

Essays on Public Finance

Research Plan - PhD in Economics

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Introduction

While it is commonly accepted that the expansionary fiscal response in advanced societies to the COVID-19 pandemic-economic crisis has maintained certain income levels and has contributed to a relatively rapid economic recovery, it is also true that it has significantly increased public deficit and public debt levels. For that reason, different voices are calling for a process of fiscal consolidation to restore balance to public finances. Given this situation and taking into account the high welfare state standards that need to be maintained, many are calling for tax rises. However, it is absolutely necessary to rely on a strong and sustained economic growth to help us in this process, and many say that fiscal cuts are needed for this purpose and for alleviating the negative consequences of the COVID-19 crisis and the hyperinflation period that we are currently experiencing.

Nevertheless, one cannot forget one of the most important ultimate purposes of the public finance system: the reduction of inequality. Societies in developed countries got used to live with relatively high levels of inequality in the past decades. Income and wealth inequality trends have been different across countries [Piketty \(2015\)](#). But, almost in every country the resulting concentration of income is substantial. 34.6% of pre-tax national income in Spain is earned by the richest 10 percent in 2018, relative to 34.1% in 2011. Income at the very top has increased from 11.3 to 12.5% for the top one percent of the population.¹ And the concentration of income (and consequently wealth) and resulting inequality can cause substantial harm to societies. [Alesina and Perotti \(1996\)](#) argue that inequality creates social-political discontent, which reduces investment and growth. Furthermore, recent studies highlight the important impact of inequality on political instability and populism.² That is why many modern governments implement a redistributive public finance scheme, where income is taxed at an increasingly higher rate, while transfers tend to target the poorest households. In the broadest sense, the concept of progressive redistribution is twofold. On the one hand, progressive taxation, where individuals with higher pre-tax income or wealth are taxed at higher rates relative to those at the lower end of the distribution, leading to a more equal distribution of net income across individuals. On the other hand, progressive public spending, where typically the poorest households receive a higher amount of transfers from the government (e.g. social public expenditure). However, the effectiveness of the redistribution function of the government in reducing inequalities depends, among other, on three determinants: (1) the degree of progressivity implemented in the tax code by policy makers, (2) the way how taxpayers react to the incentives generated by the tax system, and (3) the manner how targeted individuals respond to every type of transfers from the government.

Then, what should our societies do? Is it possible to modify the public finance system (taxation and public spending) in such a way as to increase revenue (improving public finance balance) while minimizing the distorting effects on economic growth and inequality? Why do not we talk about collecting and spending more efficiently instead of just about raising taxes? The literature encounters that forces of globalization and mobility traditionally move governments to perform tax cuts in order to enhance economic growth. As high-income individuals or firms are assumed to be more mobile than workers, fears

¹Source: [World Inequality Lab \(2022\)](#).

²See [Stiglitz \(2012\)](#) and [Pástor and Veronesi \(2021\)](#).

of declining tax bases have lowered the tax burden. Those declines might be caused by fears to tax evasion, tax avoidance, migration towards low-tax jurisdictions, or other behavioral responses of taxpayers. Up to this point, it is an empirical question whether reactions of taxpayers to more progressive tax systems are strong enough to threaten the possibility of governments to implement more redistributive policies to combat inequality. In addition, one should not miss that public spending (including tax benefits) is another way of progressive redistribution and it is also an empirical question whether policy-targeted individuals (typically, the most vulnerable people) react in a desirable way to public expenditure policies.

At this point, it is essential to have a rigorous evaluation of public finance policies (tax system and of public spending policies). This implies gathering empirical evidence on the behavior of taxpayers when facing tax changes or on the impact of expenditure policies on the most vulnerable people. More scientific evidence is key to provide policy recommendations based on a revenue and welfare analysis of progressive redistribution. Here is where my PhD Research Plan precisely tries to fill the academic gap by covering some of these questions in Spain. This is not only interesting because the Spanish public finance system in many aspects follows the global trends outlined before, but also because tax decentralization (many different regional fiscal schemes) provides interesting sources of quasi-experimental variation, which allows the causal identification of important policy parameters. In particular, the results of this PhD thesis will help to design reforms that aim at mitigating inequalities through more equitable taxation, while distorting the less the efficiency of the economy and its growth dynamics, and through a more efficient social-policy framework.

The remainder of this research plan document is structured as follows. Sections 1, 2, and 3 provide detail on each of the three papers which my PhD dissertation will consist of.³ The data that will feed up my different projects is presented in Section 4. Finally, Section 5 concludes with the work plan or schedule I will follow for each of my three PhD dissertation essays.

1 Income Shifting and Asset Reallocation: Evidence from Fiscal Policy Reforms in Spain

1.1 Motivation

Increasing progressivity of the tax system by raising taxes at the upper part of the income distribution might be a challenge, as taxpayers respond to policy changes. Empirical research in taxation usually estimates the elasticity of taxable income (hereafter ETI) as an aggregated measure of how tax changes (tax rate, deductions, etc.) translate into changes of the tax base (the amount to which the corresponding tax rate schedule is applied). [Feldstein \(1999\)](#) documents that the ETI serves under some circumstances as a sufficient statistic for revenue and welfare analysis. Therefore, estimates of this parameter help to predict how government revenues would react to a change in tax rates. This immediately illustrates the

³These articles will be potentially publishable in top scientific/academic indexed journals. The main outlets I consider for publication include: *The Review of Economic Studies*; *The Review of Economics and Statistics*; *American Economic Journal: Applied Economics*; *Journal of The European Economic Association*; and the *Journal of Public Economics*.

importance of this number for efficiency questions of taxation. The larger this estimate, the more tax revenues would react to any change in progressivity, and therefore the bigger the welfare loss to society.

Almunia and Lopez-Rodriguez (2019) provide the best estimates available for personal income tax in Spain and find that, on average, for each percentage point increase in marginal rates, the reported taxable income decreases by 0.4% and the broad reported income (without taking into account deductions in taxable income) decreases by 0.2%.⁴ However, this measure does generally not capture the mechanism behind the change in the tax base. The estimated ETI may be not only capturing responses in real economic behavior of agents (labor supply, savings decisions, etc.), but also greater efforts to evade and other responses. The existence of these responses is well documented in the literature: Slemrod (2001), Gruber and Saez (2002), and Chetty (2009), among others. In particular, Saez et al. (2012) shows how changes in one tax in a specific time period might trigger effects in other tax bases or years or create other types of externalities to society. While the effect of a tax raise on the observed tax base and hence tax revenues estimated through the ETI is the same regardless of the channel, the social impact could be very different depending on the mechanism behind the response of the tax base. Under those circumstances, just estimating the ETI of one particular tax instrument might be misleading to develop policy recommendations, and further evidence on the underlying behavioral adjustments is needed.

One of these important hidden mechanisms could be that related to business income. Think about an entrepreneur who faces a tax rate increase on her income. On the one hand, (1) the entrepreneur might react to a tax increase by reducing his output as after facing the tax bill fewer net business revenues will remain with her. In this case, the entrepreneur will move downwards in the income distribution and will pay the corresponding lower average tax rate, which will reduce the efficiency of the economy and will hurt economic growth. However, (2) the same entrepreneur might also consider about other strategies which permit her to generate the same output, but shelter parts of her income from taxation. In this case, the real income remains constant and only tax payments will be reduced (with the implications that a drop in public revenue could have).

Entrepreneurs or other taxpayers who file personal income tax (PIT, hereinafter) as self-employed individuals can consider the possibility of establishing a corporation or transfer their business income to such a legal entity to minimize tax liabilities. This way they would be taxed on the profits of that company through the corporate income tax (CIT, hereinafter) scheme, and they could transfer income to themselves in the form of dividends as capital income and in the form of salaries as labor income. Given a dual PIT, earned income through dividends from the created company would enter the PIT filling in the capital or savings taxable income base. Taxpayers with sufficiently high earnings might benefit from this strategy as capital income is subject to a lower and less progressive tax schedule than the PIT schedule on labor income, in which their earned self-employment or labor income would enter.⁵ This is

⁴We focus here on the taxation of personal income, which is not a minor issue, since most of the OECD economies obtain a large proportion of their tax collection through it. The OECD average of the share of personal income tax revenues over total tax revenues (excluding social security contributions) has been around 30-35% in recent years.

⁵In Spain, corporate net profits are taxed at a fixed rate of 25% through the CIT scheme. However, there are many cases in which the taxable income base in the CIT can be reduced, which lowers the effective rate paid on the company's profits. According to Agencia Estatal de Administración Tributaria (AEAT) (2022b), the effective CIT rate in Spain in 2019

what is traditionally known in the economic literature as income shifting between tax bases, and some results indicate that standard ETI approaches are affected by such income shifting, as first documented by Kreiner et al. (2016). Similar results are obtained by Foremny et al. (2018) by exploiting a mayor tax reform in Uruguay. When it comes to the Spanish reality, there is empirical evidence that self-employed and business owners taxpayers perform these income shifting practices, as shown by López-Laborda et al. (2018).

In this paper, I propose a systematic analysis of this particular behavioral response to taxation, as these strategies generate inefficiencies and erode the progressivity of the tax system, which ultimately limits the redistribution function of taxation. But this has not only impact on the efficiency of the economy and the tax system, but also on inequality as business income from entrepreneurs tends to be concentrated at the top of the distribution, and by definition assets are held disproportionately more by those top income earners. If tax avoidance strategies are not equally distributed across the income distribution, it is important to understand who benefits more from those, as this has important implications for the difference between the pre- and post-tax distribution of income. Therefore, this income shifting must be taken into account when designing or reforming tax systems.

1.2 Objective and Expected Contribution

The general objective of this paper is to obtain a better understanding on how individuals react to progressive tax reforms from an empirical perspective. In particular, I will identify the cross-base income shifting and I will assess the magnitude of this effect on tax progressivity, economic efficiency and growth dynamics, inequality, and public revenue.

My work will contribute to the broad literature on income shifting, which has been focused on several aspects. On the one hand, there is a sub-body of the literature devoted to studying the effects of income shifting produced by a dual PIT on the decision of the organizational form of business (self-employment vs. company ownership). Gordon and MacKie-Mason (1994) and Gordon and Slemrod (1998) analyze the case of the USA and Thoresen and Alstadsæter (2010) studies the case of Norway. There are also some works on the subject applied to the Spanish case: Domínguez Barrero et al. (1999), Domínguez Barrero et al. (2003), Domínguez Barrero et al. (1999), Laborda et al. (2014), and López-Laborda et al. (2018). Income shifting through the choice of how to remunerate management employees and business owners has also been studied: Fjaerli et al. (2001), Alstadsæter and Jacob (2016), and Harju and Matikka (2016). Another form of income shifting such as moving income between spouses within marriage also received some research from Stephens and Ward-Batts (2004). The election of the time when realizing dividend payments has been also widely analyzed in the literature: Alstadsæter and Jacob (2016), Chetty and Saez (2005), Kari et al. (2008), and le Maire and Schjerning (2013). The timing election for realizing

was, on average for all companies, below 20%. Setting up a corporation becomes optimal for certain businesses crossing a threshold of profits at which both ways of taxation would result in a similar tax burden. Once this threshold is reached, self-employed individuals face the decision problem of choosing between declaring income only as labor or self-employed income through PIT (in the progressive general schedule) or through CIT and PIT (through the almost flat tax savings or capital schedule).

capital gains also conforms a sub-body of income shifting: [Auerbach et al. \(1998\)](#), [Jacob \(2016\)](#), and [Jacob \(2018\)](#).

In addition, my work will contribute to the literature on the elasticity of taxable income. In this sense, my work also links directly to [Pirttilä and Selin \(2011\)](#), and, more specifically in the Spanish context, to [López-Laborda et al. \(2018\)](#). As mentioned in Subsection 1.1, the response to a fiscal change might not be entirely driven by changes in decisions to work more or less or invest more or less, i.e., purely economic decisions. Instead, many other factors may be behind ETI estimates, and income shifting between tax bases of the same tax unit and between different tax units appears to be one of the main elements to be taken into account. Much of the response of taxpayers to tax changes may be purely a tax and income shifting response. This has been already studied for Finland by [Harju and Matikka \(2016\)](#), finding that income shifting accounts for a majority of the overall elasticity of taxable income, which significantly decreases the marginal excess burden. But no research so far has been performed for the Spanish case. Using similar techniques, my proposal is to update [Almunia and Lopez-Rodriguez \(2019\)](#), the most recent and advanced work on Spanish ETIs, to depict the part of the estimated ETI that is accountable for by income shifting between tax bases.

My paper will be the first academic work on these specific issue for the Spanish tax system and the results will be crucial in the debate on the optimal marginal tax rates that we should face. I will show that income shifting must be considered when designing or reforming tax systems by estimating its potential consequences on relocation, welfare, economic activity, redistribution, etc. In addition, when analyzing potential fiscal revenue variations derived from income shifting behavior, I will take into account the backstop function of the CIT that may be taking place. Furthermore, another contribution of my research is a systematic analysis of this income shifting behavior with respect to inequality and the loss of progressivity of the tax code, which is currently missing in the literature.

1.3 Identification, Methodology and Data

To identify the causal effect of tax changes on income shifting, I exploit the variation provided by several tax policy changes, both at the regional and at the Spanish national level, on PIT and CIT (and other capital taxes) during the period 1998-2019, using administrative panel micro-data from the Spanish Tax Agency described in Section 4. Spain provides an ideal framework of analysis due to the existing variation in tax codes and in setting-company costs between autonomous communities and along the income distribution. I will use *new difference-in-difference* techniques and event study methods with appropriately defined treatment and control groups to identify effects. These two groups will be separated from each other by the threshold at which an individual taxpayer would be indifferent between either way of taxation. This approach will allow me to estimate how much of the ETI could be attributed to income shifting between the two personal income tax bases.

The strategy to identify the potential shifters has multiple components. We have no precise data on firm capital for each person, but my identification strategy would deal with this problem in a very precise way using just PIT data. First of all, it must be taken into account that the vehicle-company must

usually pay a salary to the shifter-person as a director or as a part of the direction and management area of the company. Since those individuals who own a company can deduct not only employee social security contributions but also employer social security contributions in the PIT filling, I can identify them in the data just checking cases in which the ratio between social security contributions and gross labor income is greater than 6,4%.⁶ Secondly, I explore the role of declared attributions from civil societies (previous to 2016) and from firms abroad and declared capital gains. This could also bring some track of those acquiring new capital in the form of firms and could help in identifying potential shifters. In addition, I can identify in the data those individuals who are public employes, and those are very unlikely to perform income shifting, which will help me in circling more precisely the potential shifters group.

In order to identify those receiving a treatment, I will compute the individual specific threshold, at which each taxpayer would be indifferent between either way of taxation (through general PIT base vs through CIT and savings PIT base).⁷ Here, I exploit the large variation in the different thresholds since those vary across regions. This novel identification & treatment procedure will help me to overcome limitations of earlier approaches to identify the causal effect of income shifting at the individual level.

Using aggregate tax statistics, some preliminary evidence I have already obtained indicates that during years characterized by increases in top marginal Spanish PIT rates on labor income (for instance, between 2012-2014 when a supplementary tax was implemented on top earnings), more companies have been declaring CIT than during other years, while the number of PIT filers on labor in some income brackets temporarily decreased notably.⁸ This may be indicating potential income shifting first between tax bases and second between PIT and CIT. It could be also showing inter-temporal income shifting to try to overcome the temporary rise of top marginal rates.

In addition, it is seen that just after the subsequent lowering of top marginal rates (as of 2015), especially in the savings tax schedule, income inequality started to increase, especially in movable or financial capital. I have already documented how top shares remain constant throughout the period from 2007 to 2014 and this is broken with a large increase in top shares in 2015. The rise in top shares since 2015 could be the result of higher top income growth but also be reinforced by the reform of lowering top marginal tax rates in 2015, what would produce less migration to CIT. It is surprising that the pattern of top earners is not affected by the financial crisis in Spain and the sharp rise in interest rates in 2012. This may be because two effects offsetting each other. In particular, (1) the crisis could affect less the top income earners (their share of the total should rise) and (2) the marginal tax rate hike makes some of

⁶This value is the typical percentage applied to gross salary to compute the employee social security contributions. This would miss somehow a very small group of shifters that migrate income into a firm but does not set a salary to themselves from the firm, but they continue to have business income and dividends. But I am working on defining an identification strategy for those very few cases.

⁷When computing the specific threshold, it is also considered that creating a company has certain expenses and requires at the same time greater documentary and formal obligations than self-employment. The decision problem of income shifting between tax bases must also takes into account whether or not the company provides greater legal coverage, mainly for the person's private assets. Therefore, there are many variables to take into account when analyzing and determining the optimal point provided by the current tax system for income shifting and, in addition, this optimality condition can considerably vary depending on the personal characteristics of each individual or company.

⁸Source: [Agencia Estatal de Administración Tributaria \(AEAT\) \(2022a,b\)](#).

those top business earners migrate income to CIT and PIT savings base. It could provoke an aggregate effect of compensation and present some preliminary evidence that income shifting between tax bases occurred.

This theses are reinforced when I move my analysis to the tax administrative micro-data part. Using such data and the aforementioned identification strategy, I have already documented how the number of identified potential shifters rise and occupy a larger proportion of the total taxpayers during the years with higher marginal PIT rates in the general-labor tax base. This is a sign showing strong presence of income shifting behavior, which will permit me to carry out a significant causality analysis. Finally, I will be able to run a counterfactual analysis simulating an economy where actual shifters do not shift. What would be the tax revenue loss? Here, I will take into account that income shifting would induce a raise in CIT revenue as well (but there will be a total revenue loss in general due to lower tax rate in CIT, at least in partial equilibrium analysis).

2 Is The Minimum Income Protection Sufficient and Effective for Labor and Social Inclusion in Spain?

2.1 Motivation

Income supplementation programs have been proposed and set to alleviate poverty and inequality in many countries around the world. These minimum income schemes have also experienced major changes to foster transitions from unemployment to work. The implementation of this type of social programs differ considerably across countries. While some governments provide this public service in a centralized way, other offer it in a decentralized manner, where regional or local governments across the state adjust their programs in an autonomous way. Further, those public transfer programs always deal with important challenges due to the difficult balance between the emergence of new social needs and the limits to increasing budgetary resources.

The Spanish minimum income system is complex due to its territorial organization and implementation. On the one hand, there is a wide variety of specific means-tested benefits whose management and financing depend on the central government. On the other hand, the general risk of poverty is covered by regional governments without any coordination and financing from the central government. This results in a complex panorama of multiple and co-existing means-tested and non-means-tested minimum income programs.

After the 2007 crisis, regional governments in Spain started to introduce own minimum income schemes (in Spanish, "*Rentas Míminas Autonómicas*"), which vary in a considerable way between them. Then, aiming at unifying those programs and given the social emergence that arose with the COVID-19 economic-pandemic crisis, the central government introduced in 2020 the Minimum Living Income (IMV hereinafter, due to its Spanish acronym, "*Ingreso Mímino Vital*"). It was first designed to guarantee the basic needs of people located under some defined national poverty threshold and thus prevent their social

exclusion and its adverse effects. But its objective was also to unify the different already existing regional minimum income programs. This sequence of events resulted in an Spanish minimum income scheme which is heavily split in many different regional and national programs. This feature provides a unique source of rich variation, which will be exploited by this work to try to quantitatively evaluate the effects that the Spanish minimum income programs could have on many important aspects like poverty, income and social inequality, labor inclusion, and education gap, among others. This task, as it will be discussed in Subsection 2.2, has not been properly undertaken yet.

2.2 Objective and Expected Contribution

In a first descriptive work, I will analyze the sufficiency of the IMV and the different regional minimum income programs to place those who receive it above the poverty threshold. It will also assess the fitting of the IMV within the complex system of government benefits and its overlap with the already existing regional minimum income programs and with other non-contributory benefits. In the broadest sense, my article will be contributing to the literature on minimum income programs. There are many descriptive works in the literature that provide a very complete review on minimum income schemes for a wide range of countries: Nelson (2008), Nelson (2010), Marx and Nelson (2013), Wang and van Vliet (2016), Natili (2017), Crepaldi et al. (2017), and Coady et al. (2021), among others. When it comes to the Spanish sphere, we also find several articles: Noguera (2019), Natili (2019), Aguilar-Hendrickson and de Durana (2020), and Berjón and Gorjón (2021), among others.⁹

Following this, I will carry out an empirical quantitative evaluation of the minimum income programs in Spain. Therefore, my paper will be contributing to the body of literature on quantitative evaluations of the minimum income schemes, e.g. Saboia and Rocha (2002). And more precisely, it will be entering the specific empirical literature focused on Spain which is covered so far by Hernández et al. (2020), Gambau-Suelves and Nuria (2020) and Ayala et al. (2021). But I will try to answer questions that have not been analyzed in the literature (or have been studied in a very limited way): Do minimum income programs generate incentives for those receiving them to join the dynamics of the economy in the form of better jobs, better formation, less school dropout or better socio-health conditions? Do the current minimum income protection system work as an insurance against transitory income shocks in households that do not necessarily live under the poverty thresholds?

The results will explore the differences that may be found between different socioeconomic groups (particularly in groups such as children and youth). Contributing in the methodological field and with new data, my work will be the first one to study causal relationships between minimum income schemes and labor and social inclusion in Spain. Many policy recommendations could be drawn from it.

⁹My paper will also study the causes of the “non-take-up” (people who do not apply for it, although they are potential receivers), linking my work to those by Goedemé and Janssens (2020), Reijnders (2020), Lucas et al. (2021), and Sylvia et al. (2022).

2.3 Methodology and Data

To identify the causal effect of receiving the minimum income on several outcomes (poverty, income and social inequality, labor inclusion, or education gap, among others), I exploit the variation provided by several minimum income policy changes, both at the regional and at the Spanish national level, during the period 1998-2019, using administrative panel micro-data from the Spanish Tax Agency described in Section 4. Spain provides an ideal framework of analysis due to the existing variation in those public transfer programs between autonomous communities and at the national level. I will use quasi-experimental econometric methods such as *new diff-in-diff* or *regression discontinuity design* techniques and event study methods with appropriately defined treatment and control groups to identify effects.

The administrative tax micro-data will allow for a very precise identification strategy. I will be able to depict individuals receiving the minimum income quantity (treatment group) and those with similar characteristics not receiving it (control group). This control group will be not small since many Spanish minimum income programs define some very strict requirements on legal issues that does not have anything to do with income or social status. It is key here to note that non-compliance of legal issues (those not related with socio-economic status) is equally distributed among those potentially eligible for accessing the minimum income amount when only observable-in-data socio-economic characteristics are taken into account, which prevents individuals in the control group from self-selection bias.

3 A Quantitative Evaluation of Personal Income Tax Benefits in Spain: Rental Housing and Private Pension Plans

3.1 Motivation

Many developed countries around the world are experiencing two major issues in their societies from a decade ago. On the one hand, population is ageing at an increasing rate. The fertility rate and the positive immigration balance is not enough to compensate the huge part of the population that is over 65 years old or approaching it. This trend presents a huge problem for the sustainability of the public pension system and an aggravated situation for young working-age people. On the other hand, asset inequality, concentration of housing wealth, depopulation and agglomeration of population around big cities is rising the price of rental housing to very high limits, which also poses another big competitive disadvantage for young working-age households, especially for those at the lower end of the income distribution.

These trends are specially remarkable in Spain. The average dependency rate (number of contributors per public pension) was 3 in 2007, in 2020 it is 1.95, and it is expected that when the *baby boom* generation retires it will be even less than 1 affiliate per pension. This, when coupled with high levels of public debt that are aggravated year by year by a structural public deficit of 4%, is a serious burden for the younger generation. In addition, young people are facing rental prices that, in average, account for more than 40% of their gross annual income.¹⁰

¹⁰ Access report “*España 2050: Fundamentos y Propuestas para Una Estrategia Nacional de Largo Plazo*”.

In this context, many political and economic solutions to the problem are in the current debate. One of the strategies to address those issues is through taxation. In particular, the Spanish PIT scheme includes certain certain tax benefits which are intended to address those two problems: the sustainability of the public pension system and the difficulty in access to rental housing, particularly for young people. There exist some taxable income deductions in the PIT filling for those who make contributions to private pension plans and for owners who offer their housing assets in the rental market for primary residence renting purposes. But there exists no evaluation so far of these tax benefit policies in Spain. Spain is a country of interest for analysis not only due to its remarkable trends (which are considerably more pronounced than in other developed countries), but also because its decentralized tax policy context provides research with an ideal framework for an empirical evaluation of the mentioned tax benefits due to very large and rich variation not only over time, but also across different regions. And this is precisely the aim of my research work.

3.2 Objective and Expected Contribution

Are the aforementioned PIT deductions effective in achieving the objectives they were intended to when introduced? What are the non-desired effects of these tax policies? Do they augment or reduce inequality measures? In a cost-benefit analysis, does the tax revenue loss derived from these policies, which can be seen as public spending, induce a desirable behavior in the evolution of the supplementary private pension system and in rental housing prices and supply magnitude? This paper is intended to carefully address those issues in an empirical quantitative analysis form.

This frames my work in the body of literature devoted to evaluate tax benefit policies through micro-simulation techniques and causality analysis, e.g. [Spadaro \(2005\)](#) and [Roca \(2010\)](#). But more specifically, my work would be entering two subgroups in this particular literature. On the one hand, it will be related to those studies analyzing tax benefits devoted to adjust rental pricing mechanisms: [Jappelli and Pistaferri \(2007\)](#), [Cummings and DiPasquale \(2010\)](#), [Williamson \(2011\)](#), and [McClure \(2018\)](#), among others. On the other hand, my work is filling the literature on fiscal treatment of public pension plans and its effects: [Cymrot \(1980\)](#), [Whitehouse \(1999\)](#), and [Varga \(2018\)](#), among others.

In my study, I will analyze the effect of different PIT reforms, such as changes in the exemption percentage for residential rental income or the increase in income imputed to non-habitual housing. These changes would modify marginal rates, which could have a behavioral response. For example, agents' decisions to save in real estate vs. savings in movable capital could be affected. Did these measures have a desired effect on rental prices? What is their effect on the extensive margin of private rental housing supply? Does it only produce a greater concentration of income in housing tenants? It is important to characterize the profile of the different tenure holders in order to compute the elasticity of the tax benefit by socioeconomic group.

Moreover, I will also analyze the savings profile in pension plans that different taxpayers have: savings in pension plans, investment funds or other forms. By identifying the different PIT reforms in terms of tax benefits for contributions to private pension plans (for example, by introducing the taxabale

income deduction of €10,000 or by reducing it to €1,500 for contributions to private pension plans) and controlling for the rest of the taxation system and costs of other financial assets, I can evaluate the effect that the different regulatory changes in this tax benefit have had on private savings decisions and on the form of complementary pension savings. It is important to characterize the different profiles of savers in order to analyze the elasticity of this tax benefit by socioeconomic group.

This will be the first study to quantitatively and empirically evaluate these two issues of relevance for the Spanish society. Further, this research will be of great relevance in modeling the behavior of taxpayers who are holders and savers in the face of changes in tax policy, who tend to occupy higher parts of the income distribution, with the implications that this has on the evolution of income and wealth inequality in Spain.

3.3 Methodology and Data

To identify the causal effect of the tax benefits on several outcomes (housing supply, rental prices, income and social inequality, savings decision on pension plans vs. other savings instruments, tax revenue, or social security balance, among others), I exploit the variation provided by several PIT policy changes, both at the regional and at the Spanish national level, during the period 1998-2019, using administrative panel micro-data from the Spanish Tax Agency described in Section 4. I will use quasi-experimental econometric methods such as *new diff-in-diff* or *regression discontinuity design* techniques and event study methods with appropriately defined treatment and control groups to identify effects at the individual level. The administrative tax micro-data will allow for a very precise identification strategy and would serve to later properly infer aggregate results.

4 Data

Each of the three papers of my PhD dissertation uses the same database. The data-set (*Panel de declarantes del Impuesto sobre la Renta de las Personas Físicas 1999-2016*) consists of a 4% longitudinal sample of individual personal income tax returns, that contains all items reported on the annual personal income tax declaration. This includes the amount and source of income, personal characteristics (e.g., age and gender), and, critically, the fiscal residence of the tax filer. The micro-files are drawn from 15 of the 17 autonomous communities of Spain, in addition to the two autonomous cities, Ceuta and Melilla. We do not observe tax data for the two autonomous regions of Basque Country and Navarre, as their fiscal regime works independent from the regions of the Common Fiscal Regime. These data come from the [Insituto de Estudios Fiscales \(IEF\) \(2022\)](#) and gathers administrative information at the individual level provided by the Spanish Tax Agency ([AEAT](#)) and the Spanish Institute of Statistics ([INE](#)). A detailed description of the already published and open-access data-set is provided in [Pérez López et al. \(2019\)](#).

In order to be able to undertake the tasks projected for each of the three papers, I will not only need the aforementioned panel data-set, but a more complete and updated version of it. For this purpose, I will use new data which is now under construction and is not yet disclosed publicly. The new panel data-set

will be completed by the the Spanish Tax Agency ([AEAT](#)) and the Spanish Institute of Statistics ([INE](#)) with not only richer information on income (including not only PIT fillers, but the whole population), but also on wealth, housing assets, and other socioeconomic characteristics. I am working together with the providing institutions to build up these new data-sets. However, due to ethical and legal reasons, I am not allowed at this time to spread more information regarding such new data. Further, I must point out that the mentioned new data, which I have already exclusive access to, cannot be shared with any third person so far. All these data-sets, which have been already used in my PhD research, are properly stored in my personal computer following the corresponding security procedures established by the providing institutions. It should be noted that all data are anonymized by the providing institutions and I hereby confirm I will provide no results computed with less than 20 observations.

I can assure that my research works, at the time of being pre-published in the working paper phase, will give more detail on the new data to be used. I can assure that all the data I will use will be public and accessible to the whole research community once my papers will be close to public circulation.

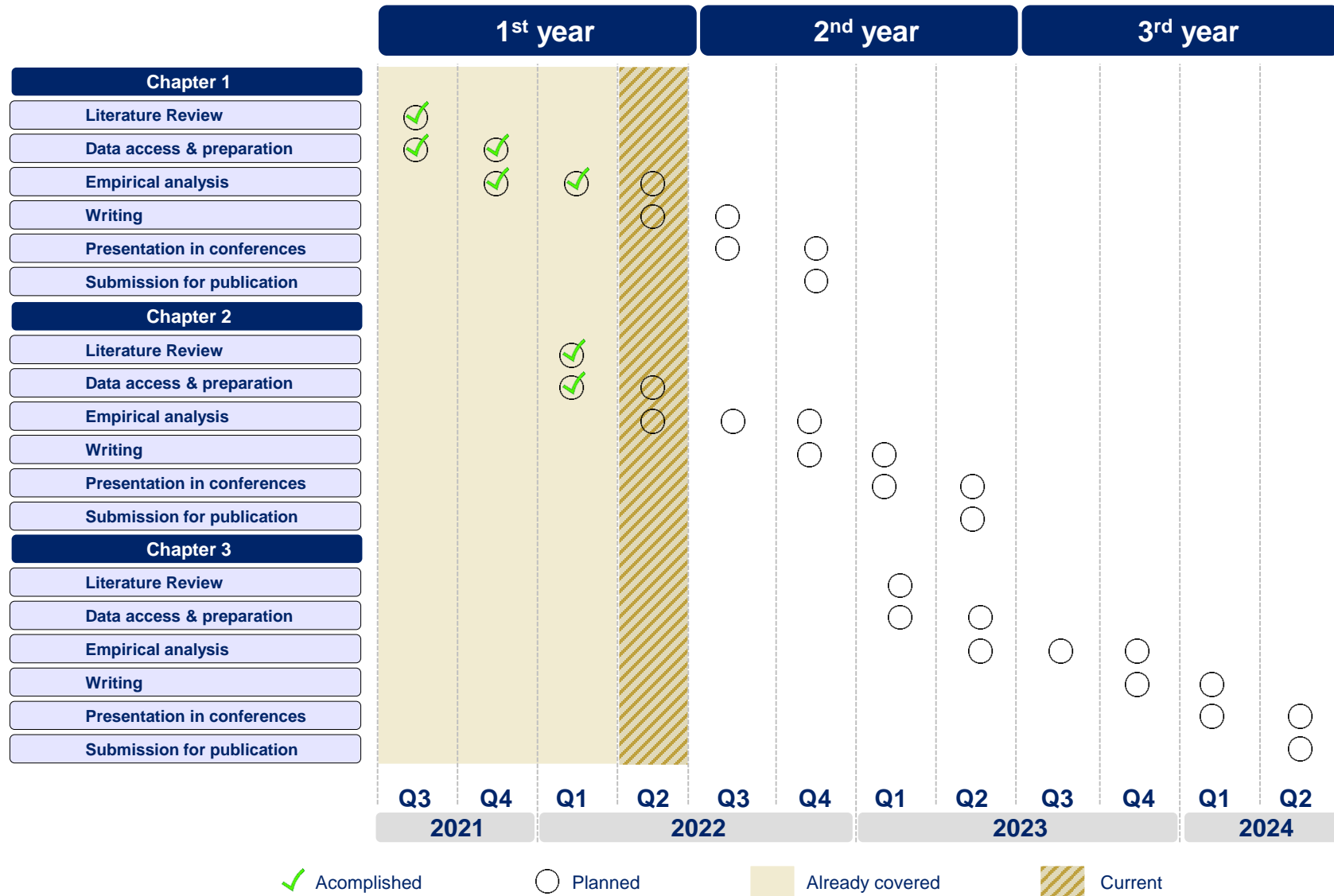
For the processing of the data, I am using **Stata** software with the student license provided by the [Universitat de Barcelona School of Economics](#).

5 Work Plan

All parts of this proposal have been already initiated immediately and simultaneously from the beginning of my PhD studies in September 2021, although significant progress has been mainly made so far in Chapter 1 of my PhD dissertation. Figure 1 shows the summary of how I have planned to allocate my time during three years of my PhD studies. Roughly, my plan is to complete one chapter in one year. In principle, every chapter of the PhD Thesis will be compounded by the same phases. It will begin with a literature review and a revision of the state-of-the-art. Immediately and simultaneously, I will work on the data access and data preparation. Then, the empirical analysis will come, where I will finish the preparation of the identification strategy. Here, I will dedicate time to develop a robust econometric work and the identification of effects. This will provide me with the first results or preliminary evidence. Then, after a refining and a step-further on the methodology, I will obtain my final results. At this time, the documentation of results and preparation of research papers can already start. This allows to circulate results and submission to conferences and workshops in order to obtain feedback from other scholars. The final year might possibly incorporate some preparation of dissemination articles in order to communicate results to interested public and policy makers. Finally, before submitting results for publication, I will try to present my work at leading international conferences dealing with topics on public finance, taxation, inequality, redistribution. Potential conferences include, but are not limited to, the *Annual Congress of the International Institute of Public Finance*, the *National Tax Association Annual Conference*, the *Meetings of the European Economic Association*, the *AEA Annual Meetings*, and several workshops on topics related to our questions. Of course, I will be presenting my work at the [Universitat de Barcelona School of Economics](#) and at the [Institut d’Economia de Barcelona \(IEB\)](#). Further, during the PhD studies I also plan to visit other institutions worldwide as visiting PhD student.

FIGURE 1

WORK PLAN FOR PhD DISSERTATION ELABORATION



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