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Fiscal Decentralisation and Mobility: Evidence from Spain's Income Tax System¹



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INTRODUCTION

In recent decades, many countries around the world have become more fiscally decentralised. Spain provides a unique case study given it has relatively quickly transitioned from a highly centralised country to a much more decentralised country, although formally not a federation. As part of this decentralisation, autonomy over individual income tax rates and brackets was recently granted to the regions (Autonomous Communities), which are similar to states or provinces in other countries. In the early 2000s, individual income tax brackets and rates were the purview of the central government. Only recently were the Spanish regions granted the authority to levy their own individual income tax rates on a portion of the personal income tax base. Once granted this authority, marginal tax rates diverged substantially at the top of the income distribution, resulting in substantial tax differentials across various regions within Spain. This article reviews the economic consequences of Spanish fiscal decentralisation with a particular focus on the impact on the mobility of high-income individuals and the implications of migration decisions for public finances.

Fiscal decentralisations around the world have occurred against the backdrop of widening income inequality in many countries. In the Spanish case, recent trends in income inequality have been strongly countercyclical, with inequality increasing substantially in the recent recession (Bonhomme and Hospido 2017). These increases in income inequality raise policy relevant questions concerning the appropriate level of government to engage in redistribution and the optimal degree of progressivity of individual income taxation. Indeed, in the presence of decentralisation, different regional governments may reach different policy conclusions due to different ideological or philosophical viewpoints. Most fiscally decentralised countries – including Canada and the United States – vary in the progressivity of the tax codes across regions due to some regions selecting relatively flat tax systems, while

others adopt progressive systems with high marginal tax rates on top income earners.

Spain's fiscal decentralisation of the tax system raises important issues long debated in economics. In the Fiscal Decentralisation Theorem, Oates (1972) outlines sufficient conditions for the decentralised provision of public expenditures to be superior to a centralised determination of public spending. However, Musgrave (1959) argues that redistributive policy should remain squarely in the domain of the central government. One critical factor determining which of these views is dominant relates to how mobile individuals are across sub-national jurisdictions in response to the spending and tax policies set by those jurisdictions. Put differently, do the rich flee from high tax states, or are they drawn to them based on the public services and amenities provided? Or are taxes irrelevant to residential decisions?

In this article, we review recent reforms in Spain and the relevant institutions concerning Spain's recent decentralisation of individual income taxes. As a part of this exercise, we document the degree to which various regions reduce earnings inequality due to the heterogeneous patterns of tax changes that emerged following fiscal decentralisation. We then summarise the empirical evidence of the migration response of high-income taxpayers documented in Agrawal and Foremny (2018). In particular, although many factors matter to where individuals decide to live, taxes appear to be an important determinant. However, the gain in tax revenue resulting from the mobility response of individuals due to a region lowering its tax burden, at least in the short run, is much smaller than the loss in revenue from lowering taxes on those individuals that elect to stay. We provide new simulations in this paper that show how large the tax revenue response is, following a region raising or lowering top marginal tax rates by one percentage point; regions raising taxes see a substantial increase in revenue, even in the presence of a net outflow of individuals from their region.

SUB-NATIONAL INCOME TAXATION AROUND THE WORLD

Only some countries have decentralised portions of the personal income tax. Taxation of the personal income tax base is a means of generating revenues that many central governments reserve for themselves. However, even in cases where personal income tax revenues are shared with sub-national jurisdictions through redistributive grants, such as personal income taxation in Germany with the Länder, most countries reserve the right to set important parameters such as tax rates and tax brackets to the central government. The personal income tax is also a tool for governments to intervene with respect to the income distribution, but the mobility of individuals might constitute a constraint on the ability of sub-national jurisdictions to engage in progressive redistribution. Countries that allow for local

¹ This article discusses the relevant intuitions, summarises some of the key results in "Relocation of the Rich: Migration in Response to Top Tax Rate Changes from Spanish Reforms" (Agrawal and Foremny 2018), and presents new results on mobility and inequality. We thank Montse Bassols Santamaria and Antoni Castells i Oliveres for helpful discussions. Foremny acknowledges funding from Fundación Ramón Areces for this paper and the original research summarized in this article.

income taxation at the municipal level tend to permit only a local surcharge in the form of a flat tax that is not progressive. This, among others, is the prevailing system in Nordic Countries such as Denmark, Norway, Sweden and Finland. The autonomy to set progressive region- or state-level taxes is mostly reserved to federations, such as Switzerland, the United States and Canada²; and even then, some states in these countries elect to levy flat or relatively flat marginal tax rate schemes. However, de-jure not being a federation, Spain has recently implemented a similar system granting substantial autonomy to the regions. The share of taxes, as a fraction of total revenue, over which regions have a direct impact by setting their own tax rates increased from 3% in 1995 to around 30% in 2012.

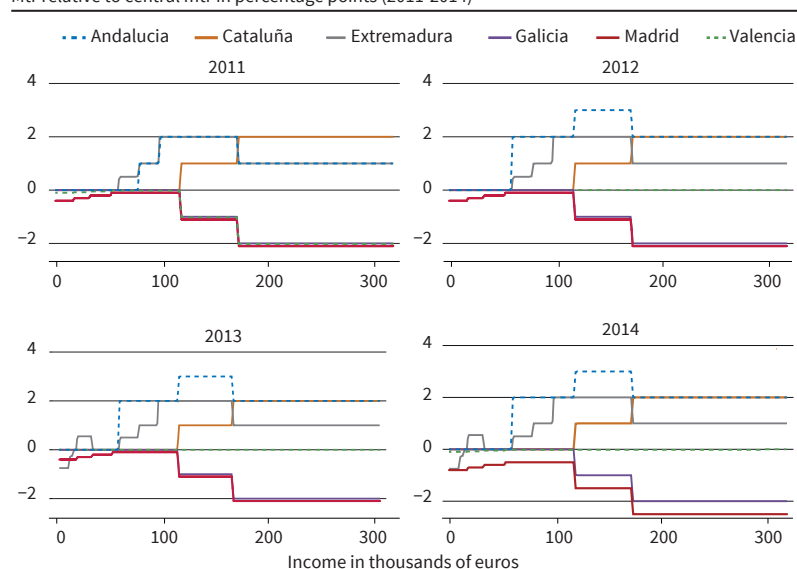
INSTITUTIONAL DETAILS OF RECENT SPANISH REFORMS

Since the ratification of the Spanish Constitution in 1978, Spain has been divided into seventeen regions, the Autonomous Communities (Comunidades Autónomas). The regions have a substantial degree of heterogeneity with respect to culture, history and language. To account for those differences, Spain opted for a system of asymmetric fiscal decentralisation. This implies that autonomy over spending and revenues varies across different regions. Historically, on the revenue side, an important difference is between País Vasco (Basque Country or Euskadi in Basque language) and Navarra (Navarre or Nafarroa) and the remaining regions. Those two regions have almost complete tax autonomy to levy taxes within their territory, while for the remaining 15 regions, taxes were initially much more centralised. Until recently, marginal income tax rates and tax brackets were determined by the central government. Partial autonomy was granted to the regions in 1997, but the regions mainly had focused on setting specific tax credits (Durán and Esteller 2005; Durán and Esteller 2006). In the 2000s, however, several waves of decentralisation granted growing autonomy over income taxes to the regions. The most important of these fiscal decentralisations occurred in 2009-2010, with the laws going into effect in the fiscal year 2011. As a result of this, regions can autonomously tax 50% of the personal income tax base.

Figure 1

Regional MTR

Mtr relative to central mtr in percentage points (2011-2014)



Note: This figure shows regional tax rate changes for a selection of Autonomous Communities relative to the central government tax rate.

Source: Authors' calculations.

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Immediately following this reform, the personal income tax became an important tax instrument for the regions, as it generated 23% of total regional revenues in 2011. This was partially due to the reforms, allowing the regions to keep the revenues collected from half of the entire tax base in their territory. In addition, regions were also given the right to introduce new tax brackets on top of those implemented by the central government over which they could select their own regional marginal tax rates on income. Thus, as of today, regions have the ability to set tax brackets and marginal tax rates on their half of the personal income tax base in addition to levying region-specific credits. A diverse picture of different tax schedules across regions emerged immediately in 2011: several regions increased marginal tax rates substantially, while others lowered them relative to the central government benchmark.

Three reasons, which probably interact with each other, drive the divergence of tax rates across Autonomous Communities. Firstly, generating additional revenues was one of the main reasons for some regions to increase tax rates. This was an important driver for Autonomous Communities in which budgets were hit substantially by the Great Recession around the time of the reform. Rising deficits forced those regions to intervene and regional governments used the personal income tax (along with the inheritance and wealth tax³) to increase revenues. Secondly, political motives were at force. These motives are two dimensional. Some regions enacted strategic policies such as lower tax rates to become attractive places in terms of the business environment. Furthermore, ideology plays an important role here. Simple correlations indicate that

² Canada recently allowed provinces to set marginal tax rates and brackets following reforms (Milligan and Smart 2017).

³ Regions recently also received partial autonomy over wealth and inheritance taxes.

right-of-center governments are more likely to set lower tax rates than left-of-center governments. Thirdly, macro-economic objectives such as redistribution and fiscal policy played a role.

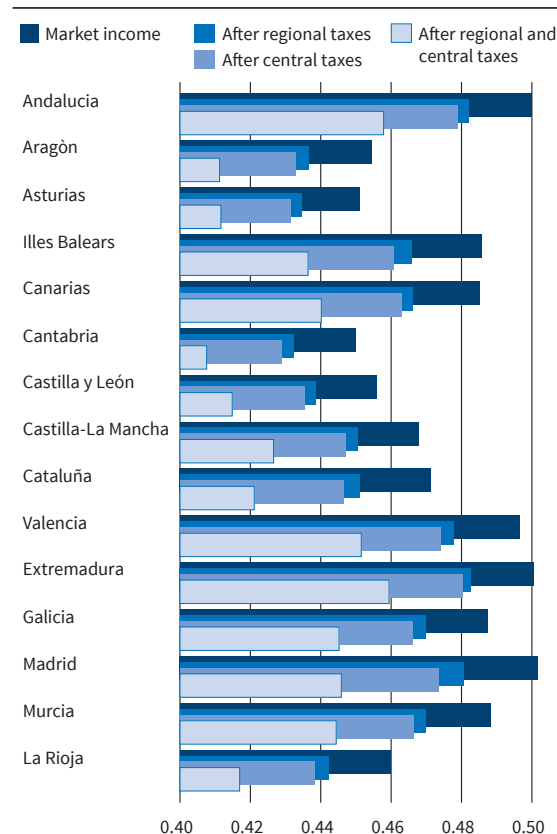
Figure 1 shows the difference between regional marginal tax rates and the central government tax rate at various points of the income distribution (on the horizontal axis) across regions (different lines) and across time (in the different sub-figures).⁴ Thus, zero indicates that the region set the same tax rate as the central government, while positive [negative] values indicate the region raised [lowered] tax rates relative to the central government. The red vertical line indicates the top percentile of the income distribution in each year. Several interesting stylised facts can be observed from this figure. Firstly, the Comunidad de Madrid and Cataluña (Catalonia or Catalunya in Catalan) are the regions with the lowest and highest top marginal tax rate throughout this period, but this tax rate only applied to a very small fraction of taxpayers at the very top of the income distribution range. This can be well explained by the arguments presented above. Madrid was governed by the conservative party and faced less budgetary problems compared to the left-of-center governed region of Cataluña. The difference in top marginal tax rates between those two regions was 4% points in 2011 and increased subsequently. Secondly, we observe that the picture generally shows more regional variation over time, indicating that more regions decided to deviate from the central tax schedule and by larger amounts. Thirdly, the figure shows that changes at the beginning of the period were almost exclusively focused on the top of the income distribution. Later, some regions also increased tax rates in the middle of the distribution and, in 2013, regions also started to lower tax rates for the lowest parts of the income distribution, which might have been driven by distributional motives. While the top changes may have been politically motivated to increase revenues, the changes in the lower part of the income distribution may have helped to reduce inequality.

Figure 2 uses individual tax returns released by the Ministry of Finance. These data make it possible to break down the effect of the personal income tax on inequality in 2014. We compute the Gini coefficient – which when zero corresponds to perfect equality and when one corresponds to maximum inequality – at the regional level and compare between market income (before any kind of intervention), net income after regional taxation, net income after central taxation, and net income after both central and regional taxes. These data allow us to do the exact calculations as tax returns are provided. The data include the tax base and exact tax liabilities separated for both layers of government, which accounts for the tax rate schedule and tax credits and deductions applying at the central and regional level. We ignore transfers (such as unemploy-

ment benefits and other social programmes) to highlight the distributive effect of the tax system. The Gini based on market income varies from 0.50 in Madrid and Andalucía to 0.45 in more equal regions such as Cantabria. The following two bars indicate the extent to which the Gini is reduced due to regional or national taxation. We observe two important facts. Firstly, the central level intervention always reduces the Gini more than regional level taxation. This is due to deductions and tax credits, which mostly focus on the lower part of the income distribution. While both levels of government can implement deductions, the central government is more generous with them. This partially offsets the potentially more progressive effect of regional marginal tax rates. Secondly, we observe that the difference between the effect of the two levels of government varies across regions. Most interestingly, the regions that also implemented changes in the lower part of the income distribution, such as Andalusia and Extremadura, have a larger impact on the reduction in inequality. However, on average these reductions in inequality by regional tax systems are rather limited; and it seems that the focus of tax changes was politically motivated and driven by budgetary pressure. The Catalan government, for example, increased tax rates with the objective of increasing revenues from this

Figure 2

Inequality Pre-Tax and Post-Tax



Note: This figure shows the Gini for market income before taxes and after taxes by region.
Source: Authors' calculations based on Muestra IRPF IEF-AEAT (Declarantes) 2014.

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⁴ For simplicity, we only show a selected sample of the regions in the figure. See Agrawal and Foremny (2018) for a figure with all regions.

source after regional budgets were under fiscal pressure in the aftermath of the crisis.

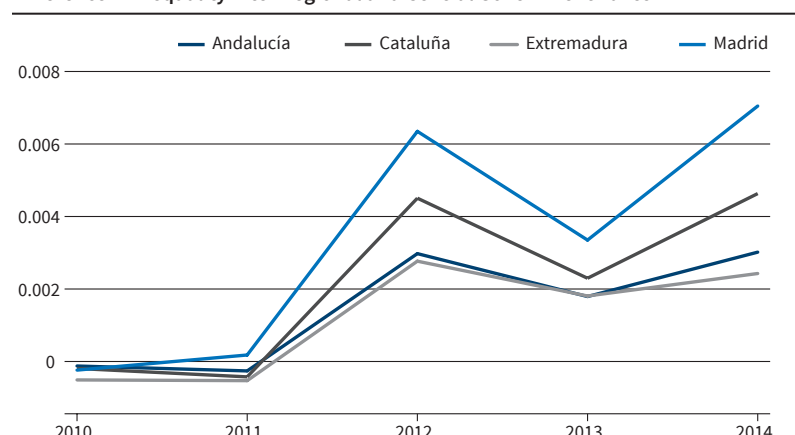
Given that marginal tax rates diverged differentially at the top and bottom of the income distribution, it is interesting to look at the previous result over time. To do so, Figure 3 shows the difference in the after-tax Gini accounting for regional taxes and the after-tax Gini accounting for central government taxes between 2010 and 2014 (i.e. the difference between the second and third bar of the previous graph). For simplicity's sake, we present four regions, Madrid and Cataluña and Andalusia and Extremadura because two of those regions had the largest variation at the lower part of the income distribution. Following the reforms, the Gini is higher after accounting for regional taxes than after accounting for central taxes only. However, variation across the regions widens marginally over time and indicates the different roles of progressive taxation. Compared to the effect of central government taxes on the Gini, Madrid, which lowered its tax rates, has a regional tax system that reduces inequality less than Cataluña, which raised its tax rates. The other two regions in this graph are those that implemented interesting changes in the middle and the bottom of the income distribution (see Figure 1). Figure 3 shows that the regional impact of those two regions has been larger than in the other ones, pushing the regional Gini closer to the central government. However, these changes remain relatively small. For example, by 2014, the difference in Extremadura was 0.5% of the after-tax Gini while in Madrid it was 1.5% of the after-tax Gini. These differences in the regional effect on the Gini coefficient depend on the tax rates selected by the regions, the credits and deductions adopted by the regions, and the initial distribution of income.

POTENTIAL REVENUE EFFECTS OF SPANISH DECENTRALISATION

As mentioned previously, one reason why some regions opted for higher or lower tax rates was the Great Recession and increasing revenue needs. Fiscal decentralisation of taxation authority may result in numerous potential responses, which eventually affect tax revenues. Firstly, regions raising taxes see higher revenues on their existing tax base. This effect is potentially offset by behavioural responses. In regions increasing marginal tax rates, individuals may reduce labour supply or find more creative ways to engage in tax avoidance. Thus, given the large body of literature on taxable

Figure 3

Difference in Inequality After Regional and Central Government Taxes



Note: This figure shows the Gini for income after regional taxes minus the Gini after central government taxes for four regions.

Source: Authors' calculations based on Muestra IRPF IEF-AEAT (Declarantes) 2010-2014.

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income responses, we would expect these regions to see declines in reported taxable income. A final response involves the location of individuals following decentralised tax changes. All else equal, an increase in the tax rate in one region might spur migration from high-tax regions to relatively low-tax regions. This response, combined with taxable income responses, suggests that the tax base will shrink in regions that raise their taxes relative to those regions that lower their taxes. Ignoring fiscal externalities and effects of tax competition, following Piketty and Saez (2013), we can decompose the effect of changes in taxes into these three components:

1. **A mechanical effect.** This is the change in tax revenue that would occur on the existing tax base if there were no behavioural responses (changes in earnings or residences) in response to the tax change.
2. **A taxable income effect.** This is the change in tax revenue resulting from distortions to the amount of taxable income individuals declare, which, for example, could change as a result of earnings (labour supply) responses.
3. **A migration effect.** This is the change in tax revenue realised by any one region because of a switch in the residential location decisions of taxpayers from one region to another.

It is worth noting that the last two effects may include real and non-real responses. By this we mean, for example, that some individuals may not actually move across regions, but rather might “falsely” declare a primary residence as a second home in order to reduce tax liability. Taxable income responses may also capture avoidance or evasion opportunities.

It follows that if the mechanical effect dominates the two behavioural effects, governments can increase revenue from raising taxes. The last two effects depend critically on the elasticity of taxable income and the elasticity of the stock of the population, respectively. In

the absence of migration effects, only the elasticity of taxable income is relevant. The empirical evidence, although varying substantially, suggests that taxable income effects are relatively small (Saez, Slemrod and Giertz 2012), which allows governments to sustain potentially high top marginal tax rates. However, it remains an open question: How large are migration effects in Spain when taxes are decentralized and what are the implications for tax revenue?

EVIDENCE ON MIGRATION

Against that backdrop, Agrawal and Foremny (2018) document the migration responses of individuals in the top 1% of the income distribution in response to the fiscal decentralisation of part of the personal income tax base to the regions. The effects of such a massive decentralisation remain unknown as yet, given that much of the prior literature on migration has focused on cross-country tax variation for a selected group of industries or occupations (Kleven, Landais and Saez 2013; Akcigit, Baslandze, and Stantcheva 2016) and the effect of changes to already existing state taxes on migration (Young and Varner 2011; Young, Varner, Lurie and Prisinzano 2016; Moretti and Wilson 2017). Some of these state tax systems have partially employment-based taxation rather than residence-based taxation, so that mobility, especially within a local metropolitan area, may occur through employment rather than residence shifts (Agrawal and Hoyt 2018). Spain's tax system is entirely residence-based, facilitating identification of any migration elasticity.

To study migration of high-income households, Agrawal and Foremny (2018) use administrative data from Social Security and tax records from Spain's Continuous Sample of Employment Histories (Muestra Continua de Vidas Laborales), which contains information on income, residential location, and industry and occupation. These income data are then inputs to a tax calculator to determine the average and marginal tax rate each individual would face for all regions within Spain. Using this information, Agrawal and Foremny (2018) show that a 1% increase in the net-of-average-tax rate for a region relative to others increases the probability of moving to that region by 1.7 percentage points. This implies, for example, that when Madrid cut taxes by 0.4 percentage points, the probability of moving to Madrid increased by 1.1 percentage points. The elasticity of the stock of top taxpayers in a given region is approximately 0.85. Using

these estimates, Agrawal and Foremny (2018) show that, under certain assumptions, the mean tax change on top earners in each region results in a mechanical effect that is larger than both behavioural effects combined (taxable income and mobility). The revenue simulations in Agrawal and Foremny (2018) have different revenue changes for different regions partly because the sizes of the tax changes are different.

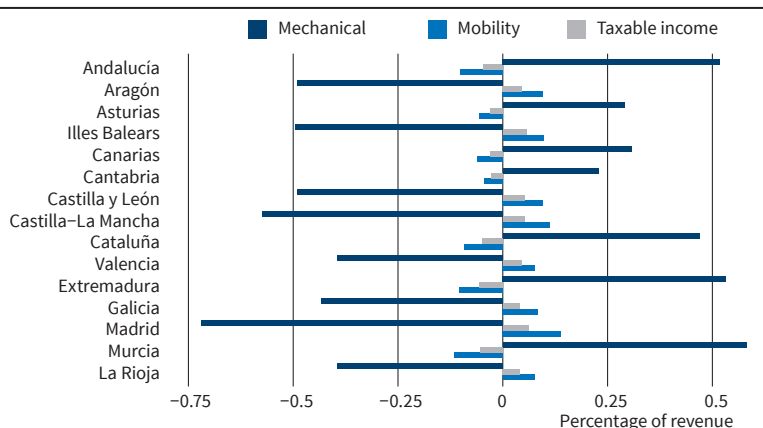
Here we extend this analysis to focus on the case where all regions change their tax rates on top earners by the same magnitude, but in opposite directions. In particular, we focus on a one percentage point change in the marginal tax rate on income above 90,000 euros. For the purpose of these simulations, we assume that the seven regions that raised their tax rates relative to the central government by 2014 only raised the marginal tax rate on income above 90,000 euros by one percentage point. On the other hand, we assume that the seven regions that lowered or maintained⁵ their tax rates by 2014 relative to the central government, only lowered the marginal tax rate on income above 90,000 euros by one percentage point. Given the magnitudes of the tax changes are identical in all of the regions, the mechanical effect will differ because the existing stock of top taxpayers and the average amount of income above this bracket threshold vary by region. The taxable income response additionally depends on the elasticity of taxable income and the shape of the distribution of income (the Pareto parameter). The mobility response depends on the estimates of the stock elasticity, as well as those factors in the mechanical effect.

Figure 4 presents the simulation results for a one percentage point change in the marginal tax rate on income above 90,000 euros. Consider the case of Madrid. Madrid lowered its tax rates, so we consider a one percentage point decline in their top marginal rates. Using the random sample of Social Security data,

⁵ Valencia was the one region that mimicked the central government tax rates in the years immediately following the reform.

Figure 4

Simulated Changes in Tax Revenue by Mechanism

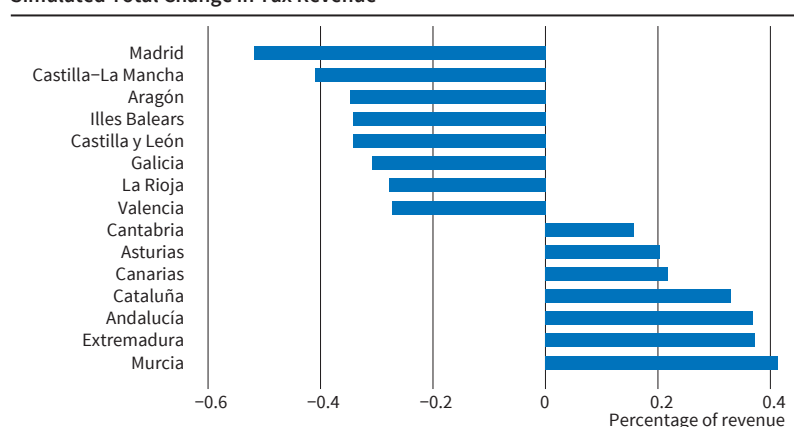


Note: We show the mechanical, taxable income and mobility responses, as a percentage of total personal income tax revenue, for a percentage point change in tax rates above 90,000 euros. Regions with positive mechanical effects are assumed to have increased taxes, while regions with negative mechanical effects are assumed to have decreased taxes. Source: Authors' calculations.

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Figure 5

Simulated Total Change in Tax Revenue



Note: We show the total revenue change, as a percentage of total personal income tax revenue, for a percentage point change in tax rates above 90,000 euros. Regions Madrid to Valencia are assumed to have decreased taxes, while regions Cantabria to Murcia are assumed to have increased taxes.

Source: Authors' calculations.

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euros raised from the personal income tax, this is a 0.48% change in revenue shown in the Figure. The pareto parameter is higher in Cataluña, but the size of the tax base is smaller, and implies a 0.05% decrease (3.7 million euros) in revenue due to declines in reported taxable income. The net outflow of migration due to higher taxes implies a 0.08% decrease in revenue (6.8 million euros). The total increase in revenue due to higher taxes is 0.33%.

As can be seen from these two examples, tax increases result in increases in revenue, while tax decreases result in

we can determine that there are approximately 75,000 individuals in the top 1% residing in Madrid with an average income of 171,000 euros (therefore, with 81,000 euros subject to our simulated reform). This yields a mechanical decrease – assuming no individuals change their behaviour – in taxes of approximately 61 million euros. Relative to 8.4 billion euros raised from the personal income tax in Madrid, this is a 0.72% change in revenue, as shown in the Figure. To calculate the taxable income response, we use an elasticity of taxable income slightly below the midpoint in the literature (Saez, Slemrod and Giertz 2012), accounting for the fact that we only study the tax on labour income and not capital income. That, combined with an estimate Pareto parameter of 2.1 and the information above, yields an increase in taxable income, due to, for example, increases in labour supply from the lower tax rates, of five million euros or 0.06% of revenue. The migration response relies on the above information plus the estimates of the stock elasticity in Agrawal and Foremny (2018). This implies a 12 million euro increase in revenue due to the net inflow of top taxpayers to Madrid due to lower tax rates, or 0.14% of tax revenue. As can be seen, the net effect of summing all three effects yields a net revenue loss of approximately 0.5% of total income tax revenues for the region of Madrid from this lower tax rate on top incomes. The total change in revenue as a percentage of income tax revenue is depicted in Figure 5.

In the opposite direction, consider Cataluña, which increased its taxes. Using the same magnitude tax change on income above 90,000 euros as Madrid, but instead increasing taxes, we can compare the revenue effects to Madrid. Cataluña has a smaller number of individuals – approximately 60,000 – in the top 1% and a lower mean income of 152,000 euros for this group (therefore, with 61,000 euros subject to our simulated reform). This yields a mechanical decrease in taxes of approximately 37 million euros. Relative to 7.5 billion

declines in revenue – even in the presence of mobility. Fiscal decentralisation does not, at least in the short run, appear to pose a threat to revenue-raising capabilities given the magnitudes of these tax changes. The magnitudes of the revenue changes depend upon the elasticity of the population stock, the elasticity of taxable income, as well as characteristics of region size along with its distribution of income.

POLICY IMPLICATIONS AND CONCLUSIONS

Our tax revenue simulations, combined with evidence on inequality after taxes, suggest that regions adjusting their tax rates in the presence of mobility need not threaten progressive redistribution in the short run. Indeed, fiscal decentralisation gives regions the autonomy to shape a tax system consistent with their political ideology and revenue needs. This heterogeneity may be especially important in a country with heterogeneous cultures, languages, and ideologies such as Spain. Furthermore, it helps to reduce fiscal imbalances between central and regional governments, which may have a positive impact on fiscal discipline.

However, this comes with several caveats. Firstly, the asymmetric fiscal decentralisation and higher autonomy in some regions (Basque Country and Navarra) than others create political tensions which, among many others, might be one of the reasons for regions pushing for more autonomy. More regional autonomy through further fiscal decentralisation might be feasible to implement, as migration responses remain moderate. At the same time, this might intensify tax competition between the regions, which even in the existing system created the word “fiscal dumping”, for which Madrid in particular was accused. Tax competition may, in turn, place additional constraints on governments, resulting in tax rates that may be inefficiently low. Indeed, the inequality measures presented here suggest that inequality is higher after regional

taxes than after central government taxes; and this may be a result of mobility.

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