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INCOME AND WEALTH CONCENTRATION IN SPAIN FROM A HISTORICAL AND FISCAL PERSPECTIVE

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Abstract
This paper presents series on top shares of income and wealth in Spain using personal income and wealth tax return statistics. Top income shares are highest in the 1930s, fall sharply during the first decade of the Franco dictatorship, then remain stable and low till the 1980s, and have increased since the mid 1990s. The top 0.01% income share in Spain estimated from income tax data is comparable to estimates for the United States and France over the period 1933–1971. Those findings, along with a careful analysis of all published tax statistics, suggest that income tax evasion and avoidance among top income earners in Spain was much less prevalent than previously thought. Wealth concentration has been about stable from 1982 to 2005 as surging real estate prices have benefited the middle class and compensated for a slight increase in financial wealth concentration in the 1990s. We use our wealth series and a simple model to analyze the effects of the wealth tax exemption of stocks for owners-managers introduced in 1994. We show that the reform induced substantial shifting from the taxable to tax exempt status, hence creating efficiency costs. (JEL D31, H31, O15)

1. Introduction

The evolution of income and wealth inequality during the process of development has attracted much attention in the economics literature. Recent studies have constructed series for shares of income accruing to upper income groups for various countries using income tax statistics (Atkinson and Piketty 2007). The countries studied are Anglo-Saxon countries (United Kingdom, Ireland, United States, Canada, New Zealand, and Australia), continental European countries

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(Finland, France, Germany, Netherlands, Sweden, and Switzerland), and large Asian countries (China, India, Indonesia, and Japan). No such study has analyzed Southern European countries. This paper proposes to start filling this gap by analyzing the Spanish experience. Spain is an interesting country to analyze on several grounds.

First, there are very few studies on the evolution of inequality in Spain from a historical perspective. A number of studies have analyzed the evolution of income, earnings and expenditure inequality over the last three decades using survey data. Research has also been done using income tax data for recent years, but those studies focus on the effects of taxes on global inequality indices rather than top incomes as we do here.[1] Survey-based studies point to a reduction in income or expenditure inequality in the 1970s followed by relative stability in the 1980s and 1990s,[2] whereas tax-based results display a worsening in income inequality in 1982–1991 and 1995–1998.[3] More recently, Prados de la Escosura (2006a, 2008) has constructed long historical series on income inequality using macroeconomic series. Those series offer the best evidence to date on inequality trends in Spain from a historical perspective. Our study constructs long run series of income concentration using primarily individual tax statistics, a source that has not been fully exploited by previous studies. Our series measure only top income (or wealth) concentration and hence are silent about changes in the lower and middle part of the distribution. As a result, our series can very well follow different patterns than broader and macro-based measures of inequality.

Second, up to the 1950s, Spain was still largely an agricultural economy with a GDP per capita around $4,000 (in 2005 dollars) similar to developing countries such as Pakistan or Egypt today.[4] Indeed, because of the civil war shock and the poor economic performance during the first decade of the Franco dictatorship, Spain GDP per capita did not reach the peak of 1929 before 1951. Starting in the 1950s and following economic liberalization and openness to trade, economic growth resumed at a very quick pace. Today, Spain's GDP per capita is only about 20% lower than GDP per capita of the largest western European economies such as France, Germany, or the United Kingdom. Therefore, it is quite interesting to analyze income concentration during the stagnation years and

1. See Rodríguez and Salas (2006) for a recent example.

2. Garde, Ruiz-Huerta, and Martínez (1995) provide a survey of the literature until 1995 and Ayala and Sastre (2005) present more recent findings. A summary of existent studies on inequality in Spain can be found in the Appendix (see footnote 5).

3. See Ayala and Onrubia (2001), Castañer (1991), and Lasheras, Rabadán, and Salas (1993).

4. Prados de la Escosura (2003, 2006b, 2007) has constructed historical GDP and growth series for Spain. He emphasizes that, before the economic stagnation of the 1930–1952 period, Spain experienced significant economic growth since 1850, in particular from 1850–1883 and in the 1920s. Maddison (2001, 2003) also reproduces those historical series of real GDP per capita in Spain in his international compilation.

during the economic boom starting in the late 1950s to re-assess the link between economic development and income concentration.

Third, Spain has undergone dramatic political changes since the 1930s. Spain was a republic from 1931 to 1939. A military coup led by General Franco in 1936, followed by a three-year civil war, transformed Spain into a dictatorship from 1939 till the death of Franco in 1975. Since then, Spain has returned to democracy and has implemented redistributive policies such as the development of progressive income and wealth taxation, and of a welfare state with universal health coverage. The study of top income and wealth shares in Spain can cast light on the effects of the political regime and economic policies on inequality and income concentration.

Our results show that income concentration was much higher during the 1930s than it is today. The top 0.01% income share was twice higher in the 1930s than in recent decades. The top 0.01% income share fell sharply during the first decade of the Franco dictatorship, and has increased slightly since the 1970s, and especially since the mid 1990s. Interestingly, both the level and the time pattern of the top 0.01% income share in Spain is fairly close to comparable estimates for the United States (Piketty and Saez 2003) and France (Piketty 2001, 2003) over the period 1933–1971, especially the post–World War II decades. Those findings, along with a careful analysis of all published tax statistics as well as a re-evaluation of previous academic work on income tax evasion in Spain, leads us to conclude that income tax evasion in Spain before 1980 was much less prevalent than previously thought at the top of the distribution. Our analysis on the criteria required for successful income tax enforcement on top incomes shows that income tax statistics, even at an early stage of development such as Spain in the 1930s or 1940s, are a valuable primary data source for analyzing income concentration. Our in-depth analysis of income tax enforcement also provides support to the reliability of top income studies gathered in Atkinson and Piketty (2007).

Although Spain had to wait till the return of democracy in 1975 to start implementing a modern welfare state and redistributive tax policies, our findings show that, perhaps contrary to previous views, income concentration in Spain was quite low since the early 1950s and this possibly played a role in the stability and longevity of the dictatorship regime.

Since 1981, top income shares have increased significantly due to an increase in top salaries and a surge in realized capital gains. The gains, however, have been concentrated in the top percentile (and especially the top fractiles within the top percentile) with little changes in income shares of upper income groups below the top percentile. Financial wealth concentration has also increased in the 1990s due to a surge in stock prices, which are held disproportionately by the wealthy. However, as real estate wealth is less concentrated than financial wealth and real estate prices have increased dramatically, on net, very top wealth shares (including both financial and real estate wealth) have declined during the period 1982–2005.

Our series can be fruitfully used to evaluate the effects of tax reforms on the economic behavior and tax avoidance of the affluent. In particular, our series show that the wealth tax exemption of stocks for owner-managers introduced in 1994 has gradually and substantially eroded the wealth tax base, especially at the very top. Our empirical results, interpreted using a simple theoretical model of tax avoidance, show evidence of strong shifting effects whereby wealthy business owners were able to re-organize their business ownership and activities in order to take advantage of the reform. This implies that this tax reform, while reducing the redistributive power of the progressive wealth tax, also generated efficiency costs, as business owners were taking costly steps to qualify for the exemption.

The paper is organized as follows. Section 2 describes our data sources, outlines our estimation methods, and discusses the issue of income tax evasion in Spain. In Section 3 we present and analyze the trends in top income shares since 1933 as well as the composition of top incomes since 1981. Section 4 focuses on top wealth shares and composition since 1982. Section 5 uses the wealth series to analyze the efficiency costs of the wealth tax exemption of 1994. The complete details on our data and methods, as well as the complete sets of results are presented in an electronic Appendix.[5]

2. Data, Methodological Issues, and Context

2.1. Data and Series Construction

Our estimates are from personal income and wealth tax return statistics compiled by the Spanish fiscal administration for a number of years from 1933 to 1971 and annually from 1981 on. The statistical data presented are much more detailed for the 1981–2005 period than for the older period. Because the received wisdom is that the individual income tax was poorly enforced, especially in the pre-1981 period, we will discuss in great detail this issue in Section 2.2 and throughout the text in Section 3. Complete details on the methodology are provided in the Appendix.

Before 1981, because of very high exemption levels, only a very small fraction of individuals had to file individual tax returns and therefore, we must restrict our analysis to the top 0.1% of the income distribution (and for 1933–1947 even the top 0.01%). From 1981 on, we can analyze the top 10% of the income distribution. Spain has adopted an annual personal wealth tax since 1978. Detailed statistics on the "new" income and wealth tax were first published in 1981 and 1982, respectively.[6] The progressive wealth tax has high exemption levels and only

5. The electronic Appendix is available on-line at ⟨http://elsa.berkeley.edu/∼saez/⟩.

6. The official publication exists since 1979 for the income tax and since 1981 for the wealth tax. However, the statistical quality of the data for the first years is defective with obvious and large inconsistencies which make the data non-usable.

the top 2% or 3% wealthiest individuals file wealth tax returns. Thus, we limit our analysis of wealth concentration to the top 1% and above, and for the period 1982 to 2005. For 1981 to the present, estimates are based on Spain excluding two autonomous regions—Pais Vasco and Navarra—because they manage the income and wealth taxes directly and hence are excluded from the statistics. Those two regions represent about 10% of Spain in terms of population and income.[7]

Our top groups are defined relative to the total number of adults (aged 20 and above) from the Spanish census (not the number of tax returns actually filed). The Spanish income tax is individually based since 1988 (although joint filing remains possible, it is always advantageous to file separately when both spouses have incomes). Before 1988, the Spanish income tax was family-based. We correct our estimates for 1981–1987 using the micro-data (which allow to compute both family and individual income after the reform) in order to account for this change in law.[8]

We define income as gross income before all deductions and including all income items reported on personal tax returns: salaries and pensions, self-employment and unincorporated business net income, dividends, interest, other investment income, and other smaller income items. Realized capital gains are also included in the tax base since 1979 (but not before). In order to create comparable series before and after 1979, we also estimate series excluding capital gains for the period 1981–2005. Our income definition is before personal income taxes and personal payroll taxes but after the deduction of employers' payroll taxes and corporate income taxes.

The wealth tax is a progressive tax on the sum of all individual wealth components net of debts with a significant top rate of 2.5% in the top bracket for very large wealth holdings.[9] In general, real estate wealth is not taxed according to its market value but according to its registry value for property tax purposes. Market prices are about three times as high as registry value on average. Real estate wealth is a very large component of wealth in Spain; especially after the surge in housing prices since 1995. Therefore, we use two definitions of wealth, one including real estate wealth evaluated at market prices, and one excluding real estate wealth (and excluding also mortgage debt on the passive side) which we call *financial wealth*. Total wealth is clearly a better measure of wealth but

7. In the old regime, from 1933 to 1935, estimates are based on all Spain; Navarra is excluded since 1937 and Alava (one of the three provinces from the Pais Vasco) since 1943.

8. The old income tax was based on individual income from 1933 to 1939 and based on family income from 1940 on. We do not correct estimates for the 1940–1971 period because, at the very top of the distribution, we expect spouses' incomes to be small during that period when very few married women worked.

9. The wealth tax is individually based since 1988 and family-based before. We correct for this discontinuity assuming that wealth shares from 1987 to 1988 grew at the average rate of 1986 to 1987 and 1988 to 1989 (see Appendix). Our earlier draft did not correct for this change and Duran and Esteller (2007) pointed out to us this omission.

is not directly measured in the wealth tax statistics and hence requires making large adjustments. Financial wealth is a more narrow definition of wealth but it is better measured in tax statistics.

Our main data consist of tables displaying the number of tax returns, the amounts reported, and the income or wealth composition for a large number of income brackets. Because the top tail of the income distribution is very well approximated by Pareto distributions, we can use simple parametric interpolation methods to estimate the thresholds and average income levels for each fractile. This method follows the classical study by Kuznets (1953) and has been used in most of the top income studies presented in Atkinson and Piketty (2007). In the case of Spain, income tax micro-data is available since 1982 allowing us to check the validity of our estimations based on published tax statistics. We find that our tabulations based estimates are almost always very close (within 2–5%) to the micro-data based estimates, giving us confidence that the errors due to interpolation are fairly modest.[10]

In order to estimate shares of income, we need to divide the income amounts accruing to each fractile by an estimate of total personal income defined ideally as total personal income reported on income tax returns had everybody been required to file a tax return. Because only a fraction of individuals file a tax return (especially in the pre-1979 era), this total income denominator cannot be estimated using income tax statistics and needs to be estimated using National Accounts and the GDP series created by Prados de la Escosura (2003) for the pre-1979 period. For the recent period 1981–2005, we approximate the ideal income denominator as the sum of (1) total wages and salaries (net of social security contributions) from National Accounts, (2) 50% of Social Transfers from National Accounts (as pensions, which represent about half of such transfers, are taxed under the income tax), (3) 66.6% of unincorporated business income from National Accounts (as we estimate that about 1/3 of such business income is from the informal sector and hence escapes taxation), and (4) all capital income reported on tax returns (as capital income is very concentrated, non-filers receive a negligible fraction of capital income). Our denominator for the 1981–2005 period is around 66% of Spanish GDP (excluding Pais Vasco and Navarra) with small fluctuations across years, which is comparable to other studies in Atkinson and Piketty (2007). For the pre-1979 period, because of lack of personal income series in the National Accounts series, we define our denominator as 66% of GDP.[11] Similarly we use estimates of aggregate financial net wealth and real estate wealth from the Bank of Spain statistics to compute wealth shares.

10. We do not have micro-data in the case of the wealth tax to check the accuracy of our interpolation method. However, Duran and Esteller (2007) have constructed bounds on the top 1% average wealth and shown that those bounds are tight (within 3% in all years).

11. We take into account the exclusion of Navarra since 1937 and that of Alava since 1943.

2.2. The Issue of Tax Avoidance and Evasion

Income tax data have rarely been used before to study income concentration, especially prior to 1979, because there is a widely held view that income tax evasion in Spain was very high, and that consequently, the income tax data vastly underestimate actual incomes.[12] A careful analysis of the income tax statistics shows that evasion and avoidance in Spain at the very top of the distribution during the first decades of existence of the tax was most likely not significantly higher than it was in other countries such as the United States or France. It is therefore critical to understand the roots of this widely held view, which is based on two main arguments.

First, very few individuals were paying income tax and the individual income tax was raising a very small amount of revenue relative to GDP. Second, the administration did not have the means to enforce the income tax, especially when the exemption thresholds were significantly reduced in the 1960s, and when tax filers could very easily exaggerate their deductions to avoid the tax.

The first argument is factually true as only about 1,500 individuals paid taxes in 1933—about 0.01% of all adults—and throughout the 1950s and 1960s the number of taxpayers rarely exceeded 40,000—about 0.2% of all adults—(Appendix Table B3). Combined with relatively low tax rates (except at the very top brackets), it is therefore not surprising that the income tax was only raising between 0.03% of GDP in 1933 and 0.22% of GDP in 1978 (Appendix Table G). However, extremely high exemption levels can very well explain such facts even in the absence of tax evasion. Indeed, in 1933, the filing threshold was 100,000 Pesetas, that is, 66 times the average income per adult (equal to around 1,500 Pesetas based on our denominator estimation described in Section 2.1). Our series show that income concentration based on those tax statistics was very high in the 1930s (about twice as high as in recent decades), and actually not much lower than levels estimated for the United States or France. Therefore, the number of filers and income reported at the very top are not unreasonably low.

The second argument that enforcement was poor also needs to be qualified. It is undoubtedly true that the 1964–1967 income tax reform that eliminated the high exemption levels failed to transform the income tax into a mass tax as the fiscal administration kept using de facto high exemption levels and did not try to make taxpayers with incomes below 200,000 or even 300,000 Pesetas pay the tax (Martí Basterrechea 1974).

12. Comín (1994) and Comín and Zafra Oteyza (1994) provide a historical account on the issues of fiscal fraud and tax amnesties over the last century in Spain. Díaz Fuentes (1994) focuses on the period 1940–1990. For the view that income tax evasion was very high in the pre-1979 period, see Breña Cruz et al. (1974), Castillo López (1992), Instituto de Estudios Fiscales (1973), and Martí Basterrechea (1974).

However, there are three main reasons to believe that enforcement for very top taxpayers was acceptable under the old income tax. First, historically, early comprehensive income tax systems always use very high exemption levels and therefore only a very small fraction of the population at the top was liable for the tax. The rationale for using income taxes on the very rich only is precisely because, at the early stages of economic development with substantial economic activity taking place in small businesses with no verifiable accounts, it is much easier to enforce a tax on a small number of easily identifiable individuals. The rich are identifiable because they are well known in each locality and they derive their incomes from large and modern businesses or financial institutions with verifiable accounts, or from highly paid (and verifiable) salaried positions, or property income from publicly known assets (such as large land estates with regular rental income).[13] Therefore, the Spanish income tax was small because it was a tax limited to the very rich and this should not be interpreted as the consequence of poor enforcement.[14] Indeed, official statistics show that the administration was able to audit a very significant fraction of individual tax returns in the pre-1960 period. The audit rates were on average around 10–20% and hence significantly higher than today (Table F2 and Table F3 in Appendix). It is likely that audit rates were even higher for the top 2,000 income earners in the top 0.01%.

Second, when the progressive income tax was started, Spain had already set in place schedule income taxes on wages and salaries, rents, corporate profits, business profits, and capital income.[15] As a result, most of the income components of the rich were already being taxed through those schedule taxes with a system of withholding at source,[16] which offered a robust way to verify the incomes of

13. Seligman (1911) is the classical reference on the history of early income taxes. The studies gathered in Atkinson and Piketty (2007) all show that the early income taxes in Western countries were limited to a small number of tax filers. All those studies show that income concentration measures derived from those early income tax statistics are always very high, suggesting that enforcement of the income tax on the rich was acceptable. The case of Japan, which started an income tax in 1887, shows that a pre-industrial economy significantly less advanced than Spain in the 1930s could successfully enforce a tax on the rich (Moriguchi and Saez 2008). The Spanish case follows this general pattern as well.

14. In the discussions leading to the creation of the income tax during 1932, it was recognized that enforcement would be acceptable only if the exemption threshold was chosen high enough. The parliamentary debates show that, although some congressmen considered that the exemption level was too high, it was recognized that the tax authority lacked both the managerial capabilities and the necessary human resources to administer a broader income tax (Vallejo Pousada 1995). Most Western countries broadened their income tax during emergencies such as the World Wars, and this required a very large administrative effort.

15. The time series of the revenue raised by each of those schedule taxes are compiled and reported in Appendix Table G.

16. For an account of the evolution of tax withholding at source for the different schedule income taxes, see García Caracuel (2004).

the rich.[17] Furthermore, like France, Spain also adopted and used presumptive income taxation based on external signs of wealth (ownership of cars, planes, vessels, and number of domestic workers) when the administration suspected tax evasion or avoidance.[18]

Third, the administration also threatened to make public the list of taxpayers in order to shame prominent tax evaders (Albiñana 1969a). Such lists were published for tax years 1933 to 1935 in the official state bulletin and show that virtually all the largest aristocratic real estate owners among the *Grandes de España* [the highest nobility rank] were taxpayers, demonstrating that the traditional aristocracy could not entirely evade the income tax.[19]

Contemporaneous observers (Albiñana 1969a,b; Gota Losada 1970) suggest that enforcement deteriorated during the last decade of Franco's regime.[20] This view is based primarily on the fact that the 1964–1967 reform virtually eliminated exemptions and legally transformed the income tax into a mass tax, linked to schedule taxes. In practice however, the income tax remained a tax on very high incomes only as the mass tax was not enforced. Therefore, a much more accurate statement is that the Spanish income tax could not become a mass tax (as this happened in most Western countries around the mid 20th century) without a significant administrative effort that the Franco regime never seriously attempted,

17. Crosschecking of income tax returns with the schedule income tax returns did take place, as stated, for instance, in Albiñana et al. (1974) and Gota Losada (1966). Starting in 1933, the administration prepared personal listings with information from all schedule taxes in order to identify individuals with very high incomes. Along the same lines, in 1940 the government launched the *Registro de Rentas y Patrimonios* [Registry of Income and Wealth] in which information on personal wealth was gathered with the aim of assisting income tax audits. Additionally, the high level of land ownership concentration allowed local tax authorities to identify large estate proprietors and rents for rural rent tax purposes (see, for instance, Carrión (1972, 1973) and Alvarez Rey (2007)).

18. According to Albiñana et al. (1974), Castillo Lopez (1992), and Martí Basterrechea (1974), extraordinary deductions were among the main sources for tax evasion after the reform of 1964–1967. Tax statistics report the amount of extraordinary deductions, which are only around 5% of income in the late 1950s. Our series are estimated based on income before deductions and thus are not biased downwards due to excessive deductions.

19. In 1932, the list of all the *Grandes de España* (who were part of the land reform expropriation) was published in the *Gaceta de Madrid* (12/16/1932). Carrión (1973) provides details of the land area owned by the largest estate proprietors among them. By comparing these lists and the income tax lists it turns out that 100% of owners of more than 3,000 hectares were income taxpayers (36 people). Furthermore, 92% of proprietors with more than 1,000 hectares (65 people) are present in the tax lists. Note that this does not imply that the missing 8% were necessarily evaders; in most cases their ascendants paid the income tax, which reflects different timing between land ownership transfers and nobility title transfers (due, for example, to male preference). Additionally, inspection of the income tax lists shows that over one tenth of all taxpayers in 1933–1935 were either *Grandes* or close relatives.

20. The economic historian Francisco Comín reported to us a well-known story: During the final period of the dictatorship, the commission in charge of redesigning the income tax examined the list of top taxpayers. Strikingly, the top of the list consisted of famous bullfighters and show business stars rather than bankers or large business owners. Unfortunately, there does not seem to be any written reference on this and it is possible that the story has been widely exaggerated as it was told and re-told over time. As just discussed, the published lists of taxpayers in 1933–1935 provide hard evidence that goes in the opposite direction.

hence giving the impression that the tax was primitive and poorly enforced relative to other countries.[21] However, this does not mean that the Spanish income tax was not properly enforced on very top incomes, and all the evidence that we have been able to gather points toward enforcement levels and techniques for the very top of the distribution, that were comparable to those used in other countries.

Since the return to democracy, Spain has successfully extended the income tax, which now covers a large fraction of income earners (see Table A1 in Appendix). Spain uses tax withholding at source for wages and pensions and has third party reporting requirements for most types of income (such as interest and dividends) making it very difficult to evade taxes on income paid through large businesses or financial institutions.[22] As a result and as in most OECD countries, tax evasion is concentrated among the self-employed, especially in the informal sector where businesses do not use formal and verifiable accounts. Therefore, evasion within the top 10% is expected to be relatively modest. The wealth tax is also systematically enforced using the official catastro values for real estate and information from the income tax for financial assets. Strikingly and as we show in Appendix F, top wealth holders report substantially more wealth for wealth tax purposes than in the first wealth survey recently created by the Bank of Spain for the year 2002.

3. Top Income Shares and Composition

3.1. Top Income Shares

Figure 1 displays the average personal income per adult estimated from National Accounts that is used as the denominator for our top income shares estimations along with the price index for the period 1932 to 2005. As discussed in the Introduction and as shown in Prados de la Escosura (2003, 2006b, 2007), real economic growth (per capita) was negative from 1930 to the early 1950s. Rapid economic growth started in the 1950s. Growth was fastest in the 1960s. Economic growth stalled during the transition period to democracy and in the first years of the democracy from 1975 to 1985, and then resumed again. Average income per adult in 2005 is around €15,700. As discussed previously, average income is estimated primarily from National Accounts and hence is largely independent of our tax statistics and hence not biased downwards because of tax evasion or

21. Fiscal inspectors were very competent, well compensated, and highly regarded. Many of them have extensively written on income tax issues, including Albiñana (1969a,b), Albiñana et al. (1974), Breña Cruz et al. (1974), Gota Losada (1966, 1970), and Martí Basterrachea (1974).

22. For an account of the improvements in the third-party reporting requirements over the last thirty years, especially on income from financial assets, see Castillo López (1992).

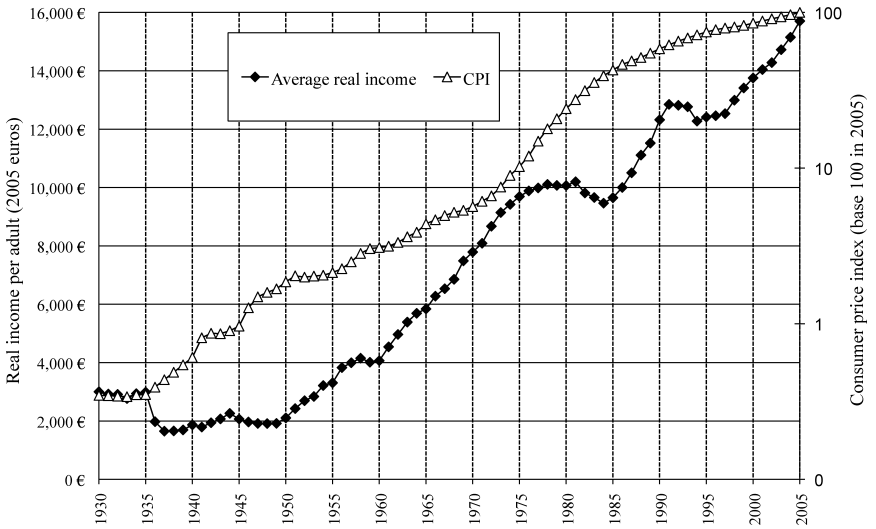

FIGURE 1. Average real income and consumer price index in Spain, 1930–2005. Figure reports the average real income per adult (aged 20 and above), expressed in real 2005 euros from Table A.1. CPI index equal to 100 in 2005.

avoidance. Average incomes are low because they include a large number of non-working adults (such as non-working wives or students) with either no or very small individual incomes who rely on other family members' income.

Figure 2 displays the top 0.01% income share from 1933 to 2005. The break from 1971 to 1981 denotes the change from the old income tax to the new income tax. Four important findings emerge from this figure.

First, the highest income concentration occurs in the 1930s. The top 0.01% share was around 1.5% and about twice as high as in the recent period. This finding is not surprising as Spain was a country with low average income and with high concentration of wealth and, in particular, land ownership.[23] However, lack of any statistics on income or wealth concentration made this claim impossible to establish rigorously. The use of the old income tax statistics demonstrates that Spanish income concentration was indeed much higher in the pre-civil war period than it is today.[24] Interestingly, tax statistics providing the composition of reported top incomes show that taxpayers in 1941 (representing the top 0.03%)

23. The land reform of the Second Republic was not successful in redistributing large land estates and was eventually abandoned (see Malefakis 1971 and Carrión 1973).

24. If tax evasion at the very top was higher in the 1930s than today, then this reinforces our finding that income concentration was higher in the 1930s. However, as we argued previously, we did not find compelling arguments showing that enforcement at the top was particularly poor in the 1930s.

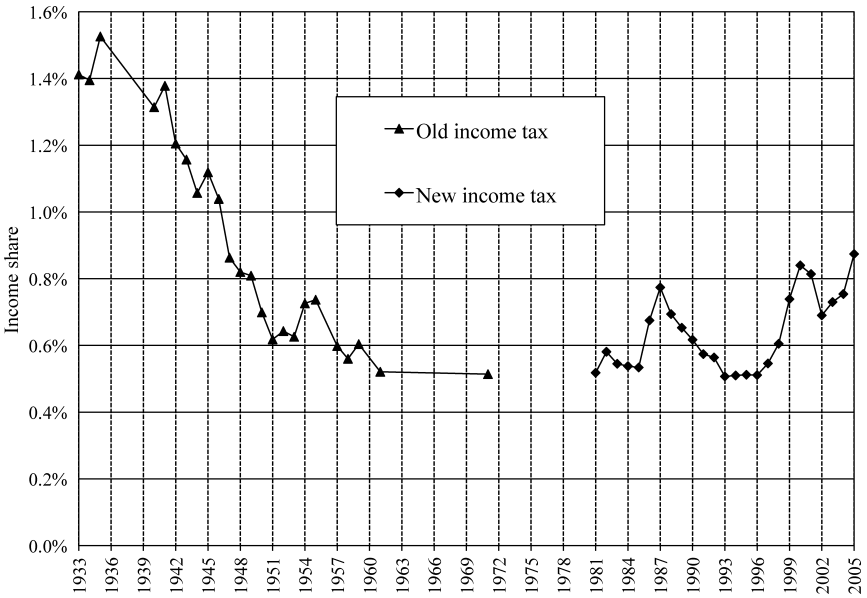

FIGURE 2. The top 0.01% income share in Spain, 1933–2005. For 1933 to 1971, estimations based on the old income tax statistics. For 1981 to 2005, estimations based on income excluding realized capital gains (for homogeneity with older income tax). Source: 1933–1971 from Table B3 (column top 0.01%), 1981–2005 from Table B2 (column top 0.01%).

obtained about 20% of their income from returns on real estate (rents), 35% from returns on financial assets, 25% from non-farm business income, 5% from farm business income, and about 15% from employment income (Table H in the Appendix). This suggests that, at the beginning of the Franco regime, only a minority of top income earners were passive landowners deriving all their income from rents (the traditional image of the agrarian aristocracy of the *Grandes de España*, mainly concentrated in the central and southern areas of the country). Top income earners were much more likely to be also owners of financial assets and non-farm businesses.

Second, the old income tax statistics display a large decrease in the top 0.01% income share from 1.4% in 1941 to 0.6% in the early 1950s, during the first decade of the Franco dictatorship. We have argued in Section 2.2 that there is no compelling hard evidence suggesting a deterioration of enforcement at the very top of the distribution and, therefore, we conclude that the poor economic management and the turn toward economic autarchy hit top incomes particularly hard and actually reduced income concentration in Spain. By 1953, the composition of top incomes had changed significantly relative to 1941: The fraction of non-farm business income has dropped from 26% to 9% and the fraction of farm business

income has increased from less than 5% to over 20%.[25] This suggests that the closing of the Spanish economy in the 1940s led to a sharp reduction in successful non-farm business enterprises and as a result, non-farm business owners were replaced by large farm business owners at the top of the distribution.

Third, top income concentration estimated with income tax statistics remains around 0.6% from 1953 to 1971, the last year for which old income tax statistics are available, suggesting that the high economic growth starting in the 1950s did not bring a significant change in income concentration. Interestingly, the level of income concentration measured with the new income tax statistics in the early 1980s is quite similar to the level of 1971. Assuming again a constant level of enforcement from 1971 to 1981, this suggests that the transition from dictatorship to democracy was not associated with a significant change in income concentration. Comparing the change in income composition in the top 0.05% from 1961 to 1981 is interesting: In the capital income category, there is a dramatic shift away from real estate to financial assets and in the business income category, there is a dramatic shift away from farm income toward non-farm business income. This shows that the very fast economic expansion from 1961 to 1981 made traditional land and farm owners fall behind other business owners at the top of the distribution. Our top income share series show, however, that such a shift took place with no change in overall income concentration.

Interestingly, our results display a striking asymmetry: The civil war shock and the subsequent economic mismanagement in the 1940s crippled the economy and reduced drastically the concentration of income. However, the fast economic growth after 1950 was not accompanied with a resurgence of income concentration. These findings are in line with the results from other countries (see Atkinson and Piketty 2007) suggesting that large but accidental shocks, rather than the natural economic growth process, are the main factors affecting top incomes. In the case of Spain, it is conceivable that the low level in income concentration since the 1950s contributed to the stability and longevity of the dictatorship.

Finally, Figure 2 shows that there are fluctuations in very top income concentration since 1981 with sharp increases in the late 1980s and since the late 1990s. The top 0.01% income share in 2005 is highest since 1946.

In light of our discussion in the Introduction about the specific economic and political trajectory of Spain relative to other western countries analyzed previously, it is interesting to compare the trends in income concentration between Spain and other countries. Figure 3 displays the top 0.01% income share in Spain, France (from Piketty 2001 and Landais 2007), and the United States (Piketty and Saez 2003). Two points are worth noting.

25. The share of capital income from financial assets drops from 36% to 29% and the share of labor income increases from 13% to 19% from 1941 to 1953 (Appendix Table H).

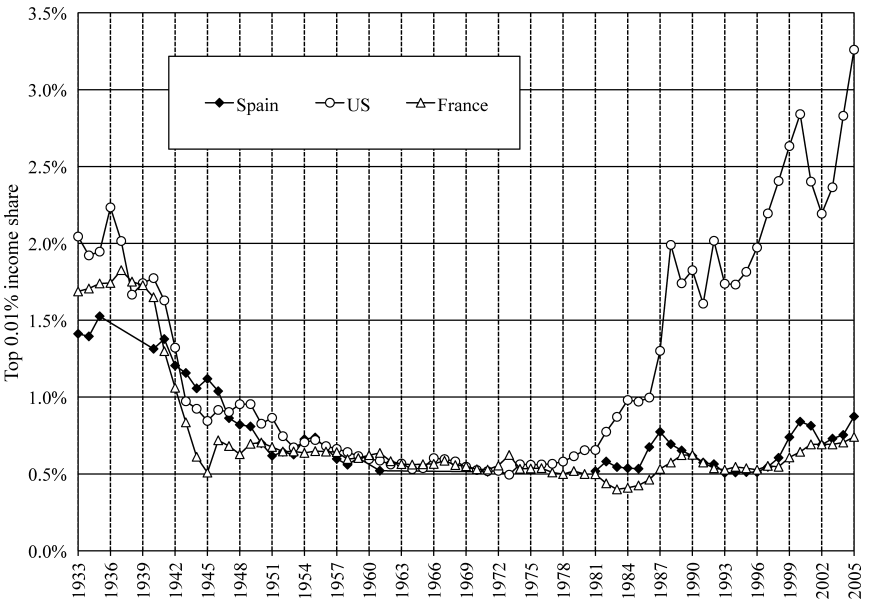

FIGURE 3. The top 0.01% income share in Spain, U.S., and France, 1933–2005. Top 0.01% income share excludes realized capital gains. Sources: U.S.: Piketty and Saez (2003); France: Piketty (2001) and Landais (2007); Spain: 1933–1971 from Table B3 (column top 0.01%), 1981–2005 from Table B2 (column top 0.01%).

First, Spain starts with a level of income concentration in the 1930s that is slightly lower than France or the United States. However, income concentration in France and the United States falls more sharply than in Spain during World War II. Therefore, from the mid 1940s to 1971, income concentration across the three countries is actually strikingly close.[26] This shows that the number of high income taxpayers is not inherently too low in Spain relative to other countries and supports our claim that enforcement at the top of the distribution was plausibly comparable across Spain and other Western countries. Second, although income concentration has increased in Spain in recent decades, this increase is very small relative to the surge experienced by top incomes in the United States. Thus, the Spanish experience is actually closer to the one of continental Europe countries such as France than Anglo-Saxon countries such as the United States.[27]

26. The series are estimated using similar methodologies across countries although there are of course differences in the details. However, it is important to note that the denominator (as a fraction of GDP) is comparable across countries and around 60% to 65%. It is actually slightly higher in Spain (66% of GDP) than in France (around 60% of GDP on average).

27. The studies gathered in Atkinson and Piketty (2007) show that Anglo-Saxon countries experienced a dramatic increase in income concentration in recent decades whereas continental European countries displayed either no or small increases in income concentration.

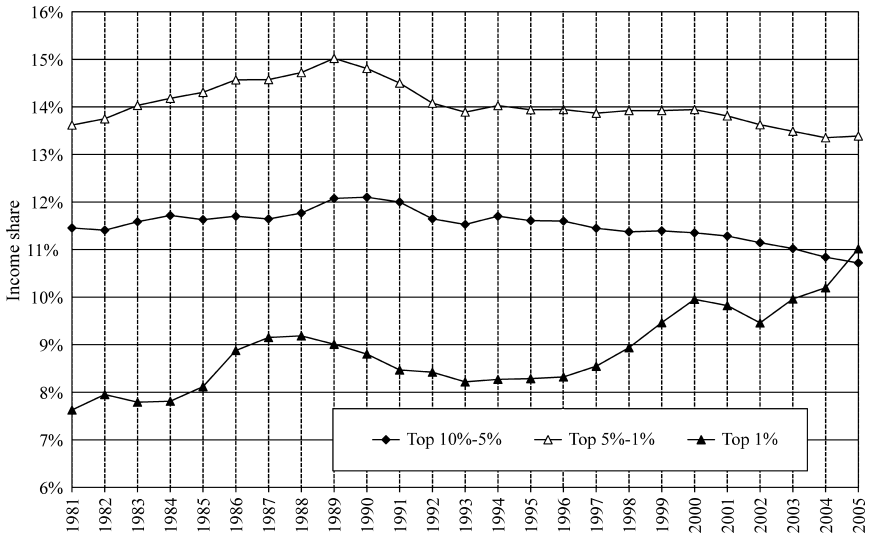

FIGURE 4. The top 10%–5%, top 5%–1%, and top 1% income share in Spain, 1981–2005. Income includes realized capital gains. Source: Table B1, columns top 10%–5%, top 5%–1% and top 1%.

3.2. Detailed Analysis since 1981

The tax statistics since 1981 are much more detailed than the old income tax statistics. Thus, we can study larger income groups such as the top 10% since 1981. Figure 4 displays top income shares for three groups within the top decile: the bottom half of the top decile (top 10%–5%), the next 4% (top 5%–1%), and the top percentile. In contrast to Figure 2, we now include realized capital gains in the top income shares.[28] The figure shows that those top income shares have evolved quite differently: The top 1% increased very significantly from 7.7% in 1981 up to 11% in 2005. In contrast, the top 10%–5%, and the top 5%–1% shares actually slightly declined from 1981 and in 2005, with very modest fluctuations throughout the period. Therefore the increase in income concentration, which took place in Spain since 1981, has been a phenomenon concentrated within the top 1% of the distribution. This result could not have been derived from survey data, which have too small samples and top coding issues to reliably study the top 1%.

In order to understand the mechanisms behind this increase in income concentration at the top, which has been happening within the top percentile, we next

28. To a large extent, realized capital gains were not taxed (and hence not reported) under the old income tax. Therefore, for comparison purposes, we also excluded realized capital gains in Figures 2 and 3 for the period 1981–2005.

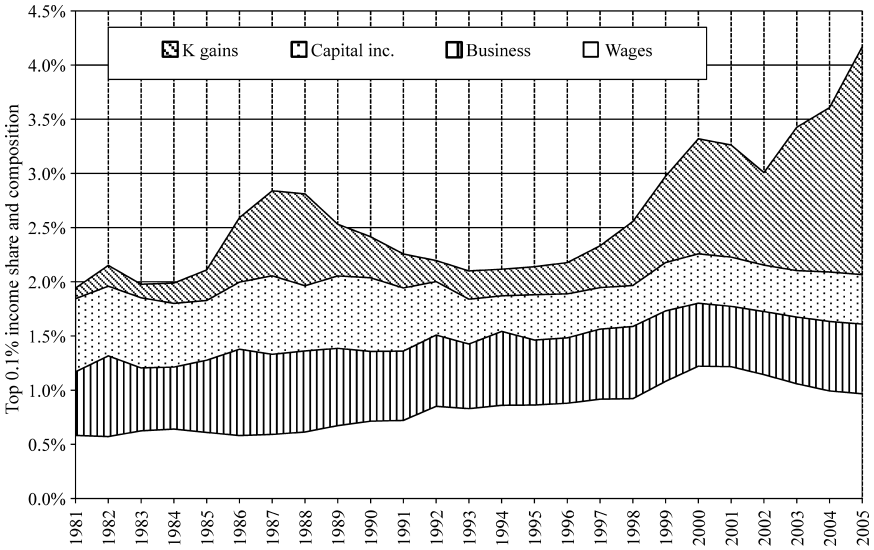

FIGURE 5. The top 0.1% income share and composition in Spain, 1981–2005. The figure displays the income share of the top 0.01% tax units, and how the top 0.1% incomes are divided into four income components: wages and salaries (including pensions), business and professional income, capital income (interest, dividends, and rents), and realized capital gains. For example, in 1981, the top 0.1% was 1.95% of total income. Of those 1.95%, 0.55% were from wage income, 0.6% from business income, 0.7% from capital income, and 0.1% from capital gains. Source: Table B1, top 0.1% income share and Table C, composition columns for top 0.1%.

turn to the analysis of the composition of top incomes. Figure 5 displays the share and composition of the top 0.1% income fractile from 1981 to 2005. The figure shows that the top 0.1% share more than doubled from 2% in 1981 to 4.1% in 2005. The figure also shows that the increase in the top 0.1% income share is due solely to two components: realized capital gains and wage income. The remaining two components, business income and capital income, have stayed about constant. The figure shows that the 1987, 2000, and 2005 spikes were primarily a capital gains phenomenon.[29] In contrast, the wage income increase has been a slow but persistent effect, which has taken place throughout the full period.

4. Top Wealth Shares and Composition

In order to cast light on the capital income component of the income concentration series we discussed, we now turn to top wealth shares estimated from the wealth tax statistics. Figure 6 displays the evolution of average wealth (total net worth of the household sector divided by the total number of individuals aged 20 and

29. Capital gains fluctuate from year to year as they follow closely the large stock market swings explaining the peaks in 1987, 2000, and 2005 (Figure A1 in the Appendix).

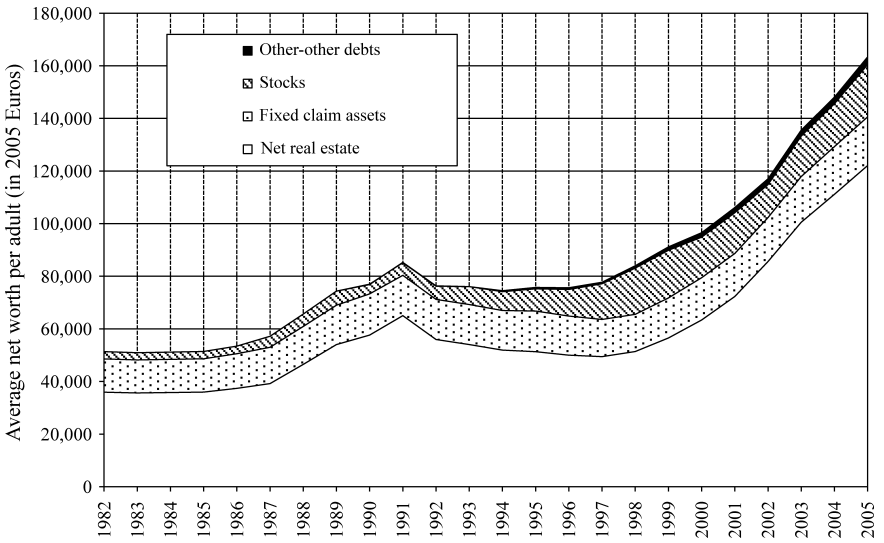

FIGURE 6. Average net worth and composition, 1982–2005. Net real estate is defined as total household real estate wealth net of mortgage debt. Fixed claim assets are cash, deposits, and bonds. Stocks include publicly traded and closely held stock, directly or indirectly held. Source: Table A2.

above) and its composition from 1981 to 2005. Those average wealth statistics come solely from National Accounts and are hence fully independent from wealth tax statistics.

Three elements should be noted. First, wealth has increased very quickly during that period, substantially faster than average income: Average wealth in 2005 is 3.15 times higher than in 1982 while average income in 2005 is only 1.6 times higher than in 1982. Second, real estate is an extremely large fraction of total wealth. It represents about 80% of total wealth on average over the period. Third and related, the growth in average wealth has been driven primarily by real estate price increases, and to a smaller degree by an increase in corporate stock prices. In contrast, fixed claim assets have grown little during the period.

Figure 7 displays the composition of wealth in top fractiles of the wealth distribution in 1982 and 2005. As one would expect, the share of real estate is declining and the share of stocks is increasing as we move up the wealth distribution. It is notable that real estate still represents over 60% of wealth for the bottom half of the top percentile. Thus, only the very rich hold a substantial share of their wealth in the form of stock holdings. The patterns in 1982 and 2005 are quite similar except that the level of stock ownership is higher across the board in 2005, a year with high stock market prices. Those compositional patterns suggest that an increase in real estate price will benefit relatively less the very top and should therefore reduce the very top wealth shares. In contrast, an

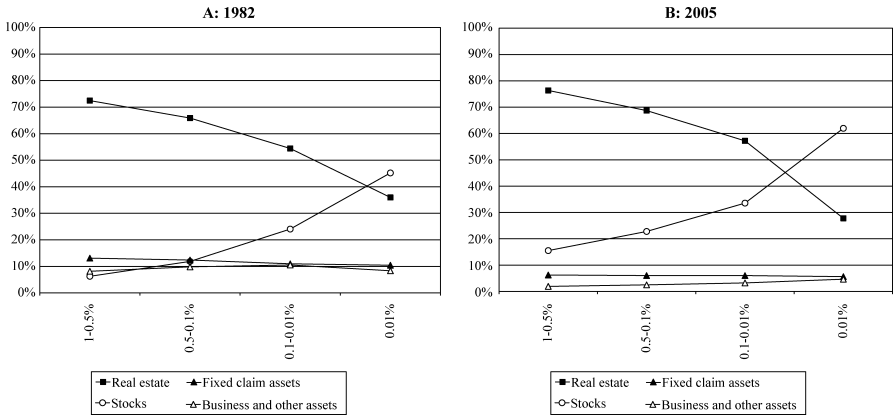

FIGURE 7. Income composition of top groups within the top decile in 1982 and 2005. Source: Table E2, rows 1982 and 2005.

increase in stock prices will benefit disproportionately the very rich and should increase the very top wealth shares.

Figure 8 displays the top 1% wealth share (net worth including real estate wealth) along with the top 1% financial wealth share (net worth excluding real estate wealth and mortgage debts). Unsurprisingly, the top financial wealth share is larger than the top wealth share because financial wealth is more concentrated than real estate wealth. Top financial wealth concentration is stable around 25% from 1982 to 1990, decreases to about 21% from 1990 to 1995 and then increases again to about 25% by 2005. Top wealth concentration decreases from 19% in 1982 to 16% in 1992 and then increases to almost 20% in 2005.

Figure 9 displays the wealth composition of top 0.1% wealth holders from 1982 to 2005. In contrast to the top 1%, it shows that the top 0.1% has fallen substantially from over 7% in 1982 to less than 5.5% in 2005. Therefore, at the very top of the wealth distribution, the surge in stock prices has not been enough to compensate for the dramatic increase in real estate prices, which benefits upper (but not very top) wealth holders.

5. The Erosion of the Wealth Tax Base

The series we have constructed and described in the previous sections can fruitfully be used to analyze the effects of tax reforms. In this section, we analyze the 1994 wealth tax reform, which introduced an exemption for business owners substantially involved in the management of their business. More precisely, stocks of corporations where the individual owns at least 15%, or the individual and family own at least 20%, and where the individual is substantially engaged in this business activity (getting over 50% of his labor and business income from this activity) is exempted from the wealth tax. The value of those stocks still has to

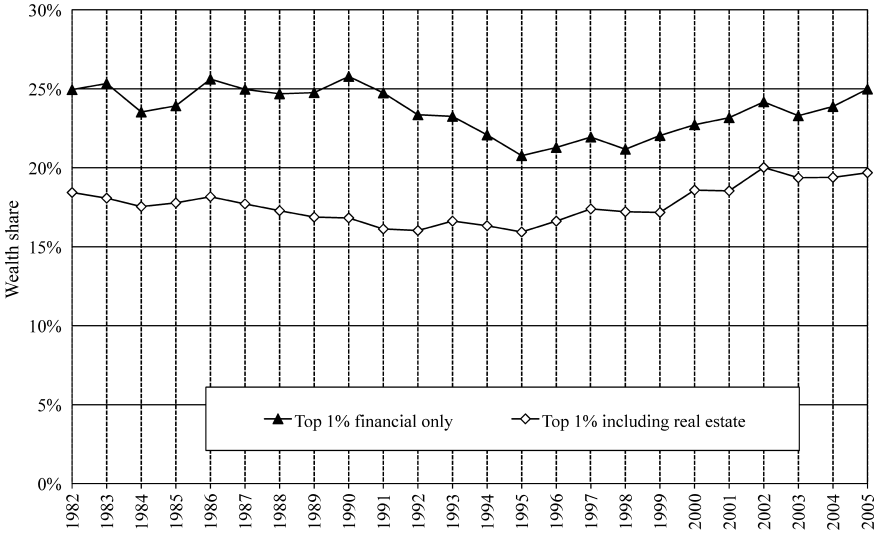

FIGURE 8. Top 1% wealth share in Spain, 1982–2005. Source: Table E1, column top 1%.

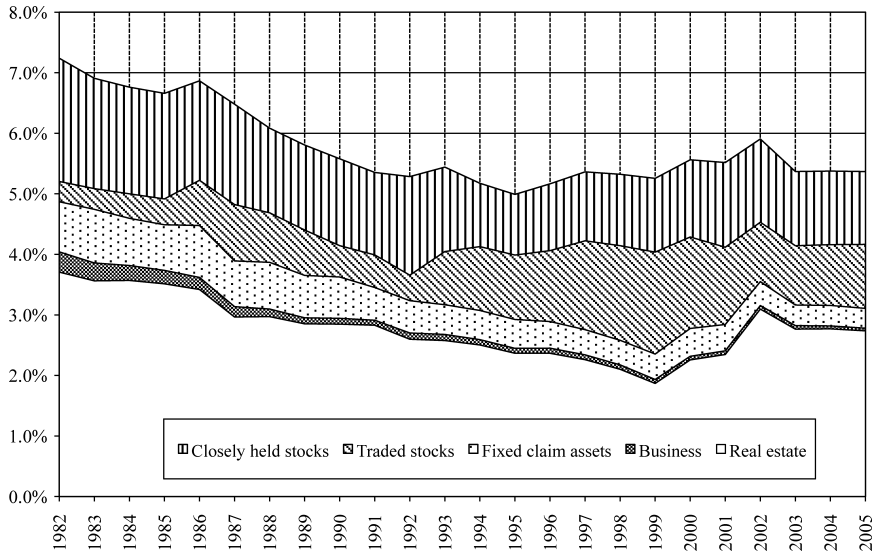

FIGURE 9. The top 0.1% wealth share and composition in Spain, 1982–2005. The figure displays the wealth share of the top 1% tax units, and how the top 0.1% wealth holdings are divided into five components: real estate, business assets, fixed claim assets (cash, deposits, bonds), publicly traded stocks, and closely held stocks. Source: Table E1 and E2, columns top 0.1%.

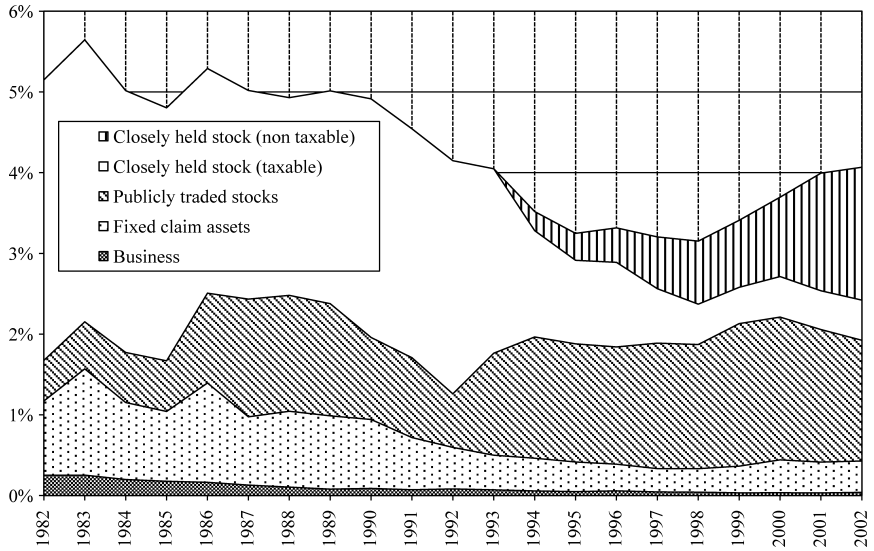

FIGURE 10. The top 0.01% financial wealth share and composition in Spain, 1982–2002. The figure displays the financial wealth share and composition of the top 0.01% tax units. Stocks are broken down into three components: publicly traded stocks, taxable closely held stocks, and exempted closely held stocks. Source: Table E1 and E2, and direct computations based on wealth tax statistics.

be reported to the fiscal administration and was included in our top wealth share series. Importantly for the subsequent empirical analysis, the exemption criteria were relaxed for tax year 1995 (when the individual ownership requirement was lowered from 20% to 15%) and in tax year 1997 (when the 20% family ownership criterion was introduced).[30]

In principle, the 1994 wealth tax reform could have two effects. First, the tax cut might spur business activity in the exempted sector—a supply side effect. Second, the tax cut for exempted business might induce some businesses, which did not originally meet the exemption criteria, to shift to the exempt sector in order to benefit from the tax cut—a shifting effect. For example, business owners could increase their share of stock in the company in order to meet the 15% ownership threshold. Alternatively, they might become active managers in their businesses or drop other work activities outside the business. A business owner would be willing to shift to the exempt sector as long as the costs of shifting are less than the tax savings.

Figure 10 displays the composition and share of financial wealth held by the top 0.01% wealth holders. Closely held stocks are now divided into two components: taxable and exempted. In 1994, the first year the exemption was

30. Starting in 2003, the individual ownership requirement was further reduced from 15% to 5%.

introduced, exempted stock represents only about 15% of total closely held stock reported by the top 0.01%. By 2002, the fraction has grown to 77%. Presumably, in 1994, individuals did not have time to reorganize substantially their business activity. Therefore, the 15% fraction of closely held stock benefiting from the exemption in 1994 must be close or just slightly above the fraction of closely held stock which would benefit from the exemption absent any behavioral response to the introduction of the exemption.[31] The fraction of business exempt wealth grows enormously from 1994 to 2002, consistent either with a very large supply side effect or a significant shifting effect. However, the fraction of taxable closely held stocks shrinks significantly from 1994 to 2002 suggesting that the great increase in tax exempt wealth comes, at least in part, at the expense of taxable wealth through the shifting channel. We use our series to quantify the relative size of each effect. We first present a simple model to capture those two effects that we then estimate empirically.[32]

5.1. Conceptual Model

We assume that business owners have an objective function of the form $c - h(z)$ where z is pre-tax profits, c is net-of-tax profits, and $h(z)$ is an increasing and convex function representing the costs of earning profits. Those costs represent labor input costs (including the labor supply cost of the business owner if he is an active manager) and also capital input costs. The quasi-linear form of the objective function amounts to assume away income effects or risk aversion effects, which simplifies the derivations and the welfare analysis.[33] We assume that the business owner can pay a cost $q \geq 0$ in order to meet the tax exemption status. Such costs represent, for example, the costs of increasing business ownership to 15% or the opportunity costs of dropping outside work activities to meet the labor income requirement. Let $P(q)$ be the cumulated distribution of q. A fraction $P_0 = P(q = 0)$ of businesses meet those criteria even in the absence of the tax preference.

We assume that the tax rate on profits z in the taxed sector is τ_0 and that the tax rate in the exempt sector is τ_1 with of course $\tau_1 \leq \tau_0$. Note that τ_1 is not

31. Those would be businesses for which the cost of shifting q was zero because the businesses already met the criteria.

32. To the best of our knowledge, such a model has not been presented before in the literature on the efficiency costs of taxation. It could be easily applied to other tax settings. For example, in the United States, the issue of shifting business profits from the corporate income tax base to the individual income tax base has received a lot of attention (see, e.g., Gordon and Slemrod 2000). Such shifting occurs because businesses meeting specific criteria (number of shareholders) can elect to be taxed directly at the individual level.

33. Including income effects would not change the qualitative nature of our findings but would complicate the presentation. In the case of wealthy business owners who actively work in their business, it seems plausible to assume that income effects are small (if income effects were large, those wealthy business owners would not be working).

necessarily zero as the business also faces corporate and individual income taxes. It is also important to note that we convert the wealth tax rate t into a tax rate τ on profits using the standard formula $\tau = t/r$ where r is the normal annual return on assets. We denote by l the tax status of the business with $l = 0$ denoting the standard taxable status and $l = 1$ the exempt status. The manager solves the following maximization problem

$$\max_{l,z} z(1 - \tau_l) - h(z) - q \cdot l.$$

This maximization problem can be decomposed into two stages. First, conditional on l, z maximizes $z(1 - \tau_l) - h(z)$ which generates the first order condition $1 - \tau_l = h'(z)$. This equation captures the within sector supply side effect, as a decrease in τ_l leads to an increase in z_l with an elasticity $e_l = ((1 - \tau_l)/z_l)\partial z_l/\partial(1 - \tau_l) = h'(z_l)/(z_l h''(z_l))$.

Second, the business chooses l. We denote by $V_l = \max_z[z(1 - \tau_l) - h(z)]$ the indirect utility in each taxable status $l = 0, 1$ (not including the cost q of becoming tax exempt). Therefore, if $q \leq V_1 - V_0$, then the exempt status $l = 1$ is optimal, whereas if $q > V_1 - V_0$, then $l = 0$ is optimal. As a result, a fraction $P^* = P(V_1 - V_0)$ of businesses chooses the exempt status. Using the envelope theorem, we have $\partial V_l/\partial \tau_l = -z_l$. Therefore, $\partial P^*/\partial \tau_0 = p(V_1 - V_0) \cdot z_0$ and $\partial P^*/\partial \tau_1 = -p(V_1 - V_0) \cdot z_1$, where $p(q)$ denotes the density of the distribution $P(q)$. Unsurprisingly, if there are firms on the margin between the tax exempt and taxable status, then increasing the tax τ_0 in the taxable sector generates a shift toward the tax-exempt sector. Conversely, reducing the tax advantage of the exempt sector by increasing τ_1 reduces the number of firms in the tax-exempt sector.

We denote by $T = (1 - P^*)\tau_0 z_0 + P^* \tau_1 z_1$ the total tax revenue and by $W = (1 - P^*)V_0 + \int_0^{V_1 - V_0}(V_1 - q)dP(q)$ the private surplus in the economy. Social surplus is $SW = W + T$. Routine computations show that

$$\frac{\partial T}{\partial \tau_0} = (1 - P^*)z_0 \left[1 - \frac{\tau_0}{1 - \tau_0} e_0 - \frac{p^*}{1 - P^*}(\tau_0 z_0 - \tau_1 z_1)\right], \quad (1)$$

$$\frac{\partial T}{\partial \tau_1} = P^* z_1 \left[1 - \frac{\tau_1}{1 - \tau_1} e_1 + \frac{p^*}{P^*}(\tau_0 z_0 - \tau_1 z_1)\right]. \quad (2)$$

The first term (equal to one) inside the square brackets of equations (1) and (2) represents the mechanical increase in tax revenue absent any behavioral response. The last two terms inside the square brackets represent the loss of tax revenue due to the supply side effect and the shifting effect, respectively. The reduction in private surplus due to the tax change is equal to the mechanical tax increase (absent behavioral responses).[34] Therefore, the last two terms represent

34. This follows from $\partial V_l/\partial \tau_l = -z_l$, which is a direct consequence of the envelope theorem.

the net effect on social surplus SW of the tax increase or equivalently (minus) the marginal deadweight burden of increasing taxes. Absent shifting effects ($p^* = 0$), we obtain the standard Harberger formula showing that the marginal loss in tax revenue (per euro) is proportional to the supply side elasticity e and the tax rate τ.

If the tax rate τ_0 in the taxable sector is below the Laffer rate maximizing tax revenue (when taking into account only supply side effects) then $\tau_0 z_0 > \tau_1 z_1$. Therefore, equation (1) shows that shifting effects increase the marginal deadweight burden of taxation in the taxable sector. In contrast, equation (2) shows that shifting effects decrease the marginal deadweight burden of taxation in the exempt sector. The economic intuition is transparent. Increasing the tax differential across the two sectors leads to more shifting: The marginal shifters spend q for a tax saving equal to q, which is pure deadweight burden. Strikingly, in the extreme case where $\tau_1 = 0$,[35] $\partial SW/\partial \tau_1 = p^* \tau_0 z_0 / P^*$: Social surplus increases with an increase in τ_1 no matter how large the supply side effect in the tax exempt sector is. Therefore, providing a wealth tax exemption for businesses meeting some specific set of criteria has two opposite effects on social surplus. First, it has a positive effect on social surplus through the standard supply side effect: Exempt businesses face lower taxes and hence might expand their economic activity (with no effect in the taxable sector). This effect is measured through the supply side elasticity e. Second, however, the exemption might induce some businesses to shift to the exempt status and waste resources in doing so. This shifting effect leads to an increase in reported business wealth in the exempt sector coming at the expense of reported business wealth in the taxable sector. We now propose an empirical estimation using our wealth composition series.

5.2. Empirical Estimation

We propose a simple quantitative analysis using our estimated series and the model described previously. Let us assume that, taking the tax or exempt status as fixed, business wealth is given by $z = \bar{z}(1 - \tau)^e$, where τ is the total tax rate (including income and wealth taxes) on profits, e is the supply side elasticity, and $\bar{z}$ is potential wealth absent any taxes. We assume that the fraction of businesses in the tax-exempt sector is given by $P = P(\tau_0, \tau_1)$. We use subscript b to denote before reform variables and subscript a to denote after reform variables. Hence P_b is the fraction of businesses meeting the exemption criteria just before the reform and P_a is the fraction of businesses meeting the exemption criteria after the reform. Hence $P_b - P_a$ captures the shifting effect (purged from the supply-side effect).

For a given top wealth group (such as the top 1% or the top 0.01%), after the reform, we observe (1) exempt closely held stocks $P_a \bar{z}_a (1 - \tau_0)^e$ and (2)

35. As we discussed previously, exempt business owners are exempt from the wealth tax, but still pay income taxes on the profits so that $\tau_1 > 0$.

non-exempt closely held stock $(1 - P_a)\bar{z}_a(1 - \tau_1)^e$. Before the reform, we observe (3) the total closely held stocks held by the top group $P_b\bar{z}_b(1 - \tau_0)^e + (1 - P_b)\bar{z}_b(1 - \tau_0)^e$, as there is no distinction between taxable and exempt stock.

We estimate τ_0 and τ_1 as the sum of the income tax on profits and the wealth tax. We assume that the income tax on profits (corporate income tax if the business is incorporated or individual income tax if the business is unincorporated and taxed directly at the individual level) is 30% for the top 1% wealth holders and 40% for top 0.01% holders. We assume that the wealth tax rate (when the business is taxable) is 0.8% of the value of assets for the top 1% and 1.3% for the top 0.01%.[36] We convert wealth tax rates into an implicit tax on profits assuming a return rate on assets equal to 5%. Therefore, the total tax rates on profits for non-exempt businesses are 46% and 66% for the top 1% and top 0.01%, respectively. Although there is significant uncertainty about the exact tax rates, they only affect the estimation of e (and not P_a and P_b).

In order to estimate the three key parameters e, P_a and P_b, and the two auxiliary variables $\bar{z}_a$ and $\bar{z}_b$ from the three observed quantities, we need to make two important additional assumptions. First, we assume that the fraction of closely held stocks meeting the exemption criteria before the reform P_b is given by the observed fraction of stocks meeting the exemption the first year the reform is implemented. This assumption is reasonable if businesses do not have time to respond to the tax change in the first year after the reform. In any case, if businesses start responding in the first year, then we will overestimate P_b, hence underestimate the shifting effect $P_a - P_b$ and overestimate the supply side elasticity e.[37] In the empirical estimation, we need to take into account the fact that the wealth tax exemption criteria were relaxed in 1995 and in 1997. Therefore, we assume that the growth in the fraction exempt from 1994 to 1995 and from 1996 to 1997 is entirely due to the relaxation of the criteria (and hence that the fraction exempt would have stayed constant absent the relaxation). This is a very conservative estimation as the fraction exempt grows in every single year from 1994 to 2002. As a result, we assume that the fraction exempt (before the reform) is actually about twice as large as the fraction actually exempt in 1994. This conservative assumption leads to a conservative estimate of the shifting effect.

Second, we assume that, absent any tax change, total closely held stocks (taxable and non-taxable) would have grown at a rate g equal to the growth rate of other financial assets held by the top 1%. In that case, $\bar{z}_a = (1 + g) \cdot \bar{z}_b$, where $1 + g$ is taken as the ratio of other financial assets held by the top 1% after

36. Those estimates are based on the tabulated data. The wealth tax rates range from 0.2% up to 2.5% at the top but effective tax rates are substantially lower due to numerous exemptions.

37. A counterargument could be that business owners did not know about the wealth tax exemption in the first year after the reform and hence failed to claim it even in cases where they were fully eligible. This argument is difficult to believe in the case of large wealth holders who use tax accountants to file their taxes. More broadly, the costs of learning about complex tax exemptions can be incorporated into the cost q of meeting the exemption criteria and our model and results would go through unchanged.

and before the reform. This is clearly a strong assumption. Using our pre-reform series, we show that it holds as a first approximation in the pre-reform period.[38] Panel (A) of Table 1 presents those key parameters for the top 1% (left) and for the top 0.01% (right) for various choices for the pre-reform base year and the post-reform year.

With those two assumptions, we can estimate the behavioral parameters e, P_a and P_b (Panel B), as well as evaluate the tax and efficiency consequences (Panel C). Three important results arise from this exercise. First and most important, all the estimates robustly suggest that there is a very large shifting effect: The fraction of businesses benefiting from the exemption jumps from 1/3 to about 2/3 for the top 1%. The shifting is even more extreme for the top 0.01% and goes from 37% exempt to over 80% exempt. It is important to reiterate that this represents the pure shifting effect (controlling for the supply-side effect).[39] Such a large shifting effect is not surprising in light of Figure 10 which showed a striking drop in taxable closely held wealth compensated by an increase in exempt closely held wealth. Second, the estimates for the supply side elasticity are sensitive to the choice of the comparison years and hence cannot be estimated precisely with our series.[40] However, the elasticity estimates are never extremely large and are often around zero (or even negative). This shows that the data series do not display consistent evidence of a very large supply-side effect. Third and finally, Panel (C) shows that the combination of large shifting effects with moderate supply side elasticity implies that the actual tax loss due to the reform is much larger than the predicted tax loss of the reform absent any behavioral response. Even in the case of column 1 where the supply side elasticity e is largest and equal to 0.83, the actual loss in tax revenue from the top 1% wealth holders is larger than the loss in tax revenue assuming no behavioral response. When the supply-side elasticity estimate is smaller, the loss in tax revenue with behavioral responses can be three to four times larger than with no behavioral responses. As our theoretical model showed, the difference between actual changes in tax revenue and predicted changes in tax revenue (absent the behavioral response) are a measure of the efficiency costs of the tax change.[41] The last row in Table 1 displays such an estimated change in total surplus due to the tax change.

38. For example from 1982 to 1993, among the top 1%, the (real) growth of other financial assets was 63% whereas the growth of closely held stocks was 44%. However from 1987 to 1993, closely held stock (in the top 1%) grew faster (36%) than other financial assets (16%).

39. Such shifting effects are robust to assuming a rate of growth of closely held stock that is slower (absent any tax change) than other financial assets. For example, one would have to assume that closely held assets would have declined by 15% in real terms from 1993 to 2002 to make the shifting effects disappear for the top 1% group, which seems very unlikely given the growth that closely held stock experienced in the pre-tax reform period from 1982 to 1993.

40. In contrast to shifting parameters, e is also sensitive to the assumption about the growth rate g of closely held assets absent the tax change.

41. This is exactly true in the case of small tax changes. In the case of the relatively large change we are considering, this is only a first order approximation.

TABLE 1. Estimating behavioral responses from the 1994 wealth tax exemption.

	Top 1% Wealth Holders			Top 0.01% Wealth Holders		
	(1)	(2)	(3)	(4)	(5)	(6)
A. Observed variables and assumptions						
Before the reform (base year)	**1993**	**1993**	**1990**	**1993**	**1993**	**1990**
Imputed exempt closely held stock (Eb)	17,073	17,073	16,726	5,039	5,039	5,160
Imputed taxable closely held stock (Tb)	34,161	34,161	33,465	8,478	8,478	8,681
After the reform (post year)	**2002**	**2001**	**2002**	**2002**	**2001**	**2002**
Exempt closely held stock (Ea)	66,274	58,791	66,274	15,280	14,426	15,280
Taxable closely held stock (Ta)	26,942	27,668	26,942	4,615	4,753	4,615
Growth in other financial wealth from base year to post year (g)	56.9%	70.6%	73.1%	77.8%	102.0%	74.3%
Total tax rate on profits for non-exempt closely held businesses (t0)	46%	46%	46%	66%	66%	66%
Total tax rate on profits for exempt closely held businesses (t1)	30%	30%	30%	40%	40%	40%
B. Estimates of key behavioral parameters						
Fraction of closely held businesses exempt before tax change (Pb)	33.3%	33.3%	33.3%	37.3%	37.3%	37.3%
Fraction of closely held businesses exempt after tax change (Pa)	66.5%	68.4%	69.0%	80.8%	82.6%	80.9%
Supply side elasticity (e)	0.83	−0.06	0.39	−0.42	−0.79	−0.43
C. Tax and welfare implications of 1994 wealth tax reform						
Change in tax revenue assuming no behavioral responses	−183	−199	−198	−99	−113	−100
Change in tax revenue including behavioral responses	−201	−421	−328	−286	−389	−289
Estimated change in total social surplus	−18	−222	−130	−187	−276	−189

Notes: All amounts are in millions of 2005 euros. The tax rates are computed by adding the income tax rate on profits (30% for top 1% and 40% for top 0.01%) and the wealth tax. The wealth tax rate (0.8% for top 1% and 1.3% for top 0.01%) is converted into a profit tax rate assuming a return on assets of 5%.

Therefore, our estimates suggest that the wealth tax exemption was an inefficient way to provide tax relief: The welfare gain to taxpayers was substantially smaller than the loss in tax revenue because taxpayers dissipate resources to meet the tax exemption criteria, creating deadweight burden.

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