Discovering Tax Decentralization: Does it Impact on the Marginal Willingness to Pay Taxes?

José María Durán-Cabré (UB-IEB)
Alejandro Esteller-Moré (UB-IEB)
Luca Salvadori (UAB-IEB)

February 2024

Abstract. Decentralized fiscal decision-making is expected to enhance welfare by promoting allocative efficiency gains and fostering greater political accountability. Within this institutional framework, it is anticipated that individuals would be willing to pay no less taxes in comparison to a centralized setting. This hypothesis is tested through an experiment utilizing survey data, leveraging the decentralization process that has transpired in Spain over the last 25 years. Individuals possess very limited knowledge about the layer of government to which they pay taxes, frequently assuming a centralized system. This holds true even in regions where tax decentralization is at its maximum, as observed in the so-called 'foral regime'. Upon individuals 'discovering decentralization' (i.e., being informed that the corresponding tax is more decentralized than initially perceived), the Marginal Willingness to Pay Taxes experiences minimal changes, except for the Personal Income Tax. These findings raise questions about the purported benefits of tax decentralization.

Keywords: Tax Decentralization; Fiscal Knowledge; Survey Data
JEL Codes: H11, H71, H77

Acknowledgments: We gratefully acknowledge funding received from PID2021-126652NB-I00 (Spanish Ministry of Science and Innovation) and from AGAUR (Government of Catalonia; Project 2021SGR00355). Salvadori gratefully acknowledges research funding from the Economic and Social Research Council (ESRC) (Grants ES/S00713X/1 and ES/X003973/1), the Serra Húnter Programme, the Generalitat de Catalunya [2021SGR00571] and the Spanish Agencia Estatal de Investigación (AEI), through the Severo Ochoa Programme for Centres of Excellence in R&D (CEX2019-000915-S). The usual caveat applies.

1. Introduction

Within the realm of fiscal decentralization, the provision of public services adapts to diverse preferences and needs across territories (Oates, 1972). Additionally, it fosters political accountability (Seabright, 1996). The resulting welfare gains from expenditure decentralization are indeed beneficial. However, if expenditure decentralization occurs without a parallel move towards revenue decentralization, it could potentially introduce new inefficiencies, comparable to or even less advantageous than the previous centralized status quo (Rodden, 2019). Furthermore, tax decentralization itself has the potential to enhance political accountability through yardstick competition (Besley and Case, 1995). Thus, to maximize social welfare, fiscal decentralization should encompass both facets of the public budget: expenditure and revenue.

In light of tax autonomy and of the anticipated benefits associated with expenditure decentralization, such as allocative efficiency and enhanced political accountability[1], decentralization is expected to increase citizens' willingness to pay taxes, or at the very least, maintain the current level (Golem, 2010)[2]. In essence, tax autonomy serves as the mechanism through which the welfare gains from expenditure decentralization are realized. This is the theory. However, the effectiveness of this mechanism hinges significantly on taxpayers' awareness of the specific layer of government to which they pay taxes. Without such awareness, tax decentralization may represent potential drawbacks, such as detrimental tax competition or increased tax administration and compliance costs, without yielding tangible benefits.

Does tax decentralization contribute to a more prominent role for the public sector by fostering a higher Marginal Willingness to Pay taxes (MWTP)? This is the hypothesis we aim to examine, capitalizing on the extensive decentralization process that has unfolded in Spain since the restoration of democracy in 1978. Tax decentralization has been significantly advanced since the establishment of the regional layer of government

[1] See Espasa et al. (2017) for an estimation of the gains from expenditure decentralization applied to the Spanish case.

[2] See also the review of the empirical literature on decentralization and government size by Martínez-Vázquez et al. (2017).

outlined in the 1978 Constitution. However, this advancement has not followed a uniform trajectory across regions. Based on historical rights recognized by the Constitution, the so-called 'foral regions' have enjoyed the maximum level of tax autonomy possible from the outset of the process. This stands in stark contrast to the rest of the regions, referred to as the 'common regime,' where tax empowerment is lower and has been progressively granted over the past 25 years. Nevertheless, a convergence in tax decentralization has not transpired across regimes. The current level of decentralization in the 'common regime'—including regulatory powers, visibility in tax compliance, and tax administration—is markedly lower.

Despite the differences across regimes, most citizens are unaware to which layer of government they pay the PIT and the VAT. While one could expect this result for the residents in 'common regime', it was unexpected for the 'foral regime'. Therefore, effective regulatory power and visibility of who is responsible for administering the tax do not make any difference in the 'foral regime' with respect to the 'common regime'. These results come from an on-line survey conducted at the end of 2021, whose territorial representativeness is guaranteed. In practice, thus, the necessary condition for tax autonomy to materialize the gains from expenditure decentralization does not hold.

Subsequently, we conducted an experiment within the on-line survey. Individuals who incorrectly identified the PIT or the VAT as more centralized than they are—constituting the majority—were provided with the correct information. For this group, we compared their MWTP before and after they 'discover tax decentralization'. Very few respondents changed their predisposition to pay taxes. This casts doubts on the utility of tax decentralization as a mechanism to materialize the supposed gains from expenditure decentralization. Only for the PIT, we observe a significant positive impact of tax decentralization on MWTP. Then, for both taxes we amended the original MWTP of those who incorrectly assigned the tax while the original remains for those who were right about tax assignment. Next, we performed an econometric analysis to test whether the MWTP under perfect knowledge differs between 'foral regime' (fully tax decentralized) and 'common regime' (partially tax decentralized). In line with the little

impact of 'Discovering Tax Decentralization' on the MWTP, ceteris paribus, we do not observe statistically significant differences in the predisposition to pay taxes across regimes. In conclusion, we infer that citizens currently do not perceive significant welfare gains from expenditure decentralization, suggesting that the potential role of revenue decentralization in fostering public sector activity does not appear to be a priority.

The rest of the paper is organized as follows. In Section 2, we describe the main characteristics of decentralized taxation in Spain, highlighting the differences between the foral and the common regime. In Section 3, we describe the questionnaire from which we obtained the survey data, and set the hypotheses and empirical framework. In Section 4, we present our main results; and Section 5 concludes.

2. Tax Decentralization in the Spanish Regional Financing System

With the approval of the 1978 Constitution Spain created an intermediate layer of government, the regional one, so-called Autonomous Communities (AC hereafter), granting them self-government. Since then, ACs have acquired substantial powers and responsibilities from the central government, playing a pivotal role in providing public services such as education, health, and social services —cornerstones of the welfare state.[3] [4] Public expenditure is funded according to two alternative financing systems: the so-called common regime encompassing 15 regions[5] and the special ('foral') regime applicable to the Basque Country and to Navarre.[6] This latter regime is rooted in

[3] Notably, regional public expenditure accounts for 33% of the total general government expenditure, a share surpassing that of Austria or Germany and aligning closely with Belgium, the other EU federal countries (OECD, 2023).

[4] Although Spain is not a federal country from a legal point of view, it is usually considered as so in the economic literature about decentralization.

[5] These are: Andalusia, Aragon, Principality of Asturias, Balearic Islands, Canary Islands, Cantabria, Castile and Leon, Castile-La Mancha, Catalonia, Extremadura, Galicia, Community of Madrid, Region of Murcia, La Rioja and Valencian Community.

[6] In addition to the 17 AC, In Spain there are two autonomous cities, Ceuta and Melilla, located in the North of Africa, with their own financing system deriving from historical and geographical particularities. They are not considered in this paper.

historical considerations acknowledged by the Constitution.[7] In the following, we briefly overview both systems in terms of taxing power, highlighting the substantial differences.

2.1. Taxation in the common regime and in the foral regime

In common regime regions, the primary source of tax revenue stems from central taxes that are either fully or partially transferred to regions, known as 'ceded taxes'. The evolution of the common financing system, marked by various reforms, has expanded both the number of ceded taxes and the corresponding responsibilities of the regions. During the initial phase in the eighties, only a handful of taxes were ceded: the Net Wealth Tax, the Inheritance and Gift Tax, the Tax on Property Transactions and Stamp Duty and the Taxes on Gambling. Along with the total cession of revenues, regions also assumed administrative responsibility.

It was only in 1997 when regions gained some regulatory authority over ceded taxes, and the PIT was also partially ceded. The 2002 reform incorporated additional ceded taxes such as the VAT and manufacturing excise taxes. Cession percentages were also increased, for instance, reaching 33% of the PIT, and enhancing regulatory power in that tax. The current financing system, in force since 2009, aimed at reinforcing fiscal accountability of the common regime regions, resulting in a notable increase in both the number of ceded taxes and cession percentages, as outlined in Table 1. Notably, apart from Social Security contributions, the corporate income tax stands as the sole major non-ceded tax.

The 2009 reform marked a significant shift, with 50% of the PIT and of the VAT ceded to the regions. Revenues from ceded taxes constitutes a substantial amount of the total revenue. Specifically, the ceded PIT alone contributes 35.40% to the overall revenue,

[7] The roots of the foral regime trace back to the "Ley Paccionada" (1841) in Navarre and the Economic Agreements (1876) in the Basque Country, both established in the aftermath of the Carlist wars.

while the ceded VAT accounts for 27.50% (Durán-Cabré and Vilalta, 2023).[8] Additionally, ACs gained considerable regulatory power in the PIT. They can independently set their own tax brackets and rates for the general base[9], adjust personal and family allowances within a ±10% range, and introduce regional tax credits with only generic limitations. Consequently, the final PIT liability can significantly vary across regions. The degree of regulatory power was also extended in the Net Wealth Tax and the Inheritance and Gift Tax, allowing regions to determine their own rates and brackets, and to introduce a wide range of allowances, including a 100% tax credit, as exemplified by the Community of Madrid in the Wealth Tax since 2011. Regulatory powers are absent in the VAT or in manufacturing excise taxes. Notably and probably crucially for an effective enhancement of fiscal accountability, the administration of the PIT, VAT, and excise taxes is exclusive responsibility of the national tax administration.

Table1. Ceded taxes to the common regime regions and regional responsibilities, 2023

Ceded Tax	**Ceded percentage**	**Regulatory powers**	**Administrative powers**
Personal Income Tax (PIT)	50%	Yes	No
Value Added Tax (VAT)	50%	No	No
Manufacturing excises	58%	No	No
Specific Tax on Certain Means of Transport	100%	Yes	No
Electricity Tax	100%	No	No
Wealth Tax	100%	Yes	Yes
Inheritance and Gift Tax	100%	Yes	Yes
Tax on Property Transactions and Stamp Duty	100%	Yes	Yes
Taxes on Gambling	100%	Yes	Yes
Taxes on Online Gambling Activities	100%	Yes	No
Tax on Waste Disposal	100%	Yes	On request
Tax on Bank Deposits	100%	No	No

Despite being part of the common regime, the Canary Islands exhibit some distinctions. Due to their exclusion from the European VAT area, it has a distinct regional general consumption tax. Additionally, it imposes specific taxes on petroleum products and tobacco, being it itself responsible for their levying and collection.

[8] Although there is official data for 2020 and for 2021, we use 2019 to avoid the impact of the pandemic on the revenues collected.

[9] In the Spanish tax there are two tax bases, the general one, mainly integrated by labour income, and the saving base, mainly of capital income. They account for 93% and 7% of the total bases, respectively. Common regime regions do not have any regulatory power over the rates applied to the saving base.

The special ('foral') regime operates on two distinct pillars, significantly diverging from the common regime. Firstly, foral governments have comprehensive authority over the regulation, administration, and collection of all taxes, excluding tariffs and Social Security contributions. Their power to regulate indirect taxes is constrained, though, by EU harmonization directives. Secondly, as foral regions collect all revenues, they offset national expenditures incurred by the central government through an annual payment to the State. In Navarre, where there is a single province, the foral government aligns with the regional government. In the Basque Country, however, the system is more intricate due to the presence of three provinces (Álava, Guipúzcoa and Vizcaya). The foral government corresponds to each province, referred to as the Foral Deputation. While there is potential for regulatory differences among the three provinces, there exists a high degree of internal harmonization (Zubiri, 2017).[10]

2.2 The visibility of the PIT and of the VAT in the common regime and in the foral regime

The PIT serves as a stark illustration of the substantial disparities between the two systems. In common regime regions, residents pay a PIT governed mainly by legislation approved by the national parliament. Despite taxpayers fill in a single tax return, they must assess two liabilities, one for the central government and another for the regional one. Within the legal limits mentioned in Section 2.1, regions have introduced numerous and relevant changes. Thus, the differences between the national tax liability and the respective regional liability, as well as among regional tax liabilities, can be considerable.

In Table 2 we present the values of some key elements in assessing tax liabilities. For the sake of simplicity, we present only the respective minimum and maximum values set by the regions. The differences in the minimum tax rates – a relevant margin affecting all taxpayers – can reach up to 2 percentage points (p.p.). Regarding the top rate, the

[10] With the aim of harmonizing taxes, the Tax Harmonization Law of the Basque Parliament created the Tax Coordination Body, with representation of the regional government and the three foral deputations, whose aim is encouraging harmonization and cooperation among them. Likewise, it allows the Basque Parliament to eliminate, if necessary, essential differences among the provinces. However, this has never been applied.

differences among regions can reach up to 9 p.p. and between the national and the regional rates up to 5 p.p. Changes introduced by the regions can move in opposite directions: in 2022 seven regions had reduced the minimum tax rate, while two had increased it; six regions had lowered the maximum rate, and nine had raised it. The total number of regional tax credits reaches 286 in 2022, averaging 19.07 per region. These credits cover a wide array of issues, mainly related to personal and familiar circumstances, housing and certain expenditures and donations. Despite the high number of tax credits, only 8.70% of taxpayers in 2020 benefited from them.

Table 2**.** Differences in the PIT among common regions and the state, 2022

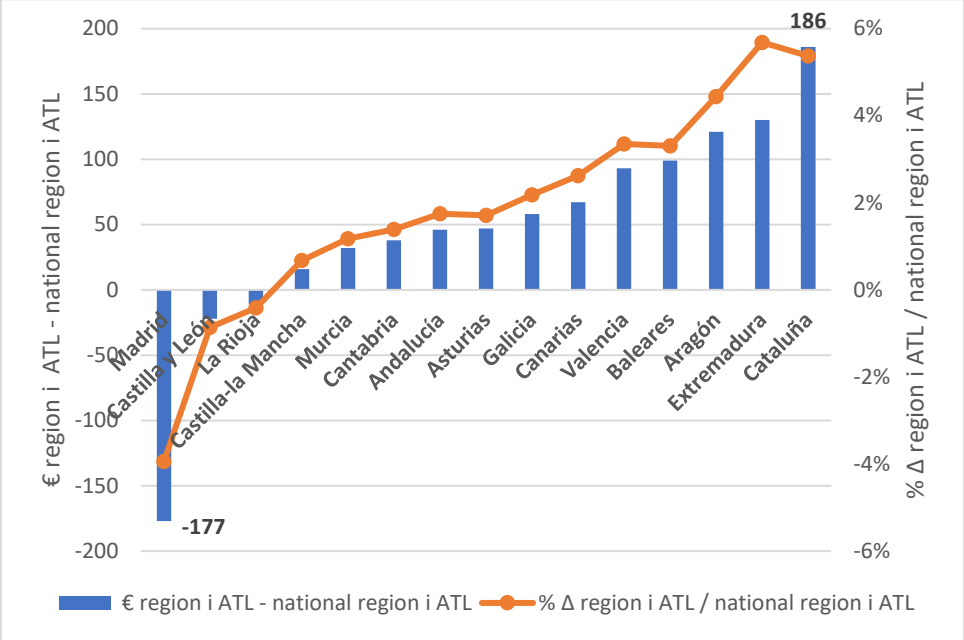
Variable	**National regulation**	**Regional regulation**	
		Minimum	**Maximum**
Number of tax brackets	6	5	11
Minimum marginal tax rate	9.50%	8.50%	10.50%
Maximum marginal tax rate	24.50%	20.50%	29.50
Income threshold for the top bracket	300,000€	53,407.20€	200,000€

As mentioned earlier, even though 50% of the PIT was ceded to the regions, in practice this share depends on how regions use their regulatory power. Depending on the overall impact of changes, the taxpayer's regional liability can be smaller, equal, or larger than the national one. In Graph 1 we compare the regional average tax liability with the national one within each region. Differences between national and regional tax liabilities can be substantial. Nonetheless, the crucial question is whether taxpayers are aware of these differences, in other words, if they know to what layer of government pay the PIT.

Most revenue collected in the Spanish PIT is levied through withholdings. The final liability is determined when filling in the tax return, and slightly over the 70% of all returns result in a negative balance. In such cases, individuals request a refund. It is worth noting that withholding rates are solely regulated by the central government. This setup makes it easy to perceive the PIT just as a national tax. Furthermore, the tax return and the associated computing program are the same for all regions of the common regime. As illustrated in Picture A1, the role played by ACs is not readily apparent in the tax return. Taxpayers must specify their region of residence initially, and after providing

all the information about earned income, the computing program automatically calculates both national and regional liabilities, along with the final consolidated result known as the "differential liability". This figure indicates whether withholdings have resulted in an overpayment or an underpayment of taxes.

Graph 1. Differences between regional and national average tax liabilities



Source: Durán Cabré and Vilalta Ferrer, 2023.
Left axis: € difference between regional average tax liability and national average tax liability of the corresponding region. Right axis: % ratio of the previous difference with respect to the national average tax liability of each region.

In only two of the many little boxes of the final sheet of the return (highlighted in Picture A1) taxpayers can see their regional liability before and after the regional tax credits. Thus, it is not easy for them to observe the role played by regions in the PIT and that around 50% of the total payment corresponds to them. Taxpayers can only observe the logos of the central government and of the national tax agency. Furthermore, recall, the national agency is responsible for the administration of the tax, sends all the information regarding the tax, often including a pre-filled return, and eventually conducts tax audits or enforcement checks. The role played by regions is definitively not visible.

As far as the VAT is concerned, the visibility of the regions' role is even more limited, given the lack of any regulatory power. Only national tax rates are applicable on invoices,

and, once again, taxpayers only encounter the logos of the central government and of the national tax agency when filling in the tax (Picture A2). Despite half of the collected revenue corresponds to the regions, neither consumers nor taxpayers receive any information about that.

The situation is markedly different in the foral regime. Concerning the PIT, regions apply their own law, without any reference to the national one. The determination of the tax bases, corresponding tax rates (including the saving rate), any potential tax credits, and withholding rates[11] are exclusively decided by the foral governments. The design of the returns and the associated computing programs are regulated by the foral governments and taxpayers can only observe the logos of the foral government and of the foral tax administration (Picture A3). Concerning VAT, the tax due on invoices aligns with the national standard, but the returns and the associated computing programs are distinct (see Picture A4).

3. The Experiment and Empirical Methodology

3.1. *The Experiment: Survey Data*

To test our hypotheses about knowledge over tax assignment and its impact on the MWTP taxes, we employ survey data. We designed an on-line survey, which was monitored and processed by a professional survey firm, *Netquest*, known for its extensive and high-quality panel of potential respondents.[12] Launched in early November 2021, participation was by invitation only. The survey included an item about sincerity in responding and a quality check item to ensure respondents' attention. Additionally, responses that showed a time of completion 20% faster than expected were excluded from the sample. Respondents were required to be over the age of 18, residing in Spain, and were rewarded through a programme of in-kind compensation.

[11] There are two exceptions: withholding rates on the wages of State employees and on the interest of assets issued by the public sector.

[12] https://www.netquest.com/en/online-surveys-investigation

Table 3. Descriptive Statistics

Variable	Observations	Mean	Standard Deviation	Min	Max
Mistake or Don't know PIT	3,017	0.6130	0.4872	0	1
Mistake or Don't know VAT	3,017	0.7740	0.4183	0	1
Right	3,017	0.2251	0.4177	0	1
Left	3,017	0.4859	0.4999	0	1
Center	3,017	0.1700	0.3757	0	1
Common regime	3,017	0.7329	0.4426	0	1
Female	3,017	0.5118	0.4999	0	1
Older	3,017	0.5018	0.5001	0	1
Inactive	3,017	0.3016	0.4590	0	1
Married	3,017	0.5801	0.4936	0	1
High_Edu	3,017	0.5164	0.4998	0	1
High_Income	3,017	0.3102	0.4627	0	1
Pro_Autonomy	3,017	0.3712	0.4832	0	1
Decentralization PIT	1,470	0.9401	0.2373	0	1
Decentralization VAT	2,024	0.9476	0.2228	0	1

The sample consists of 3,017 observations, ensuring statistical representation at the national level, as well as for specific regions, including Catalonia, Canary Islands, the AC of Madrid, and the regions belonging to the foral regime. The main descriptive statistics are presented in Table 3. Ideologically, most respondents self-locate at the left of the political spectrum (48.59%)[13], while 11.9% preferred not to respond the question about their ideology. The average age of respondents is 46.1, ranging from 18 to 92 years old. The variable *Older* is equal to 1 for individuals older than 45 years old. Slightly more than half of them (51.64%) have a university degree and 31.02% are qualified as high-income, meaning their monthly household income is above 2,400 euros (the median household income in Spain, approximately)[14]. Finally, *Pro_Autonomy* is a dichotomous variable equal to one for those individuals who would like their region were granted more political autonomy, or the independence; hence, 37.12% of the surveyed individuals aspire to more political autonomy for their region.

[13] Along a 1 to 10 scale, we identify individuals labelled as *Center* by 5; *Left*, between 1 and 4; and *Right*, between 6 and 10.

[14] The rest, 68.98%, either did not respond that question or their monthly household income is below that amount.

Considering the institutional peculiarities of the regional financing system across regions described in Section 2, through the questionary we carried out a simple experiment consisting of three steps. In the first one, we asked the following basic question:

To whom layer of government do you think you pay the following taxes?[15]

Although we also asked about other taxes, in this paper we will exploit the answers given to the two major ones: the Personal Income Tax (PIT) and the Value Added Tax (VAT). These major taxes should be the easiest to assign due to their importance in terms of tax revenue collected, but also because they levy general bases (either any source of income or any kind of consumption) and are annually applied. The five possible responses were the following: (i) all to the central government; (ii) all to the AC; (iii) a share to the central government and a share to the AC; (iv) all to the city council; and (v) "Don't know". The correct answer depends on the AC of residence: in the case of PIT, (iii) is the correct one for the common regime and (ii) for the foral one; in the case of VAT, again (iii) is the correct answer for the common regime, but Canary Islands for which the correct answer is (ii) as for the foral regime.

As shown in Table 3, the level of knowledge can be qualified as quite low (Durán-Cabré and Esteller-Moré, 2023): 61.3% and 77.4% of individuals either simply do not know or fail the right answer regarding the assignment of PIT and of VAT, respectively. At the bottom of the table, we have defined two variables that will be useful for our empirical purposes: *Decentralization PIT* and *Decentralization VAT*. Among those who failed in identifying the correct assignment, these variables equal one for those whose answer was that the tax was more centralized than what actually is, and zero otherwise. For instance, for the PIT under the common regime (and also the VAT, except, recall, for the Canary Islands), the variable equals one if the individual wrongly thought the tax was entirely assigned to the central government. Under the foral regime and for both taxes, the variable equals one if the initial belief was that the tax was fully centralized or shared with the central government. Introducing these variables allows us to discern the direction of the lack of knowledge: those leaning towards perceiving the tax as too

[15] In Spanish, *¿A qué gobierno crees que se pagan los siguientes impuestos?*

centralized versus those who inaccurately replied it was too decentralized.

After the individuals answered the above question for each tax, in the second step of the experiment, we posed the following one:

> Suppose the public sector is planning to raise public expenditure and for that purpose would consider necessary only to increase the PIT burden. Would you agree with this measure?[16]

and analogously for VAT. If they agreed with it, there was an additional question to identify how much the respondents were willing to pay in that: up to an additional 5% of their annual income; between 6% and 10%; and more than 10%.

Finally, if the respondents had wrongly replied the question about tax assignment or simply 'don't know' (Step 1), we informed them about the correct answer according to their territory of residence. After giving the correct information, in Step 3 we readdressed the MWTP inquiry in the same way as in Step 2. This approach enabled us to infer whether the provision of correct information modified the originally revealed MWTP. To parametrize the modification, we employ two alternative definitions. In definition 1), for any of the two steps, $MWTP$=0 if the respondent did not agree with paying more taxes; $MWTP$=+1 if agreed with it and was willing to pay up to an additional 5% of their annual income; $MWTP$=+2 if agreed with it and was willing to pay between 6% and 10%; and MWTP=+3 if agreed and was willing to pay more than 10% of their income. Hence, $\Delta MWTP_i$=0 if there is no 'before and after' variation; and the range of the variable goes from -3 to +3. Definition 2) is a bit more restrictive: it only identifies whether the $MWTP$ has remain unchanged (0), has increased (+1) or decreased (-1) between Step 2 and Step 3.

[FIGURE 1 & FIGURE 2 AROUND HERE]

Figure 1 shows the anatomy of the survey responses for PIT: 1,168 individuals (38.71% of the sample) correctly assigned it; the rest either responded incorrectly (43.92%) or

[16] In Spanish, "*Supón que el sector público se está planteando aumentar el gasto público para lo cual considera necesario incrementar únicamente el IRPF. ¿Estarías de acuerdo con esta medida?*".

'don't know' (17.37%). The lack of knowledge is pervasive, and even more for the VAT (Figure 2), where only 22.6% of the respondents correctly assigned the tax. Following over 25 years of tax decentralization, the observed phenomena are, to say the least, surprising. In both figures, we also see the direction of the information provided when the respondent failed. In the case of PIT, among the 43.92% who made a mistake, a substantial 93.4% believed the tax was more centralized than it is. That is, under the common regime most residents presumed the tax was entirely assigned to the central government[17], while under the foral regime most of them perceived it is fully assigned to the central government or shared between both layers of government. This kind of bias also holds for VAT, pointing to a prevalent perception of tax centralization by Spanish society. The very few individuals who think any of both taxes is more decentralized than it is and change their MWTP (e.g. in the PIT 11 for common regime and 1 for foral regime) invalidates any potential sound statistical analysis of 'Discovering Tax Centralization'.

In Table 4, we show the specific results of 'Discovering Tax Decentralization' on the MWTP taxes (definition 1)After the discovery, the average MWTP PIT of those who were not aware of the correct assignment increased from 0.2981 to 0.3256 (+0.0275). This makes – not shown in the table – the average MWTP PIT of the whole sample to increase from 0.3361 to 0.3494 (+0,0133), being the latter the 'amended' MWTP, that is, the MWTP under perfect knowledge. In accordance with the expected gains from expenditure decentralization, it goes up, but the increase is very tiny: a combination of the variation per surveyed and the low number of people who changed their preferences[18]. In Panel B), we hold this, and so just focus on the MWTP variation for those who are sensitive to 'Discovering Tax Decentralization'. The variation for that group of individuals is +0.2346, and their initial MWTP was also relatively higher (0.5494). The variation per surveyed who modifies the MWTP is not negligible, but very

[17] The alternative ('too decentralized') would occur if their answer was 'all to the to the city council;' (very unlikely) or 'all to the Autonomous Community' (a priori, likely).

[18] Note for PIT and for VAT, the number of individuals who 'discover tax decentralization' is larger than what is shown in Figure 1 and Figure 2. This is so because – to estimate the impact on MWTP – those individuals of 'foral regime' who answered 'Don't know' are considered to discover decentralization, since their institutional reality is full decentralization. We will come back to this in Section 3.2.

few modify their MWTP. A similar pattern is obtained for VAT.

Table 4. Variation of the MWTP when 'Discovering Tax Decentralization'. Definition 1

	Observations	Mean	Standard Deviation
	Panel A): All those who 'Discovered Tax Decentralization'		
After MWTP (PIT)	1,382	0.3256	0.5781
Before MWTP (PIT)	1,382	0.2981	0.5678
Variation MWTP	1,382	0.0275	0.3871
After MWTP (VAT)	1,918	0.1637	0.4215
Before MWTP (VAT)	1,918	0.1502	0.4191
Variation MWTP	1,918	0.0136	0.3010
	Panel B): All those who 'Discovered Tax Decentralization' & Modified their MWTP		
After MWTP (PIT)	154	0.7840	0.6754
Before MWTP (PIT)	154	0.5494	0.7228
Variation MWTP	154	0.2346	1.1120
After MWTP (VAT)	128	0.6797	0.5603
Before MWTP (VAT)	128	0.4766	0.6754
Variation MWTP	128	0.2031	1.1526

According to definition 1), the MWTP runs from zero (null marginal willingness to pay taxes) to three (highest MWTP).

In the next section, we detail the empirical framework we have developed to estimate the impact of 'Discovering Decentralization' on the MWTP once we control for the composition of the non-random sample of those who were treated in the experiment.

3.2. *Empirical Framework Using Survey Data*

We aim at identifying to what extent the 'Discovering Decentralization' modifies the revealed MWTP for each tax. For this purpose, we propose estimating the following standard 'before-and-after' regression for each tax:

$$\Delta MWTP_i = \delta Decentralization_i + X_i\beta' + \mu'_i \quad [1]$$

where μ_i is the error term with the usual statistical properties (here and in the following regressions). The sample for this regression only includes those who were not aware of the right tax assignment in Step 1. For each tax and each respondent, the dependent

variable is the difference between the revealed *MWTP* after the correct information has been transmitted (Step 3) and the originally revealed *MWTP* (Step 2), either according to definition 1) or definition 2). We prefer definition 1), but we will show the results of the estimation of equation [1] and of the rest of equations for both definitions of the dependent variable[19]. We aim at estimating whether δ is non-negative. In this regard, the use of control variables – X_i – is particularly important as by definition the sample of those without knowledge (wrong or 'don't know') is not random. If their personal characteristics are correlated with the 'treatment' (i.e., provision of correct information), the estimate of γ would be biased in absence of the controls.

Our subsample will be expanded to encompass those who responded 'don't know' in the foral regime. In that regime, the provision of correct information can implicitly be assumed to imply *Decentralization*, as the tax is fully decentralized. A similar approach cannot be applied to residents of the common regime, as taxes are partially decentralized. Consequently, in the estimation of eq. [1], the sample size will exceed the numbers of 'wrong answers' illustrated in figures 1 and 2, as we will include those who responded 'don't know' in the foral regime.[20]

Equation [1] serves as our primary estimation, and it will guide us in conducting a heterogeneity analysis. In particular, we will explore variations based on individuals who advocate for more political autonomy in their region of residence compared to the rest or based on their political ideology. Regardless of gains due to allocative efficiency, we would also expect a larger variation among individuals favouring more political

[19] The survey was quite brief. Despite this, not all the respondents might be consistent across steps. If they are willing to pay more PIT, and in Step 2 they revealed they are willing to pay up to 5%, and say 6-10% in Step 3, this difference might not be caused by the correct information provided, but by inconsistency in spite of the 'quality check' described at the beginning of Section 3.1 (once the individual started to respond the survey, there was no way back at answering the questions). In contrast, inconsistency seems less likely to hold between having said 'yes/no' to pay more taxes in Step 2 and 'no/yes' in Step 3. Hence, although definition 2) is certainly less flexible (i.e., there is less variation), it looks less prone to inconsistent answers by individuals across steps. There is, thus, a potential trade-off between the two definitions of the dependent variable. That is why, we show both set of results.

[20] In Figure 1, according to the definition of *Decentralization PIT*, this variable applies (0 or 1) to 1,325 observations. However, in Table 3, it applies to 1,470 observations. The difference between 1,470 and 1,325 amounts to the 'don't know' from foral regime, for whom all of them *Decentralization PIT* equals one. The analogous reasoning applies to *Decentralization VAT* in Figure 2.

autonomy, as tax decentralization—commonly associated with political autonomy—is a key component of autonomy.

It is worth noting, however, that the number of individuals altering their revealed MWTP is relatively modest, as we saw in Table 4, posing a challenge in obtaining precise estimates. To obtain further empirical evidence, we will complement our experimental analysis by estimating the following equation also based on survey data:

$$MWTP_{i\,(amended)} = \Phi Common\ Regime_i + X_i\beta'' + \alpha(X_i x Common\ Regime) + \mu''_i \quad [2]$$

This approach aims to estimate the determinants of the would be-MWTP under perfect knowledge. That is, for those with perfect knowledge (non-treated), the MWTP is the 'original' one; for the rest, the MWTP revealed in Step 2 is replaced with the one revealed in Step 3, if they differ. In this way, we can compare the MWTP under 'partial' decentralization (picked up by the dichotomous variable *Common regime*) versus 'total decentralization' (foral regime) under perfect knowledge. To obtain a causal impact, we interact the *Common regime* variable with all the personal characteristics of the surveyed (as in any other heterogeneity analysis we perform). If decentralization is welfare non-decreasing (and so, people are willing either to pay more taxes or, at least, the same level), ceteris paribus, we expect $\Phi \leq 0$.

Before delving into the main analysis, we also conduct a foundational examination to elucidate the determinants of knowledge, with a crucial focus on discerning potential disparities between the foral and the common regime. Specifically, we aim to estimate the following equation:

$$Lack\ of\ knowledge_i = \Pi Common\ Regime_i + X_i\beta'' + (X_i x Common\ Regime)\kappa + \\ + \mu'''_i \quad [3]$$

For each tax, the dependent variable equals one if the individual failed the right response about tax assignment or 'don't know'. Due to the higher level of tax decentralization in the foral regime, we expect $\Pi \geq 0$. Next, we present our results.

4. Empirical Results

4.1. *Who is more likely to have wrong or no information about tax assignment?*

In Table 5, we present the estimates for the determinants of knowledge about assignment (eq. [3]). This analysis involves the entire sample. In column (1), we show the results for PIT. Out of the total sample, recall, 38.7% were aware of to what layer of government the PIT is assigned (Figure 1). Thus, the mean of the dependent variable is 0.613.

Those located at the extremes of the political spectrum (*Right* and *Left*) are relatively well informed; both estimates show a negative sign, statistically significant and greater in absolute value than the estimate of those self-located at the *Center* (-0.092). These estimates must be interpreted with respect to those who preferred not to reveal their position along the political spectrum. Gender makes a difference: women have less knowledge than men (+0.115). Relatively old people (aged above 45) show greater knowledge. Among the *Inactive* group (comprising students and retirees), there is a dip in knowledge compared to their counterpart (+0.049), while the reverse holds for the *Married* category (-0.050). As expected, highly-educated individuals (i.e., those with a university degree) exhibit more knowledge than others (-0.101), and ceteris paribus, high-income individuals – presumably those having more at stake due to their larger income tax liabilities – also demonstrate greater knowledge (-0.0915). Generally, the sign of each determinant aligns with expectations.

Table 5. Determinants of wrong or no-information about Tax Assignment

VARIABLES	(1) Mistake PIT or Don't know	(2) Mistake PIT or Don't know	(3) Mistake VAT or Don't know	(4) Mistake VAT or Don't know
Common regime	-0.0407**	0.0203	-0.100***	-0.167***
	(0.0198)	(0.0648)	(0.0163)	(0.0493)
Right	-0.146***	-0.116*	-0.110***	-0.197***
	(0.0295)	(0.0599)	(0.0245)	(0.0500)
Center	-0.0918***	-0.0627	-0.107***	-0.0582
	(0.0299)	(0.0543)	(0.0250)	(0.0370)
Left	-0.145***	-0.169***	-0.114***	-0.0762***
	(0.0254)	(0.0445)	(0.0208)	(0.0293)
Female	0.115***	0.111***	0.0649***	0.0276
	(0.0179)	(0.0343)	(0.0158)	(0.0262)
Older	-0.144***	-0.0972***	-0.0417**	-0.0938***
	(0.0186)	(0.0335)	(0.0168)	(0.0266)
Inactive	0.0485**	0.117***	0.0864***	0.0910***
	(0.0189)	(0.0420)	(0.0166)	(0.0293)
Married	-0.0499***	-0.0208	0.0184	0.0301
	(0.0184)	(0.0348)	(0.0167)	(0.0269)
High_edu	-0.101***	-0.0834**	-0.0186	-0.00435
	(0.0175)	(0.0340)	(0.0155)	(0.0261)
High_income	-0.0915***	-0.0873**	0.0101	-0.0523*
	(0.0200)	(0.0380)	(0.0174)	(0.0294)
Pro_Autonomy	0.0296	0.0109	0.00418	-0.0214
	(0.0182)	(0.0356)	(0.0161)	(0.0266)
Right x Common regime		-0.0328		0.101*
		(0.0692)		(0.0581)
Center x Common regime		-0.0376		-0.0672
		(0.0652)		(0.0489)
Left x Common regime		0.0370		-0.0514
		(0.0544)		(0.0401)
Female x Common regime		0.000751		0.0560*
		(0.0403)		(0.0327)
Age x Common regime		-0.0629		0.0780**
		(0.0404)		(0.0341)
Inactive x Common regime		-0.0807*		-0.00998
		(0.0471)		(0.0351)
Married x Common regime		-0.0371		-0.0188
		(0.0410)		(0.0339)
High_edu x Common regime		-0.0230		-0.0196
		(0.0397)		(0.0322)
High_income x Common regime		-0.00410		0.0877**
		(0.0447)		(0.0364)
Pro_Autonomy x Common regime		0.0288		0.0333
		(0.0415)		(0.0331)
Constant	0.859***	0.812***	0.902***	0.951***
	(0.0328)	(0.0545)	(0.0273)	(0.0369)
Observations	3,017	3,017	3,017	3,017
R-squared	0.097	0.101	0.035	0.042

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

It is worth focusing now on the distinctive institutional features of the regional financing system, as elucidated in Section 2: the residency in the foral or in the common regime. The variable *Common regime* is assigned a value of one for individuals residing in that regime and zero otherwise. Despite the foral regime territories enjoy the maximum level of tax autonomy, ceteris paribus, the level of knowledge is slightly greater in the common regime (-0.041); just the reverse than we expected. Although the impact is statistically significant (at 95%), the value of the estimate is not very large: it is slightly less than half the impact caused by being high-income or being a highly-educated individual. To check whether this impact is caused by the differences between regimes or by the peculiar composition of each subsample, in column (2), we interact all the individual variables with *Common regime*. While the rest of estimates remain qualitatively the same, in accordance with our expectations, the sign of *Common regime* reverses (+0.0203), but becomes statistically insignificant. Hence, the differences estimated in column (1) were merely due to a sample composition effect. Nevertheless, it is worth emphasizing that the maximum level of tax autonomy – including visibility – of the foral regime does not by itself increase the level of knowledge of the citizen-voter-taxpayer's residents therein with respect to those residing elsewhere[21].

In column (3), we analyse the VAT. The mean of the dependent variable is higher than in the PIT case, 0.774 (see also Figure 2). That is, 16.1 p.p. less of knowledge in comparison with PIT. The lack of knowledge in the VAT is independent of the level of income or of the level of education of the respondent; hence, in these cases, these two variables do not exhibit statistically significant differences across individuals. Those who prefer not to reveal their political ideology have less knowledge as with the PIT, but now there are hardly differences along the political spectrum (the estimate runs from –0.107 for *Center* to -0.114 for *Left*). Once again, residents in the common regime demonstrate more fiscal knowledge than those in the foral regime (the estimate is equal to -0.100).

[21] The unexpected lack of knowledge in the foral regime is also suggested in Durán-Cabré and Esteller-Moré (2019) with survey data for the 2014-2017 period from the *Centro de Investigaciones Sociológicas*, an official center on sociological research in Spain. Although the surveys were not representative for the Spanish regions, the authors warned that the low level of knowledge about tax assignment between common and foral regions was practically the same.

In contrast to PIT, when we interact the control variable with *Common regime*, this latter result reinforces (see column (4)): ceteris paribus, the likelihood of residents in common regime of correctly assigning the VAT is 0.167 points higher compared to residents in the foral regime. Along with being right-wing in the political spectrum, it has by far the greatest impact out of all the potential determinants of knowledge. Considering the results for PIT and VAT, contrary to our expectations, the foral regime by itself does not enhance knowledge about tax assignment. In the case of VAT, it even diminishes knowledge compared to the common regime.

As the foral regime is fully decentralized, it is immediate to conclude that its citizens underestimate the level of tax decentralization; particularly so for the case of VAT. This is confirmed by the results shown in Table 5. The dependent variable equals one if the individual wrongly answered the tax was more centralized than what actually is. In both columns, the control variables are interacted with the *Common regime* variable. Hence, the estimator of that latter variable (-0.170 for PIT, and -0.237 for VAT) with a negative sign and statistically significant indicates that, compared to foral regime residents, those of the common regime who provide incorrect answers are less likely to believe that the corresponding tax is centralized. The findings suggest that full tax decentralization in the foral regime does not contribute to additional knowledge. Thus, it seems challenging to harness the potential advantages of decentralized taxation, such as gains in allocative efficiency or in electoral accountability, if any, given the observed lack of knowledge.

4.2. *Discovering Tax Decentralization: Does it impact on the Marginal Willingness to Pay Taxes?*

We aim to test whether tax decentralization has any impact on the size of the public sector measured through the marginal willingness to pay (MWTP), as argued in Section 2. If there is a positive relationship –tax decentralization causes a larger MWTP –, then the current size of the public sector will be inefficiently small in the presence of low knowledge (as demonstrated in the previous section). Conversely, if the relationship is

Table 5. Common *vs.* foral regime: Who is more aware of Tax Decentralization?

VARIABLES	(1) Wrongly Guess the PIT is More Centralized	(2) Wrongly Guess the VAT is More Centralized
Common regime	-0.170**	-0.237***
	(0.0746)	(0.0582)
Right	-0.109*	-0.201***
	(0.0603)	(0.0500)
Center	-0.0552	-0.0752**
	(0.0548)	(0.0383)
Left	-0.160***	-0.0791***
	(0.0453)	(0.0294)
Female	0.110***	0.0263
	(0.0344)	(0.0265)
Older	-0.0998***	-0.0874***
	(0.0336)	(0.0268)
Inactive	0.109**	0.0957***
	(0.0427)	(0.0296)
Married	-0.0167	0.0329
	(0.0350)	(0.0274)
High_edu	-0.0820**	-0.000767
	(0.0341)	(0.0265)
High_income	-0.0882**	-0.0469
	(0.0380)	(0.0296)
Pro_Autonomy	0.00644	-0.0265
	(0.0358)	(0.0270)
Right x Common regime	0.0436	0.217***
	(0.0774)	(0.0650)
Center x Common regime	0.0259	0.0136
	(0.0749)	(0.0593)
Left x Common regime	0.119*	0.0561
	(0.0647)	(0.0499)
Female x Common regime	-0.0496	0.00979
	(0.0423)	(0.0347)
Age x Common regime	-0.0175	0.109***
	(0.0426)	(0.0365)
Inactive x Common regime	-0.0956*	0.00886
	(0.0495)	(0.0366)
Married x Common regime	-0.0291	-0.0292
	(0.0432)	(0.0361)
High_edu x Common regime	-0.0186	-0.0205
	(0.0414)	(0.0339)
High_income x Common regime	0.0263	0.124***
	(0.0459)	(0.0373)
Pro_Autonomy x Common regime	0.0319	0.0511
	(0.0436)	(0.0350)
Constant	0.806***	0.946***
	(0.0549)	(0.0377)
Observations	2,638	2,399
R-squared	0.079	0.041

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

negative, an inefficiently large public sector would be inferred. This would be odd due to the supposed gains from expenditure decentralization (see fn. 1)). Therefore, it is crucial to explore this statistical relationship. In absence of any statistical relationship, the lack of knowledge would not be particularly important, as tax decentralization would not influence the desired size of the public sector measured through the MWTP.

Table 6 examines whether *Decentralization* influences the revealed MWTP (eq. [1]). In column (1) and (2), we test this hypothesis for PIT, and in (3) and (4) for VAT. Although not explicitly shown, we are controlling for the complete set of personal characteristics of the surveyed and the financing regime. Results clearly indicate that MWTP – regardless of how it is defined and the tax in question – does not vary because of *Decentralization*. The estimates are very low in absolute values, and statistically insignificant. Hence, it seems the degree of tax decentralization does not play any significant role at determining the willingness to pay.

Table 6. Does MWTP change when individuals 'Discover Decentralization'?

	(1)	(2)	(3)	(4)
	ΔMWTP_PIT	*ΔMWTP_PIT*	*ΔMWTP_VAT*	*ΔMWTP_VAT*
VARIABLES	(Def. 1)	(Def. 2)	(Def. 1)	(Def. 2)
Decentralization	0.0169	0.00915	0.00663	0.00915
	(0.0413)	(0.0372)	(0.0286)	(0.0239)
Observations	1,382	1,382	1,918	1,918
R-squared	0.015	0.019	0.006	0.007

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Notes: the dependent variable is the difference in the MWTP (before and after the treatment). The sample is restricted to those individuals who either failed or didn't know initially about tax assignment, and if any guess, they thought the tax was too centralized. According to definition 1), the dependent variable is the difference between the MWTP after having been provided the right piece of information and before, where MWTP runs from zero (null marginal willingness to pay taxes) to three (highest MWTP); in definition 2), the difference only accounts for no variation (0), increase in MWTO (+1) or decrease in MWTP (-1). In all regressions, we control for the whole set of personal characteristics (see Table 3), and the (foral or common) regime where the surveyed resides.

Table 7 delves into testing whether the impact of decentralization differs depending on the regional financing system. Due to the limited number of observations for the foral regime, we shift our focus to the common regime from this point forward. Moreover, citizens of the 'common regime' are the ones who could perceive differences in the layer

of government who decides on public good provision, as the decentralization process for those regions, in contrast with the 'common regime', was parsimonious. On the one hand, for the PIT and common regime, *Decentralization* leads to an increase in the MWTP (+0.129 according to definition 1) and +0.113 according to the more restrictive one)[22]. On the other hand, in the case of VAT, the estimate is positive, but statistically insignificant. Hence, for the subset of the 'common regime', expenditure decentralization has a statistically significant impact on the average MWTP, but only for PIT. Hence, citizens might be willing to pay more, but the composition of the mix matters: they prefer PIT rather than VAT; we will come back to this in Table 9.

Table 7**.** Does MWTP change when individuals 'Discover Decentralization'?, focus on 'common regime' regions

VARIABLES	(1) *ΔMWTP_PIT* (Def. 1) *COMMON*	(2) *ΔMWTP_PIT* (Def. 2) *COMMON*	(3) *ΔMWTP_VAT* (Def. 1) *COMMON*	(4) *ΔMWTP_VAT* (Def. 2) *COMMON*
	(a)	(a)	(a)	(a)
Decentralization	0.129**	0.113**	0.0525	0.0500
	(0.0511)	(0.0502)	(0.0479)	(0.0380)
Observations	866	866	1,241	1,241
R-squared	0.032	0.034	0.010	0.013

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Notes: the dependent variable is the difference in the MWTP (before and after the treatment). The sample is restricted to those individuals who either failed or didn't know initially about tax assignment, and if any guess, they thought the tax was too centralized. According to definition 1), the dependent variable is difference between the MWTP after having been provided the right piece of information and before, where MWTP runs from zero (null marginal willingness to pay taxes) and three (highest MWTP); in definition 2), the difference only accounts for no variation (0), increase in MWTO (+1) or decrease in MWTP (-1). In all regressions, we control for the whole set of personal characteristics, and the regime (foral or common) where the surveyed resides.

In Table 8, we investigate whether the increase in MWTP caused by *Decentralization* in the common regime is 'simply' driven by individuals' aspirations for more political autonomy. In this scenario, the impact of 'Discovering Decentralization' would primarily be motivated by regional sentiments. While in the case of PIT, those with higher political autonomy aspirations increase more their MWTP when 'discover decentralization', unexpectedly this does not occur for VAT. In none of the cases, though, the impact of

[22] This impact is not negligible as the average MWTP PIT for common regime is 0.326.

Decentralization on the MWTP is statistically different across individuals depending on their political aspirations of autonomy for their region.

Table 8. Does MWTP change when individuals 'Discover Decentralization'?, depending on their aspirations of further political autonomy

VARIABLES	(1) *ΔMWTP_PIT* (Def. 1)	(2) *ΔMWTP_PIT* (Def. 2)	(3) *ΔMWTP_VAT* (Def. 1)	(4) *ΔMWTP_VAT* (Def. 2)
(a) *Decentralization*	0.106**	0.101*	0.0516	0.0648
	(0.0521)	(0.0518)	(0.0587)	(0.0486)
(b) *Decentralization* x *Pro_Autonomy*	0.0786	0.0451	0.0293	-0.0329
	(0.125)	(0.122)	(0.099)	(0.0679)
Impact of *Decentralization* for those in favour of more Political Decentralization [(a)+(b)]	0.1849	0.1459	0.0810	0.0319
	(0.1134)	(0.1109)	(0.0794)	(0.0475)
Observations	866	866	1,241	1,241
R-squared	0.045	0.048	0.017	0.017

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Notes: the dependent variable is the difference in the MWTP (before and after the treatment). The sample is restricted to all those individuals who – residing in common regime – failed about tax assignment (*Fail*). *Decentralization* is a qualitative variable that equals one for those individuals who underestimate the degree of tax decentralization. *Pro_Autonomy* is a dummy equal to 1 for those individuals who would like more political autonomy for their regions or the independence. According to definition 1), the dependent variable is difference between the MWTP after having been provided the right piece of information and before, where MWTP runs from zero (null marginal willingness to pay taxes) to three (highest MWTP); in definition 2), the difference only accounts for no variation (0), increase in MWTO (+1) or decrease in MWTP (-1). In all regressions, we control for the whole set of personal characteristics, and those variables interacted with *Decentralization*.

The impact might also be intertwined with political ideology. For example, in the first step of the experiment, extreme leftist might have revealed the highest MWTP, and so there is no room for further increases. On the contrary, right-wing individuals might be particularly prone to decentralization as a way to promote market efficiency (Qian and Weingast, 1997), or simply do not care about what layer of government provides what as, in any case, they prefer a minimal state. We cannot discard, thus, heterogenous responses along the ideological axis; and if any response, rightist might be more willing to increase the VAT. In Table 9, we see no statistically significant differences caused by ideology, although certainly right-wing tend to lean more on VAT increases than left-wing individuals.

Table 9. Does MWTP change when individuals 'Discover Decentralization'?, depending on their political ideology

VARIABLES	(1) *ΔMWTP_PIT* (Def. 1)	(2) *ΔMWTP_PIT* (Def. 2)	(3) *ΔMWTP_VAT* (Def. 1)	(4) *ΔMWTP_VAT* (Def. 2)
(a) *Decentralization*	0.119**	0.099*	0.0434	0.043
	(.0567)	(0.055)	(0.052)	(0.041)
(b) *Decentralization* x *Right*	-.0147	-0.0036	0.038	0.029
	(0.081)	(0.077)	(0.069)	(0.059)
Impact of *Decentralization* for Rightist individuals [(a)+(b)]	0.105*	0.096*	0.0817*	0.071*
	(0.058)	(0.054)	(0.046)	(0.042)
Observations	866	866	1,241	1,241
R-squared	0.0393	0.0427	0.0124	0.0153

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Notes: the dependent variable is the difference in the MWTP (before and after the treatment). The sample is restricted to all those individuals who – residing in common regime – failed about tax assignment (*Fail*). *Decentralization* is a qualitative variable that equals one for those individuals who underestimate the degree of tax decentralization. According to definition 1), the dependent variable is difference between the MWTP after having been provided the right piece of information and before, where MWTP runs from zero (null marginal willingness to pay taxes) to three (highest MWTP); in definition 2), the difference only accounts for no variation (0), increase in MWTO (+1) or decrease in MWTP (-1). In all regressions, we control for the whole set of personal characteristics, and those variables interacted with *Right*.

4.3. *Back to Step 1 of the Experiment: Decentralization in Practice with Perfect Knowledge*

How would the situation look like if all citizens had perfect knowledge? To test for this, we estimate eq. [2]. Results are shown in Table 10. Originally, according to column (2), citizens of the common regime reveal a smaller MWTP PIT with respect to residents in the foral regime (-0.04), although the estimate is not statistically different from zero. Once they have the correct information, in accordance with their increase in the MWTP PIT when they 'discover decentralization', their MWTP PIT is larger than the one of the residents in foral regime. The difference, though, between both regimes is not statistically different. Similar results hold of the VAT (columns (4) and (3) of the table).

In summary, the marginal increase in the MWTP for the PIT, as obtained in Section 4.2, falls short of justifying a larger scale of the public sector in regions where tax decentralization is at its maximum ('foral regime'). Consequently, the potential for maximizing gains from expenditure decentralization in these regions remains uncertain.

Table 10. Does MWTP differ across territories depending on their financing regime when all citizens have perfect knowledge?

VARIABLES	(1) Amended MWTP PIT (perfect knowledge)	(2) Original MWTP PIT (imperfect knowledge)	(3) Amended MWTP VAT (perfect knowledge)	(4) Original MWTP VAT (imperfect knowledge)
Common regime	0.0623	-0.0397	0.0599	-0.0306
	(0.0885)	(0.0874)	(0.0763)	(0.0742)
Right	0.101	0.0492	0.0507	0.0206
	(0.0724)	(0.0718)	(0.0535)	(0.0535)
Center	-0.0512	-0.0667	-0.0282	-0.0204
	(0.0565)	(0.0559)	(0.0464)	(0.0486)
Left	0.273***	0.288***	0.0759*	0.0473
	(0.0536)	(0.0542)	(0.0432)	(0.0431)
Female	-0.172***	-0.201***	-0.0525	-0.0895**
	(0.0481)	(0.0485)	(0.0356)	(0.0357)
Age	-0.0349	-0.0232	-0.0263	-0.0114
	(0.0444)	(0.0443)	(0.0320)	(0.0319)
Inactive	0.154**	0.115*	0.0260	0.0346
	(0.0690)	(0.0664)	(0.0398)	(0.0397)
Married	0.0295	0.0117	0.00446	-0.0177
	(0.0460)	(0.0456)	(0.0334)	(0.0333)
High_edu	0.143***	0.124***	0.0594**	0.0639**
	(0.0443)	(0.0447)	(0.0303)	(0.0299)
High_income	0.0225	0.0433	0.0633*	0.0610*
	(0.0498)	(0.0505)	(0.0358)	(0.0349)
Pro_Autonomy	0.168***	0.104**	0.0263	-0.0198
	(0.0453)	(0.0454)	(0.0320)	(0.0330)
Right x Common regime	-0.147*	-0.0892	-0.0712	-0.00586
	(0.0802)	(0.0790)	(0.0616)	(0.0606)
Center x Common regime	0.0507	0.0847	0.0350	0.0405
	(0.0675)	(0.0663)	(0.0569)	(0.0570)
Left x Common regime	0.0669	0.0657	0.0198	0.0885*
	(0.0650)	(0.0651)	(0.0532)	(0.0521)
Female x Common regime	0.103*	0.140**	0.0167	0.0538
	(0.0550)	(0.0552)	(0.0410)	(0.0410)
Age x Common regime	0.0518	0.0360	0.00811	-0.0166
	(0.0524)	(0.0522)	(0.0386)	(0.0384)
Inactive x Common regime	-0.155**	-0.0788	-0.0336	-0.0585
	(0.0741)	(0.0720)	(0.0452)	(0.0448)
Married x Common regime	-0.0247	-0.0103	-0.0356	0.00218
	(0.0534)	(0.0530)	(0.0397)	(0.0396)
High_edu x Common regime	-0.135***	-0.0803	-0.0377	-0.0347
	(0.0513)	(0.0516)	(0.0364)	(0.0361)
High_income x Common regime	0.0350	-0.00391	-0.0319	-0.0395
	(0.0586)	(0.0590)	(0.0431)	(0.0429)
Pro_Autonomy x Common regime	-0.126**	-0.0877	0.00390	0.0422
	(0.0537)	(0.0538)	(0.0391)	(0.0399)
Constant	0.123	0.181**	0.0950	0.149**
	(0.0786)	(0.0781)	(0.0687)	(0.0672)
Mean dependent variable	0.3494	0.3361	0.1760	0.1651
Observations	3,017	3,017	3,017	3,017
R-squared	0.104	0.105	0.024	0.026

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

5. Conclusions

Expenditure decentralization might be welfare enhancing if we expect gains from allocative efficiency and from greater political accountability. If so, promoting tax decentralization should convey a higher (not lower, in any case) MWTP, provided a necessary condition is met: citizens are aware of to whom they pay taxes.

Does this condition hold? We test it by means of an experiment based on survey data taking advantage of the tax decentralization process occurred in Spain over the last 25 years, and the acute institutional differences across territories (foral *vs.* common regime). Our results show there is a low level of knowledge regarding tax assignment across layers of government: only 38.71% of respondents correctly assigned the PIT and only 22.60% regarding the VAT. There is a massive presumption PIT and VAT are more centralized than what they actually are. Ceteris paribus, in the foral regime, where tax decentralization is almost full, there is a relatively lower level of knowledge than in the common regime. Hence, the necessary condition to take advantage of the supposed welfare gains due to tax decentralization does not currently hold in the Spanish case. A priori, this is not good news.

To infer whether this lack of knowledge is something worth to tackle, next we estimate to what extent transmitting the correct information modifies the originally revealed MWTP. We obtain mixed results. For the PIT, although very few individuals changed their revealed preferences (12.05% of those who wrongly answered the tax was more centralized than what is; 149 out of 1,237 observations), we estimate causality from 'discovering decentralization' to MWTP. In the case of VAT, there is not impact at all. Hence, tax decentralization has a weak impact on the average MWTP: very few individuals react, and only for the PIT. Likely, we cannot conclude the change on the MWTP is related with further aspirations of political autonomy for their region or the political ideology .

If we restrict the analysis to comparing the foral and the common regimes in terms of 'tax preferences', after controlling for all the differences in the individual characteristics

of each sample, we conclude the MWTP does not systematically differ between them, not even the tax mix. If we amend the originally revealed MWTP once individuals 'discover decentralization', differences between territories shrink even more. Hence, comparing the reality of both territories, we do not obtain evidence of any clear advantage caused by tax decentralization.

The decentralization process that the 1978 Constitution started in Spain was not due to economic grounds, i.e., allocative efficiency gains or political accountability, rather to political ones. Nonetheless, none of the two regional financing regimes will be welfare enhancing if most of their citizens do not know taxes are partially (common) or totally (foral) paid to the regional government. This is particularly shocking in the foral regime, where the regulatory powers and the responsibility for administering the taxes are extremely high. The lack of knowledge about tax decentralization is an important issue that definitively can also occur in other decentralized countries.

This issue brings us to a final consideration about how the main taxes currently work in modern tax systems. Pre-filled returns, e-returns or tax withholdings make compliance and payment much easier. PIT taxpayers do not have to make any calculation applying progressive tax schedules or even many of them do not have to keep payslips, bank files or invoices, as the tax administration already has this information. VAT is an indirect tax, whose taxable persons from a legal point of view (those responsible for charging, collecting and paying VAT) are generally economic activities, although the aim of the tax is levying final consumers (the taxpayers from an economic point of view). Price products are usually VAT included (at least in the EU) and, therefore, it seems reasonable to believe most taxpayers do not pay too much attention to the total VAT due.

All in all, the procedures to collect taxes do not help to know to what layer of government they are paid, but neither to how much. We do consider this is a problematic issue, which deserves further research. For the time being, discovering tax decentralization in Spain does not change the MWTP.

References

Besley, T., Case, A. (1995): "Incumbent Behavior: Vote-Seeking, Tax-Setting, and Yardstick Competition", *American Economic Review* 85, 25–45.

Charron, N., LapuenteV., Bauhr, M., Annoni, P. (2022): "Change and Continuity in Quality of Government: Trends in subnational quality of government in EU member states", *Investigaciones Regionales-Journal of Regional Research*, 2022(53), 5-23.

Durán-Cabré , J.M., A. Esteller-Moré (2023): "Conocimiento fiscal: Un aspecto clave para la evaluación de políticas públicas", *Ekonomiaz*, 103, 214-247.

Durán-Cabré , J.M., A. Esteller-Moré (2019): "Diseño institucional, descentralización y gestión tributaria" in Alain Cuenca and Santiago Lago Peñas (eds.), *El sector público español: reformas pendientes,* Funcas, Madrid.

Durán-Cabré, J. M., Vilalta Ferrer, M. (2023): "La autonomía fiscal de las Comunidades Autónomas", in *Informe Comunidades Autónomas 2022,* Observatorio de Derecho Público, IDP Barcelona.

Espasa, M., A. Esteller-Moré, T. Mora (2017): "Is Decentralization Really Welfare Enhancing? Empirical Evidence from Survey Data (1994-2011)", *Kyklos*, 70, 189-219.

Golem, S. (2010): "Fiscal decentralisation and the size of government: a review of the empirical literature", *Financial Theory and Practice* 34, 53-69.

Martínez-Vázquez, J., S. Lago-Peñas, A. Sacchi (2017): "The impact of fiscal decentralization: A survey", *Journal of Economic Surveys*, 31, 1095-1129.

Oates, W. E. (1972): *Fiscal Federalism*, New York: Harcourt Brace Jovanovich.

OECD (2023): *OECD Fiscal Decentralisation Database*

Rodden, J. (2019): "Decentralized Rule and Revenue", in Jonathan Rodden and Erik Wibbels (eds.), *Decentralized Governance and Accountability*, Cambridge University Press

Qian, Y., B. R. Weingast (1997): "Federalism as a Commitment to Preserving Market Incentives", *Journal of Economic Perspectives*, 11, 83-92.

Seabright, P. (1996): "Accountability and Decentralization in Government: An Incomplete Contracts Model", *European Economic Review* 40, 61–89.

Zubiri, I. (2017): *The Economic Agreement Between the Basque Country and Spain: Principles, Characteristics and Economic Implications*, Ad Concordiam.

Figure 1: Anatomy of Response to the Experiment: The case of the PIT (All)

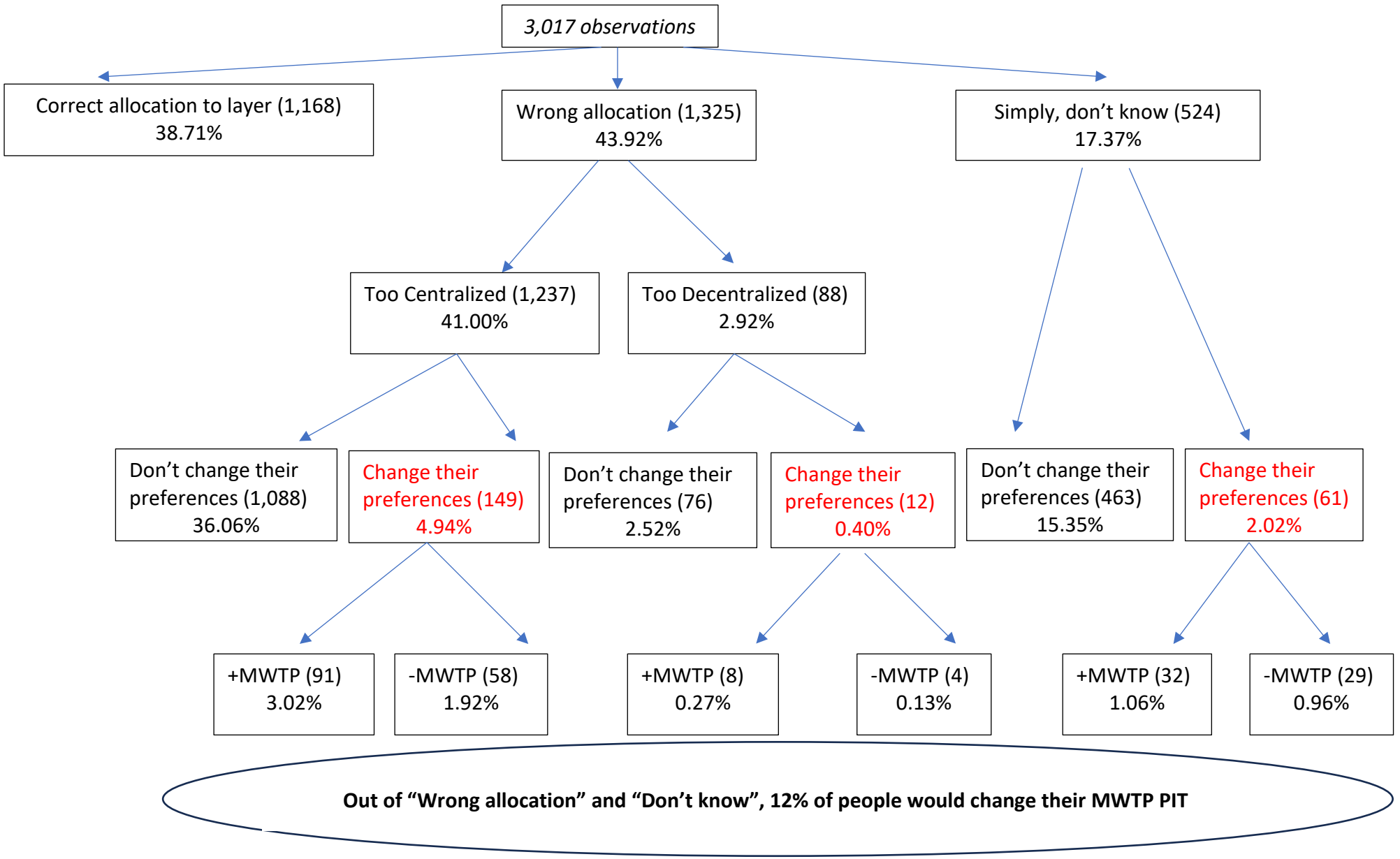


Figure 1': Anatomy of Response to the Experiment: The case of the PIT (Foral)

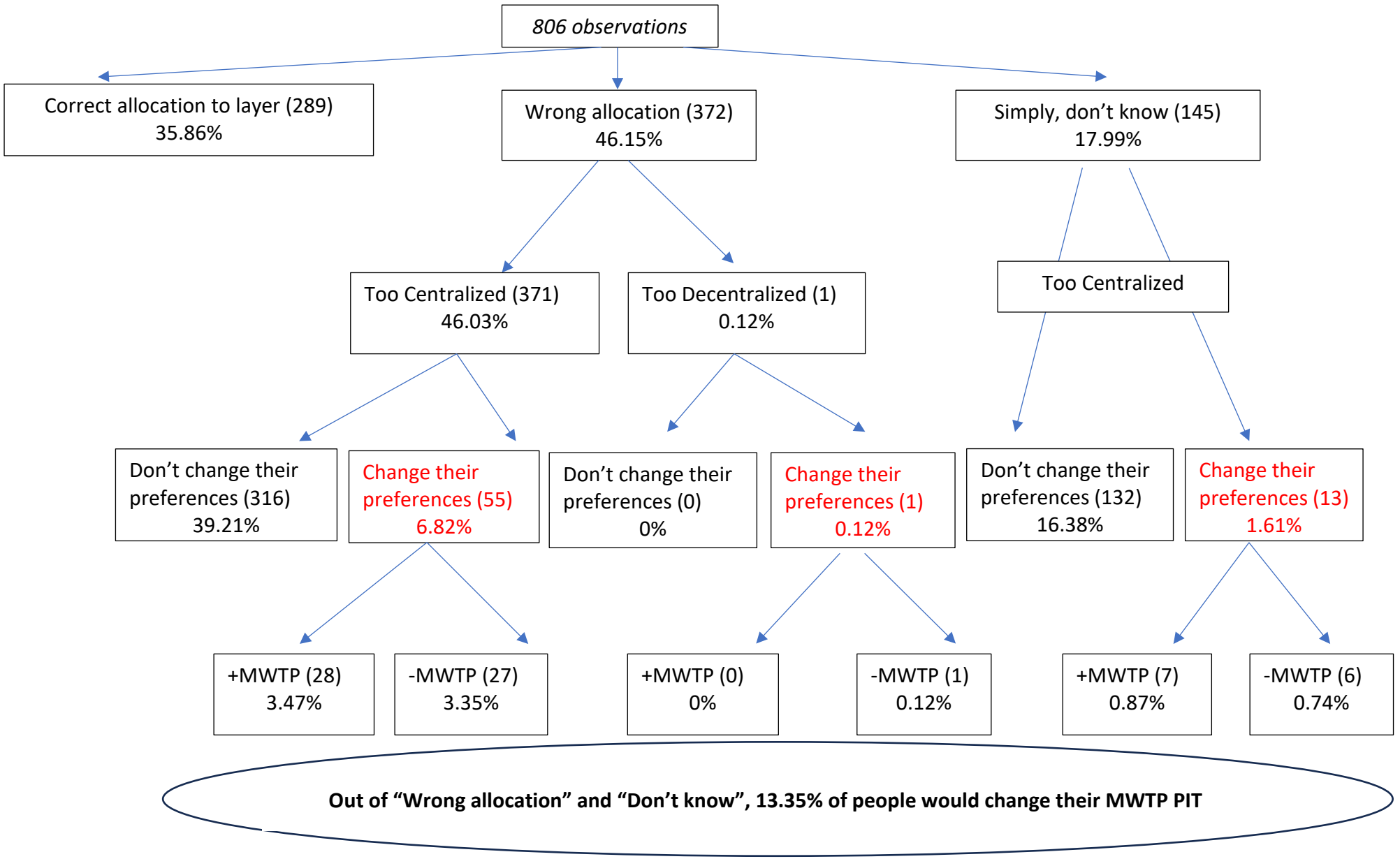


Figure 2: Anatomy of Response to the Experiment: The case of the VAT (All)

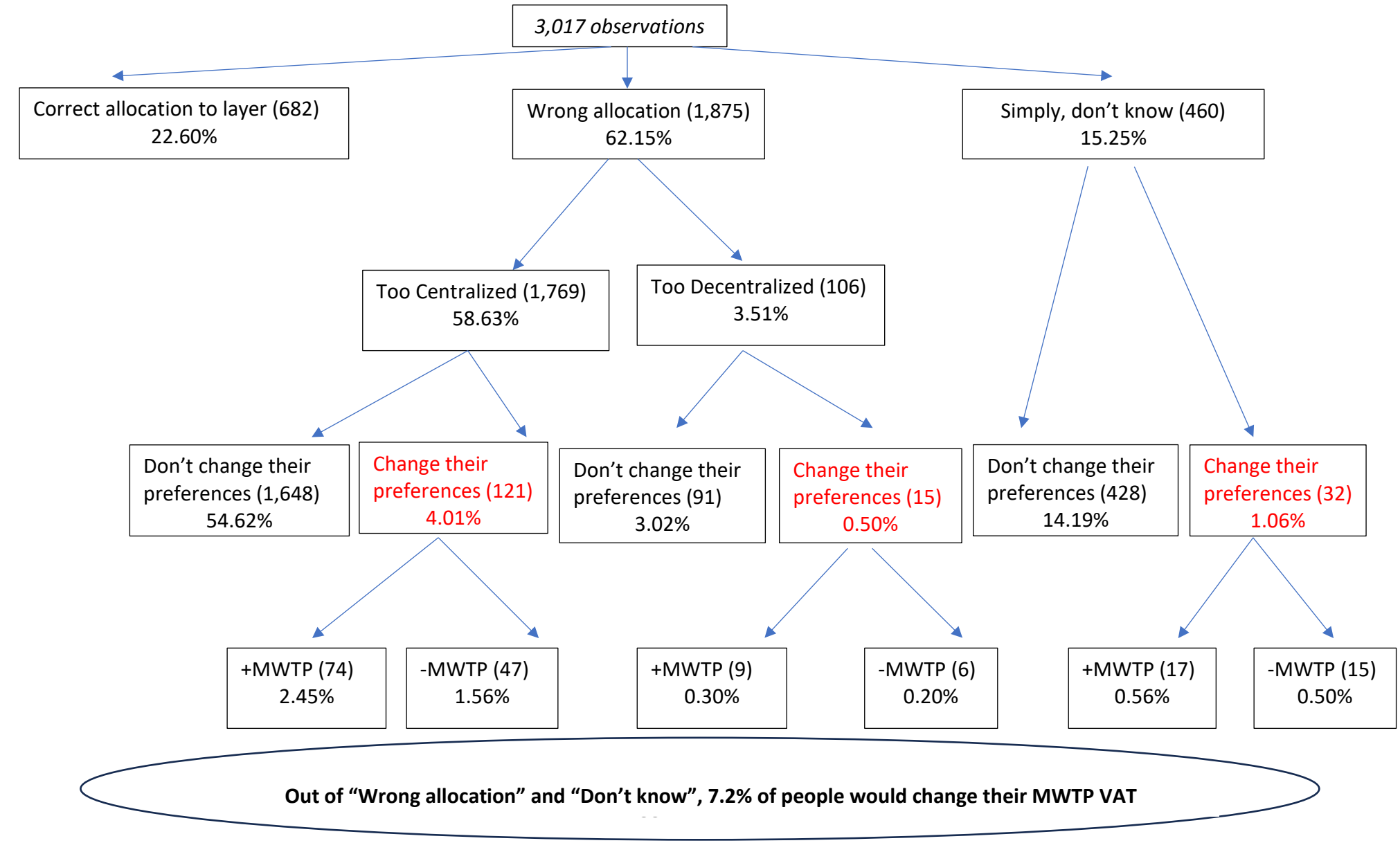
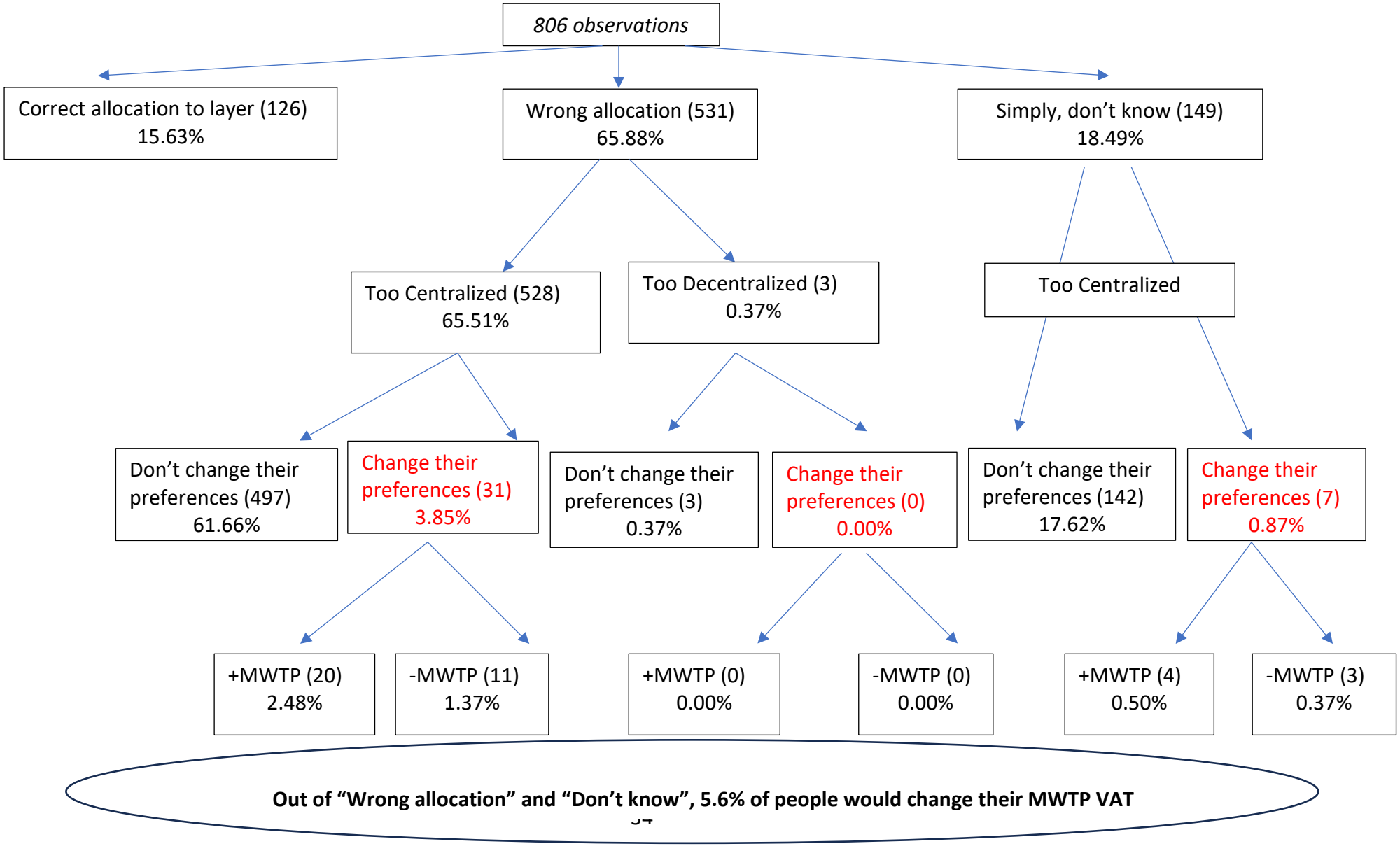
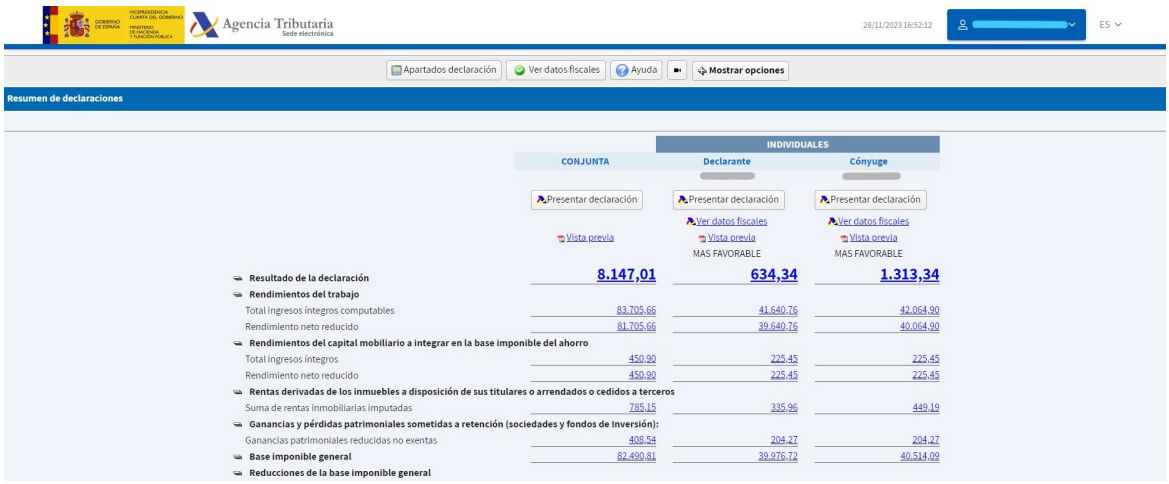


Figure 2': Anatomy of Response to the Experiment: The case of the VAT (Foral)



Appendix

Picture A1. PIT returns and assistant programs in the common regime



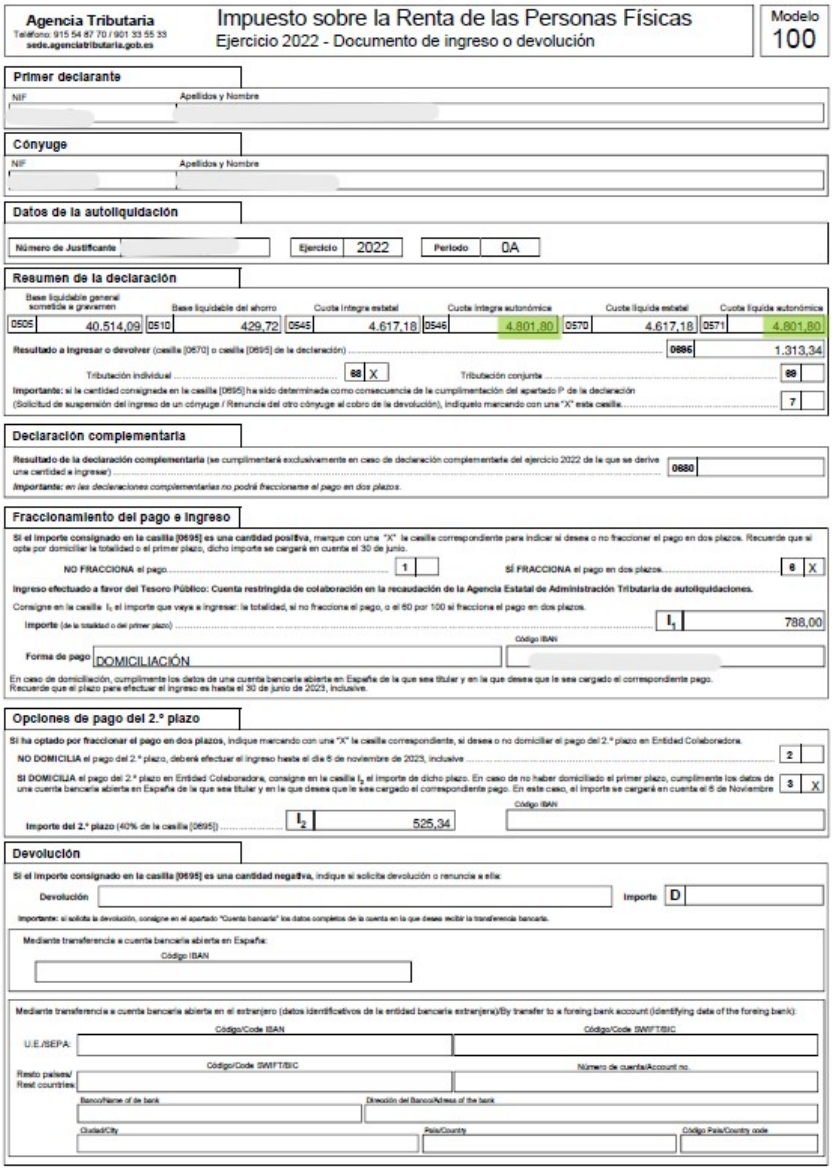
Agencia Tributaria
Sede electrónica

28/11/2023 16:52:12 ES

Apartados declaración | Ver datos fiscales | Ayuda | Mostrar opciones

Resumen de declaraciones

	CONJUNTA	INDIVIDUALES Declarante	INDIVIDUALES Cónyuge
	Presentar declaración Vista previa	Presentar declaración Ver datos fiscales Vista previa MAS FAVORABLE	Presentar declaración Ver datos fiscales Vista previa MAS FAVORABLE
Resultado de la declaración	**8.147,01**	**634,34**	**1.313,34**
Rendimientos del trabajo			
Total ingresos íntegros computables	83.705,66	41.640,76	42.064,90
Rendimiento neto reducido	81.705,66	39.640,76	40.064,90
Rendimientos del capital mobiliario a integrar en la base imponible del ahorro			
Total ingresos íntegros	450,90	225,45	225,45
Rendimiento neto reducido	450,90	225,45	225,45
Rentas derivadas de los inmuebles a disposición de sus titulares o arrendados o cedidos a terceros			
Suma de rentas inmobiliarias imputadas	785,15	335,96	449,19
Ganancias y pérdidas patrimoniales sometidas a retención (sociedades y fondos de inversión):			
Ganancias patrimoniales reducidas no exentas	408,54	204,27	204,27
Base imponible general	82.490,81	39.976,72	40.514,09
Reducciones de la base imponible general			



Agencia Tributaria
Teléfono: 915 54 87 70 / 901 33 55 33
sede.agenciatributaria.gob.es

Impuesto sobre la Renta de las Personas Físicas
Ejercicio 2022 - Documento de ingreso o devolución

Modelo 100

Primer declarante

NIF | Apellidos y Nombre

Cónyuge

NIF | Apellidos y Nombre

Datos de la autoliquidación

Número de Justificante | Ejercicio 2022 | Periodo 0A

Resumen de la declaración

Base liquidable general sometida a gravamen	Base liquidable del ahorro	Cuota íntegra estatal	Cuota íntegra autonómica	Cuota líquida estatal	Cuota líquida autonómica
0505 40.514,09	0510 429,72	0545 4.617,18	0546 4.801,80	0570 4.617,18	0571 4.801,80

Resultado a ingresar o devolver (casilla [0670] o casilla [0695] de la declaración) 0695 1.313,34

Tributación individual ..... 88 X | Tributación conjunta 88

Importante: si la cantidad consignada en la casilla [0695] ha sido determinada como consecuencia de la cumplimentación del apartado P de la declaración (Solicitud de suspensión del ingreso de un cónyuge / Renuncia del otro cónyuge al cobro de la devolución), indíquelo marcando con una "X" esta casilla 7

Declaración complementaria

Resultado de la declaración complementaria (se cumplimentará exclusivamente en caso de declaración complementaria del ejercicio 2022 de la que se derive una cantidad a ingresar) 0680

Importante: en las declaraciones complementarias no podrá fraccionarse el pago en dos plazos.

Fraccionamiento del pago e ingreso

Si el importe consignado en la casilla [0695] es una cantidad positiva, marque con una "X" la casilla correspondiente para indicar si desea o no fraccionar el pago en dos plazos. Recuerde que si opta por domiciliar la totalidad o el primer plazo, dicho importe se cargará en cuenta el 30 de junio.

NO FRACCIONA el pago ..... 1 | SÍ FRACCIONA el pago en dos plazos ..... 6 X

Ingreso efectuado a favor del Tesoro Público: Cuenta restringida de colaboración en la recaudación de la Agencia Estatal de Administración Tributaria de autoliquidaciones.

Consigne en la casilla I_1 el importe que vaya a ingresar: la totalidad, si no fracciona el pago, o el 60 por 100 si fracciona el pago en dos plazos.

Importe (de la totalidad o del primer plazo) ..... I_1 788,00

Forma de pago DOMICILIACIÓN | Código IBAN

En caso de domiciliación, cumplimente los datos de una cuenta bancaria abierta en España de la que sea titular y en la que desea que le sea cargado el correspondiente pago. Recuerde que el plazo para efectuar el ingreso es hasta el 30 de junio de 2023, inclusive.

Opciones de pago del 2.º plazo

Si ha optado por fraccionar el pago en dos plazos, indique marcando con una "X" la casilla correspondiente, si desea o no domiciliar el pago del 2.º plazo en Entidad Colaboradora.

NO DOMICILIA el pago del 2.º plazo, deberá efectuar el ingreso hasta el día 5 de noviembre de 2023, inclusive 2

SI DOMICILIA el pago del 2.º plazo en Entidad Colaboradora, consigne en la casilla I_2 el importe de dicho plazo. En caso de no haber domiciliado el primer plazo, cumplimente los datos de una cuenta bancaria abierta en España de la que sea titular y en la que desea que le sea cargado el correspondiente pago. En este caso, el importe se cargará en cuenta el 5 de Noviembre ..... 3 X

Importe del 2.º plazo (40% de la casilla [0695]) ..... I_2 525,34 | Código IBAN

Devolución

Si el importe consignado en la casilla [0695] es una cantidad negativa, indique si solicita devolución o renuncia a ella:

Devolución | Importe D

Importante: si solicita la devolución, consigne en el apartado "Cuenta bancaria" los datos completos de la cuenta en la que desea recibir la transferencia bancaria.

Mediante transferencia a cuenta bancaria abierta en España:

Código IBAN

Mediante transferencia a cuenta bancaria abierta en el extranjero (datos identificativos de la entidad bancaria extranjera)/By transfer to a foreing bank account (identifying data of the foreing bank):

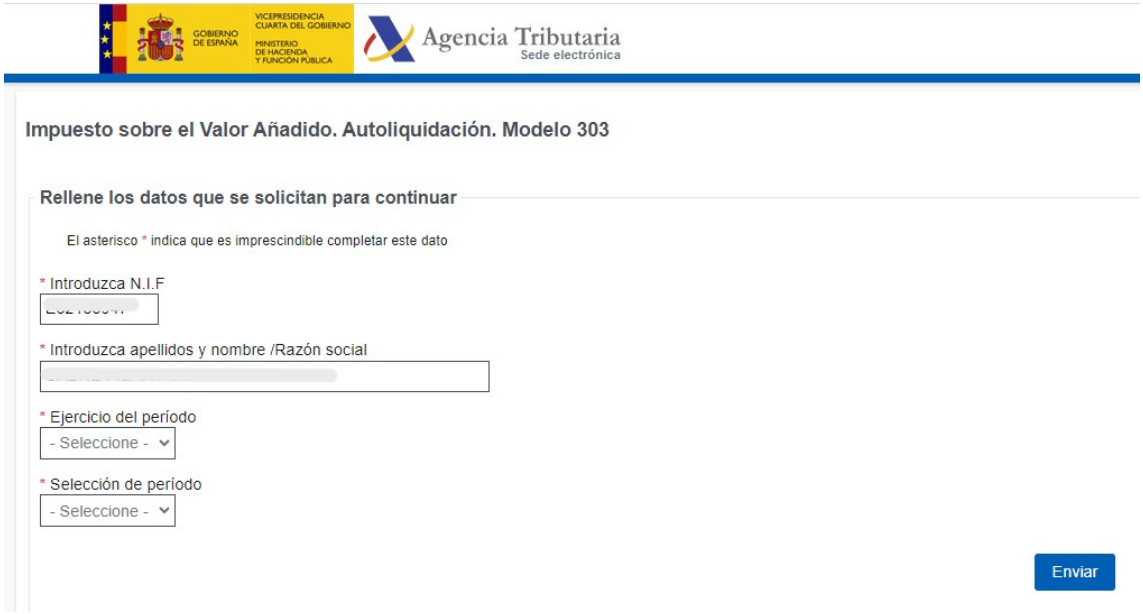
U.E./SEPA: Código/Code IBAN | Código/Code SWIFT/BIC

Resto países/Rest countries: Código/Code SWIFT/BIC | Número de cuenta/Account no.

Banco/Name of de bank | Dirección del Banco/Adress of the bank

Ciudad/City | País/Country | Código País/Country code

Picture A2. VAT returns and assistant programs in the common regime



Agencia Tributaria
Sede electrónica

Impuesto sobre el Valor Añadido. Autoliquidación. Modelo 303

Rellene los datos que se solicitan para continuar

El asterisco * indica que es imprescindible completar este dato

* Introduzca N.I.F

* Introduzca apellidos y nombre /Razón social

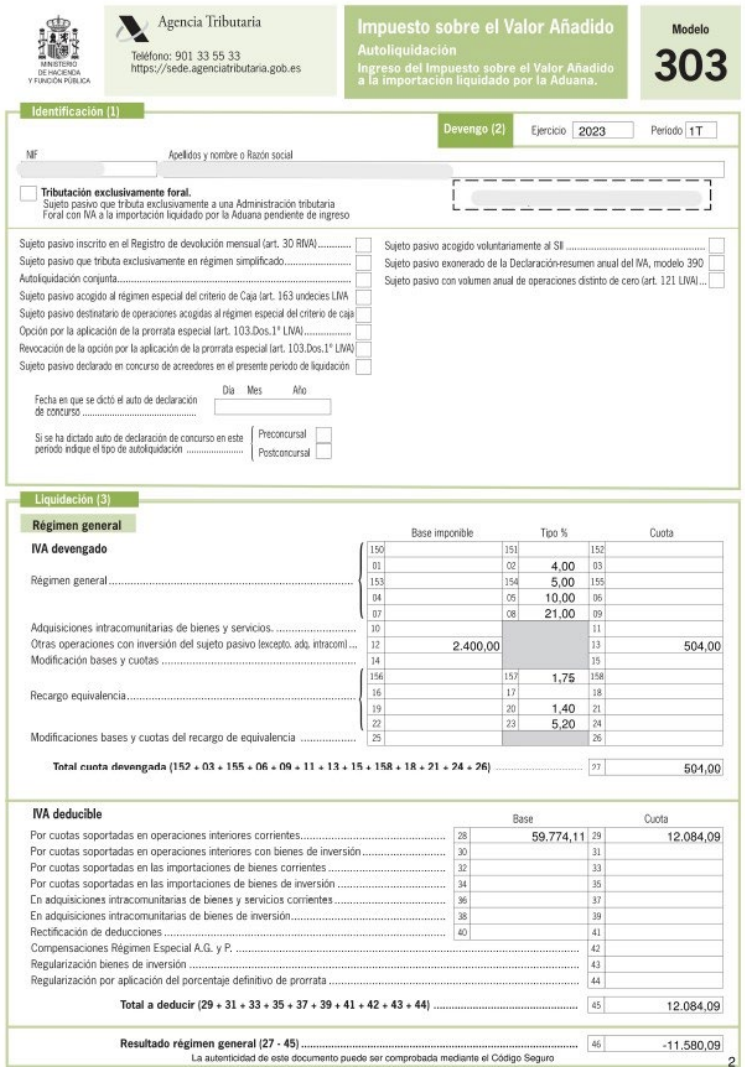
* Ejercicio del período

- Seleccione -

* Selección de período

- Seleccione -

Enviar



Agencia Tributaria
Teléfono: 901 33 55 33
https://sede.agenciatributaria.gob.es

Impuesto sobre el Valor Añadido
Autoliquidación
Ingreso del Impuesto sobre el Valor Añadido a la importación liquidado por la Aduana.

Modelo **303**

Identificación (1)

Devengo (2) Ejercicio 2023 Período 1T

NIF Apellidos y nombre o Razón social

Tributación exclusivamente foral.
Sujeto pasivo que tributa exclusivamente a una Administración tributaria Foral con IVA a la importación liquidado por la Aduana pendiente de ingreso

Sujeto pasivo inscrito en el Registro de devolución mensual (art. 30 RIVA)
Sujeto pasivo que tributa exclusivamente en régimen simplificado
Autoliquidación conjunta
Sujeto pasivo acogido al régimen especial del criterio de Caja (art. 163 undecies LIVA
Sujeto pasivo destinatario de operaciones acogidas al régimen especial del criterio de caja
Opción por la aplicación de la prorrata especial (art. 103.Dos.1º LIVA)
Revocación de la opción por la aplicación de la prorrata especial (art. 103.Dos.1º LIVA)
Sujeto pasivo declarado en concurso de acreedores en el presente período de liquidación
Sujeto pasivo acogido voluntariamente al SII
Sujeto pasivo exonerado de la Declaración-resumen anual del IVA, modelo 390
Sujeto pasivo con volumen anual de operaciones distinto de cero (art. 121 LIVA)

Fecha en que se dictó el auto de declaración de concurso (Día Mes Año)

Si se ha dictado auto de declaración de concurso en este período indique el tipo de autoliquidación: Preconcursal / Postconcursal

Liquidación (3)

Régimen general

IVA devengado

	Base imponible	Tipo %	Cuota
Régimen general	150	151	152
	01	02 4,00	03
	153	154 5,00	155
	04	05 10,00	06
	07	08 21,00	09
Adquisiciones intracomunitarias de bienes y servicios.	10		11
Otras operaciones con inversión del sujeto pasivo (excepto. adq. intracom)	12 2.400,00		13 504,00
Modificación bases y cuotas	14		15
Recargo equivalencia	156	157 1,75	158
	16	17	18
	19	20 1,40	21
	22	23 5,20	24
Modificaciones bases y cuotas del recargo de equivalencia	25		26
Total cuota devengada (152 + 03 + 155 + 06 + 09 + 11 + 13 + 15 + 158 + 18 + 21 + 24 + 26)			27 504,00

IVA deducible

	Base	Cuota
Por cuotas soportadas en operaciones interiores corrientes	28 59.774,11	29 12.084,09
Por cuotas soportadas en operaciones interiores con bienes de inversión	30	31
Por cuotas soportadas en las importaciones de bienes corrientes	32	33
Por cuotas soportadas en las importaciones de bienes de inversión	34	35
En adquisiciones intracomunitarias de bienes y servicios corrientes	36	37
En adquisiciones intracomunitarias de bienes de inversión	38	39
Rectificación de deducciones	40	41
Compensaciones Régimen Especial A.G. y P.		42
Regularización bienes de inversión		43
Regularización por aplicación del porcentaje definitivo de prorrata		44
Total a deducir (29 + 31 + 33 + 35 + 37 + 39 + 41 + 42 + 43 + 44)		45 12.084,09

Resultado régimen general (27 - 45) 46 -11.580,09

La autenticidad de este documento puede ser comprobada mediante el Código Seguro

2

Picture A3. PIT returns and assistant programs in the foral regime

navarra.es

ES | EU

← Buscador de trámites

Hacer la declaración de la renta por internet

Puede calcular su declaración de renta 2022 y entregarla telemáticamente, así como acceder a sus datos tributarios, modificarlos o añadir otros.

Puede también presentar declaraciones correspondientes a ejercicios anteriores (2016 a 2021).

Manual de uso - Vídeo explicativo

EN PLAZO

Suscribirse a este trámite

Ocultar todo

TRAMITACIÓN

Hacer la declaración

Se puede tramitar con las siguientes credenciales:

- Certificado digital o DNI electrónico
- DNI + PIN de Hacienda
- Cl@ve

CONTENIDO RELACIONADO

- Preguntas frecuentes sobre la renta
- Reglamento de IRPF vigente a 31/12/2022

Picture A4. VAT returns and assistant programs in the foral regime