

April 2020

Report
technical
document:
**The
redistributive
effects of
wealth tax**

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Credits

**Social Observatory
of "la Caixa"**

**"la Caixa" Banking
Foundation, 2020
Plaza de Weyler, 3
07001 Palma**

ISBN: 978-84-9900-277-4

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“It is therefore the greatest happiness which the citizens can enjoy to possess a moderate and convenient fortune; for when some possess too much, and others nothing at all, the government must either be in the hands of the meanest rabble or else a pure oligarchy; or, from the excesses of both, a tyranny; [...]”

Politics, Aristotle

The authors would like to thank Dirk Foremny and Mariona Mas-Montserrat for their comments, as well as Luis Ayala and all others who participated in “la Caixa” Foundation’s in-house seminar on redistribution. Nonetheless, any errors are the sole responsibility of the authors.

1

Introduction

Context

Wealth distribution, in addition to that of income and consumption, is crucial in identifying the level of a society's well-being. Wealth is income accumulated¹ over time and it affects people's well-being by giving them increased economic power alongside that provided by income.

In order to calculate income, consumption or wealth distribution, we must analyse the ever controversial issue of inequality. Reducing this through public policies is a subjective issue in which social values that undoubtedly change over time are highly present. In this sense, at a more theoretical level, inequality can be studied from two alternative perspectives: equal opportunity and equality of outcome. Equal opportunity implies that all individuals begin from the same starting point, so that any inequalities will mainly arise as a result of various efforts to obtain income. Equality of outcome means that the public sector will intervene by implementing redistributive policies to ensure a similar level of well-being among all citizens regardless of the source of inequality. This latter approach is the one we will adopt in this paper, which analyses the role of wealth tax when it comes to reducing inequality and distributing wealth.

Atkinson (2015), a leading economist and expert on issues of inequality, claims that the concept of equal opportunity is valid, but argues that equality in outcome is crucial for three reasons. First, because one cannot ignore people whose lives have become worse, no matter how much they would have initially enjoyed equal opportunity. Second, by using a sporting analogy, equal opportunity provides everyone with the chance to participate in a race, although the prizes for participating are very unequal, thereby preventing that the race is fair. And third, because inequality in the outcomes of today determines tomorrow's inequality of opportunity, in other words, it conditions intergenerational inequality.

1. Accumulated wealth includes any potential received inheritances and donations. But given the fact that they are a major issue of inequality, they deserve special treatment and thus will not be addressed in this study.

The concern about inequality and low social mobility has become more pronounced in recent years as income and wealth distribution has become increasingly unequal, especially as a result of the effects of the Great Recession. Income inequality has risen over the past thirty years in most OECD countries and this has led to discussion on the impact of increasing differences between rich and poor in social cohesion. Some have even highlighted the negative impact that inequality can have not only on the poorest people, but also on stable economic growth (OECD, 2015). It is argued that this negative effect is largely due to the fact that it reduces the ability of the poorest segments of the population to invest in their education and skills. The International Monetary Fund has underlined the importance that less inequality can have in greater macroeconomic stability and more sustainable growth (Lagarde, 2012). Although empirical studies prevent us from asserting that greater inequality leads to lower growth, they do indeed point to the importance of inclusive economic growth as an economic policy objective (Fuest et al., 2018).

Wealth distribution and composition

The available data on wealth distribution indicates there is a significant concentration of wealth that is much greater than that arising from income. Thus, 10% of the richest Spanish households (Table 1) have 45.6% of total wealth, while 10% with the highest income have 24.40% of total income. Only 1% of the richest households own 16.3% of total wealth. When compared to other countries, Spain is not among those with the highest levels of inequality (Balestra and Tonkin, 2018). But the data clearly shows that inequality in Spain increased during the Great Recession: the accumulated wealth of the richest 1% of households increased by 6.7 percentage points between 2005 and 2014, and that of the richest 10% by 11.3 points (Anghel et al., 2018).

Table 1. Concentration of net wealth in Spain and various OECD countries

	Germany	Denmark	Spain	USA	France	Italy	UK
Richest 1%	23.66%	23.62%	16.32%	42.48%	18.65%	11.69%	20.05%
Richest 10%	59.76%	63.98%	45.58%	79.47%	50.59%	42.78%	52.50%

Source: OECD Wealth Distribution Database (2014) for all countries, except Denmark (2015), Spain (2012) and USA (2016).

The type of assets that make up people's wealth is another issue we must address. These are diverse in nature and usually classified into two main types of assets: real (mainly real estate) and financial. Real assets in Spain are more prevalent than financial assets, as they represent 80.2% of total wealth.² Only main residences and other real estate owned by households represent 71% of total wealth. Nonetheless, this distribution varies considerably depending on the wealth levels of households, so that the greater the household wealth, the lower the prevalence of real estate and the higher that of financial assets. Thus, main residences represent on average 79%

2. Source: Survey of Household Finances (2014), Banco de España.

of the total wealth of 50% of households with less wealth. On the other hand, main residences represent only 25% of the total wealth of the richest 10% of households, while second residences and other real estate account for 34%. For this 10% of richest households, the prevalence of financial assets stands at 30%, and 10% for the half with the least wealth. This different distribution of elements making up wealth is important for the purposes of changes in its distribution, given that a fall in the price of real estate or a sharp rise in the stock market, to list just two examples, will logically not influence all households in the same manner.

Aim

The aim of this paper is to analyse the taxation of wealth in the hands of households through the system of a wealth tax and it has been structured as follows. First, we have analysed the features of this tax and its current role in EU countries. Next, the redistributive effect of Spain's tax as it is currently defined has been calculated, both in the short term, as in the present moment, and in the long term, as accumulated over time. After this, possible reforms have been proposed with the aim of improving the legal framework and their impact has been assessed. The paper concludes with some considerations on the future of this tax in our country.

2

General framework

Wealth tax (“IP” by its Spanish acronym) is levied each year on the net value of all assets that make up a natural person’s wealth, in other words, assets and financial rights minus debts. As opposed to income tax, IP levies value, regardless of the revenue that these assets generate for their holder.

A first argument in favour of applying this tax is that wealth gives a person an ability to pay that is in addition to that of income.³ Thus, imagine two individuals with similar personal circumstances who receive the same income, 80,000 euros, but whose wealth is very different: one barely has any assets and the other owns several flats, shares and bank deposits totalling 3 million euros. These two individuals would pay the same income tax, but in terms of their economic capacity, the individual with more wealth would be assumed to enjoy non-monetary benefits. These are embodied by greater security, prestige or even economic power, and these provide the person with an additional economic capacity to that already levied by income tax. It is therefore argued that IP plays a complementary role to that of income tax.

Another argument in favour of the tax is that excessive wealth concentration can lead to social instability, in addition to the fact that the process of wealth accumulation is self-reinforcing, thereby making it easier for inequality to increase over time. Individuals with higher earnings can save more and thus accumulate more income. Returns on investment tend to increase with wealth, given that these people can invest in riskier assets and also because they have a better financial education or easier access to professional advice. A progressive wealth tax should therefore reduce inequality by promoting equal opportunity.

However, an IP is not without its share of major criticism.⁴ First, because one needs to value all assets according to a common criterion, such as market value, when applying this tax in order to properly calculate the aforementioned additional payment capacity. In practice, however, this valuation can be complicated, as is the

3. See section 8.3 in Esteller-Moré et al. (2015) for a fuller explanation of arguments in favour of the tax.

4. See Durán-Cabré and Esteller-Moré (2014) for a fuller explanation of the criticisms of the tax.

case with real estate, which in Spain accounts for almost three quarters of household wealth. The values on which taxes are levied on it are often inevitably very different from those of the market, thereby leading to inequities and distortions.

The tax aims to levy all the assets of a individual, but in practice it is common to establish special treatments on assets, such as those applied to economic activities, main residences or pension plans. A second criticism levelled at it is that these special treatments encourage tax avoidance (Durán-Cabré et al., 2019) or even tax evasion (Durán-Cabré et al., 2018), thereby hindering the achievement of the redistributive objective, given that the richest individuals are those who most often benefit from them.

Its complementary nature with income tax implies that a joint limit must be established between what is paid for income and wealth in relation to people's income in order to avoid the confiscatory nature of the tax. The basic idea is that an individual should not have to sell any assets or go into debt in order to pay the tax. In the case of Spain, the limit of this confiscatory nature is recognised by the Constitution in Article 31.1. However, this limit once again facilitates tax avoidance practices⁵ that reduce the tax's revenue capacity and redistributive potential (Durán-Cabré et al., 2019).

Finally, the tax is also criticised because the IP faces the inherent difficulties of taxing a highly movable factor when it is applied to all capital, including financial capital. This capital can be transferred to other territories, such as tax havens, which offer their owners the required secrecy to avoid tax authority controls.⁶

5. For example, savings are placed in assets that generate capital gains, such as investment funds, thereby reducing the annual amount of income until the capital gains are obtained.

6. The tax gap indicates the part of potential tax revenue that is not obtained in the voluntary compliance period. It is estimated that the IP tax gap in the case of Catalonia is 44.34%, of which 56.40% is attributed to undeclared assets located abroad (Durán-Cabré et al., 2018).

3

Wealth taxation in Spain and EU

Wealth tax in Spain

The IP in Spain has been in existence ever since the tax reform that began in 1977, which aimed to modernise Spain's tax system following the arrival of democracy, although major peculiarities have arisen throughout its history. First, because it was first developed as a temporary, extraordinary tax until 1991, when it became "definitive". Second, the decision was made to abolish it de facto in 2008 by introducing a 100% rebate in light of the tax's supposed inability to achieve its redistributive objective. And third, because it was reintroduced for a transitional period of two years in 2011, in the midst of the economic crisis, with the dual purpose of guaranteeing financial sufficiency and complying with the equity of the tax system.⁷ Nonetheless, the application of the tax has been annually extended until today following these initial two years.

Box 1 provides a summary of the main elements of its legal structure. The only innovations to be approved with the reintroduction of the tax were a considerable increase in the minimum declared exemption threshold (up to 700,000 euros) and the maximum amount of the main residence, which is also exempt (up to 300,000 euros).

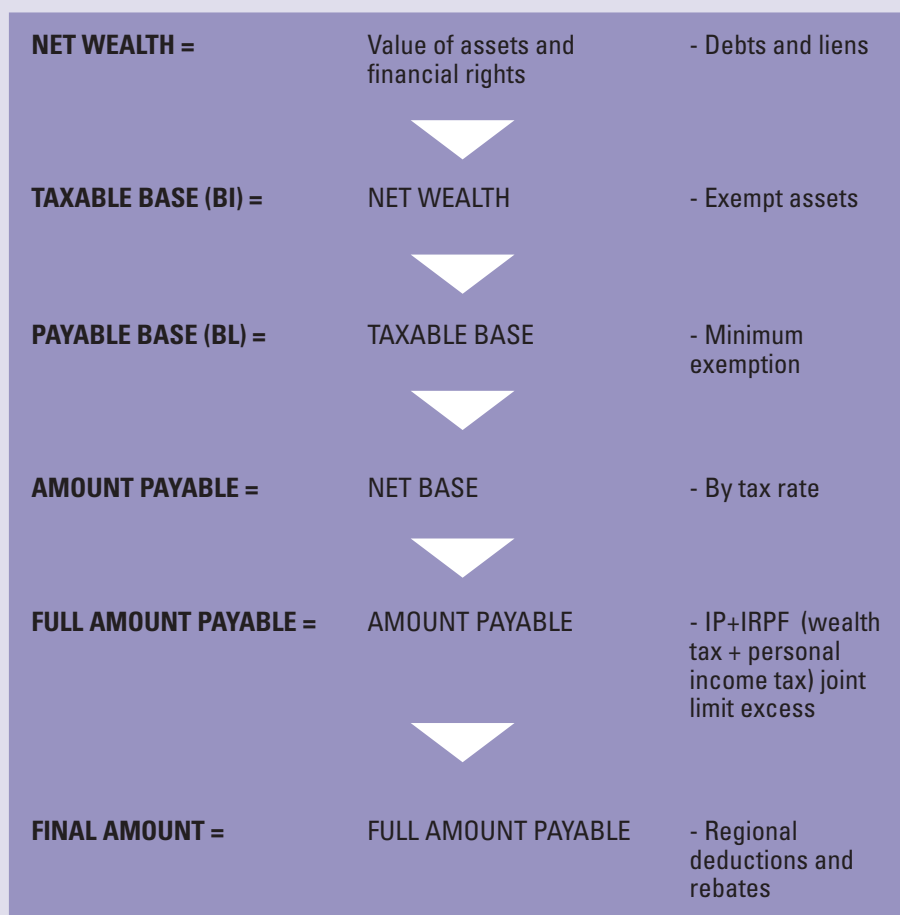
The tax was fully transferred to Spain's autonomous communities in the early stages of the country's development into a state of autonomies in the 1980s, alongside their capacity to also administer it, in other words, to control its proper compliance. Similarly, Spain's autonomous communities received regulatory powers in 1997 by virtue of which they can decide on the amount of the minimum exemption threshold, establish the tax rate they deem fit and approve any tax rebates and deductions. For this reason, the minimum exemption threshold is 400,000 euros in Aragon, 500,000 euros in Catalonia and Extremadura and 600,000 euros in Valencia, while eight communities apply their own tax rate, for example, taxpayers in the Community of Madrid do not pay the tax because this region has established a general rebate of 100%, which in the case of La Rioja stands at 75%.⁸

7. Royal Decree-Law 13/2011, which reinstated the tax, argues that "those who have more contribute more to emerge from the crisis by strengthening compliance with the objectives of budgetary stability assumed by Spain".

8. See REAF (2019) for a detailed analysis of the regulatory changes introduced by the autonomous communities.

Box 1. Most important elements of Spain's wealth tax

The tax is levied on the net wealth (NW) of natural persons, in other words, on assets and financial rights minus debts and liens. The tax is declared individually, which means that in marriages the assets must be distributed between the spouses as appropriate. The figure below indicates its structure and most important elements.



The taxable base ("BI" by its Spanish acronym) is made up of the value of the encumbered assets, which are generally valued at market prices, although specific criteria are established for certain assets. This is especially true in the case of real estate, for which the highest value is taken between the acquisition price and cadastral value. When it comes to shares of unlisted entities, the value is usually according to the company's balance sheet, in other words, according to accounting criteria.

Certain items are exempt and are subsequently not included in the tax base. The two most important exemptions are that of an individual's main residence, up to a maximum amount of 300,000 euros, and that of assets assigned to economic activities and holdings in specific entities, which are classified as a family business exemption. Certain requirements must be met in order to apply the latter exemption.

A minimum exemption threshold is applied to the BI value, which is generally 700,000 euros, to which all individuals are entitled, and the taxable base ("BL" by its Spanish acronym) is obtained from this, on which the tax rate is applied to calculate the full quota. The tax rate is progressive in stages, given that it increases with the BL. The

rates range from 0.2% to 2.5% (if they have not been altered by the autonomous communities).

The quota obtained cannot exceed a certain limit. Specifically, the sum of the total IRPF (personal income tax) and IP (wealth tax) quotas, with some peculiarities, cannot exceed 60% of the IRPF taxable base. If it does exceed this, the IP quota is reduced (not the IRPF quota), although this reduction cannot exceed 80% of the quota. In other words, at least 20% of the total IP quota should be taxed.

Any deductions and rebates that the taxpayer may be entitled to on this obtained quota are finally applied, and these may be regulated by the autonomous communities. Thus, the Community of Madrid has been applying a 100% rebate ever since the tax was reintroduced in 2011, which means that its residents do not ultimately pay the tax. The autonomous communities can also regulate the minimum exemption threshold and rate. Regulations in Spain's foral territories (Navarre and Basque Country) are different, although the tax is broadly similar.

Wealth tax in EU and OECD

The tax has been abolished from most tax systems and Spain is currently the only EU country that actually applies an IP. The latest country to abolish it was France, which did so in 2008,⁹ reconverting it into a tax that levied only real estate. It was known there as a solidarity tax on fortunes or, previously, a tax on large fortunes, an appropriate name when the minimum exemption threshold is high, therefore levied only on the richest taxpayers. Norway and Switzerland now also apply this tax within the OECD.

Nine OECD countries have eliminated it from their tax systems since the mid-1980s.¹⁰ Analysing the official arguments given for its elimination shows that there is no single justifiable reason, as the reasons were financially and politically specific to each country. But one common element that justified its elimination is the difficulty of taxing a factor as mobile as capital in today's world.

The tax was eliminated in the Netherlands in 2001, although it was done so within the framework of a joint income reform that involved introducing a dual tax levied at a rate of 30% on capital income. But the difference was that these incomes are estimated by taking a rate of return of 4%, which is applied to the value of the assets and can therefore implicitly be considered as a rate of 1.2% on assets. There was some discussion in several countries with the onset of the crisis, such as Germany, Denmark or Sweden, about its possible reintroduction, but it was ultimately only reintroduced in Spain.

9. A critical analysis of its elimination can be found in Thomas Piketty (2018): "Yellow vests' and tax justice", *Le Monde*, 11 December 2018.

10. Austria, Denmark, Finland, France, Germany, Iceland, Luxembourg, the Netherlands and Sweden.

In any case, analysing the experience of other developed countries also shows that an IP has never been implemented in a considerable number of countries, such as, for example, Portugal, the UK or the USA. But a major discussion is currently underway in the US about the possible introduction of an IP specifically on the basis of a proposal by Democrat Senator Elizabeth Warren, and this is discussed in Box 2.

Box 2. A daring wealth tax proposal in the US

Two prominent US-based French economists, Emmanuel Saez and Gabriel Zucman (2019), have studied the effect in the US of applying an IP with a minimum exemption threshold of \$50 million, without any special treatment and with a tax rate of 2% that would increase to 3% for assets greater than \$1,000 million. According to their estimates, the tax would generate high revenue of 1% of GDP, although because of its high minimum exemption threshold, it would only be paid by less than 0.1% of North American households. The effect of varying some of the tax parameters can be calculated by using this [wealthtaxsimulator](#) available on the Internet.

Saez and Zucman underline the importance of not offering any exemption or special treatment, because otherwise revenue would be reduced and it would lead to a change in wealth composition towards exempt assets, thereby also making tax control difficult. In this sense, the obligation that all of the world's financial institutions have had since 2010 to identify and inform the US Internal Revenue Service (IRS) about the amounts of their North American clients, as a direct result of the law known as FATCA, would facilitate the control of assets located abroad.

As regards the flight of capital to other countries that a tax of this type could cause among the richest individuals, Saez and Zucman argue that this would be particularly difficult in the case of the US, because one of this country's peculiarities is that the main criterion for having to pay taxes there is not residence, as is common practice, but nationality. Therefore, US nationals have to pay US taxes even if they do not reside in the country, unless they renounce their nationality

What are we talking about in terms of tax revenue?

The total revenue generated by the IP in Spain in 2016 amounted to 1,241 million euros, including the revenue obtained in the foral territories of Navarre and the Basque Country. This figure is not even 0.2% of Spanish GDP (Table 2:), a very small amount compared to the weight of other taxes such as personal income tax ("IRPF" by its Spanish acronym) or VAT, which in Spain represents around 7.5% and 6.5% of GDP respectively. However, as mentioned above, the limited revenue capacity of the IP is one of its specific characteristics, as can be seen in all the countries that apply or have introduced it until recently. Only in Switzerland does it account for 1% of GDP. In fact, this low revenue level is another reason that has helped to eliminate the tax, given that it does not represent an unbearable burden for public finances.

If we analyse its importance as regards the revenue of the autonomous communities, whose governments collect it, we can see that it is also low and represents 0.82% of non-financial revenue and 1.31% of tax revenue.¹¹ The fact that the IP has a high tax gap, which is estimated at around 45% in the case of Catalonia (Durán-Cabré et al., 2018), also contributes to this reduced tax burden. The tax gap indicates the part of a tax's potential revenue that is not obtained within the voluntary compliance period. It should also be noted that the transfer of a tax with a clear redistributive objective to sub-central governments is a specific feature of the Spanish system, given that this role is usually attributed to central governments.

Table 2. Revenue of the tax (2016).

	Spain	France	Norway	Switzerland
% IP / GDP	0.18%	0.22%	0.43%	1.03%

Source: OECD, Revenue Statistics.

11. Data referring to 2016, without including the Community of Madrid, as it does not collect this tax. We will return to this question later.

4

The redistributive effects of wealth tax

Elements of the reform

We already know that the IP can help to reduce inequality in wealth distribution, but we also know that it can lead to a significant presence of tax evasion and avoidance depending on its legal set-up. Our goal is now to quantify and analyse the tax's redistributive capacity in its current set-up and in alternative reforms that we will propose in order to eliminate, or at least mitigate, tax avoidance practices. The problems generated by tax evasion will in any case remain in the hands of tax authorities, although our simulations will also provide information, however tentative, on the current tax.

The tax's legal structure contains several key elements, as can be seen in Box 1, which will be conveniently taken into account in our simulations:

- // Exemptions: specifically those referring to main residences and to assets and participations related to family businesses.
- // Minimum exemptions: minimum wealth of any taxpayer who ceases to pay taxes.
- // Joint income and wealth limit to avoid its confiscatory nature (from now on, designated as "limit"), linking together the IP quota with that of IRPF.

The above legal elements will play an important role in the various tax reforms that we are going to simulate and analyse, although we will not apply the exemption of the family business, given that it is an important source of tax avoidance and evasion (Durán et al., 2018 and 2019). We also believe that other mechanisms exist to favour these types of businesses (Dondena, 2017, pp. 71-74).

For the sake of simplifying the tax, and in line with Saez and Zucman's proposal (2019) (Box 2), our proposal is compatible with the existence of progressivity, and therefore redistribution, and comprises a linear tax (minimum exemption threshold plus single tax rate) rather than a progressively tiered rate.

Average tax rates calculated as a percentage of net wealth are low when compared, for example, with those of personal income tax. However, the IP levies the wealth that a person has been able to accumulate over time, a process that requires a certain amount of time, so it seems reasonable that any analysis of the tax's redistributive capacity is conducted in the long term. For this reason, we have calculated the short-term average rate (tme_s/t), in other words, the amount finally paid in the first year on net wealth value, and we have also calculated what we call the long-term average rate (tme_l/t). The latter is obtained by assuming that the same IP is applied each year (short-term average rate) for a certain period of time and for a certain annual revaluation of wealth. Our calculations are explained in more detail in Appendix 1.

Income and wealth simulator: Banco de España's Survey of Household Finances

The Banco de España has been publishing its Survey of Household Finances ("EFF" by its Spanish acronym) every three years since 2002, providing valuable information on the wealth composition and distribution of Spanish households. We are going to use this information to design an income and wealth simulator that we have dubbed "SIMPA". We say "income and wealth" because the income information that is also contained in the survey helps us to be able to assess whether the requirements for the exemption of assets and shares of family businesses are met, as well as to assess the application of an income and wealth limit to avoid the confiscatory nature of the IP, if the case requires.

Using a sample of 6,120 households, the survey helps to provide us with as real a picture as possible of wealth composition and distribution in Spain. It should also be noted that the EFF over represents households with a high level of wealth, a feature that is especially relevant in the IP, given that it is levied on the richest taxpayers. We will use the results obtained in 2014, which are the latest available at the time of conducting the study. This should not represent an obstacle in drawing at least interesting qualitative conclusions on the effects of alternative reforms. We analyse alternatives to using the EFF, with its pros and cons, in Appendix 2.

We provide a detailed explanation of the main methodological assumptions used in Appendix 3. The survey is representative of the national territory and we will therefore not be able to take into account the possible existence of differences in the design of this tax by autonomous communities. Our simulation analysis, which includes the Basque Country and Navarre, should therefore be interpreted as the analysis that would occur if the tax were harmonised, in such a manner that any possible distortions arising from interterritorial mobility are avoided in the face of differences in the tax among autonomous communities. In other words, it provides us with information on the maximum redistributive power of the tax at a national level.

Our simulator is therefore based on household information and calculates net wealth per individual, the exempt amount of the main residence and that of shares and assets of family businesses, when the legal requirement for applying these are

met.¹² The simulator also considers the limit when applicable. In short, the EFF provides us with enough information to achieve our objective, which is to assess the tax's redistributive capacity in the long term. We will calculate the redistributive capacity per household, although the taxpayer unit of the tax is the individual according to our legislation.¹³ It should finally be pointed out that it allows us to compare the potential and real results of the current tax, given that the survey is not based on declared data. This is precisely what we have done in the next section.

Use of data at aggregated level: reality versus potential of current tax

The main pre-tax inequality indicators can be seen in the first column of Table 3 and these will serve as a reference for analysing alternative reforms. The results of the current tax according to our SIMPA simulator can be seen in the second column, which we have dubbed "potential current IP", given that it shows the current tax results for the wealth declared in the survey and valued at market prices. This is why we have called it "potential". In this case, the current tax achieves reasonable redistribution levels in the long term (25 years) and very long term (85 years). For example, the Gini index falls slightly more than 0.4 and 2 percentage points after 25 and 85 years respectively, and the percentage of wealth in the hands of the richest 1% by slightly more than 1 and 4 percentage points.

The forecast revenue for the short term, in other words for the base year, would be 3,691,968.5 million euros, a revenue that is far removed from reality. For the year 2014, including the Basque Country, Navarre and also the Community of Madrid,¹⁴ the actual revenue was 39.2% of this potential amount; in other words, potential revenue is 2.5 times higher than real revenue.

The estimated tax gap is 60.8%. This is undoubtedly a very high percentage, higher than that estimated by Durán-Cabré et al. (2018) for Catalonia, 44.3%, by means of an alternative methodology based on analysing the realm of tax returns. It should be borne in mind, however, that the EFF's valuation criteria are market-based, a particularly relevant aspect as regards real estate and shares in unlisted companies, which represent 75% of the assets of Spanish families.¹⁵ In any event, the difference between actual and potential revenue is a fact that undoubtedly lessens the tax's redistributive capacity.

12. The simulator specifically allows us to identify whether the income derived from the shares represents more than half a person's income, in which case we consider the right to apply the exemption, on the understanding that the requirements of managerial functions in the company and minimum participation would also be met. This is explained in detail in Appendix 3.

13. As explained in Appendix 3, the so-called "splitting method" is used to calculate the number of taxpayers in a household. In other words, to the extent that the subject in question lives with and is married to another individual, we will assume that their incomes and net wealth are divided by two. In all other cases, we will assume that all income or net wealth corresponds to the individual, designated as the subject in question in the EFF.

14. The Community of Madrid has applied a 100% rebate ever since the tax was reintroduced in 2011. We have made a very simple calculation to include the potential collection of this Community: we have assumed that revenue in 2007 would have grown at the same rate as it did in Catalonia. Although this is a limited assumption, it seems suitable enough for us to make the aggregated results of our simulations comparable with (estimated) reality.

15. Discrepancies in the valuation of tax real estate assets are analysed in Durán-Cabré and Esteller-Moré (2010).

Table 3. SIMPA: Inequality before and after current tax

	Situation before IP	Potential current IP	Corrected current IP
A // SHORT-TERM EFFECT			
Revenue (€K)	n/a	3,691,968.5	1,303,781
% real/potential or corrected revenue	n/a	39.21%	90.07%
tme s/t (before/after limit)	n/a	0.058% / 0.0352%	0.058% / 0.014%
% individuals/home with positive quota	n/a	0.9659% / 2.015%	0.9659% / 2.015%
B // LONG-TERM EFFECT (25 YEARS)			
Gini index	0.6609	0.6569	0.6608
Richest 1%	19.45%	18.14%	19.01%
Richest 10%	51.63%	50.79%	51.37%
tme l/t (total/quota > 0)	n/a	0.832% / 5.701%	0.343% / 2.352%
C // VERY LONG-TERM EFFECT (85 YEARS)			
Gini index	0.6609	0.6394	0.6502
Richest 1%	19.45%	15.19%	17.92%
Richest 10%	51.63%	48.88%	50.44%
tme l/t (total/quota > 0)	n/a	2.49% / 17.04%	1.115% / 7.639%

n. a.: not applicable

In order to have an idea of this decrease, we have shown the results obtained with SIMPA in the third column if the potential tax revenue (second column) is corrected downwards by taking into account the tax gap estimated by net wealth deciles in Durán-Cabré et al. (2018) for Catalonia. Caution must be applied to these results, as we are assuming that the tax gap obtained for Catalonia is distributed equally throughout Spain and that its level is similarly identical. Nonetheless, the tax revenue can be seen to be much closer to the real level (long-term rates are reduced to half their potential level) and its redistributive capacity is greatly reduced compared to the potential situation by concentrating the tax gap in the upper levels of wealth.

In short, we have a tax that can play a major role in reducing wealth inequality in the long term, but does not do so because of the existence of fraud. This is undoubtedly a challenge for tax authorities.

Use of data at disaggregated level

Who should pay?

The data shown in Table 4 is that obtained from the “potential current IP” and allow us to ascertain that Spain’s current IP should only be levied on the richest households.¹⁶ As a result of the exempted minimum and exemptions, there are only taxpayers in households from the 94th percentile, that is, among the richest 7% of households. Likewise, it can be seen that there are paying and non-paying households in the same wealth percentile, which is primarily due to the exemptions of main residence and family business; even 11.69% of households from the 100 percentile do not manage to pay the tax. Nonetheless, the final column of Table 4 shows that the share paid by the richest percentile represents 91.99% of the total potential share, a very high value indeed. We would finally like to point out the enormous disparity in wealth that exists between the richest 1% of households, including in this group households with assets ranging from just over 2 million to 524 million euros.

Table 4. SIMPA: Potential distribution of taxpaying households

Percentile	Average net wealth	Minimum net wealth	Maximum net wealth	% payers within percentile	% total quota
94	712,937	674,492	755,044	0.04%	0.00009%
95	803,292	755,063	855,800	8.81%	0.00533%
96	917,907	857,000	986,023	1.11%	0.00692%
97	1,094,068	986,525	1,195,506	28.27%	0.41%
98	1,323,794	1,195,860	1,488,011	17.05%	0.74%
99	1,644,263	1,488,055	2,108,324	62.57%	6.83%
100	5,053,378	2,110,405	524,000,000	88.31%	91.99%

In short, the Spanish tax in its current set-up would be levied on the highest fortunes, but the existence of exemptions and the limit on the total quota greatly distort the tax’s redistributive capacity, as we will analyse below.

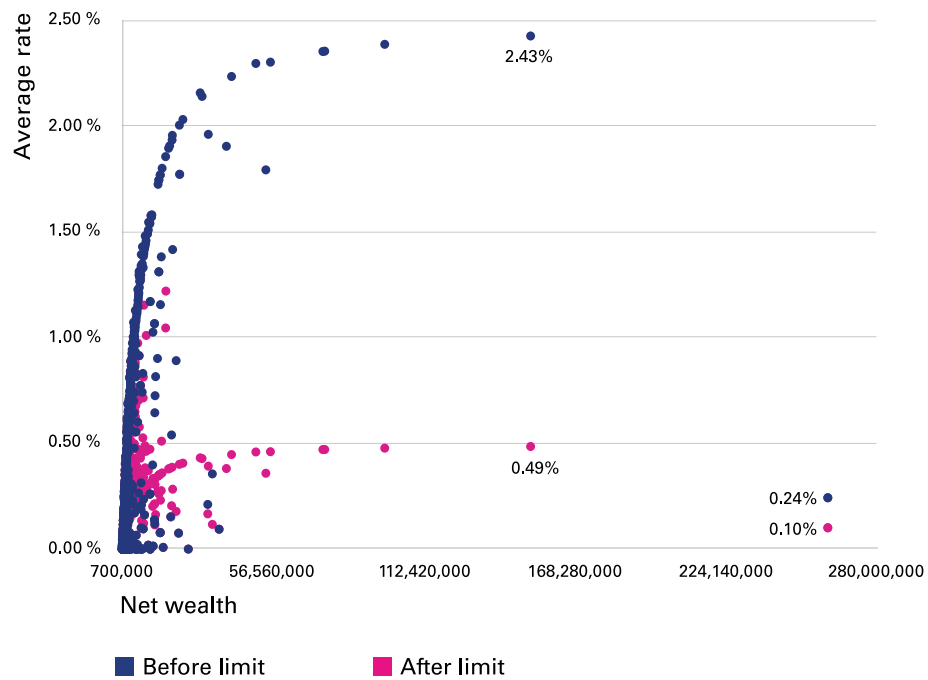
Effect of joint income and wealth limit

This limit has been established so that the IP quota plus IRPF does not exceed a maximum percentage of a person’s income, in order to avoid a confiscatory nature of the IP, and this involves reducing the IP share to a maximum of 80%. For taxpayers located in the two richest percentiles (in which 98.5% of paying

16. The taxpayer is always the natural person in Spain’s IP, never the household. For this reason, quotas are always calculated by individuals. But when it comes to estimating inequality in wealth distribution, as is customary in the literature on distribution, it is calculated per household.

households can be found),¹⁷ Figure 1 shows the average rate on net wealth before (blue) and after (orange) applying the limit. The average rate increases in both cases as net wealth increases at a declining rate, given that the average rate cannot be higher than the maximum marginal rate of 2.5%. But the average rate decreases substantially for many taxpayers when this limit is applied. For example, take the extreme case of a taxpayer who claims to have a net wealth of 152 million euros in the survey: without the limit, this person would have to pay €3,691,350 (rate of 2.43%), while with the limit, the person ultimately pays “only” €738,264 (rate of 0.49%).¹⁸

Figure 1. SIMPA: Average rate of current IP before and after joint income and wealth limit

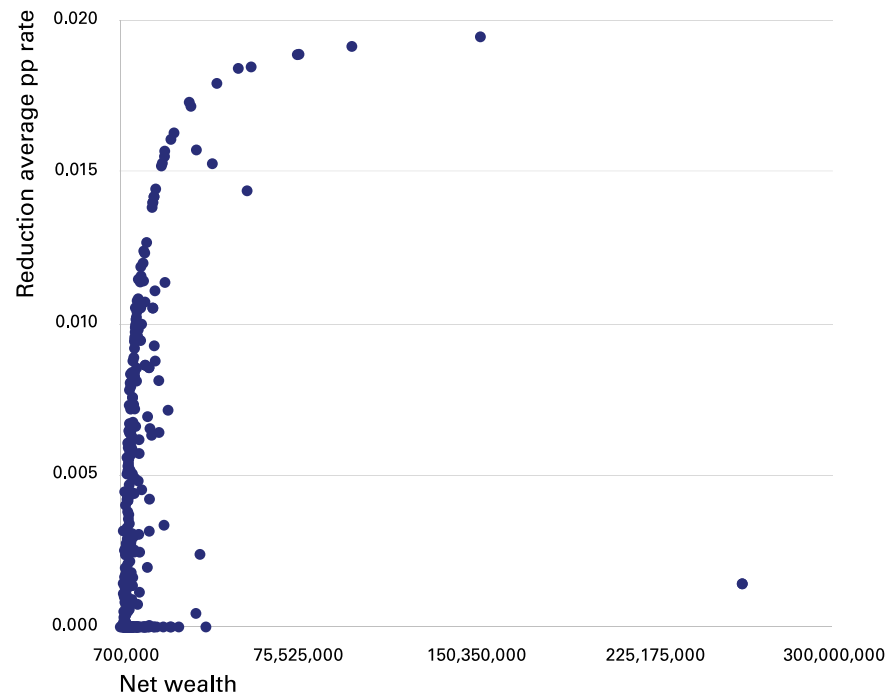


At an aggregated level, the revenue that is no longer obtained as a result of the limit is 2,682 million euros, almost 73% of current potential revenue. In addition, a reduction of the average rate increases with household wealth, as can be clearly seen in Figure 2, which means that the limit is regressive, a very important aspect for our analysis.

17. Average rates are individually calculated for contributors to the EFF sample and they are shown in all Figures without assessing the weight of each household in the sample.

18. In this case, we have observed that applying the limit does not imply that the final IP quota is less than 20% of the initial quota.

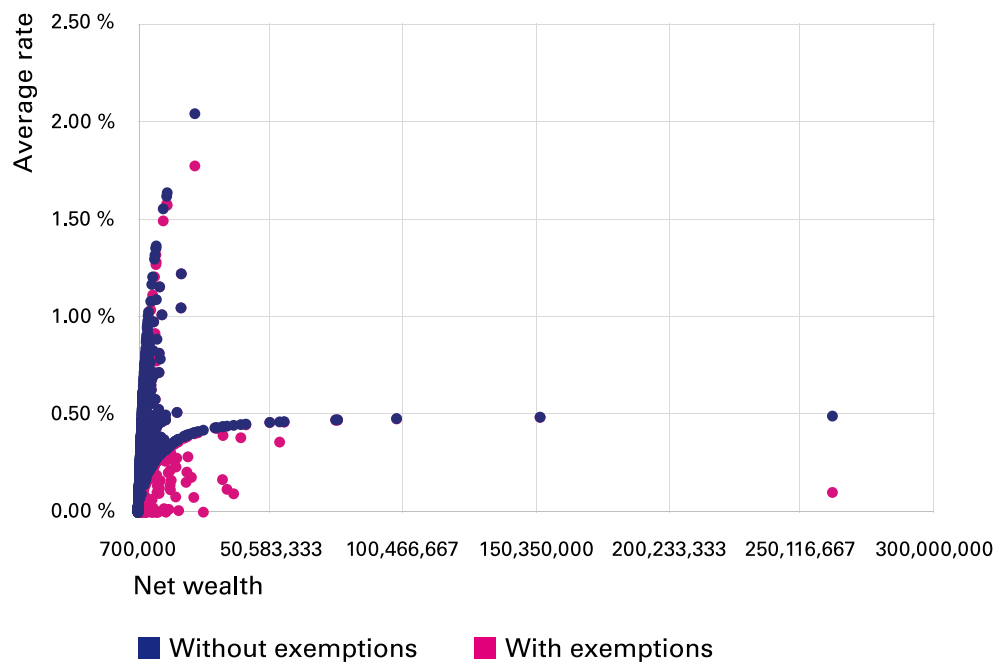
Figure 2. SIMPA: Reduction of average rate by percentage points due to application of joint income and wealth limit



Effect of exemptions

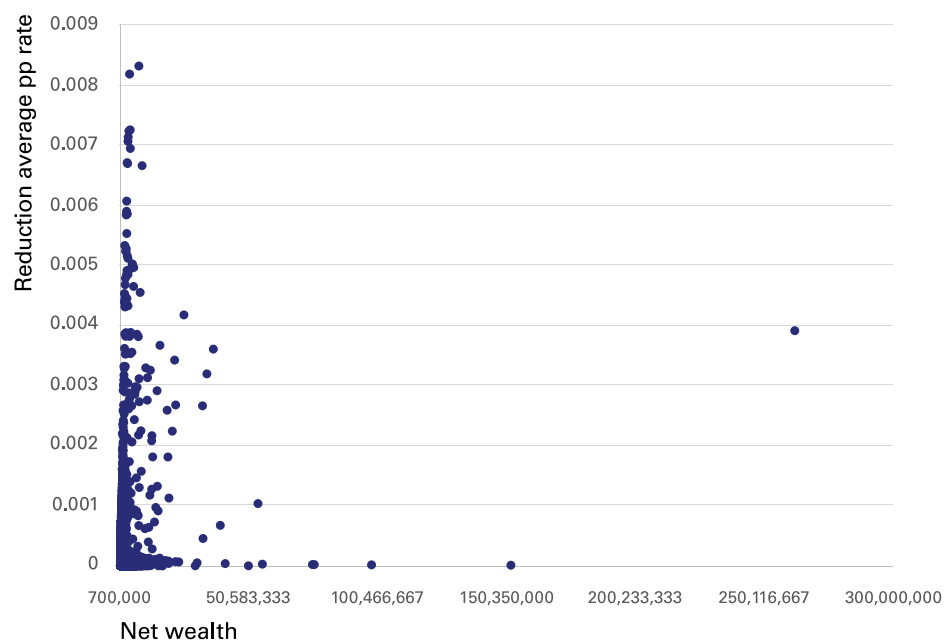
Figure 1 shows how the average rate tends to increase with household wealth before the limit (blue), although this is not always true and richer taxpayers bear lower average rates than less rich taxpayers. This is due to the joint application of home and family business exemptions. We will now analyse their effect on progressivity. Figure 3 once again shows the average rate taking into account the joint income and wealth limit for the richest 2% of households, both without (blue) and with (orange) applying the exemptions. Eliminating the exemptions would in this case increase revenue by 1,352 million euros, almost 37% of current potential revenue. In other words, the revenue importance of both exemptions is half of that resulting from applying the limit. The most obvious case shown in Figure 3 is that of the richest taxpayer in the survey. Thanks to the exemptions (in this case, only the family business), this person would have to pay €264,568 and would pay €1,289,747 if the exemptions were eliminated.

Figure 3. SIMPA: Average IP rate without and with housing and family business exemptions after joint income and wealth limit



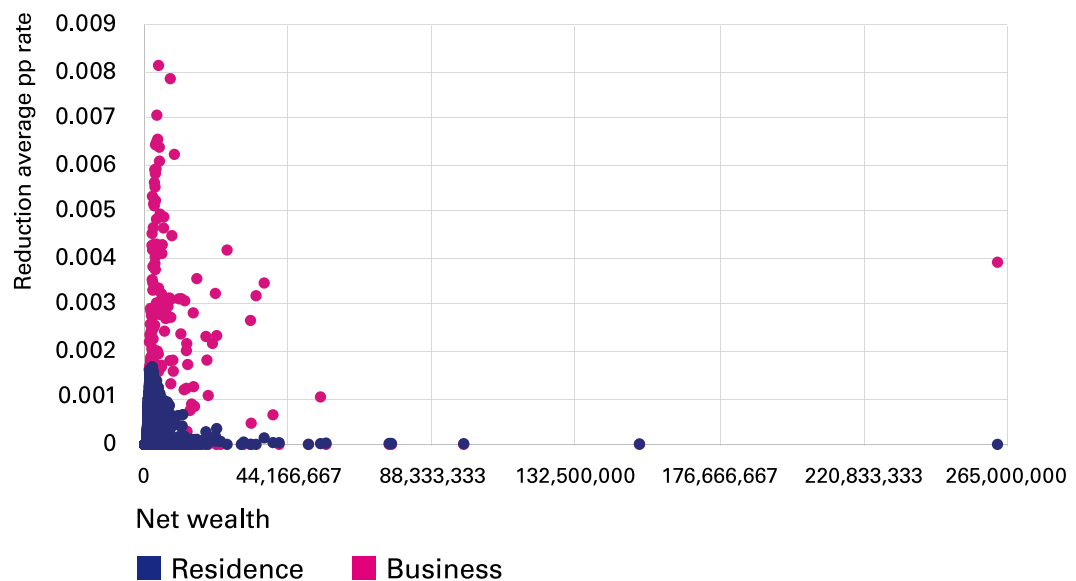
If we also look in this case at how reducing the average rate changes with household wealth (Figure 4), we can see that the impact on the tax's progressivity remains unclear, and there is very high heterogeneity by levels of wealth. It appears as if the effect is not clearly regressive as opposed to what happens with the limit. Although the importance of this issue justifies further study.

Figure 4. SIMPA: Reduction of average rate by percentage points due to application of exemptions



With this aim in mind, we have differentiated the effect of each exemption on an individual basis. Thus, in Figure 5 we show the amount of the average taxpayer rate by including the exemption of the main residence (blue) and for the family business (orange), although in this case it is for all households in the sample. In Figure 6, the same information is shown sequentially for sections of households divided into lowest to highest wealth, from left to right. This sequence helps us to observe how the exemption of the main residence (blue) leads to savings that increase with wealth in a first phase until reaching its maximum value for households whose wealth is between 1.5 and 3 million euros. Savings tend to decrease slightly in households whose wealth is between 3 and 10 million, and it is from 10 million when the effect is clearly less pronounced. The design of the exemption, with a maximum amount of 300,000 euros, most certainly triggers this effect. If we similarly analyse the exemption of the family business (orange), we can see that its effect is somewhat different because the reduction in the average taxpayer rate increases more clearly with net wealth. Consequently, the two exemptions reduce the tax's progressivity, although this effect is much more pronounced in the case of family businesses.

Figure 5. SIMPA: Reduction of average rate by percentage points due to application of exemptions of main residence or family business for all households



Joint application of exemptions and income and wealth limit

In the two previous sections, we separately analysed the effects of the limit and exemptions, but the possible elimination of the exemptions may in practice affect the extent of the limit. This can be seen in Figure 7, where we show the effects of the joint limit in four alternative scenarios for the richest percentile: current situation with exemptions, IP without exemption of the main residence, IP without exemption

of the family business and IP without either of these two exemptions. The left axis shows that the average savings from the limit clearly increase as taxed wealth increases, especially when the family business exemption is removed, as well as the percentage of households benefiting from the limit (right axis). If neither of these two exemptions is applied, the average savings from the limit for the richest 1% of households would total almost 7 million euros, benefiting 32% of households.

Figure 6. SIMPA: Reduction of average rate by percentage points due to application of exemptions of main residence or family business according to household wealth



These results are particularly interesting because they demonstrate the importance of jointly assessing all elements of the tax. The exemptions, especially for family businesses, partly substitute the limit. If they were to be eliminated, it could be thought that this would considerably increase the share of the richest households, thereby strengthening the tax's progressivity. Nonetheless, the richest households would benefit more from the limit if they were eliminated, so that the aimed improvement in the tax's progressivity would not be achieved. Both the exemptions and limit have a regressive effect, for in both cases they mostly benefit the richest households. But this effect is even clearer in the case of the limit, as can be seen in the sequence of Figure 8, which from left to right shows the reduction in the average rate in percentage points as household wealth increases. It can also be seen that the exemptions are generally regressive, although there is more heterogeneity when compared to the limit. On the other hand, the saving of the limit only increases clearly for households whose net wealth is higher than 3 million euros.

Figure 7. Effect of joint IRPF+IP limit on percentile 100: average savings and percentage of households benefited

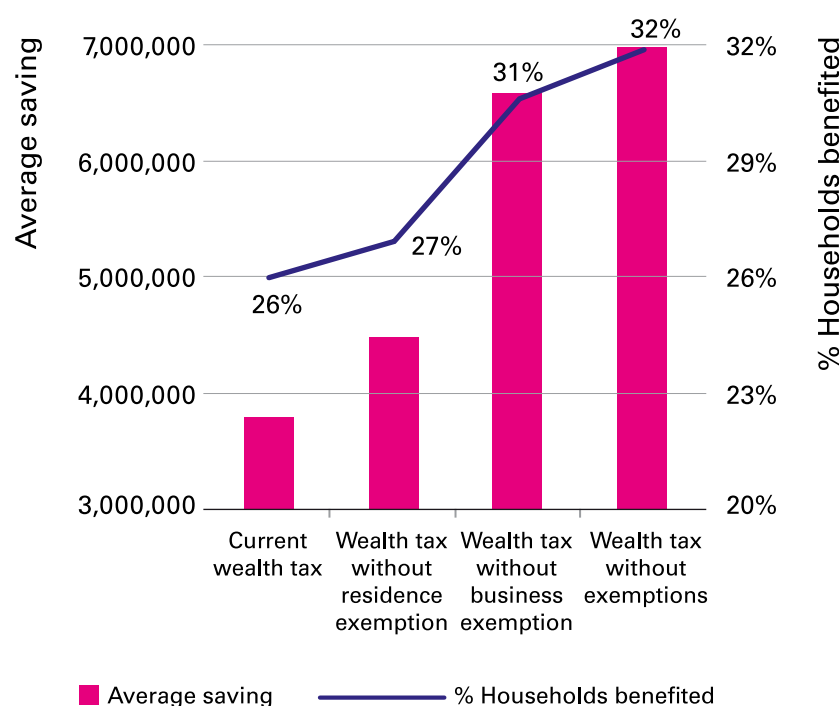
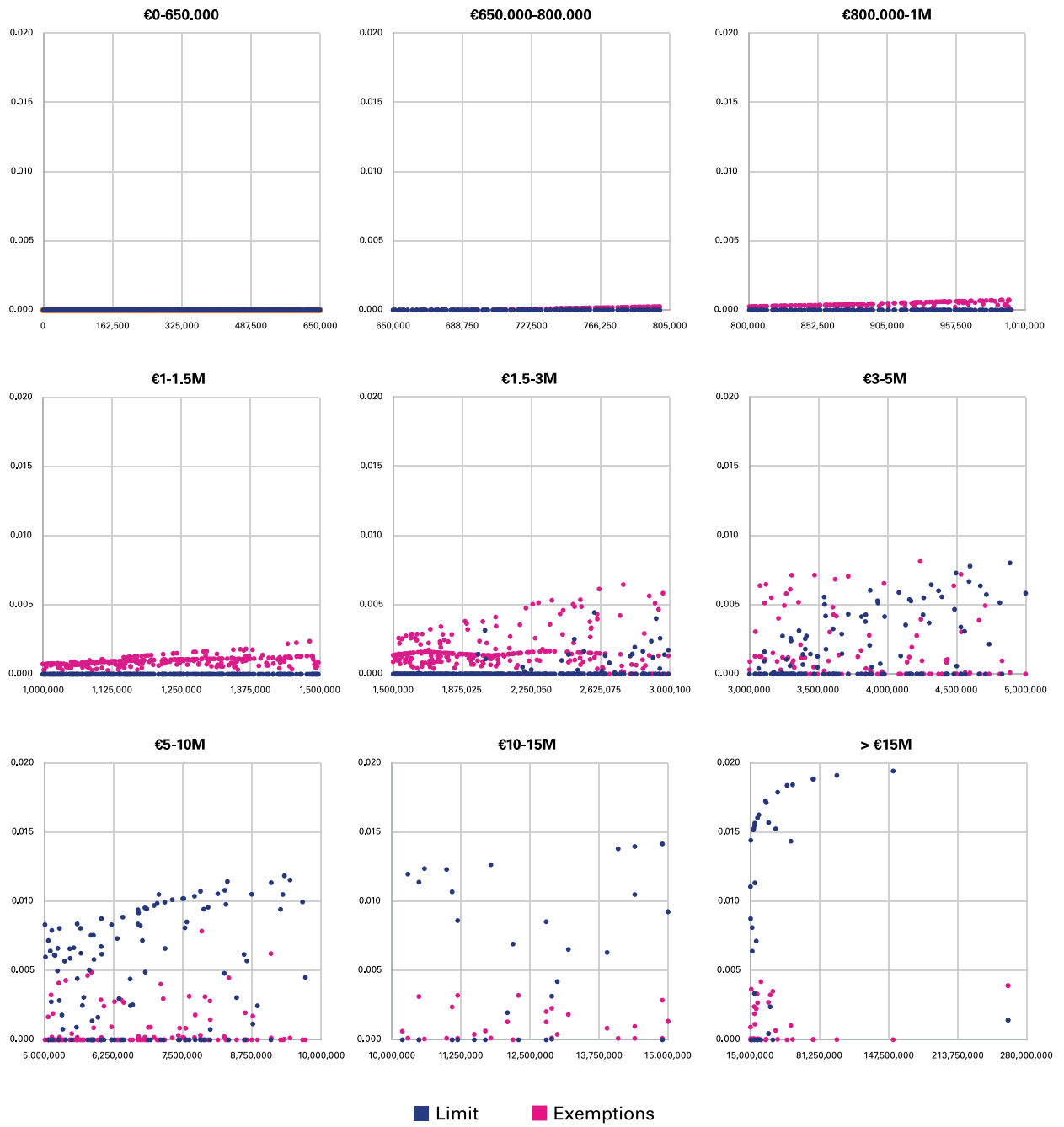


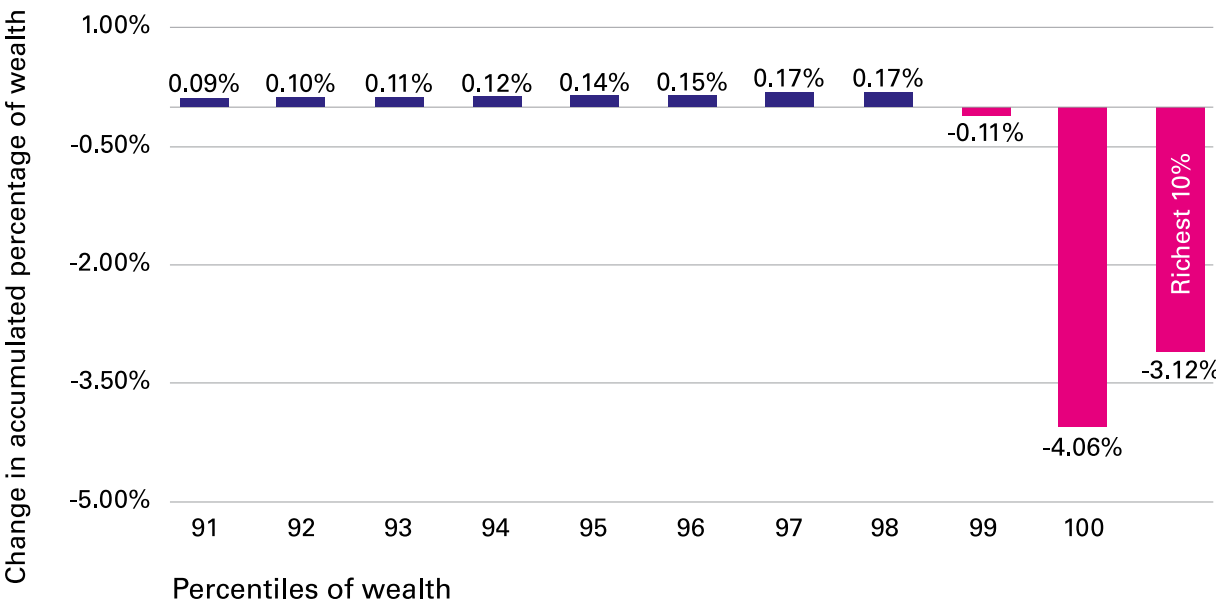
Figure 8. SIMPA: Reduction of average rate in percentage points due to application of exemptions and joint IRPF+IP limit according to household wealth



Long-term effects of current IP

In addition to considering all the elements of the tax to assess its potential for redistribution, we will now look at the potential long-term effect of Spain's IP (Figure 9), in which we calculate the average percentile variations that the richest households would experience if the current tax were applied over an 85-year period. Following this period, we determine the percentage of total wealth held by each percentile. Based on this, we found that it is taxed on only 2% of the richest households (percentiles 99 and 100), especially on the richest 1%. The amount of their wealth would decrease by almost 4%.

Figure 9. SIMPA: Variation in accumulated percentage of wealth after 85 years of IP and g=1%. Percentiles 91-100 and decile 10



*Analysis of tax effect over 85 years, assuming that the wealth of these household percentiles will increase by 1% annually over this time.

5

Proposals and assessment of IP reform by using SIMPA simulador

Reforms for tax revenue equality

The IP can be reformed and structured in various ways. But for reasons that we have already mentioned, our proposal is not to include the exemption of shares and assets related to family businesses in all the simulations. We have specifically simulated three alternative reforms with one restriction, which is that all three are equivalent in revenue terms to that of the potential current tax. As can be seen in Table 5, there are no exemptions in either simulation 1 or simulation 2 and we only take into account the main residence in simulation 3. Therefore, our aim is to make it simpler and more neutral by taking the tax's current structure as a reference, as well as aiming to eliminate a major source of tax avoidance. In doing so, the base is broader (all wealth is taxed), which means that the same revenue can be obtained as with the current tax even though the minimum exemption thresholds are higher. This is especially relevant in simulation 1, as it is not corrected for the potential confiscatory nature of the tax, with a highest minimum exemption threshold of 2,280,641 euros. We have assumed a linear tax rate of 1% in all three cases.

Table 6 shows the effects that the simulations would have in terms of redistribution if they were applied over an 85-year period, assuming an annual return on wealth of 1%. The effects of the three simulations compared to the current tax would generally be quite similar if we look at the Gini index (remembering that the Gini is initially 0.6609). Eliminating the joint income and wealth limit would cause the percentage of wealth in the hands of the richest 1% to decrease slightly in simulation 1. It can also be seen that a higher minimum exemption threshold means that the percentage of households paying the tax is 0.47%, well below the current 2%. Therefore, as fewer households pay, their long-term average rate is clearly much higher: 31.73%. Whether or not the exemption of the main residence is eliminated has hardly any impact on redistribution, as can be seen from a comparison of simulations 2 and 3. Finally, it is worth noting the importance of the tax's redistributive effect over time. As can be seen in Figure 10, the concentration of wealth in the hands of the richest 1% clearly decreases over time, both in the three simulations and in the current tax. In any case, simulation 1 is the most redistributive (due to eliminating the limit).

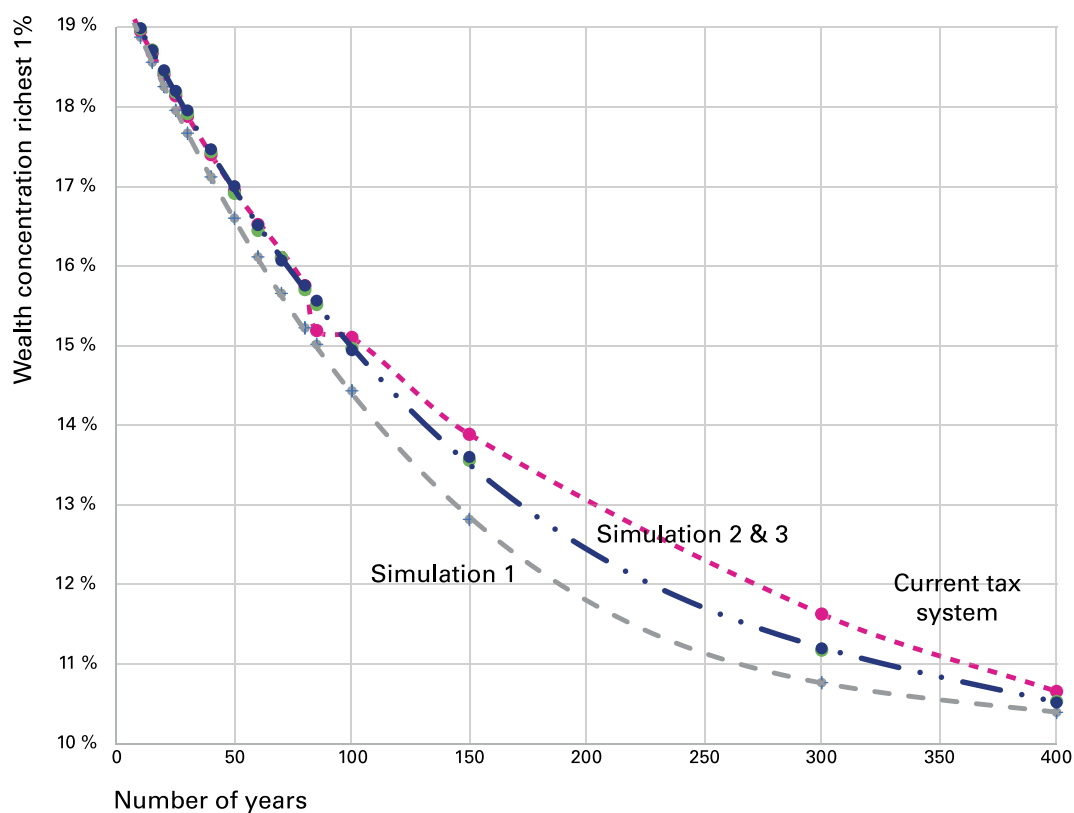
Table 5. SIMPA: Alternative simulations with revenue equivalence

	Simulation 1	Simulation 2	Simulation 3
Exemptions	None	None	Residence
Applying income and wealth limit	No	Yes	Yes
Minimum exemption	2,280,641	1,198,808.7	1,096,170
Tax rate	1%	1%	1%

Table 6. SIMPA: Inequality of alternative simulations after 85 years

	Current IP Potential	Simulation 1	Simulation 2	Simulation 3
Gini index	0.639	0.639	0.638	0.638
Richest 1%	15.19%	15.02%	15.52%	15.57%
Richest 10%	48.88%	48.89%	48.66%	48.66%

Figure 10. SIMPA: Evolution of long-term redistributive capacity, wealth concentration in richest 1%



In short, the tax's potential redistributive capacity is demonstrated no matter what reform is proposed, although the effects are not immediate. For example, we have to wait a minimum of 20 years for the concentration of net wealth in the hands of the richest 1% to decrease by 1 percentage point. As indicated in section 2, these levels of redistribution can be considered maximums because of the possible mobility of the bases at an international level, the difference in valuing assets based on a market price criterion or even due to the presence of tax evasion. We will return to this question in our conclusions. In any case, we believe that the reforms we propose on a broad basis can at least reduce the incentives for tax avoidance despite applying the limit.

Other simulations

The SIMPA simulator helps to calculate the effects of many other reforms over time. Depending on how the IP is structured, these specifically are: which exemptions, which minimum exemption, which tax rate and whether or not the limit applies. The results of several reforms obtained using the simulator can be seen in Appendix 4 by way of example.

6

Conclusions

- // Wealth is distributed very unequally, which is why it is highly concentrated, much more so than that of income. According to OECD data, the richest 10% of households in Spain own 45.6% of total wealth and the richest 1% own 16.3%. Spain is not one of the countries with the highest levels of inequality, but the accumulated wealth of the richest 1% of households increased by 6.7% during the Great Recession, between 2005 and 2014, and that of the richest 10% by 11.3%.
- // Wealth provides its owners with additional payment abilities to that of income. Inequality in wealth distribution is also much greater than that of income, and excessive concentration can lead to social instability. This is why a tax is defended that periodically levies a natural person's net wealth value and plays an additional role to that of income tax. But applying it involves serious difficulties, including the valuation of assets at market prices, the special treatment of specific assets, the income and wealth limit and the mobility of financial capital.
- // Spain is the only country in the EU that currently applies a wealth tax, although if we take the OECD as a reference, it is one of three, alongside Norway and Switzerland. Nine countries have eliminated this tax since the mid-1990s, with France the most recent example, in 2018. But some of these countries considered reintroducing it with the onset of the crisis, although it was only reintroduced in Spain in 2011. Nonetheless, the constant growth of wealth concentration is leading to much discussion on the role of a wealth tax, including bold proposals for its introduction even in the US.
- // The Survey of Household Finances (EFF) published by the Banco de España provides very detailed information on the composition and distribution of Spanish household wealth. We have designed a simulator based on this information, SIMPA, which allows us to apply Spain's current tax regulations, taking into account such important elements as exemptions for main residences and family businesses, as well as the joint income and wealth limit. The simulator also allows us to estimate the effects of alternative reforms to Spain's current tax. It specifically provides us with information on the average rates per household percentile, the estimated total revenue and its impact on redistribution as measured by the Gini index and concentration ratios.

- // The potential long-term redistributive capacity of the current tax is considerable. For example, we found that the weight on the total net wealth of the richest 1% (10%) of households would increase from 19.45% (51.63%) to 15.15% (48.84%) after an 85-year period.

- // As regards the structure of the tax, the exemption of the family business has a regressive effect that reduces its redistributive capacity. It is also known to encourage the development of tax avoidance practices. The exemption of the main residence also reduces the tax's redistributive capacity, albeit to a lesser extent. The joint income and wealth limit, arising from a constitutional requirement to avoid the confiscatory nature of taxes, also triggers regressivity and leads to a major loss of revenue, estimated at 2,681 million euros, slightly more than 70% of the tax's potential revenue.

- // The three simulations presented in this study, under the common case of tax revenue equivalence, are in line with implementing a simpler tax that is less prone to tax avoidance practices by eliminating the exemption of the family business. We also suggest eliminating the joint limit in one of these simulations to observe the effect this would have, although we must always keep in mind that there is a constitutional restriction on the non-confiscatory nature of taxes. Another question would be how to regulate this limit, but this is already a departure from the aim of this study. The exemption of the main residence is also maintained in another case. The estimated results indicate that the three proposals would a priori be slightly more redistributive than the current tax in the very long term. Although we believe they would also de facto be more redistributive by eliminating the possibility of tax avoidance.

- // Redistribution can be achieved in various ways and the IP is one important yet not sole instrument of doing this when it comes to wealth. In fact, other options have been put forward in various studies, such as, for example, a broad income tax that would also inevitably tax presumed returns on capital. But applying such an instrument in practice could lead to problems of control (basically, transferring income from labour to income from capital), as the IP clearly does. Having said that, we believe that to have a better perspective of the tax's redistributive aims, the social benefits of having an IP to reduce inequality in wealth distribution must be considered.

- // Continuing on from the above, another instrument that can redirect wealth inequalities is inheritance tax. Inheritances are one of the most important reasons for the creation of inequalities and the tax levied on them is paradoxically one of the most unpopular. We believe it would be entirely appropriate to conduct this same type of work with inheritance tax in the future in order to identify how it would affect reducing inequalities in Spain.

- // Spain's current wealth tax presents considerable problems. Some, such as valuation standards, should be overcome by new technologies. For example, big data should allow real estate estimates at market values in a much better way than those provided for in existing regulations, although by always respecting the principle of "legal certainty". Similarly, eliminating special treatment, such as that of the family business, would help to reduce the extent of tax avoidance

practices. But the tax's complementary role in relation to that of income tax makes it impossible to eliminate the established joint limit to avoid confiscation, an instrument that is undoubtedly used by richer households to reduce their tax burden. SIMPA has managed to quantify the redistributive limitations generated by this last element. Nonetheless, it has also revealed that the tax's simplicity, subject to improving valuation standards and reducing the extent of tax evasion, could provide our country with a remarkable long-term redistributive capacity instrument. The fact that it is decentralised should not undermine this capacity, provided that it is harmonised both at the level of its legal structure and, more difficultly, its application by autonomous tax authorities.

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APPENDIX 1

Long-term redistributive capacity

The IP's tax quota is a flow of income, while taxed wealth is a stock amount. Therefore, effective tax rates calculated as a percentage of net wealth are low if we compare them with, for example, those of personal income tax. But this is not a fair comparison because of the different nature of the object to be taxed: wealth versus income.¹⁹ Moreover, assessing the tax's redistributive capacity must be made in the long term because wealth accumulation is also a long-term process. This is how we will present the results of our simulations as regards redistribution.

For any given reform, we will specifically calculate the effective tax rate to be paid in the first year; let us say, the base year. This tax rate is what we will call the "short-term" rate, tme_s/t . We will also calculate a "long-term" rate from this as follows:

$$\text{Net wealth in year } t \text{ without IP (RN_S)} = RN_0 \times (1+g)^t$$

$$\text{Net wealth in year } t \text{ with IP (RN_C)} = RN_0 \times (1+g)^t \times (1-tme_s/t)^t$$

RN_0 is the net wealth in the base year, which would increase after t years without the tax according to a positive annual discount factor, g , until the RN_S value is obtained. The g value depends on the capacity to generate savings annually, as well as on its annual monetary revaluation. We will assume that g is constant throughout net wealth distribution; in other words, it does not vary according to the level of household wealth. This revaluation factor is applied to the NR, and the impact of the IP after t years is obtained from a tme calculated on this stock amount. The net wealth with the tax, RN_C , will be lower depending on the short-term tme , which we assume remains constant over the following t years. Based on the two situations described (without and with the IP), we can calculate an implicit long-term tme such that:

$$tme_l/t = 1 - (RN_C/RN_S) = 1 - (1-tme_s/t)^t$$

Therefore, if the tme_s/t is zero (one), the tme_l/t will also be zero (one), with the relationship between both types being positive and the greater they are, the greater the t .²⁰ These expected results simply indicate that the tax's redistributive capacity increases over time if the tax is progressive.

19. If the financial return is 3%, note that a rate on stock of 0.5% is equivalent to a tax rate on savings income of 17.2%. The joint IRPF-IP will therefore be the IRPF rate plus this 17.2% for those assets that generate financial returns. Given the design of the current IP, this implies that we have a trial tax in relation to returns on capital in Spain: 0% rate (for assets that do not generate financial return and are exempt in the IP); IP rate that taxes a presumed non-financial return (for assets that do not generate financial return and are not exempt in the IP); and, finally, the rate that is the sum of the IP and IRPF (for assets that generate financial return and are not exempt in the IP).

20. On the one hand, for example, if the short-term tme is 0.25% or 0.5%, the long-term tme will be 19.17% and 34.69% respectively in $t=85$ years. On the other hand, for a short-term tme of 0.5%, the tme after 100 years will be 39.42%; in other words, applying an effective tme annually on net wealth of 0.5% implies ending up taxing net wealth at 39.42% after 100 years.

The tax will be redistributive in the long term if the necessary condition that the tme grows with net wealth is met. Moreover, the greater the tme in absolute value, the greater the redistribution will be. It would be pointless to have a highly progressive tax if tme values are very low. This is shown when assessing the tax's redistributive capacity. However, as we are evaluating its long-term capacity in our case, we must also assess how the NR will vary over time and over net wealth distribution. It is important to remember that this factor is reflected in g . Given that we only want to assess the long-term effects of various tax reforms in our simulations, we are assuming that g is constant and the same for all. But we also know that this does not always have to be the case.

We will work with an inequality measure based on the ratio of net wealth concentration to exemplify the consequences of an alternative assumption, whether this net wealth is in the hands of the richest 1% or 10%. Thus, on the one hand, we will have the g of the richest, g_R , and the g of the rest of the population (99% or 90% respectively), g_P . We will assume that $g_R = g' g_P$, so that $g > 1$. The following condition must therefore be met to achieve long-term redistribution:

$$tme_R'(1+g'g_P) - tme_P'(1+g_P) > (g-1)'g_P$$

Interpreting this formula is highly intuitive: in the long term, the differential tax burden of the rich versus that of the poor (left side of inequality) must be greater than the differential gain of the rich versus the poor (right side). It is a similar condition to the concept of a "progressive tax burden". Note that if $g=1$, there is long-term redistribution if $tme_R > tme_P$. On the other hand, if $g > 1$, it can be shown that it is not enough for $tme_R > tme_P$, but that the tme of the percentile of the richest population must be much greater than that of the rest of the population, all the more so the greater g is.

In short, the conclusion of this simple analysis is that if $g > 1$, the progressivity obtained in the base year (from the ratio of short-term average rates) may not be enough to reduce inequality as much as our simulations tell us in the long term. Or, to put it another way, if the results in terms of inequality reduction are to be maintained, the tax's structure should be periodically reviewed.

APPENDIX 2

Database for SIMPA simulator

We believe that a major added value to this study is the design of a wealth simulator (SIMPA). This simulator must be fed with information that reflects the reality of Spanish households, not only their wealth levels, but also their incomes because of the existence of the joint income and wealth limit.

In order to do this, we plan to take advantage of the samples of IRPF taxpayers available from the Institute for Fiscal Studies (IEF). As has occurred in other countries, savings income could be capitalised to obtain an estimate of wealth based on these figures (Saez and Zucman, 2016). This methodology has several problems of a different scale, but combining them all leads us to prefer the use of the EFF. First, the arbitrary nature of the capitalisation factor, which would also have to be the same for the entire distribution of taxpayers. Second, technical problems arise that are not easy to solve, such as capitalisation for assets that do not generate income (main residence, investment funds or other types of financial assets). Third, even for some income-generating assets, the income is estimated fiscally on the basis of objective criteria (second and subsequent residences or shares and assets assigned to self-employed activities), so that capitalisation would tend to give biased downward results. Fourth, the very complexity of the calculation of net return (take the case of returns from residences with a 60% reduction) means that applying a single capitalisation factor for a given type of return (in the case of the example, real estate returns) can also be a source of error. And finally, income from the foral territories (Navarre and Basque Country) is not included, so we cannot therefore obtain the redistributive capacity of the entire country.

Other proposed options have been the use of IP microdata for a given autonomous community, in our case the data of Catalonia, as we have all the tax declarations for the period 2011-2015. Nonetheless, using a single community is not always representative of the national total and the income data included therein is also somewhat problematic. Finally, the use of microdata recently made available to researchers by the Spanish Tax Agency (AEAT) does not include the Community of Madrid or the richest 1% of taxpayers. Apart from the possible existence of tax fraud in tax returns, these drawbacks lead us to believe that the EFF is the ideal source of data for modelling reforms in the IP, although it is not representative of all autonomous communities.

APPENDIX 3

Methodology applied to SIMPA simulator

Survey of Household Finances (EFF)

As already mentioned in the main section of this study, our simulator, that operates in STATA, is based on information provided by the Banco de España's EFF. This survey includes information on 6,120 households, but the weights used per household provide us with information on 18,362,778 households and 28,776,548 adults (we will explain how we arrive from household to individual later on). The weights are especially useful for obtaining information at an aggregated level, such as tax revenues or indices of inequality or concentration. The technical details of the survey can be accessed at the following link:

https://www.bde.es/bde/es/areas/estadis/estadisticas-por/encuestas-hogar/relacionados/Encuesta_Financi/EFF_2014.html

Net wealth of households (IP)

We have essentially operated according to the same criteria as the Banco de España to calculate household wealth. We have therefore obtained gross wealth as follows:

- Real estate properties: Value of main residence in addition to other real estate properties. This distinction is very important because it helps us to consider the exemption of the main residence in the IP and to generate imputed income in the IRPF of only the remaining properties, as long as they are neither rented nor subject to economic activities and are not, in remaining cases, a plot of land without a building or rural property.
- Luxury goods (works of art, jewellery, antiques, etc.).
- Vehicles.
- Self-employment businesses: Based on the information from the survey, we can identify whether it has the nature of a company or individual business (we will return to this distinction when calculating the exemption of the family business in the IP).
- Shares, whether listed or not; in this case, this distinction is irrelevant for our simulator.
- Bank accounts, differentiating between home savings and whether or not they can make payments; once again, this distinction is irrelevant for our simulator.
- Investment funds.

- Fixed income securities, managed portfolios and other financial assets (options, loans to third parties, etc.).
- Finally, pension and insurance plans.

Once we have calculated gross wealth, we deduct any debts (loans, mortgage loans and other debts) in order to be able to work with the concept of net wealth.

From homes to individuals

As we know, in order to be able to settle the IP we need to have the net wealth per individual (from which we will first totally or partially deduct exempt assets, then the minimum exemption to end up obtaining the concept of economic capacity to be taxed as the payable base). We therefore, and only for fiscal purposes, estimated the number of adults per household and applied the fiscal concept of splitting, which is what we believed to be the most neutral for us. We then calculated the number of household individuals of legal age in 2014; if this number is strictly more than 1, we gave it the value of 2 only if the family was a married couple. Alternatively, we gave it the value of 1. This value (1 or 2) was also used to go from income per household to income per individual, and we can thus settle the IRPF of each individual. In short, we divided by two or one, as the case may be, to go from net wealth or income per household to net wealth or individual income respectively.

Personal income tax (IRPF)

It is more important to differentiate by income source in the case of personal income tax (IRPF), as each source has a special tax treatment, with savings income representing the paradigmatic case. We therefore have the following types of returns:

- Net return from work: We start from the gross amount, obtained as the sum of pensions, remuneration derived from participation in boards of directors, salaries and unemployment benefits. We deduct the worker's social security contribution from this amount (assuming a general regime rate of 6.35%) and a deduction for other expenses (2,000 euros) to end up with the net return.
- Net return from economic activities: It is unclear whether those surveyed responded by giving their net return (from which only the amount of personal income tax would be deducted) or their gross return. We have assumed the former, so that the net return is the sum of what they claim to receive as salary in addition to benefits from this activity.
- Imputation of income from real estate assets: Lacking more precise information, we have assumed an imputation factor of 1.1% (instead of 2% for assets whose cadastral value had not been updated in the past 10 years)²¹ and the assets to which we have imputed this income have already been described.

21. All the assets are valued at market prices in the survey, while the imputed income of non-rented properties is calculated on the basis of the cadastral value in personal income tax. Our simulator will therefore overvalue this income. The widespread application of 1.1% instead of 2% is one way of implicitly mitigating this bias.

Return from real estate capital (rents): We know whether it is a residence or not, but we do not know the amount of tax-deductible expenses. So based on the aggregated data provided by the AEAT,²² for each building unit we have applied the coefficient

$$(10.021.172.101 \times 10^3 \text{ euros} / 15.770.214.492 \times 10^3 \text{ euros})$$

to gross returns to obtain net returns. Specifically, the numerator (denominator) of the coefficient used is the aggregated amount of gross (net) returns. We have applied the 60% reduction in the case of residences on this net return.

- Savings income: The EFF provides us with information on capital gains or losses derived from transfers (specifically real estate, luxury goods and shares), returns derived from the transfer of capital to third parties (i.e. interest and loans), participation in the own funds of entities (with the distinction between listed and unlisted shares, which is irrelevant for us).

Based on all this information, we can calculate the incomes that are incorporated into the general tax base, as well as those that come from savings and are also incorporated into the general tax base and those that are incorporated into the savings base. On the one hand, we have applied the reduction for the annual contributions to pension plans (payable by the taxpayer or employer) in the case of the general tax base, with a limit of 10,000 euros or, if lower, 30% of the sum of net return from work and economic activities. On the other hand, we have proceeded to calculate the personal and family minimum (here, we have only taken into account descendants), and we have calculated the deduction that will be applied on the general total quota or savings, if there is an excess. With all this information, and lacking deductions from the total tax liability, as they are unnecessary for applying the joint income and wealth limit, we can already obtain the relevant information: the amount of the total income tax liability per taxpayer.

Settlement of IP

Once we have the net wealth, we need to identify which assets are fully or partially exempt. On the one hand, we have the case of the main residence (whose value, it must be remembered, we can identify). In this case, the amount declared exempt in the current tax is 300,000 euros. On the other hand, we have the case of the family business, in which we have been able to differentiate whether it is an individually owned business or a company. If it is the former, we have applied the 100% exemption on the company's value (physical assets) if the percentage of income obtained through this activity is equal to or greater than 50% of the sum of the general tax base and savings. If it is the latter, the 100% exemption of the value of financial assets (shares or holdings) in this case only applies when the income obtained from this activity is strictly more than 50% of the sum of income from economic activities and work.

22. https://www.agenciatributaria.es/AEAT/Contenidos_Comunes/La_Agencia_Tributaria/Estadisticas/Publicaciones/sites/irpf/2014/home_parcialf5019db4613e43558bd8fd3009a24085ba4f4af7c.html.

It is possible to calculate the IP quota with all this information and the joint income and wealth limit will be applied to this if need be in order to avoid confiscation. Applying the limit can in no case lead to the final IP quota being lower than 20% of the quota before its application.

By way of a summary

In short, the following six steps are involved in applying SIMPA simulations:

1. We calculate the net wealth and net yields of income per household.
2. We change these amounts to the taxpayer level by using the tax splitting concept.
3. If required, we apply exemptions in the IP declaration (main residence and family business) and in all cases the corresponding reductions in the calculated taxable base (contributions to private pension plans in personal income tax [IRPF] and universal pension in IP, amounting to 700,000 euros with the existing tax) to obtain the taxable base.
4. In the case of IRPF, we apply the general rate and savings rate to the taxable base and personal and family minimum in order to obtain the full quota, which only interests us for the limit, and we apply the rate to the IP taxable base.
5. We determine whether the IP quota has to be reduced by applying the limit.
6. Finally, once we have the taxpayer's IP share, we transfer it to the household level to calculate all inequality indices.

APPENDIX 4.

Examples of SIMPA simulations

1) No exemption (not for residence or family business) and IRPF+IP limit is also not applied

g = 1% and years = 85

Tax rate: 1%

	M = 0	M = 500,000	M = 1,000,000	M = 5,000,000	M = 10,000,000
Gini index	0.6622	0.6045	0.6241	0.6478	0.6534
Richest 1%	0.192	0.1136	0.1277	0.1708	0.1839
Richest 10%	0.517	0.4346	0.4663	0.5013	0.5092
Revenue (€K)	44,888,924	10,359,278	6,604,648	1,957,884,6	883,481
tme s/t	0.94%	0.134%	0.204%	0.012%	0.0045%
tme l/p (total / quota>0)	54.2% (56.6%)	8.7% (35.17%)	4.74% (32.24%)	0.8% (27.83%)	0.30% (28.09%)

Tax rate: 1.5%

	M = 0	M = 500,000	M = 1,000,000	M = 5,000,000	M = 10,000,000
Gini index	0.6606	0.5846	0.6120	0.6444	0.6519
Richest 1%	0.1869	0.0821	0.1076	0.1627	0.1804
Richest 10%	0.5199	0.4034	0.4485	0.4964	0.5071
Revenue (€K)	67,333,384	15,538,916	9,906,972	2,936,827	1,325,222,6
tme s/t	1.41%	0.201%	0.108%	0.0178%	0.00671%
tme l/p (total / quota>0)	68.44% (71.36%)	11.56% (46.72%)	6.33% (43.07%)	1.08% (37.62%)	4.41% (19.45%)

2) No exemption (not for residence or family business), but IRPF+IP limit is applied

g = 1% and years = 85

Tax rate: 1%

	M = 0	M = 500,000	M = 1,000,000	M = 5,000,000	M = 10,000,000
Gini index	0.6871	0.6180	0.6343	0.6515	0.6558
Richest 1%	0.2462	0.1417	0.1515	0.1794	0.1897
Richest 10%	0.5559	0.4540	0.4810	0.5065	0.5126
Revenue (€K)	40,635,504	7,636,810	4,386,080	1,129,552,6	320,415
tme s/t (before/after limit)	0.937% (0.874%)	0.134% (0.11%)	0.072% (0.053%)	0.012% (0.006%)	0.0045% (0.02%)
tme l/p (total / quota>0)	51.13% (53.31%)	7.33% (29.61%)	3.70% (25.17%)	0.478% (16.62%)	0.149% (13.80%)

Tax rate: 1.5%

	M = 0	M = 500,000	M = 1,000,000	M = 5,000,000	M = 10,000,000
Gini index	0.7264	0.6075	0.6286	0.6501	0.6552
Richest 1%	0.3021	0.1323	0.1439	0.1760	0.1882
Richest 10%	0.6098	0.4371	0.4723	0.5044	0.5118
Revenue (€K)	57,368,708	10,272,291	5,781,000,5	1,456,225,5	436,502,06
tme s/t (before/after limit)	1.41% (1.26%)	0.20% (0.142%)	0.108% (0.068%)	0.018% (0.008%)	0.007% (0.002%)
tme l/p (total / quota>0)	63.01% (65.69%)	9.09% (36.73%)	4.56% (31.05%)	0.586% (20.38%)	0.182% (16.84%)

**3) With main residence exemption, but not applying IRPF+IP limit
g = 1% and years = 85**

Tax rate: 1.5%

	M = 0	M = 500,000	M = 1,000,000	M = 5,000,000	M = 10,000,000
Gini index	0.6788	0.5815	0.6102	0.6427	0.6508
Richest 1%	0.2062	0.0846	0.0628	0.1606	0.1792
Richest 10%	0.5404	0.4004	0.4622	0.4947	0.5062
Revenue (€K)	65,803,804	14,314,017	9,127,860	2,839,567	1,287,740,3
tme s/t	1.379%	0.1803%	0.0953%	0.0161%	0.0063%
tme l/p (total / quota>0)	73.08% (76.22%)	11.73% (48.92%)	6.28% (46.22%)	1.096% (41.93%)	0.431% (43.28%)

4) With main residence exemption and applying IRPF+IP limit

Tax rate: 1,5%

	M = 0	M = 500,000	M = 1,000,000	M = 5,000,000	M = 10,000,000
Gini index	0.7420	0.6035	0.6263	0.6485	0.6543
Richest 1%	0.3270	0.1300	0.1390	0.1738	0.1874
Richest 10%	0.6352	0.4329	0.4698	0.5029	0.5111
Revenue (€K)	56,737,760	9,571,672	5,373,922,5	1,429,110,1	422,777,72
tme s/t (before/after limit)	1.379% (1.247%)	0.1803% (0.13%)	0.095% (0.061%)	0.016% (0.007%)	0.006% (0.002%)
tme l/p (total / quota>0)	67.94% (70.9%)	9.45% (39.42%)	4.61% (33.93%)	0.605% (23.16%)	0.195% (19.61%)

5) With main residence exemption, but not applying IRPF+IP limit

g = 1% and years = 85

Minimum exemption: €500,000

	t = 0.5%	t = 1%	t = 1.5%	t = 2%	t = 2.5%
Gini index	0.6261	0.6010	0.5815	0.5672	0.5573
Richest 1%	0.1457	0.1092	0.0846	0.0706	0.065
Richest 10%	0.4689	0.4307	0.4004	0.3805	0.3683
Revenue (€K)	4,771,339	9,542,678	14,314,017	19,085,356	23,856,694
tme s/t	0.0601%	0.1202%	0.1803%	0.2404%	0.3005%
tme l/p (total / quota>0)	5.149% (21.48%)	8.924% (37.23%)	11.73% (48.92%)	13.83% (57.71%)	15.44% (64.40%)

6) With main residence exemption and applying IRPF+IP limit

g = 1% and years = 85

Minimum exemption: €500,000

	t = 0.5%	t = 1%	t = 1.5%	t = 2%	t = 2.5%
Gini index	0.6306	0.6145	0.6035	0.5968	0.5919
Richest 1%	0.1517	0.1376	0.1300	0.1257	0.1226
Richest 10%	0.4752	0.4500	0.4329	0.4225	0.4168
Revenue (€K)	4,077,666,3	7,093,711,5	9,571,672	11,218,438	12,479,851
tme s/t (before/after limit)	0.060% (0.055%)	0.120% (0.097%)	0.180% (0.130%)	0.240% (0.155%)	0.301% (0.176%)
tme l/p (total / quota>0)	4.76% (19.86%)	7.62% (31.79%)	9.45% (39.42%)	10.70% (44.64%)	11.63% (48.51%)

7) With main residence exemption and applying IRPF+IP limit

g = 1%

Minimum exemption: €500,000

Tax rate: 1.5%

	Years=5	Years=10	Years=20	Years=50	Years=75	Years=100
Gini index	0.6637	0.6594	0.6513	0.6302	0.6157	0.6035
Richest 1%	0.1911	0.1864	0.1787	0.1568	0.1422	0.1300
Richest 10%	0.5128	0.5065	0.4963	0.4700	0.4499	0.4329
Revenue (€K)	9,571,672	9,571,672	9,571,672	9,571,672	9,571,672	9,571,672
tme s/t (before/after limit)	0.18% (0.13%)	0.18% (0.13%)	0.18% (0.13%)	0.18% (0.13%)	0.18% (0.13%)	0.18% (0.13%)
tme l/p (total / quota>0)	0.64% (2.67%)	1.26% (5.25%)	2.43% (10.1%)	5.6% (22.97%)	7.6% (31.9%)	9.5% (39.4%)

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