax was paid on the market value of the company exceeding its net worth.

In Finland, the tax generated incentives for taxpayers to inflate their liabilities and to invest in low-taxed assets, particularly housing (Joumard and Suyker, 2002). Some quoted shares were valued at 70% of the market price. Furthermore, bank accounts and bonds, subject to the tax withheld at source from interest, were exempt from WT. Therefore, neither all assets were liable

¹⁹ Decision from 22nd June 1995, 93/121.

²⁰ In 2002, ten Länder made a proposal for a new WT, but they failed in their purpose.

to the tax nor all were equally assessed. Norway, that still levies the tax, under-assesses houses (around 25% of the market price) and shares (at 80% of the company's net tax value), and financial assets accumulated in occupational pension funds escape the tax²¹. As a result, it jeopardizes horizontal equity and provokes a paradox that internationally immobile capital is more lenient taxed than mobile capital (Van den Noord, 2000). And a similar situation takes place in Spain, as we will comment in the next section and will show in the empirical section.

To know more in deep the features of WT, Table 2 shows the key parameters for the seven OECD countries levied it in 2005. Only Luxembourg and Switzerland tax both individuals and companies, while the others only tax individuals. All countries grant a general allowance, although the amount can vary considerably among countries. France has the greatest threshold, in line with the purpose of only taxing big fortunes, as the same name of the tax indicates (*impôt sur les grandes fortunes*). On the other hand, Finland, Luxemburg and Sweden have a flat tax, while the others apply a progressive schedule tax, particularly significant in France and Spain. Top marginal rates offer big differences among countries, being particularly great in Spain, where it is five times bigger than in Luxembourg or three times bigger than in Finland²². In Switzerland the tax is levied by cantons and municipalities, but not by the federal government²³. Cantons and municipalities regulate *inter alia* deductions and tax rates; thereby WT has important differences within the country. In Spain, as we will see in the next section, regions (AC's) can also regulate deductions and tax rates, although for the time being differences are not significant.

The yield of the tax over total taxation is very low in all countries, but Luxembourg and Switzerland, and it has remained low for the last decades. The great bulk of revenues in Luxembourg come from taxing industrial, commercial and financing corporations, while a small part comes from individuals because the assessment of estates is very advantageous for taxpayers²⁴. However, the opposite happens in Switzerland, where yield from companies only account for one fourth of the WT revenues.

We can also observe countries offer especial concessions for certain assets, being especially important those related to business assets and dwellings²⁵. For example, business assets held by

²¹ For 2007, the Norwegian government has proposed a 10% increase in the assessed values of real estate properties recognizing the price growth on housing amplifies the distortions characterizing the WT.

²² Precisely the two countries with the smallest top rates, Luxembourg and Finland, do not already levy the tax.

²³ Since 1959 the federal government does not levy WT.

²⁴ *Projet de Loi concernant le budget des recettes et des dépenses de l'Etat*, 2006.

²⁵ Other assets, such as human capital or pension rights, have never been taxed due to inevitable administrative difficulties. See Sandford (1992).

individuals can be exempt in France, Spain or Sweden, or enjoy a 70% deduction in Finland. Owner-occupied dwellings enjoy a 10,000 € deduction in Finland, a 20% rebate in France or are exempt in Spain, up to a maximum value of 150,253 €

Table 2. The WT in the OECD countries

	Finland [*]	France	Luxembourg [*]	Norway ¹	Spain ³	Sweden	Switzerland ⁵
Year	2005	2006	2005	2006	2006	2006	2006
Taxpayer	Individuals	Individuals	Individuals and companies	Individuals	Individuals	Individuals	Individuals and companies
Threshold (\$)	200,965	597,134	2,010 + 2,010 per child	20,080 ²	86,131	129,111 ⁴	it varies per cantons
Minimum marginal rate	0.8%	0.55%	0.5%	0.9%	0.2%	1.5%	it varies per cantons
Top marginal rate	0.8%	1.8%	0.5%	1.1%	2.5%	1.5%	it varies per cantons
Number of brackets	1	6	1	2	8	1	-
% WT over total taxation (2004)	0,2%	0,4%	5.3% 1.2% ind. 4.1% cor.	1.3%	0,4%	0,4%	4.7% 3.5% ind. 1.2% cor.

* Finland and Luxembourg repealed WT in 2005, but we still include them to analyze the key parameters of recent WT.

(1) WT is levied by the national government and the municipalities. Tax rates include both national and municipal WT.

(2) 2006 exchange rate: 1 \$ = 6.407 NOK.

(3) AC's can modify threshold and tax rates. The information given refers to the basic state regulation, since few changes have been introduced.

(4) 2006 exchange rate: 1 \$ = 7.368 SEK

(5) WT is levied by cantons and municipalities, but not the federal government. Those can set threshold and tax rates, with important disparities among them.

Source: International Bureau of Fiscal Documentation, OECD *Revenue Statistics* and own calculations.

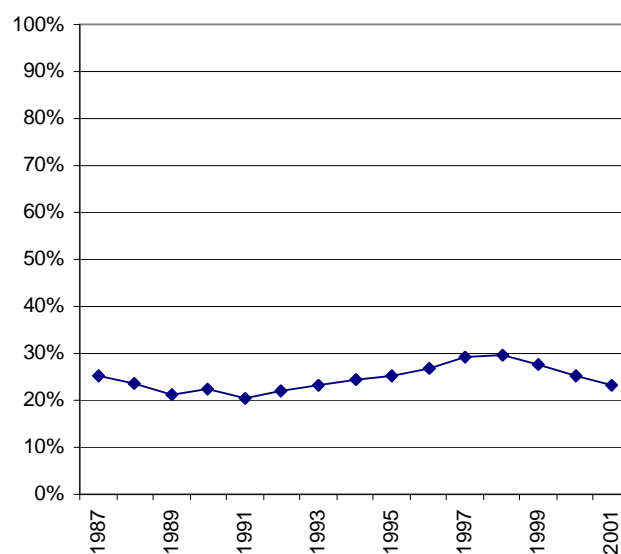
In conclusion, given the practical difficulties in taxing capital, very few countries levy a WT. Furthermore, the experience shows different assets are unequally treated, either because there are explicit special treatments or because the disparity of assessment criteria. Hence, it seems quite complicated countries can achieve any of the reasons given to justify WT. As Van den Noord and Heady (2001, p. 35) affirm, "countries using this tax could usefully reassess the merits of continuing to apply". We will precisely try to study that for the Spanish case, whose peculiarities we explain next.

3. The Annual Net Wealth Tax in Spain

Spain introduced a WT in 1977, within a package for an overall tax reform that was carried out with the arrival of democracy²⁶. It was first set out as an *extraordinary* and *transitory* tax, but after fifteen years both supposed features were officially taken away²⁷ and nowadays the WT still remains in the Spanish tax system.

The governmental reasons to justify the tax were that (i) it complements the personal income tax (IT), since it levies an additional ability to pay and relies more on the richest taxpayers; (ii) it promotes a more productivity use of capital; (iii) it helps to control IT due to the provided information; and (iv) it has a positive redistributive effect. In 1991, when the Parliament approved a new law reforming the tax, it made reference to all these ends, but emphasizing the more productivity use of richness and the achievement of a better redistribution²⁸ additional to the IT one. Nonetheless, the assessment criteria of assets and rights fixed at the law and subsequent legal modifications have made very difficult to achieve any of those aims.

Graph 1. Under-assessment of Real Estate Property



Note: The series is calculated as the ration between average cadastral value and average market price.

Source: Ministry of Public Works and Cadastral Office, several years. See more details in section 5.2.

²⁶ Act 50/1977, 14 November.

²⁷ Act 19/1991, 6 June.

²⁸ For that reason the maximum marginal rate was increased.

The sole criterion of assessment that would assure to tax the real ability to pay that wealth confers is market price (MP). Further, it would permit an homogeneous treatment of all wealth components. To know MP is easy and direct regarding, for example, equity shares traded in organized markets or bank accounts. Nevertheless, it is quite difficult for many other assets. For instance, to assess the value of real estates taxpayers have to choose the greatest of the three following values: cadastral value (CV), price of acquisition, or declared value in other taxes checked by the tax administration²⁹. However, in practice, unless there has been a recent transmission, taxpayers report the CV, which is far below MP. As Graph 1 shows for the 1987-2001 period, average CV only stands for between 20% and 30% of the average MP. As real estate represents about 70% of average net wealth of households throughout the period (according to National Accounts), the most important component of wealth is clearly under-assessed. Likewise, shares not traded in the stock market are basically assessed according to company's accountancy, therefore, taking into account historical values rather than market ones³⁰. And the same happens with assets assigned to individual businesses and professional persons. In conclusion, most of the reported wealth is not assessed according to MP and the differences between MP and the fiscal criteria can be very important.

On the other hand, the 1991 WT levied all net wealth, with a few minor exemptions (among others, household furnishings or artists' own works). But in 1994 the government introduced the exemption for business assets, with the aim of favoring entrepreneur investment³¹. The exemption is both for property and rights assigned to individual businesses and professional persons and for holdings in companies whenever certain conditions are fulfilled³². This exemption, however, trades off with the above mentioned main objective of the Spanish WT, redistribution, as it is concentrated particularly on richest taxpayers.

In 1993, the last year before the exemption, official statistics show that about top 1% of taxpayers held 7% of all assets assigned to businesses and almost 40% of all non-traded equity

²⁹ The cadastral value is assessed for the property tax. The declared value in other taxes checked by the tax administration only happens when there is a transmission either *mortis causa* or *inter vivos*. Therefore, this last value can be considered as a checked acquisition price, which in fact means the MP when the estate is acquired.

³⁰ In fact, the law also foresees three possible values to take the greatest one: denomination of shares, net asset value per share or assessed value obtained from capitalize at 20% the average benefits from the three previous years.

³¹ Act 22/1993, 29 December, later developed by Royal Decree 2481/1994, 23 December.

³² The exemption for business activities applies to property and rights assigned to individual businesses and professional persons whenever the taxpayer carries out directly the activity and obtains from that most of his taxable income. The exemption for holdings in companies, whether or not listed on organized markets, applies whenever the taxable person owns at least 15% (5% since 2003) of the company himself or 20% along with his family; the companies concerned are not operating under the tax transparency rules, in other words, they really carry out an economic activity; the taxpayer plays an active part in the management of the company; and, finally he obtains most of his taxable income from the company.

shares. Furthermore, the exemption has become an easy tax shelter, particularly for highest wealth taxpayers, which can re-organize their wealth and enjoy the exemption quite easily. When that was first introduced in 1994, only 21% of the total individual business assets were exempt. Since then, this percentage has steadily increased and is currently over 70%. Business exemption accounted for 4% of tax base in 1994. In 2003 this percentage rose to 32%³³. Top 10% of taxpayers accumulated 64% of all business exemptions in 2003³⁴. If redistribution is an important goal of the WT, the exemption of business assets undermines this end, and also goes against horizontal equity. In addition, tax saving from the business related exemptions has been reinforced since June 1996, with the introduction of a new 95% deduction for business transmission among close relatives in the IGT³⁵, subject to the exemption of business assets in the WT³⁶. Therefore, the business exemption has provoked a re-organization of business assets to fulfill with the legal conditions.

The evolution of the reported business assets that are exempt is shown in Graph 2. The gap between the tax base (the wealth finally taxed) and the modified base (that including reported business exempt) for top 1% of adult population boosts since 1994. It appears quite clear that tax planning has become very common in the Spanish WT for the top percentile.

A few years after the business exemption, in 2000, the government introduced another one: the exemption of owner-occupied dwellings³⁷. This new exemption has had an important effect on the total number of WT taxpayers, with an almost 15% fall, and on the tax yield, that went down 8%. In Spain, where official statistics show more than 80% of people live in owner dwellings, which in addition as we said before are under-assessed, the new exemption sets many former

³³ This information is based on reported data, because taxpayers still have to declare exempt business assets. However, there is often a common belief that some taxpayers do not declare them, since they do not pay anything, and therefore they do not bother WT. Or alternatively, they declare the exempt assets or shares but assessed according to false values, very small compared to the real ones, since regardless the declared value they pay nothing. Although it is difficult to demonstrate this suspicious, for instance, the comparison between the evolution of the number of taxpayers reporting business income in the IT and the number of taxpayers reporting business assets in the WT shows an opposite trend. Thus, from 1994 to 2004, the number of IT taxpayers reporting business income has increased 11%, while the number of WT taxpayers reporting business assets has gone down 35%. Consequently, the weight of business related exemptions over tax base would probably be much greater at the present moment.

³⁴ In official statistics, taxpayers are always aggregated according to tax base, which do not include exemptions. Therefore, it is difficult to know the real distribution of business exemptions along "real" wealth (that is, before exemptions). Tax base is the sole proxy we can employ.

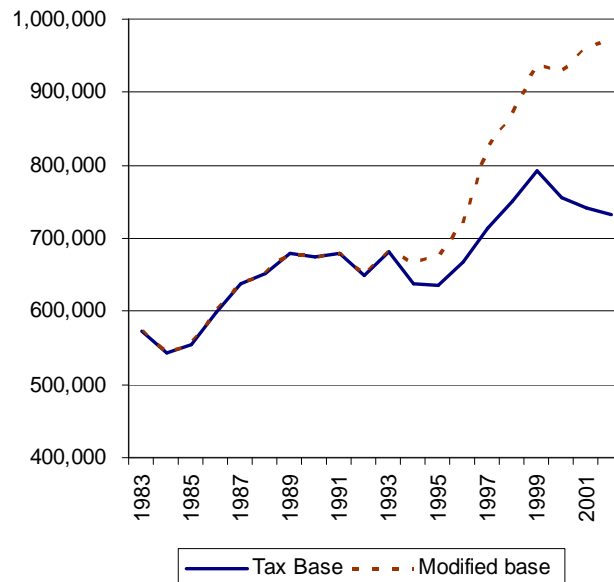
³⁵ The Spanish Inheritance Tax is highly progressive with nominal marginal tax rates up to 34%, but they can be higher since a multiplicative coefficient that varies 1 and 2.4 is applied depending on the level of wealth held by the heir before the transmission and the relationship with the deceased. Therefore, despite in only very few cases, marginal rate can reach 81.6%.

³⁶ Royal Decree-Law 7/1996, 7 June.

³⁷ The official justification was to conclude the improvement in the taxation of owner-occupied dwellings, started in the 1999 IT reform, when the taxation of the imputed rent was removed (Act 6/2000, 13 December).

taxpayers below the threshold, hence, out of the tax. Furthermore, it introduces more inequality between assets and more distortions in the allocation of savings.

Graph 2. The Evolution of Business Exemption for Top 1%



Note: Expressed in 2002 euros. Modified base is tax base plus business related exemptions. Top 1% of adult population according to refined-lower bound (See section 4). Real estate assessed on fiscal criterion.

A final issue to point out is the role of WT as far as tax administration is concerned, particularly regarding the control of IT. When WT was introduced, the tax was administered by the central government, also engaged in the administration of IT and other taxes. However, the development of a financing system for the then just created AC's provoked that the yield was later given to them, along with the power to administer and collect the tax. This has been criticized by undermining the function of the tax as a means of control (De Pablos, 2006; Esteller, 2004; Pedrós, 1981), given the difficulties of collaboration among national tax administration and regional tax administrations³⁸.

³⁸ Since 1997 AC's also have some legislative power, extended in 2002, thereby they can regulate without any limitation important tax parameters: threshold, tax rates and tax credits. Nonetheless, they cannot modify other issues, as the assessment rules or the exemptions. For the time being, Spanish AC's have been quite passive and they have only introduced few and minor changes, with the only exception is Cantabria, a northern region, that in 2006 increased considerably the threshold, from 108,182.18 € to 150,000 €, and the top marginal rate from 2.5% to 3%. Nonetheless, AC's have been very active in other taxes on wealth, such as IGT, where a clear competitive race among Spanish AC's seems to have started, similar to what happened in the eighties in Australia and Canada (Durán and Esteller, 2006).

To sum up, from this descriptive analysis it does not seem Spanish WT fulfils any of the aims that justified its introduction. Both central and regional governments do not currently pay much attention to the tax and even lobbies do not care, since they already obtained what they wished. In section 5, we will study empirically the Spanish WT, analyzing how exemptions, assessment criteria and under-compliance appear to undermine the WT goals. With that aim, we calculate declared values by top 1%, which requires carrying out an interpolation from the tax statistics. This will also permit us to describe the evolution of wealth concentration in Spain.

4. Wealth Concentration from Fiscal Data

In this section we first explain the interpolation methodology. Next we analyse in detail the evolution of wealth concentration from WT data.

4.1 Methodological issues

We focus our analysis on top 1% of richest adult population. There is a widespread assumption rich taxpayers are more responsive to tax changes, both because their marginal rates are higher and because they have more opportunities for altering their behavior (see, *e.g.*, Moffitt and Wilhelm, 2000). Furthermore, since its adoption the Spanish WT has only levied a small percentage of adult population, between 2% and 4%, as the threshold, following the progressivity aim, seeks to concentrate on wealthiest individuals. Likewise, by considering all population instead of taxpayers, our target group remains more stable and the number of members is less sensitive to legal modifications, such as new exemptions or thresholds³⁹.

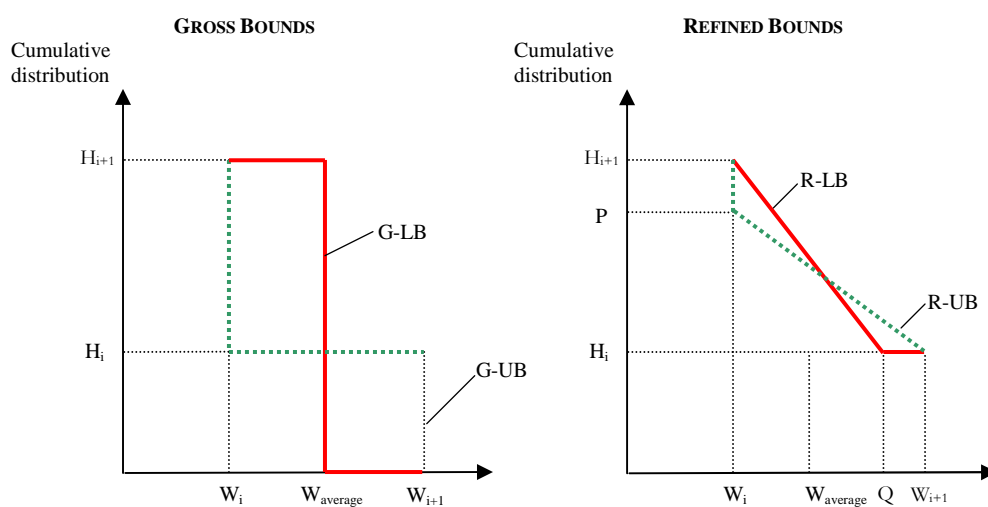
In absence of micro-data, we have had to work with aggregate data. As usual for this kind of information, in the statistics taxpayers are gathered into several brackets according to their level of tax base, regardless of the number of people within each interval. Therefore, it is necessary to interpolate to know the wealth for specific percentiles (top 10%, top 1%, etcetera). The most common method employed in the literature, and also by Alvaredo and Saez (2006) in a recent work for Spain, is “Pareto interpolation” (from now on, PI)⁴⁰, which is based on the assumption that the distribution of wealth at the top is Pareto in form. However, Atkinson (2004) argues that

³⁹ For instance, the total number of taxpayers over the year before fell about 15% in 1988, in 1992 and in 2000 due to different legal modifications (individual tax unit, new act and housing exemption, respectively).

⁴⁰ Among many others, see Feenberg and Poterba (1993 & 2000) and Piketty (2001 & 2003). Atkinson (2004) explains this follows a tradition since a Pareto interpolation was already used in a 1906 report of the House of Commons Committee on Income Tax.

“the potential error in making such interpolation depends on the width of the ranges” (p. 13). This is an especially important issue for the Spanish case because the number and width of intervals in the data are not the same along the studied period (1983-2001), and changes are quite important. Hence, we use an alternative methodology proposed by the very Atkinson (2004), which does not depend on the assumption of the distribution is Pareto in form, but on assuming a non-increasing density for the upper brackets (Gastwirth, 1972). This methodology is illustrated in Graph 3.

Graph 3. Methodology of interpolation: Lower and Upper Bounds



On the one hand, the gross lower bound (G-LB) supposes that within that range (*i.e.*, $W_{i+1}-W_i$) all the mass of population is concentrated at the average of the range (W_{average}). Hence, this bound implies maximum equality regarding the distribution of wealth within that interval (see Cowell, 2000). On the other hand, the gross upper bound (G-UB) implies maximum inequality within the interval, and it is calculated assuming that within that range a certain percentage of taxpayers is concentrated at the minimum amount of wealth of the interval (W_i) while the rest is concentrated at the maximum (W_{i+1})⁴¹. In Table 3, we can see that differences between the G-LB and the G-UB for top 1% are not very important. The greatest differences are concentrated in the 1988-98 period (up to 10.5% and 5.9% on average), when the tax statistics only offer 10 intervals. Hence, during that period, the results of the interpolation are less precise. For that reason, when possible we also calculate a refined lower bound (R-LB) and a refined upper bound (R-UB).

⁴¹ The percentage of taxpayers in each extreme of the interval has to be calculated in order to guarantee that the resulting average coincides with the real one. For example, the percentage of taxpayers concentrated at the minimum value of the interval (y_i) is $(W_{i+1}-W_{\text{average}})/(W_{i+1}-W_i)$. The percentage of taxpayers at the other extreme is simply $1-[(W_{i+1}-W_{\text{average}})/(W_{i+1}-W_i)]$.

Table 3. Top 1% Average Wealth: Gross and Refined Lower and Upper Bounds

	G-LB	R-LB	G-UB	R-UB
1983	572,823	572,823	574,708	574,708
1984	543,704	543,704	547,598	547,598
1985	553,905	553,905	556,896	556,896
1986	599,036	599,036	606,168	606,168
1987	636,798	636,798	639,262	639,262
1988	646,323	651,095	651,414	651,414
1989	661,426	679,136	685,565	684,884
1990	650,298	674,525	692,165	690,169
1991	651,544	678,203	709,156	698,508
1992	623,067	649,573	687,874	670,580
1993	655,427	680,857	724,403	701,726
1994	642,367	668,798	702,362	684,983
1995	650,469	674,790	698,667	687,528
1996	700,582	720,801	734,537	729,045
1997	785,473	797,577	801,910	800,628
1998	863,876	868,562	869,260	869,118
1999	938,538	938,538	942,932	942,932
2000	982,447	982,447	980,742	980,742
2001	1,013,951	1,013,951	1,014,011	1,014,011

Note: Expressed in 2002 Euros. The data is obtained from fiscal data. Includes reported wealth (and so it is estimated according to the fiscal criteria of assessment) and from 1994 onwards business assets reported but exempt. In 2000 and 2001 also includes the assessed value of owner-occupied housing exemption using our empirical estimates as no fiscal data are available regarding this exemption (see section 5.3.1; the value of the estimated exemption depends on the use of the MP as assessment criterion, here we have supposed the percentage use is equal to 10%).

The calculus of the refined bounds is based on Atkinson (2004), who supposes non-increasing density at the top of the whole distribution of taxpayers (Gastwirth, 1972). The procedure to obtain these refined bounds is also shown on Graph 3. In order to obtain the lower bound, instead of assuming that the whole mass of taxpayers are concentrated right at the mean, Atkinson assumes that they tend to concentrate around it. In particular, they concentrate within a range located a certain distance left to the average (until W_i) and the same distance to the right (until Q). Around those values ($W_i - Q$), density is linearly decreasing, and from Q onwards the density is zero. Similar to the calculus of the G-UB, in order to obtain the corresponding

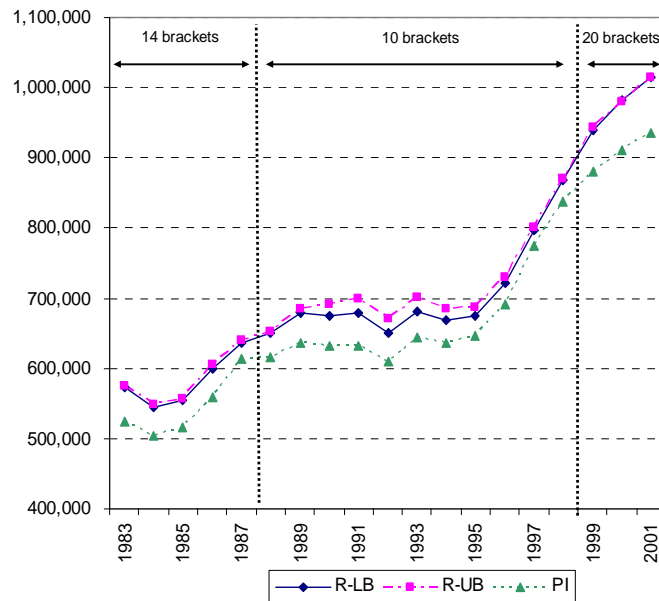
refined, Atkinson assumes that taxpayers concentrate at W_i and at W_{i+1} . Thus, in contrast to the lower bound, there must be taxpayers in both extremes. Then, given the restriction of maintaining the average of wealth at its real values, which is also binding for the calculus of the R-LB, we obtain point P. This means that the percentage of taxpayers at the bottom of the interval is given by $(H_i - P)$. From then on, the density is decreasing till point W_{i+1} . This (refined) methodology certainly offers a more precise interpolation, as shown in Table 3, and now the greatest differences are up to about 3% and 1.67% on average.

By applying this alternative methodology of interpolation our results can be compared with those obtained by Alvaredo and Saez (2006) using the PI⁴². Graph 4 shows the evolution of the reported average wealth for top 1% according to the different methods of interpolation⁴³. In spite of being difference in absolute terms, we can observe all assessed values evolve in a quite similar way. Both refined bounds are always very similar and they give a higher amount of wealth compared to PI. The highest differences take place when the number of brackets is smallest (10 brackets), which seems to confirm Atkinson's words that the potential error in interpolation depends on the width of the ranges⁴⁴. From now, in order to perform an analysis of the evolution of wealth concentration, we will use the interpolated values using Atkinson's proposed methodology. The differences between R-LB and R-UB values are on average about one percent, therefore fairly small. For that reason, in order to avoid an excess of data we mainly concentrate on R-LB values, which are slightly closer to the PI values.

⁴² Before making the comparison, we have to take into account that Alvaredo and Saez (2006) rectify upwards the declared value of real estate in order to consider the MP. Consequently, we have reconstructed their interpolated values assessing real estate property according to the CV. We sincerely thank Alvaredo and Saez for making us available the annual coefficients they use to rectify the CV. However, those values might be slightly upward biased, since they suppose that all reported real estate property is assessed according to the CV.

⁴³ The definition of wealth includes all reported goods and rights, including declared business related exemptions and owner-occupied-dwelling exemption. There are not data in the fiscal statistics about this last exemption, but we use our assessed values estimated in the model explained in section 5.3.1.

⁴⁴ The top difference is 67,523 € in 1991 between R-UB and PI, but in relative terms differences are always well below 10%. In fact, differences in 2000 and 2001 are greater, but they might be due the different procedure to estimate the value of owner-occupied-dwelling exemption. In our case, we followed the methodology explained in section 5.1.1 (see also previous footnote).

Graph 4. A Comparison of Interpolation Methodologies for Top 1%

Note: Wealth expressed in 2002 euros.

Source: Alvaredo and Saez (2006) and own calculations (see note of Table 3)

4.2 Analysis of Wealth Concentration in Spain

One of the arguments to justify WT is its role in redistributing wealth, so the rationale for maintaining this tax might crucially depend on how inequality evolves. However, in Spain, there are not studies about wealth concentration due to a historic lack of proper data⁴⁵. For that reason, data from WT could be useful to know the level and evolution of wealth concentration during the application of the tax. The lack of proper data to analyze concentration is common in many countries. A literature originated in Kuznets (1953) proposes to estimate income distribution using fiscal data (see Atkinson and Piketty, forthcoming)⁴⁶. This methodology consists of employing income data from tax returns to compute the level of upper incomes and national accounts to compute the total income denominator. Hence, by considering all population and all income one can deduce from tax data the share of top income recipients in total income. A similar process permits to estimate the distribution of wealth.

⁴⁵ Recently, starting in 2002, the Bank of Spain conducted a household wealth survey, similar to the *Survey of Consumer Finances* (SCF) of the Board of Governors of the Federal Reserve System in the United States. This survey is supposed to be conducted periodically, but for the time being it is only available for year 2002. See Bover (2004) and Bover *et al.* (2005).

⁴⁶ Atkinson and Piketty (forthcoming) have recently edited a collective volume with results of income distribution for Australia, Canada, France, Germany, Ireland, Netherlands, Switzerland, United Kingdom and United States. Most of studies follow Kuznets' methodology.

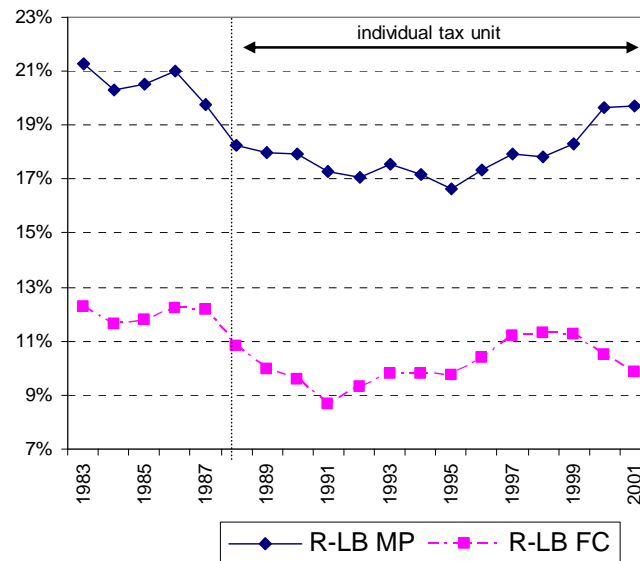
Indeed, wealth tax data can also provide useful information to analyze the distribution of wealth, particularly on the upper tail of the distribution, as different studies for the Nordic countries shown (Spant, 1987; Tuomala and Vilmunen, 1988; Ohlsson *et al.*, 2006.). Following all this literature, Alvaredo and Saez (2006) have recently estimated income and wealth concentration for the Spanish case. Regarding the numerator of wealth concentration (*i.e.*, wealth for a top percentile) they interpolate fiscal data using PI as we already know, while in the denominator (*i.e.*, total wealth from National Accounts) they calculate total net wealth, that is real estate, fixed claim assets, stock and other assets minus mortgage debt and other debts. In this paper, we will basically perform the same kind of analysis using as numerator the interpolated values obtained from Atkinson's proposed methodology of interpolation, and taking advantage of the data presented by Alvaredo and Saez (2006, Table A2, p. 57) to calculate the denominator of total wealth.

However, the use of tax data for distribution analysis is not without criticisms. Atkinson (2004) points out four potential serious problems: tax evasion, tax avoidance, legal definitions not suitable to study distribution and no contextual data to help to understand the determinants of the distribution. Likewise, tax data only provide comparable information along time as long as the pattern of tax evasion for richest groups of taxpayers remains equal along time. Further, legal changes, such as the change of tax unit, the introduction of new exemptions or the rise in the threshold required to declare, may cause additional troubles. In fact, those later circumstances occur in Spain, and so we will try to take them into account in the analysis of wealth concentration⁴⁷.

Nonetheless, at the same time tax data have points in their favor, as the very Atkinson affirms. Alternative sources also suffer problems: non-reporting or under-reporting by respondents or failure to correctly tailor questions particularly if the employed survey is conducted for other purposes. And, which is particularly important in the Spanish case, tax data are especially relevant when no other sources exist that span along time (see fn. 45). In conclusion, it is interesting to analyze the evolution of wealth distribution but being cautious about the possible conclusions.

⁴⁷ Fiscal data excludes two regions, Navarre and Basque Country, because due to a particular financing system, they have their own WT. Therefore, the analysis does not include both regions, which account for 6.3% of the Spanish adult population.

Graph 5. A comparison of assessment criteria: Top 1% Total Wealth Share according to Fiscal Criteria vs. Market Price (1983-2001)



Note: One Refined-Lower Bound (R-LB MP) is calculated taking the MP to assess real estate properties, while the other (R-LB FC) is calculated taking the fiscal criterion to assess real estates, that is, mainly CV. The impact of the owner-occupied-dwelling exemption is assessed according to the model explained in section 5.1.1 and shown in section 5.3.1, but only for R-LB MP. We use the Alvaredo and Saez coefficients to estimate MP (see fn. 42).

The average wealth for top 1% of adult population rises in real terms during the period (see Graph 4). Wealth reported in tax returns is assessed according to fiscal criteria, which is especially relevant for real estate property, rather under-assessed as we said in the previous section. This would provide an untrue image of the wealth distribution, further because the denominator, total wealth, is based on national accounts, that is, in MP values. Therefore, to know the real weight of wealth held by top 1% of population over total wealth requires converting real estate values in MP⁴⁸. In Graph 5, we show the top 1% share over all wealth according to both fiscal criteria (FC) and MP. Indeed, the fiscal criteria would grant a false image of wealth distribution. The disparity refers mainly to the absolute value of the series, but also to their evolution, as the ratio CV/MP varies along time, as pointed out in Graph 1. The introduction of the owner-occupied-housing exemption since 2000 makes this disparity larger. The average difference is almost 8 percentage points, with a minimum value in 1998, 6.55 points, and a maximum at 9.84 points in 2001.

⁴⁸ Recall business assets and shares not traded in the stock market are not reported according to MP, but we do not have enough information to convert them in real prices. However, they account for a much smaller share of wealth.

In Graph 6 we compare our series with those obtained by Alvaredo and Saez (2006). Although our estimations are slightly higher, on average around one percentage point, the two series evolve in a quite similar way, except since the introduction of the housing exemption. Due to the absence of fiscal data, we have estimated its value according to the procedure established in section 5.3.1. General speaking it appears wealth concentration goes down between 1983 and 2001. However, before making that assertion, we must consider an important legal modification which could alter this initial impression.

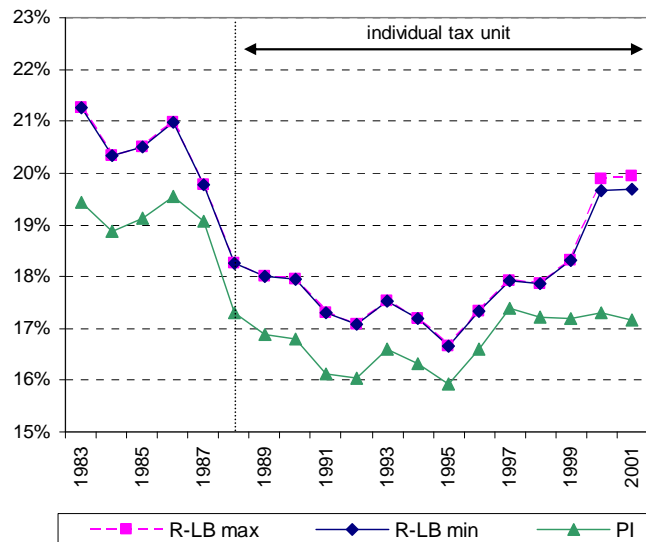
The tax unit changes since 1988 when the compulsory joint taxation for marriages was replaced by an exclusively individual system. Consequently, wealth held by marriages was split into two tax units, one for each spouse⁴⁹, which logically reduces the concentration of wealth in 1988 compared to the previous years. Recall top 1% is made of adult population, which only coincides with the number of taxpayers since 1988, but before that date means including more persons, since in joint tax units there are two persons. Obviously, the concentration of reported wealth must be greater, as more person's wealth is included, than when the top 1% is only formed by individual tax units. This legal change in the tax unit does not appear to be considered by Alvaredo and Saez (2006), but it seems to be relevant because, as Graph 6 illustrates, there is an important fall on the wealth share held by top 1% in 1988, in fact the most important annual fall of the period⁵⁰. Therefore, in order to obtain a correct conclusion about the evolution of wealth concentration, we should start the analysis since 1988⁵¹. Before, between 1983 and 1987, our results suggest there is a fall in the concentration level, while Alvaredo and Saez' results indicate concentration remains quite stable.

⁴⁹ How wealth is distributed between spouses depends on the marriage settlements, but the most common settlement in Spain establishes an equal distribution of wealth obtained during the marriage.

⁵⁰ The change in tax unit derives from a Constitutional Court sentence declaring unconstitutional compulsory joint taxation for marriages in the income tax. Consequently, the government also changed the tax unit of WT, which then on is only individual. That could have provoked a rise in the number of taxpayers, but the government decided at the same time an outstanding increase in the threshold. The overall effect was as 15% fall in the number of taxpayers.

⁵¹ An alternative would be to convert tax units in persons, but the lack of proper information in Spain to find a liable value of conversion for top taxpayers makes us to give up this possibility.

**Graph 6. A Comparison with Alvaredo & Saez (2006):
Evolution of Top 1% Total Wealth Share (1983-2001)**



Source: Alvaredo and Saez (2006) and own calculations.

Note: The values of the impact of the owner-occupied dwelling exemption are assessed according to the model explained in section 5.1.1 and shown in section 5.3.1. We use two alternative degrees of utilization of “MP” as criterion of assessment of housing: 50% (R-LB max) and 10% (R-LB min).

We use the Alvaredo and Saez coefficients to estimate MP of real estates.

From 1988 to 2001, we can identify four different sub-periods: 1988-1992, the top 1%’s share goes down; 1992-1995, it remains rather stable; 1995-1997, it rises; and from 1997, the evolution of the two series is diverse because while the share for the PI stays stable, our results indicate a clear increase in the concentration of wealth, especially since 2000. Therefore, both series show a fairly similar evolution, except once the owner-occupied-housing exemption is introduced. Again, a fiscal change alters the estimated shares and the possible conclusions. Alvaredo and Saez results illustrate top 1%’s share of wealth remains stable during the 1988-2001 period. On the contrary, our results point out a rise in the level of wealth concentration (see fn. 44).

Table 4. % Composition of Wealth for Top 1%

Year	Housing	Equity Shares	Other assets	Total
1983	65.87	11.16	22.98	100.01
1984	67.19	11.10	21.71	100.00
1985	66.66	11.76	21.58	100.00
1986	65.04	13.65	21.31	100.00
1987	63.46	14.95	21.59	100.00
1988	62.04	17.09	20.87	100.00
1989	63.89	16.54	19.57	100.00
1990	65.28	14.62	20.11	100.00
1991	67.52	15.40	17.08	100.00
1992	64.17	17.44	18.40	100.00
1993	62.35	20.26	17.39	100.00
1994	61.90	20.98	17.12	100.00
1995	60.66	21.85	17.49	100.00
1996	59.47	24.64	15.89	100.00
1997	56.27	29.66	14.07	100.00
1998	54.51	32.34	13.15	100.00
1999	55.41	31.05	13.55	100.01
2000	55.83	29.77	14.40	100.00
2001	58.37	27.45	14.18	100.00

Source: Alvaredo and Saez (2006).

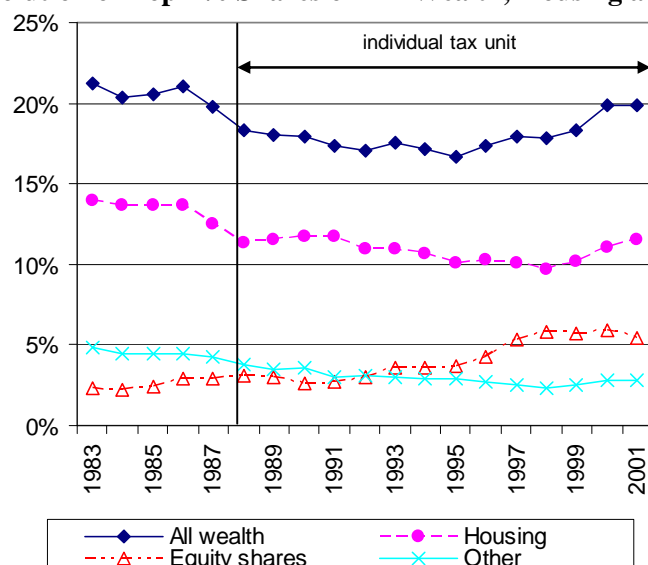
Note: Composition based on fiscal data. Housing net of debts and assessed according to MP using transformation coefficients provided by Alvaredo and Saez.

To be able to go further in this analysis, we are going now to concentrate on the particular evolution of the two main assets in the composition of wealth, real estates and shares, which represent the greatest part of all wealth (Table 4). Our purpose is to know how their evolutions influence on the overall share of top 1%.

The weight of housing and equity shares over all wealth varies along time for top 1% (Table 4). To know if each one follows the same evolution or differs, we have decomposed the annual variation in the general wealth share into separate parts for the Refined-Lower Bound (Table 5). Thus, we isolate the effect according to the type of asset that causes the change: housing and equity shares, while the rest is assigned to the remaining assets. The evolution is also shown graphically (Graph 7) for the R-LB.

Table 5. Annual Variation in the Wealth Share of Top 1%

	84-83	85-84	86-85	87-86	88-87	89-88	90-89	91-90	92-91	93-92	94-93	95-94	96-95	97-96	98-97	99-98	00-99	01-00	01-88
All wealth	-0.93	0.18	0.49	-1.22	-1.50	-0.28	-0.04	-0.64	-0.23	0.45	-0.34	-0.54	0.68	0.60	-0.08	0.47	1.34	0.03	1.43
Housing	-0.35	0.01	-0.02	-1.10	-1.21	0.16	0.23	-0.03	-0.73	-0.03	-0.29	-0.54	0.21	-0.22	-0.36	0.42	0.83	0.52	0.16
Equity shares	-0.12	0.15	0.45	0.09	0.17	-0.15	-0.35	0.04	0.31	0.57	0.06	0.03	0.63	1.05	0.46	-0.08	0.17	-0.45	2.28
Other	-0.47	0.01	0.05	-0.21	-0.45	-0.29	0.09	-0.65	0.19	-0.09	-0.11	-0.03	-0.16	-0.23	-0.18	0.13	0.35	-0.04	-1.02

Graph 7. Evolution of Top 1% Shares on All Wealth, Housing and Equity Shares

Before changing the tax unit in 1988, the top 1% share in housing falls more than one percentage point, which is partly compensated by a light increase in the concentration of equity shares. Once individual tax unit is introduced, housing concentration shows a reducing trend, partly compensated by a growth in the concentration of equity shares. Therefore, each asset has an opposite effect. However, the process for housing upturned the last year of the period, when there is a rise in concentration and, consequently, the final level of all concentration is slightly greater than at the beginning. Regarding concentration of equity shares, there is a quite steady increase throughout the period until 2000, when starts a more stable evolution.

In conclusion, between 1988 and 2001 the overall level of concentration remains very stable for housing but rises for equity shares. Generally speaking, housing evolution reduces concentration while equity shares increases it. However, this seems to change for the last years of the period, when housing prices are booming and starts an increasing concentration process. And at the

same time, the concentration of equity shares remains more stable, and so does not contribute to increase wealth inequality in contrast with the previous years. In fact, housing and equity shares concentration very often varies in opposite ways. Shady cells of Table 5 mean housing and equity variations have opposite signs, that is, when one goes up the other goes down. The stock market booming period starting in 1996 provokes an increase in the concentration level, but the evolution of housing share partly offset that effect. The subsequent fall of stock market reduces concentration, but this change is again partly offset by the increasing share in housing.

Nevertheless, fiscal data may give a misunderstanding picture of the evolution in wealth concentration if tax evasion does not remain stable along time, as we mentioned before when pointing out the criticisms of using fiscal data. In the model explained in the next section, we estimate the possible impact of tax fraud as far as housing and equity shares in organized markets are concerned. In particular, as indicated in section 5.4, the gap between declared housing values and the real ones, regardless the existing level of under-assessment due to fiscal criteria, is quite high and increasing along time, especially when housing prices are booming. For that reason, we calculate the top 1%'s share taking the results obtained in the empirical model, that for housing includes the level of under-assessment, the owner-occupied-dwelling exemption and the level of tax fraud. The results are shown in Graph 8 and also suggest concentration increases between 1988 and 2001. The impact of the housing exemption is probably under-assessed, as we will explain in the section 5.3.1, but regardless this issue, the results suggest again an increase in the share of wealth held by top 1% of adult population.

The share of top 1% (Graph 8) varies between a minimum value of 17.80% (1995) up to close to 20% from 2000, being on average 18.84%. This average value is two percentage points greater than the one calculated by Alvaredo and Saez, 16.77%. Compared to other countries (Table 6), the level of wealth concentration in Spain does not seem to be high, although differences in the unit of analysis or in the employed data may difficult comparisons among countries⁵². For similar periods, the concentration of wealth also rises in Italy, Switzerland and the United Kingdom, while it goes down in the United States.

⁵² See Davies *et al.* (2006) for a wider comparison of wealth distribution within countries and the methodology difficulties.



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