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Who knows whom we pay taxes to? Tax visibility in a decentralized country: The case of Spain

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Who knows whom we pay taxes to? Tax visibility in a decentralized country: The case of Spain

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Abstract: A necessary condition for the efficiency gains that the theory of fiscal federalism assigns to decentralization to be effective is that citizens know the costs and benefits of public action. However, surveys show that most Spaniards are unable to correctly identify the taxes received by the various levels of government. Exploiting the 2015 wave of the Spanish Institute for Fiscal Studies' Fiscal Barometer, this paper empirically determines the profile of citizens who are best able to identify the allocation of taxes among levels of government. On the basis of these characteristics, the paper proposes a number of recommendations to improve citizens' fiscal visibility: a better definition and simplification of the allocation of expenditure powers between levels of government, strengthening of regional tax powers, highlighting the link between taxes and expenditure, and improvement of the population's educational level.

Keywords: Visibility, Tax Powers, Fiscal Decentralization, Fiscal Barometer, Spain.

JEL Codes: H71, H77.

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¿Quién sabe a quién pagamos los impuestos?

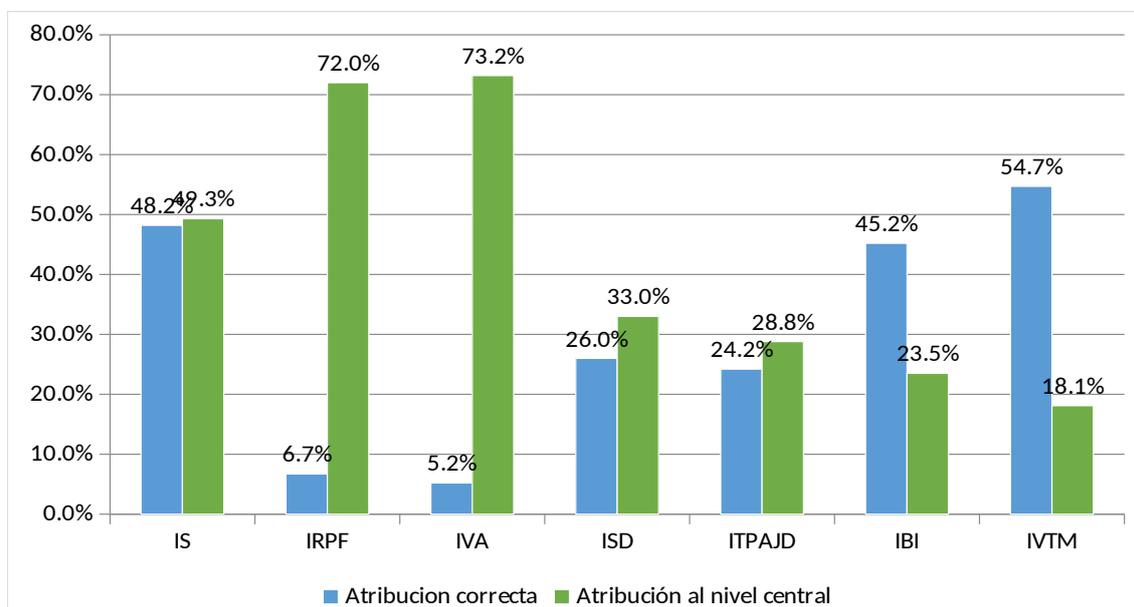
Visibilidad fiscal en un Estado descentralizado: evidencia para España

Resumen no técnico

La teoría clásica del federalismo fiscal justifica la descentralización de los ingresos y gastos públicos, principalmente, por las ganancias potenciales de eficiencia que comporta en la provisión de los bienes y servicios públicos regionales y locales. Los gobiernos subcentrales pueden conocer y satisfacer las preferencias de los individuos por esos bienes y servicios mejor que los gobiernos centrales, lo que favorece la eficiencia. Pero, para que estas ganancias potenciales sean efectivas, los ciudadanos tienen que ser capaces de comparar los costes y beneficios de la actuación pública en cada nivel de gobierno. Y esto, a su vez, requiere, entre otras condiciones, primero, que exista una clara distribución de competencias entre niveles de gobierno, en las leyes y en su ejercicio efectivo. Y segundo, que los ciudadanos sean capaces de atribuir correctamente esas competencias al gobierno responsable, esto es, que puedan identificar los impuestos que satisfacen a cada nivel de gobierno y los servicios que reciben de estos a cambio. Sin una percepción adecuada de los costes y beneficios de la intervención pública realizada por cada administración, no se puede esperar un comportamiento responsable, ni de los ciudadanos en su demanda de servicios públicos a sus respectivos gobiernos, ni de estos en la provisión de los mismos.

Lo cierto es que, en España, como en otros países, las condiciones anteriores no se cumplen satisfactoriamente. Por un lado, la distribución de competencias en materia de gastos e impuestos entre niveles de gobierno es bastante compleja. Por otro lado, y probablemente debido, al menos en parte, a esa complejidad, los ciudadanos no saben identificar correctamente qué nivel de gobierno les cobra los impuestos y les presta los servicios que reciben a cambio. Este problema se detecta de manera muy señalada (aunque no exclusiva) en el ámbito regional. Ciñéndonos solo a los impuestos, la figura 1 muestra, con datos del Barómetro Fiscal de 2015 que publica el Instituto de Estudios Fiscales, el porcentaje de ciudadanos que atribuyen la recaudación de cada impuesto al nivel de gobierno (uno o varios, en los impuestos compartidos) que efectivamente la percibe. Todavía hoy, buena parte de los ciudadanos sigue creyendo que pagamos todos los impuestos al gobierno central.

Figura 1. Porcentaje de atribución correcta de los impuestos entre niveles de gobierno y porcentaje de atribución al nivel central, 2015



Fuente: elaboración propia, con base en el Barómetro Fiscal del IEF.

En este trabajo, tratamos de determinar empíricamente el perfil de aquellos ciudadanos que son más capaces de identificar el reparto de impuestos entre niveles de gobierno para, a partir de dicho perfil, sugerir algunas actuaciones para mejorar la visibilidad fiscal de los ciudadanos. Nuestra base de datos está constituida por las respuestas de 3.000 personas residentes en España al cuestionario del Barómetro Fiscal de 2015 que publica el Instituto de Estudios Fiscales. Sobre ella, estimamos una serie de modelos de tipo Probit/Logit, teniendo en cuenta la posible estructura multinivel (regional) de los datos. De acuerdo con la información suministrada por el Barómetro Fiscal, los impuestos considerados son los siguientes: Impuesto sobre Sociedades, IRPF, IVA, Impuesto sobre Sucesiones y Donaciones, Impuesto sobre Transmisiones Patrimoniales y Actos Jurídicos Documentados, IBI e Impuesto sobre Vehículos de Tracción Mecánica. Conforme a los resultados obtenidos, hay unos pocos elementos que caracterizan a los ciudadanos que mejor perciben el reparto de impuestos en España: están informados también del reparto de competencias de gasto, conocen otros impuestos percibidos por el mismo nivel de gobierno, residen en una comunidad foral y tienen un nivel educativo alto.

Estas características nos permiten proponer y examinar con algún detalle un conjunto de recomendaciones para mejorar la visibilidad en la distribución de impuestos entre niveles de gobierno en España. En síntesis, se trataría de delimitar mejor y simplificar el reparto de competencias de gasto entre niveles de gobierno, reforzar las competencias autonómicas en los

tributos cedidos, poner de manifiesto el vínculo existente entre impuestos y gastos y mejorar el nivel educativo de la población.

1. Introduction

Over the last four decades, Spain has undergone a major process of decentralization of expenditure and (with some delay) taxation responsibilities. Although the devolution process was notably directed to the construction of the regional level of government, local entities also experienced an increase in their taxation and expenditure powers.

At present, Spanish regions (Autonomous Communities: hereinafter, ACs) currently participate in the yield of most of the taxes of the Spanish tax system, through the figure of the "ceded taxes", and they can also exercise some powers in the regulation and management of these taxes. Municipalities are also assigned a set of taxes, whose powers over collection and management correspond entirely to local entities and, at the same time, they can also modulate their tax rates.

Fiscal federalism justifies the decentralization of revenues and expenditures mainly by the potential efficiency gains it brings for the provision of regional and local public goods and services. Subcentral governments can know and meet individual preferences for regional and local public goods and services better than central governments, which favours consumer efficiency (Oates, 1972). But for these efficiency gains to be effective, citizens in each jurisdiction need to be able to compare the costs and benefits of the goods and services provided to them by the different levels of government. And this requires, among other conditions, first, that there be a clear assignment of responsibilities between government levels, in the laws and, very especially, in their implementation (Rodden, Eskeland and Litvack, 2003). In addition, citizens must be able to correctly attribute responsibilities to each level of government, that is, they must identify the taxes they satisfy to each level of government and the services provided by each of those in return. Without a proper perception of the costs and benefits of public action by each jurisdiction, accountable behaviour cannot be expected, either in the demands of individuals for public services from their respective governments or in the delivery of such services by the latter.

In Spain, as in other countries, these conditions are not satisfactorily met. On the one hand, the legal distribution of expenditure and (particularly of) taxation powers among levels of government is, as we shall see, rather complex. On the other hand, and

probably due, at least in part, to this complex delimitation of powers, citizens, as we will also see, are not able to clearly identify which level of government provides them with some of the services they receive or to which level government they pay the taxes those services are financed. These shortcomings can make it difficult for the different levels of government to efficiently deliver public goods and services. Hence the interest in identifying the factors that explain the greater or lesser ability of citizens to identify the precise level of government responsible for providing each service, as well as the precise level of government recipient of each tax's revenues. Only then, policy recommendations can be rationally raised in order to improve visibility regarding the assignment of expenditure and taxation responsibilities between levels of government.

The literature has dealt extensively with the determinants of the visibility of spending powers among government levels, but research on the tax side is almost non-existent. The literature has carried out three different lines of research aimed at studying the implications of visibility.

The precondition for a rational voting behavior relies on citizens' ability to identify who is actually carrying out each policy. The lower the level of citizens' knowledge about the division of powers within multilevel States, the easier for an incumbent to get reelected under lesser scrutiny. This is why the first and seminal approach to visibility stems from the study of economic voting, relating subjects' visibility to electoral outcomes (Powell and Whitten, 1993; Rudolph, 2003; Cutler, 2004; Tilley and Hobolt, 2011; Anderson et al., 2017; on the Spanish case, see Jaime and Sáez, 2007; Lago Peñas and Lago Peñas, 2011). With respect to this line of research, it is worth noting that tax visibility has been only recently (and seldom) used as an explanatory variable of (and generally found negatively related to) electoral support (Johns, 2011; Anderson et al., 2017; and Cutler, 2017).

Leaving aside electoral outcomes, the second strand of the literature on the implications of visibility connects the attribution of powers to concrete policy preferences. Apart from a handful of papers that investigate the attribution of governmental blame (Arceneaux and Stein, 2006; Maestas et al., 2008; Tilley and Hobolt, 2011), to the best of our knowledge also just a few papers estimate the causal relationship between citizens' visibility and concrete policies. So far, the latter research avenue has just dealt with identifying the support for (and the judgement about the current level of)

decentralization (López-Laborda and Rodrigo, 2012, 2014 and 2015), as well as the effect of visibility on governmental perceived responsibility (Cutler, 2008).

The third strand of research on visibility aims at estimating its determinants. In other words, this line of research investigates which factors influence citizens' ability of correctly attributing powers across levels of government. This research avenue can be divided up in two different groups of papers.

On the one hand, the first and most prolific group of papers focuses its attention on economic and expenditure-based powers, namely education, health, unemployment insurance and social services (Tilley and Hobolt, 2011; Wilson and Hobolt, 2015; regarding the Spanish case, see León and Ferrín, 2007; León, 2010 and 2012; López-Laborda and Rodrigo, 2014, 2015; Cordero and Lago Peñas, 2016; Herrero et al., 2018). All in all, the literature emphasizes the positive role on visibility played by subjects' educational level and their interest in politics, as well as the pervasive effect on visibility of partisan loyalties.

On the other hand, to the best of our knowledge, just one paper estimates the determinants of tax revenues visibility. It is worth noting that visibility within this context shall not be understood as how much do citizens' pay in taxes, but either to whom (which level of government) do taxation revenues go or to whom do taxation powers belong to. The paper focusing on the determinants of taxation revenues is the one by López-Laborda and Rodrigo (2014), who carried out their analysis on the Spanish context. With data from the 2005, 2006 and 2010 waves of the Fiscal Barometer survey provided by the Spanish Institute for Fiscal Studies, they investigate which factors influence citizens' correct attribution of the Personal Income Tax (IRPF) and the Value Added Tax (IVA) between the central and regional level. According to their results, taxation visibility is higher for those who correctly attribute expenditure-based powers, have positive views about the Public Sector, and live in large cities.

In this paper, we want to extend the research on tax visibility in several directions. Our aim remains to empirically identify the factors that favor or hinder the accurate attribution by citizens resident in Spain of the taxes they pay to finance each level of government, but now considering the three levels of government in the country: central, regional and local. In addition, we conduct an econometric analysis for seven of the main taxes that make up the Spanish tax system: Corporate Income Tax (IS), Personal

Income Tax (IRPF), VAT (IVA), Inheritance and Gift Tax (ISD), Capital transfer tax, taxes on the raising of capital, and stamp duties (ITPAJD), Property Tax (IBI) and Vehicles Tax (IVTM). The exercises are carried out for the year 2015, the last year in which the Fiscal Barometer collected information on these issues.

In order to empirically analyze the issue of tax visibility in Spain, we use the answers given by 3,000 citizens to the questions of the Fiscal Barometer 2015, published by the Institute for Fiscal Studies (Ministry of Finance). In our models, the dependent variables will always be discrete (the citizen may or may not be able to identify the level of government responsible for a given tax), so we estimate probit/logit-type models, attending to the possible multilevel (regional) structure of the data. The independent variables are grouped, according to the literature, in various explanatory hypotheses of the visibility of the assignment of taxes between levels of government. According to the results obtained, there are a few elements that characterize the citizens who best perceive the allocation of taxes in Spain: being informed of the allocation of functions between levels of government, being aware of other taxes of the same level of government, residing in a foral region and enjoying a high level of education. These features allow us to provide a series of recommendations to improve visibility in the assignment of taxes between levels of government in Spain.

The paper is organized as follows. After this introduction, the second section describes the Spanish institutional background, summing up the distribution of expenditure and tax powers among levels of government. The third section describes the database. The fourth and fifth sections present, successively, the specifications and estimates performed and discuss the main policy implications arising from the results obtained. The sixth section concludes.

2. Institutional background: the devolution process in Spain¹

Soon after democratic restoration in 1977, Spain went through a devolution process that has led the country be nowadays one of the most decentralized states worldwide (OECD, 2020). In addition to the central government, the territorial organization of the country includes 17 autonomous communities and 2 autonomous cities (the North

¹ For an in-depth analysis of the decentralization process in Spain, see López-Laborda et al (2020).

African cities of Ceuta and Melilla) at the autonomic/regional level, and 50 provinces and more than 8,100 municipalities at the local level.

At present, expenditure at the regional level represents 32% of the consolidated non-financial expenditure of the Spanish public sector, and local expenditure, 11% (OECD, 2020). Tax decentralization has lagged behind spending, but has accelerated in the last decade. With data from the OECD (2020) -which assigns taxes to the level of government that has the discretion to set the tax rate-, ACs' own revenues represent 17% of the consolidated non-financial revenues of the Spanish public sector, and local revenues, 10%.

The constitutional assignment of functions between levels of government broadly follows the conventional principles of fiscal federalism. The central level has responsibilities in areas that affect the functions of stabilization, redistribution and provision of national public goods, such as economic planning, pensions, unemployment benefits, international relations, defense, regulation of the financial system, national infrastructure and transportation, and so on.

At the regional level, devolution took place asymmetrically. In terms of responsibilities for providing goods and services, almost half the ACs experienced a high level of devolution from the very beginning,² while the remaining ones caught up just in the early twenty-first century. Today, notwithstanding some singularities, all regions are responsible for providing a wide range of public services with a regional scope, such as health and education, social services, agriculture, industry, environment or regional infrastructures. In some services, such as health and education, regional autonomy is not absolute. The ACs share responsibilities with the central government; for this reason, they are called “concurrent competences” (*competencias concurrentes*). They work as follows: the central government is responsible for setting the basic standards that must govern the provision of these services throughout Spain, and the ACs are responsible for developing these basic standards, adapting them to the preferences of their citizens, as well as for providing the services in their territory.

Local governments are assigned the responsibility for local public goods and services. All municipalities have to provide public lighting, cemeteries, waste collection, public cleaning, drinking water supply, sewer system, access to urban areas, food surfacing,

² Those regions were the Basque Country, Catalonia, Galicia, Navarre, Canary Islands, Andalusia and Valencia.

and food and drink control. In addition, larger municipalities must provide additional services, such as public parks or urban passengers transport. The provinces are responsible for coordinating some municipal services and for the provision of services in small municipalities or of a supra-municipal nature.

The constitutional architecture allocates revenues among levels of government in an even more elaborate way than the assigning of expenditure responsibilities. At regional level, two groups of ACs must be distinguished: the ACs under the foral or charter regime, which are the Basque Country and Navarre, and the ACs under the common regime, which are the remaining ones.

The ACs under the common regime obtain their revenue from two basic sources: the so-called "ceded taxes" (*impuestos cedidos*) and the grants from the central level (which, to some extent, have an equalization purpose). At present, ceded taxes (and other minor own revenues, like fees, charges, and so on) amount to 80% of non-financial revenues for all the ACs under the common regime; grants represent the remaining 20%.

Ceded taxes are taxes established and regulated by the central level, the proceeds of which are assigned in whole or in part to the ACs. Until 1997, the ACs did not have any powers to regulate the structure of ceded taxes, although in some cases they did have powers to manage them. As from 1997, the ACs were granted various degrees of discretion with regard to some of the ceded taxes, which allowed them to set the tax rate and establish tax credits and allowances. Table 1 details all the taxes currently ceded to the ACs under the common system, as well as the powers that these may exercise over them. There are only two relevant taxes that have not been ceded to the ACs: the IS and the social security contributions, for which the central government continues to exert all powers.

[TABLE 1 ABOUT HERE]

Table 1 shows that the four regional taxes considered in our research have a very different regime of decentralization. In IRPF and VAT, the ACs have a share of 50% of the collection, but their management is the responsibility of the central government. ACs have discretion over the tax rate and some tax credits in the IRPF, but they cannot legislate on VAT. In the ITPAJD and the ISD, the ACs are entitled to 100% of the collection, manage both taxes and have wide discretion over the tax rate, allowances and tax credits.

The foral communities obtain almost 100% of their revenue from the so-called "agreed taxes" (*tributos convenidos* in Navarre and *tributos concertados* in the Basque Country). As shown in Table 1, foral ACs enjoy more powers over these taxes than the common-regime ACs over the corresponding ceded taxes. The only tax that remains outside of the foral regime are social security contributions. In all the taxes that constitute the object of our investigation, including the IS, charter regions receive 100% of the collection, in addition to managing and regulating them (with the exception of VAT). It is also worth noting that in the Basque Country tax powers do not correspond to the Autonomous Community, but to the three provinces or "historical territories" that make it up, so that the Autonomous Community is financed by means of grants from the provincial governments. This differential feature determines some of the options followed subsequently in the definition of the variables used in our empirical application. This is not the case of Navarre, because there the provincial and regional levels perfectly overlap.

The foral communities contribute to financing the expenditure responsibilities of the central level through a grant, which is called quota (*cupo*) in the case of the Basque Country, and contribution (*aportación*) in the case of Navarre.

As in the case of the ACs under the common regime, the revenue of all Spanish municipalities also comes from taxes and grants. Currently, the former represent almost 65% of the non-financial revenue of all municipalities, and transfers, the other 35%. Table 2 summarizes the powers that municipalities can exercise on each tax. It can be seen that in the two taxes that we deal with in our application, the IBI and the IVTM, municipalities receive the entire collection, manage the taxes and can set the tax rates and some allowances and tax credits. Table 2 further shows that large cities take a small share in the collection of the major taxes, such as IRPF and IVA.

[TABLE 2 ABOUT HERE

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3. Database

The database consists of the information provided by the 2015 wave of the Fiscal Barometer. This is a yearly survey carried out by the Spanish Institute for Fiscal Studies since the early nineties. The survey gathers citizens' opinions and attitudes on various topics related to public sector activity: assessment of public services and benefits,

attitude towards tax evasion, image of the Tax Agency, etc. The population under study is citizens over 18 years of age resident in Spain, including up to 10% of immigrants. The Barometer is a sample of 3,000 individuals, elected each year from the represented population and stratified by economic activity, autonomous community and municipality of residence (Goenaga and Pérez, 2011; Área de Sociología Tributaria, 2016).

Each year the questionnaire includes a special module on a concrete Public Finance topic. The 2015 wave, as did those of 2005, 2007, and 2010, interviewed Spanish residents on the attribution of expenditure and taxing responsibilities between levels of government. Though waves prior to 2015 have been used to test the determinants of tax visibility (López Laborda and Rodrigo, 2014), we consider, for the reasons given below, that the 2015 questionnaire is the most suitable for the purpose of this paper, and this is why we had to rule out a pooled cross-section analysis and only exploit 2015 data. First, because the 2005 and 2007 waves completely forget about local taxes and taxes whose revenues exclusively go to regional Treasuries. Second, because in the case of residents in the Basque Country, just the 2015 wave offers the possibility of a purely correct answer, since it is the only questionnaire that includes Provinces as a choice. Third, because the 2010 wave, regarding the IRPF and IVA, does not offer the purely correct answer, which would be that tax revenues coming from both taxes are benefiting more than one level of government, including local entities. And fourth, because the question of the attribution of tax revenues in every wave but the 2015 one goes as follows: “What level of government do you pay the T tax?”. And, the interpretation of such a question is not straightforward, since the central Tax Agency (and foral ones too) collects the IRPF and IVA, whose revenues are shared between different levels of government. In the 2015 wave, on the contrary and more accurately, the question on the attribution of tax revenues goes as follows: “What level of government is the recipient of T tax revenues?”.

Figure 1 shows the shortcomings in the attribution of tax responsibilities to each level of government in Spain in 2015. Only 5-7% of citizens know how the proceeds of the two most important taxes in the Spanish tax system, IRPF and IVA, are allocated between levels of government. More than 70% of residents still believe that these taxes are received in full by the central level. The explanation may lie, at least in part, in the fact that, as we have seen in section 2, these two taxes are managed by the central Tax

Agency (with the exception of the foral communities), which then remits to each government its share of the collection.

The visibility of ITPAJD and ISD is much higher, although it is less than 30%. This higher percentage is probably due to the fact that the ACs regulate and manage these taxes and keep all of their collection. However, an even higher percentage of citizens believe that the receipts of these two taxes go entirely to the central government.

As expected, the percentages of correct attribution of the IBI and IVTM exclusively to local corporations are higher, 45% and 55%, respectively, and 36% of people know that the two taxes are local. However, these figures are still low, taking into account that these are two taxes that have been part of municipal budgets for decades, and that the municipal powers to regulate and manage them seem much clearer and more visible than in regional taxes, and also considering the link between these taxes (especially the IBI) and the services provided by the municipalities. The percentage of citizens who wrongly attribute these taxes to the central level is around 20%.

As with local taxes, there is also a relatively high percentage of citizens (48%) who correctly attribute the collection of IS. However, in view of what happens with the other taxes, we are left wondering how much of this percentage is due to citizens' genuine knowledge and how much is due to the fact that, as we have seen for the other taxes, many people continue inertially thinking that all taxes belong to the central level.

[FIGURE 1 ABOUT HERE]

Although, as we have explained above, the figures should be compared with caution, it seems that residents in Spain are less and less able to correctly identify the governments that receive revenue from IRPF and VAT, although the visibility of the IS has improved. The visibility of local taxes has not changed significantly over time (Área de Sociología Tributaria, 2006, 2008, 2011, 2016).

The visibility issue is less important on the services side. As shown in Figure 2, citizens correctly identify that the central level is responsible for unemployment benefits and pensions, and local authorities for public lighting and waste collection. The percentages are lower, at around 50%, in the case of education and health services. Here it should be borne in mind that, although the ACs are primarily responsible for the provision of these services, as we have seen in section 2, the provision of these services is actually a competence shared with the central government, which is responsible for regulating the

basic conditions for the provision of these services throughout the country. This probably makes it less clear to the citizen what the responsibility of each level of government is for the provision of these services.

[FIGURE 2 ABOUT HERE]

4. Specifications

Our aim is to find Spaniards' determinants of tax visibility for the seven taxes referred to above, namely Corporate Income Tax (IS), Personal Income Tax (IRPF), VAT (IVA), Inheritance and Gift Tax (ISD), Capital transfer tax, taxes on the raising of capital, and stamp duties (ITPAJD), Property Tax (IBI) and Vehicles Tax (IVTM). According to the literature, the probability of correctly identifying whom level of government is the recipient of any given tax should be higher for:

1°) *citizens that use public services or receive public benefits provided by this level of government, as well as those citizens with a greater degree of visibility on the expenditure side regarding that same level of government* (H1). Based on the empirical (though) scarce evidence provided so far (López-Laborda and Rodrigo, 2014), visibility on the expenditure side could increase citizens' interest in knowing which taxes are financing the services they receive.

2°) *citizens that accurately identify other taxes whose revenues finance the same level of government* (H2). Our hypothesis is that citizens do not have an isolated knowledge of the taxes perceived by each level of government. As stated by the previous literature (López Laborda and Rodrigo, 2014), citizens capable of attributing revenues stemming from one tax to a concrete level of government must have a higher probability of attributing other taxes' revenues that also finances the same level of government. Given that, as we have seen in section 3, a large part of Spaniards think that all taxes are central (Figure 1), it is only worth testing this hypothesis for regional and local taxes.

3°) *citizens living in subcentral jurisdictions where governments exert their taxation powers, either to modify the tax rate or to pass tax credits or allowances* (H3). Given the positive causal link of information on visibility (regarding the Spanish case, see Herrero et al., 2018), any government amending the tax code informs its citizens that it is responsible for raising revenues stemming from that concrete tax. This hypothesis applies just to regional governments, since common regime ACs do have taxation

powers on some ceded taxes only after 1997, while local entities have historically had taxation powers.

4^o) *citizens with favourable views about public intervention* (H4). Based on the literature (López Laborda and Rodrigo, 2014) causal link between individuals' economic preferences and visibility (illustratively for the Spanish case, León and Ferrín, 2007), citizens with a positive preference for public intervention shall have a deeper knowledge about the Public Sector and, therefore, should show a higher probability of knowing relatively better whom level of government gets each tax's revenues.

In order to test the above hypotheses, we propose the following general specification for each of the seven taxes under study:

$$(1) \quad 'T' TAXVISIBILITY_i = X_i\beta + Z_i\gamma + u_i$$

where '*T*'*TAXVISIBILITY*_{*i*} is the endogenous variable; *X*_{*i*} is a vector of variables of interest stemming from the hypotheses defined above; *Z*_{*i*} is a vector of control variables; and *u*_{*i*} is the error term.

The endogenous variables for each of the estimated specifications are the following one s:

- *IRPFVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes Personal Income Tax revenues i) to more than one level of government if the subject lives in regions under the common regime, ii) to the region if the subject lives in Navarre, or iii) to Provincial Governments if the subject lives in the Basque Country; and 0 otherwise.
- *IVAVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes Value Added Tax revenues i) to more than one level of government if the subject lives in regions under the common regime, ii) to the region if the subject lives in Navarre, or iii) to Provincial Governments if the subject lives in the Basque Country; and 0 otherwise.
- *ISVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes Corporate Tax revenues i) to the central government if the subject lives in regions under the common regime, ii) to the region if the subject lives in Navarre, or iii) to Provincial Governments if the subject lives in the Basque Country; and 0 otherwise.

- *ISDVISIBILITY*: a dummy variable taking a value of 1 if the citizen correctly attributes Inheritance and Gift Tax revenues i) to ACs if the subject lives in any region but the Basque Country, or ii) to Provincial Governments if the subject lives in the Basque Country; and 0 otherwise.
- *ITPAJDVISIBILITY*: a dummy variable taking a value of 1 if the citizen correctly attributes Capital Transfer Tax revenues i) to ACs if the subject lives in any region but the Basque Country, or ii) to Provincial Governments if the subject lives in the Basque Country; and 0 otherwise.
- *IBIVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes Property Tax revenues to the local level, and 0 otherwise.
- *IVTMVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes Vehicles Tax revenues to the local level of government, and 0 otherwise.

The vector of independent variables consists of five groups of variables. The first four are correlatively aimed at testing the four hypotheses defined above. The last group makes up the vector of controls that are common to all specifications, namely sociodemographic variables which could also partly explain the greater or lesser tax visibility of citizens. Then, we detail the variables included in each of the five aforementioned groups. Table 3 provides the concrete independent variables included in each estimate, as well as their predicted coefficient sign. Table 4 shows the descriptive statistics for all the variables considered.

[TABLE 3 ABOUT HERE]

a) Visibility of public services and benefits

- *CENTRALEXPVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes the main responsibility for providing unemployment benefits and/or pensions to the central government, and 0 otherwise.
- *REGIONALEXPVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes the main responsibility for providing education and/or health services to ACs, and 0 otherwise.

- *LOCALEXPVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes the responsibility for public lightning and/or garbage collection to the local level of government, and 0 otherwise.
- *UNEMPLOYMENTUSER*: a dummy variable taking a value of 1 if the individual herself or any individual's family members have benefited during the previous year of unemployment benefits, and 0 otherwise.
- *EDUCATIONUSER*: a dummy variable taking a value of 1 if the individual herself or any individual's family members have consumed public education during the previous year, and 0 otherwise.
- *HEALTHUSER*: a dummy variable taking a value of 1 if the individual herself or any individual's family members have consumed public health care services during the previous year, and 0 otherwise.
- *MORETRANSPARENCY*: a continuous variable representing the increase in the economic-financial regional transparency score, elaborated by *Transparency International España*, between 2014 and 2016.³ We claim that an increase in the disclosing of public information may be associated to a greater level of visibility.
- *NOREGIONALTV*: a dummy variable taking a value of 1 if the individual lives in an AC where regional public TV channels don't exist –Cantabria, Castile and Leon, Navarre, and La Rioja–, and 0 otherwise. Regional TV channels devote a greater attention to regional issues, namely about regional government actions (thus, indirectly teaching about the distribution of powers between levels of government). Therefore, citizens living in those regions may have a greater lack of visibility.
- *HIGHLEVEL*: a dummy variable taking a value of 1 if the individual lives in regions that experienced a high level of devolution from the very beginning of the decentralization process –Catalonia, Basque Country, Galicia, Navarre, Andalusia, Valencia, and Canary Islands–, and 0 otherwise. Citizens living in these regions show a greater preference for decentralization from the very

³ See <https://transparencia.org.es/indice-de-las-comunidades-autonomas-incau/>. The economic-financial score is based on 16 items dealing with budgetary, accountancy, expenditures, and revenues-related issues. The index is published every even year. We just take into account the index at the regional level, because at the local level the index is only available for the 110 largest Spanish municipalities.

beginning of the devolution process. Moreover, these regions exert powers on health and education way before the rest of ACs. Therefore, it can be expected that citizens living in these regions show a higher level of visibility.

- *MAJORITY*: a dummy variable taking a value of 1 if the individual lives in a region with an absolute majority government, and 0 otherwise. This happens only in Galicia. An absolute government can favour a more crystal-clear exercise of regional competences, so citizens may perceive relatively better the current distribution of power between levels of government. But it can also be argued that a government with such a majority may have more room for manoeuvre to obscure, if it suits it, the allocation of powers between levels of government. Consequently, we cannot assign a given a priori sign to the coefficient of this variable.

b) Tax visibility

- *REGIONALTAXVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes to regions (to provinces in case of subjects living in the Basque Country) revenues from at least one of the remaining regional (or provincial) taxes, and 0 otherwise.
- *LOCALTAXVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes Property Tax and Vehicle Tax revenues to the local level of government, and 0 otherwise.
- *NOTAXPAYER*: a dummy variable taking a value of 1 if the individual does not have to submit a tax return (presumably income tax form), and 0 otherwise. We claim that non-taxpayers do not relate themselves to taxation issues, namely to any Tax Administration, so identifying the recipient of tax revenues should be relatively more difficult for them.
- *SELFFINANCING*: a dummy variable taking a value of 1 if the individual lives in Madrid, the Balearic Islands, Navarre or the Basque Country, and 0 otherwise. These ACs are financed by their own revenues, without the need for central level transfers. It can be conjectured that people living in the only four self-financing ACs are more aware of the allocation of taxes between government levels than residents in other regions.

- In addition to the previous variables, we also include in this block the variables *MORETRANSPARENCY*, *IBIVISIBILITY* and *IVTMVISIBILITY*, which have been previously defined.

c) Exercise of taxation powers

- *REGIONALIRPFRATE*: a continuous variable representing the regional top marginal rate of the IRPF where the individual lives.
- *REGIONALITPAJDRATE*: a continuous variable representing the regional top marginal rate of the capital transfer tax where the individual lives.
- *NOINHERITANCETAX*: a dummy variable taking a value of 1 if the individual lives in ACs where no Inheritance Tax is collected for inheritances to close relatives in 2015 (Cantabria, La Rioja, Madrid, Balearic Islands and Castile-La Mancha), and 0 otherwise.
- *NOGIFTTAX*: a dummy variable taking a value of 1 if the individual lives in Madrid or Castile-La Mancha, ACs where no Gift Tax is collected for gifts to close relatives in 2015, and 0 otherwise.
- *FORAL*: a dummy variable taking a value of 1 if the individual lives in a foral region –Basque Country or Navarre–, and 0 otherwise. As we have seen in Section 2, foral regions have greater taxation powers than common regime ACs on the management, the yield and the regulation of taxes. Therefore, it may be expected that visibility in foral regions may be also higher.

d) Preference for Public intervention

- *PUBLICSECTOR*: a dummy variable taking a value of 1 if individual agrees or strongly agrees with the following statement: “Public Sector exerts a needed social function”; and 0 otherwise.
- *REDISTRIBUTION*: a dummy variable taking a value of 1 if the individual agrees or strongly agrees with the following statement: “One of the main objectives of the tax and benefit system must be the reduction of economic inequality”; and 0 otherwise.
- *POPULARPARTY*: a dummy variable taking a value of 1 if the individual lives in a region governed by the Popular Party, PP (Galicia, Madrid, La Rioja, Murcia and Castile-Leon), and 0 otherwise. Presumably, right-wing regional

governments are elected in territories with a lower taste for public intervention. Hence we hypothesize that this fact could be associated to a lower knowledge of the division of taxation (and expenditure) powers across levels of government.

e) Sociodemographic characteristics of individuals

The vector of control variables, common to all specifications, consists of the following sociodemographic variables:

- *AGE / AGE²*: a continuous variable representing the age of the individual. To take into account potential quadratic effects we also include age squared.
- *FEMALE*: a dummy variable taking a value of 1 if the individual is a woman, and 0 otherwise.
- *COUPLE*: a dummy variable taking a value of 1 if the individual is married or lives with a stable partner, and 0 otherwise.
- *IMMIGRANT*: a dummy variable taking a value of 1 if the individual is an immigrant, and 0 if she/he is Spanish.
- *BIGCITY*: a dummy variable taking a value of 1 if the individual lives in a city with more than 200,000 inhabitants, and 0 otherwise.
- *RURAL*: a dummy variable taking a value of 1 if the individual lives in a town with less than 10,000 inhabitants, and 0 otherwise.
- *TERTIARYEDUCATION*: a dummy variable taking a value of 1 if the individual's highest level of education is tertiary (college) education, and 0 otherwise.
- *SECONDARYEDUCATION*: a dummy variable taking a value of 1 if the individual's highest level of education is secondary (high school) education, and 0 otherwise.
- *BUSINESSPEOPLE*: a dummy variable taking a value of 1 if the individual is a professional or a businessman, and 0 otherwise.
- *RETIRED*: a dummy variable taking a value of 1 if the individual is retired, and 0 otherwise.
- *UNIVERSITY*: a dummy variable taking a value of 1 if the individual is a university student, and 0 otherwise.
- *SALARIED*: a dummy variable taking a value of 1 if the individual is a salaried worker, and 0 otherwise.

- *UNEMPLOYED*: a dummy variable taking a value of 1 if the individual is unemployed, and 0 otherwise.

[TABLE 4 ABOUT HERE]

5. Estimates and results

5.1. Baseline scenario

Our initial objective is to estimate equation (1) for each of the seven above-mentioned taxes, including the different interest (X_i) and control (Z_i) variables defined in the previous section. As the dependent variables are always discrete, we estimate probit/logit-type models, selecting the one that presents the highest value of the likelihood function in each estimate.

In many cases, it is convenient to consider whether the data we are working with have a hierarchical or multilevel structure: the individuals studied (level 1 sample units) may belong to groups or units that are larger (level 2 sample units, or larger). In our research, this second level is determined by the AC of residence, assuming an a priori greater homogeneity in the tax visibility of individuals residing in the same region, since their life contexts are more similar.

The use of traditional regression models (which consider a single level) can be questionable, as an assumption of independence between observations or lack of correlation is required for their proper estimate. In contrast, the inclusion of a multilevel structure in the model specification allows this limitation to be overcome and leads to efficient estimates of standard errors. In addition, the specification and subsequent estimate of the multilevel models enables us to quantify, in the event that they are significant, possible group effects, in our case, regional ones. In other words, with the estimate of multilevel models we will be able to identify, where appropriate, differences in tax visibility not previously controlled by the other explanatory variables, determining which share of this unexplained variability is attributable to the individual and which share is attributable to the reference group.

The way to introduce the mentioned structure in our exercise is the following:

$$(2) \quad 'T' TAXVISIBILITY_{ij} = X_{ij} \beta + Z_{ij} \gamma + \mu_{ij} + \eta_j$$

where the sub-index i denotes the individual and j his/her region of residence, and where we introduce two error terms: one for the so-called level 1 or individual (u_{ij} , with mean 0 and variance σ_u^2), and another for level 2 or regional (η_j , with mean 0 and variance σ_η^2). In the literature, this type of specification is known as random intercept models.

In other words, u_{ij} will measure the deviation of the individual tax visibility with respect to the average tax perceptibility of his/her AC of residence, while η_j provides the deviation of the average of the community of residence j with respect to the national average, that is, what we are identifying as the regional effect.

All models have been estimated for specifications (1) and (2).⁴ In order to determine which of the two estimates has a higher explanatory capacity, a conventional LR test is performed to confirm that, in all cases, the explanatory capacity of the multilevel models is greater than that of models that do not consider the hierarchical structure of observations. Consequently, Table 5 shows only the results obtained in the estimates of the multilevel models.

Table 5 also includes, for each estimated model, the value of ρ , or intraclass correlation coefficient, which indicates the percentage of the unexplained total variability of each endogenous variable that is attributable to the heterogeneity existing between ACs. In

the specific case of estimating a probit, this correlation is equal to $\rho = \frac{\sigma_\eta^2}{1 + \sigma_\eta^2}$. If the

estimated model is a logit, the correlation is calculated as $\rho = \frac{\sigma_\eta^2}{[(\pi^2 / 3) + \sigma_\eta^2]}$. In each of the two previous expressions, the denominator contains the total estimated variance.

⁴ An issue to be clarified prior to conducting the multilevel analysis is whether the number of level 2 groups available is large enough for the estimates achieved to have the properties generally demanded from an econometric point of view, bearing in mind that the estimates are based on maximum likelihood methods. According to Heck and Thomas (2000), the above requirement would be met with at least 20 different groups at level 2, and with a minimum of 30 observations within each group. In our case, the number of level 2 groups is 17, and the lowest number of level 1 observations is 28 (in La Rioja), with a maximum of 551 (in Andalucía), so we believe that compliance with these statistical requirements is reasonably achieved.

We also include a set of figures associated with each endogenous variable (Figure 3), which detail the predicted probability of correctly attributing each tax analyzed for each AC, considering both the explanatory variables introduced explicitly and the estimated regional effects. As can be seen in the different figures, in some cases, the inclusion of regional effects improves the probability of a correct attribution predicted only by the explanatory variables of the model, while in other cases, it worsens it. For example, figure 3.2 shows that the predicted probability of accuracy in attributing IRPF for the citizens of Navarre is just over 30%. Six percentage points of that probability are explained by a regional effect not captured by the fixed part of the model (i.e. attributed to the random intercept). If, by contrast, we look at the same figure for citizens in the Basque Country, the probability of a correct attribution of the tax predicted by the multilevel model is 0.17, but in this case the regional random effect worsens the visibility predicted by the fixed part of the model by five percentage points.

[TABLE 5 ABOUT HERE]

In what follows, we will carry out a joint analysis of the results reflected in Table 5, highlighting, when necessary, the particularities related to some tax or group of taxes. With the exceptions that we will indicate in due course, all the coefficients of the variables have the sign that we have attributed to them in the previous section.

In view of the estimates, it can be argued that there is some empirical evidence to support the fulfilment of the first two hypotheses we have put forward. First (with the exception of the estimates for IRPF and IVA), if citizens know which level of government provides certain services, it is more likely that they will also know the taxes perceived by that same level of government (H1). However, there is strikingly no evidence that being a user of a service increases the visibility of taxes: only the coefficient of the variable *UNEMPLOYMENTUSER* in the estimate referring to the IS is significant, but, surprisingly, with a negative sign contrary to the expected one. The increase in the transparency of regional governments raises the probability of correctly identifying the allocation of IRPF and IVA between levels of government. It should also be noted that, in almost all estimates, visibility increases when the regional government has an absolute majority. Other variables potentially related to a greater regional identity, such as *NOREGIONALTV* and *HIGHLEVEL*, have not presented significant coefficients (except for the second variable, in the estimate of visibility of the IVTM).

Second, the probability of correctly identifying the government that perceives a tax receipt also increases if individuals correctly identify other taxes that finance that same level of government (H2). However, the coefficients of the variable *SELFFINANCING*, which reflects whether an AC is financed from its own revenues, without the need to receive transfers from the central level, have not proved to be significant. This result could be interpreted in the sense that what is relevant is not so much the volume of taxes received as their quality, that is, the powers that can be exercised over those taxes. However, in the light of our estimates, it does not seem that the exercise of regulatory powers over taxes contributes to increasing their visibility either, contrary to the hypothesis we have put forward above (H3). Only the coefficients of the *FORAL* variable are significant in some models. It is worth looking more closely at the results related to this variable.

As Table 5 shows, if the citizen resides in a foral community, the probability of correctly identifying the allocation of IRPF and IVA increases. In the same vein, figures 3.2 and 3.3 show that Navarre and the Basque Country are among the ACs with the highest predicted probability of accuracy in the attribution of these taxes. However, and curiously, living in a foral community reduces the probability of properly identifying that the IS is a foral revenue: as Figure 3.1 shows, these two regions are the ones with the lowest predicted probability of accuracy in the attribution of this tax. We will return to this result later. As regards the other two regional taxes, the ISD and the ITPAJD, the coefficients of the *FORAL* variable are not significant, probably because the common regime ACs can exercise in these taxes practically the same competences as the foral regime ACs, in terms of revenue, management and regulation (see Table 1). Figures 3.4 and 3.5 show a high predicted probability of correctly attributing these taxes in the case of Navarre, and a low one in the Basque Country. As we will explain later, this result may be related to the fact that in Navarre these two taxes are regional, whereas, as explained in section 2, in the Basque Country they are provincial, although citizens attribute them (understandably) to the AC.

Nor do the estimates support the view that the preference for public intervention improves the visibility of the allocation of taxes (H4), except, distinctly, in the case of the IS, whose correct attribution is more likely if citizens think that one of the main objectives of public intervention is redistribution and if they live in a region not

governed by the PP. The proper attribution of the IBI also improves if citizens think that the public sector performs a necessary social function.

Finally, with regard to the control variables, the only regularity we can detect is that a higher level of education increases the probability of correctly identifying the assignment of taxes between levels of government, although being a college student reduces that probability for local taxes, presumably, because the student is unlikely to be a taxpayer of any of these taxes.

As can be observed in Table 5, the coefficient ρ of intraclass correlation is especially high in the estimate of IRPF: 21.4% of the unexplained total variability in the visibility of this tax is attributable to the unobservable heterogeneity existing among ACs.

[FIGURE 3 ABOUT HERE]

Although we have already warned in section 3 of the difficulty of carrying out comparisons, due to the non-minor differences that exist between the Fiscal Barometers on which each research is based, some of the results obtained in López-Laborda and Rodrigo (2014), only for IRPF and IVA, and for a pool of the years 2005, 2007 and 2010, are maintained in this research, such as the importance of the foral regime, the transparency of governments or the level of education of citizens, to increase the visibility of the allocation of taxes between levels of government.

5.2. Additional scenarios

To complete the previous exercises, in this subsection we will perform two sets of complementary estimates.

First, in the estimates presented in the previous subsection we have dealt with identifying the factors that explain why citizens are able to attribute a certain tax to the level of government that receives its collection. Now, we are interested in determining the profile of those individuals who are able to correctly identify the allocation between levels of government of most taxes perceived by the central, regional and local levels of government.⁵ To this aim, we define the following three endogenous variables:

- *TOPNOTCHVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes revenues from at least five of the seven taxes analyzed, of

⁵ There are hardly any individuals who correctly identify the allocation between levels of government of all the taxes we are considering: only 0.38% of citizens correctly identify the government that receives the yield of the seven taxes included in the analysis, while 1.89% correctly identify the allocation of at least six of these taxes.

which he/her has to correctly attribute the receipts of IS, at least three regional taxes and at least one local tax; and 0 otherwise.

- *REGIONALTAXVISIBILITY*: a dummy variable taking a value of 1 if the individual correctly attributes to regions (to provinces in case of subjects living in the Basque Country) revenues from at least three of the four following taxes: IRPF, IVA, ISD, ITPAJD; and 0 otherwise.
- *LOCALTAXVISIBILITY*: as defined above, a dummy variable taking a value of 1 if the individual correctly attributes IBI and IVTM to the local level of government, and 0 otherwise.

As can be seen in Table 4, the average values of these three variables are very low. Only 2% of citizens have an accurate knowledge of the allocation of the returns of most of the taxes included in the analysis (*TOPNOTCHVISIBILITY*=1), while the percentage is 3% if visibility is focused on regional taxes (*REGIONALTAXVISIBILITY*=1). As might be expected, the correct attribution is significantly higher for local taxation, as the percentage in this case reaches a value of 36% (*LOCALTAXVISIBILITY*=1).

We have re-estimated the specifications (1) and (2) for each of these endogenous variables, with the variables of interest detailed in Table 3 and the control variables already indicated. According to the values of the LR test, the explanatory capacity of the multilevel model is greater than that of the model without a hierarchical structure of the observations for the endogenous variables *TOPNOTCHVISIBILITY* and *LOCALTAXVISIBILITY*, but not for *REGIONALTAXVISIBILITY*. Consequently, Table 6 presents only the results of the model selected in each case. Figure 4 shows the probabilities predicted by the estimated multilevel models for each AC and detailing, if relevant, the probability explained by the idiosyncratic regional effects not captured by the rest of the variables introduced in each specification.

[TABLE 6 ABOUT HERE]

The profiles of the citizens who correctly identify the entitlement to most of the taxes studied (central, regional, and local) and to the two local taxes do not differ significantly from the characteristics we have detected in the estimates summarized in Table 5. First, the probability of correctly attributing the revenues of most taxes increases when citizens correctly identify some service provided by the regional level, when they correctly attribute the IBI and the IVTM to the local level, when they reside in a foral

community (which corroborates Figure 4.1), and if they have completed high school or university. And second, the probability of correctly attributing the revenue of the two local taxes increases when citizens identify some service provided by the local level, when they favour the redistributive function of the public sector, when they are married and when they have a college education; the probability decreases for immigrant and for college students. In both models, the intraclass correlation coefficient is high: 15.6% in the *TOPNOTCHVISIBILITY* estimate and 10.8% in the *LOCALTAXVISIBILITY* estimate.

[FIGURE 4 ABOUT HERE]

However, the profile of citizens who correctly attribute the receipts of most regional taxes is more complex. The four hypotheses we have proposed help to explain the visibility of regional taxes, although, in a couple of cases, in a direction contrary to that expected. On the one hand, not having regional public TV in a region increases the probability of a better visibility, which can perhaps be interpreted to mean that regional TV can also be used to make the division of competences between governments more obscure. On the other hand, living in regions that have abolished inheritance tax among close relatives reduces the probability of a correct visibility of most regional taxes. It seems that the practical non-existence of the tax affects citizens' perception more than the fact that it was their regional government that took this measure.

The second set of complementary estimates directly affects the treatment we have given so far to individuals resident in the Basque Country. In the previous definition of the dependent variables we have only imputed value 1 if the residents of the Basque Country attribute the taxes (except the local ones) to the provincial governments, which are the beneficiaries of all the tax competences. This is correct, but it probably leaves out many individuals who attribute taxes, not to the central government (as residents in the common regime ACs wrongly do), but to their own AC, which is an understandable error.

To examine whether and in what direction the results obtained so far change, we have re-estimated all the models (except those affecting only local taxes, which do not vary), but now assigning a value of 1 to the dependent variables if Basque Country residents attribute the tax to the provincial governments or to their AC. The results are presented in Table 7 and Figure 5. The multilevel structure has more explanatory capacity in the estimates of the visibility of each of the five taxes, but not in the two additional

estimates of visibility of most of the taxes (*TOPNOTCHVISIBILITY* and *REGIONALTAXVISIBILITY*).

[TABLE 7 ABOUT HERE]

As might be expected, given the relative small size of the Basque Country in the national aggregate, the results of the estimates are not substantially altered. The most striking point is how the performance of the *FORAL* variable changes. The coefficient of this variable continues to be significant, and with the predicted positive sign, in the estimates of the visibility of the IRPF and the IVA, but it is no longer significant in the estimate of the visibility of the IS. If we look at Figure 5.1, the predicted probability of accuracy in the attribution of this tax has risen considerably in the Basque Country with respect to Figure 3.1, which confirms our hypothesis that the most citizens of this region attribute this tax to the AC. However, Navarre remains behind all the ACs, which leads us to believe that the residents of this region mostly attribute the IS to the central level. As regards the ISD and ITAPJD, the coefficient of the *FORAL* variable is still not significant, but now the predicted probabilities of correct attribution of these taxes are very high in both Navarre and the Basque Country (Figures 5.4 and 5.5), which reinforces our hypothesis that in the Basque Country there is a significant attribution of taxes to the regional level. In all the models referring to the visibility of a regional tax, the Basque Country is the region with the highest predicted probability of correct attribution, with a large difference over the other regions, and in almost all the models it is followed by Navarre (Figures 5.2 to 5.5).

[FIGURE 5 ABOUT HERE]

5.3. Discussion

The results achieved in this research may be useful for the design of policies directed to improve citizens' knowledge of the allocation of taxes between levels of government in Spain and, in particular, of the taxes allocated to the regional level, which are the least perceptible to citizens (Figure 1).

Firstly, since the visibility of public services can help to improve the visibility of taxes, a first step should be to improve the visibility of the distribution of functions between levels of government. This is not an easy task, for two reasons. First, because, as seen in section 2, the system of allocation of competences operating in Spain is rather complex, especially with regard to the most important regional services, education and healthcare.

And second, because being a user of a service is probably not enough to perceive which government provides it. Consequently, an effort should be made to better define and simplify the allocation of functions between levels of government and to inform citizens precisely about this allocation. The improvement in the ACs' transparency indicators, recorded by *Transparency International España*, is an appropriate step in this direction.

On the tax side, the main lesson for the visibility of regional taxes can be drawn from the performance of the *FORAL* variable, which represents citizens resident in Navarre and the Basque Country, the regions that enjoy a special tax and financial regime. With the nuances that we have introduced in the previous subsections, residents in these ACs are those who best perceive the allocation of taxes between levels of government. In addition, the coefficients of the *FORAL* variable are significant when the foral ACs exercise powers over their taxes that are not available to the other ACs, as is the case with IRPF and IVA. Therefore, an expansion of the powers of the ACs under the common regime on ceded taxes could help to increase the visibility of these taxes. According to our results, it is probably more important for this purpose to increase the percentage of taxes ceded and, especially, tax management powers than to extend the regulatory competences (although this extension is very important to strengthen regional financial autonomy). In this regard, it should be recalled, first, that the exercise of regulatory tax powers has not been significant in any case to explain tax visibility; second, that the foral ACs cannot exercise any regulatory powers over IVA, although they do manage it (Table 1); and third, that, in some estimates, the fact of not having any relationship with the tax administrations (which is the case with non-tax filers, college students, and many immigrants) reduces the probability of adequately perceiving which government is entitled to a tax yield (Table 5).

Regarding the last comment, the so-called work-in benefits, which are monetary transfers applied in various countries, and that are linked to a mandatory income tax return, could be an example of how to bring the tax agency closer to certain groups that are not ordinarily tax filers (since, in a large percentage, the beneficiaries are low incomes). Furthermore, both the British experience (Blundell, 2006) and the US experience (Scholz, 1993) with this type of programs demonstrate a high percentage of generality in obtaining the benefits (take-up rate) since it is calculated that more than 70% of the potential beneficiaries of the transfers end up receiving them. In both

experiences, the management or collaboration of the tax administration in the processing of the grants is underlined as decisive in explaining this high take-up rate.

There are still some other tools that would increase the visibility of taxes for the individuals who bear them. For example, citizens would be more aware that part of the VAT they pay goes to finance regional services if the central and regional taxes were separately recorded on the same invoice. In the IRPF return (which is generally filed by electronic means) in the ACs under the common regime, the existence of an autonomic tax and a central tax could be shown more clearly than up to now (López-Laborda, 2006). Making the share of large cities in these two taxes visible as well (Table 2) could be counterproductive (as well as unnecessary), by increasing the complexity of the information provided to the taxpayer.

As suggested in López-Laborda and Rodrigo (2014), it would also help to increase the visibility of taxes (and services) if governments made explicit the link between both sides of the budget. In other words, it should be emphasized that the taxes paid by citizens at each level of government, central, regional, or local, are allocated by the respective administration to the provision of precise services that benefit them. Sunstein (2013) suggests that making the link between revenue and expenditure explicit may have positive effects on the behaviour of individuals. In this regard, it would be advisable for the representatives of regional governments to explicitly show this link in their public statements regarding possible reforms in the field of specific regional taxes. For example, statements such as ‘the loss of revenues from the exemption of close relatives in the ISD is equivalent to regional spending on *X* public service’ would go in this vein.

The last action that finds support in our estimates is the improvement of the educational level of the population. More educated citizens are also likely to be more prepared and interested in issues related to public intervention (which does not necessarily imply a preference for such intervention), which can help to increase visibility in the allocation of expenditure-related competences and taxes between levels of government.

6. Concluding remarks

As opinion polls repeatedly show, most citizens resident in Spain are not able to correctly identify the taxes received by the different levels of government -and

especially the regional one- to finance their spending powers. This shortcoming makes it difficult for citizens to know with any degree of precision the costs and benefits of the services they receive from the respective public administrations and, accordingly, represents an obstacle to the efficiency gains that classical theory of fiscal federalism attributes to fiscal decentralization being effective.

In this paper we have tried to empirically establish the profile of those citizens who are best able to identify the allocation of taxes between levels of government in order to suggest, on the basis of that profile, some actions to improve citizens' tax visibility. In short, our recommendations focus on better defining and simplifying the allocation of expenditure powers between levels of government, strengthening the powers of the regional governments in the ceded taxes, highlighting the link between taxes and expenditures, and improving the population's level of education.

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Table 1. Taxes assigned to Autonomous Communities

TAX	SHARING OF COLLECTION [initial % of assignment]		ADMINISTRATION BY REGIONAL GOVERNMENTS		DISCRETION BY REGIONAL GOVERNMENTS	
	<i>Common Regime</i>	<i>Foral Regime</i>	<i>Common Regime</i>	<i>Foral Regime</i>	<i>Common Regime</i>	<i>Foral Regime</i>
Personal income tax	[50%]	100%	No	Yes	Tax schedule and tax credits	Full
Tax on net wealth	100%	100%	Yes	Yes	Threshold, tax schedule and tax credits	Full
Inheritance and gift tax	100%	100%	Yes	Yes	Allowances, tax schedule, tax credits, administration	Full
Corporate income tax	-	100%	-	Yes	-	Full
Non-Resident income tax	-	100%	-	Yes	-	Full for permanent establishments
Capital transfer tax, taxes on the raising of capital, and stamp duties	100%	100%	Yes	Yes	Tax rates and tax credits (with some exceptions), administration	Full (with some exceptions)
Gaming taxes	100%	100%	Yes	Yes	Allowances, taxable base, tax rates, administration	Full (with some exceptions)
Vehicle excise (registration)	100%	100%	Yes	Yes	Tax rates (subject to limitations)	Tax rates (subject to limitations), declaration and payment forms and payment periods
Value-added tax	[50%]	100%	No	Yes	No	Only on declaration and payment forms and payment periods
Excise duties: alcoholic beverages, tobacco, and hydrocarbons	[58%] (100% of the special rate of the Tax on Hydrocarbons)	100%	No	Yes	No	Only on declaration and payment forms and payment periods
Electricity tax	100%	100%	No	Yes	No	Only on declaration and payment forms and payment periods
Tax on insurance premiums	-	100%	-	Yes	-	Only on declaration and payment forms and payment periods
Tax on gaming activities (*)	100% electronic, computer or telematic games 100% revenue from increase in tax rate	100%	No	Yes	Tax rates (subject to limitations), when the organizers reside in the Community, applicable only to players residing in this Community	Tax rates (subject to limitations), when the organizers reside in the foral territory, applicable only to players residing in the foral territory/ AC. Declaration and payment forms and payment periods
Environmental taxes: electricity, nuclear fuel, gas, oil and condensate, fluorinated gases	-	100%	-	Yes	-	Only on declaration and payment forms and payment periods
Tax on deposits with credit Institutions (*)	100%	100%	-	Yes	No	Only on declaration and payment forms and payment periods
Special tax on coal	-	100%	-	Yes	-	Only on declaration and payment forms and payment periods

(*) Although the Communities under the common regime have a share in this tax, it does not have (yet) the legal status of ceded tax.

Source: Authors' elaboration.

Table 2. Taxes assigned to Municipalities

TAX	SHARING OF COLLECTION	ADMINISTRATION BY LOCAL GOVERNMENTS	DISCRETION BY LOCAL GOVERNMENTS
Property Tax	100%	Yes	Tax rates, allowances and tax credits
Local Business Tax (*)	100%	Yes	Tax rates and tax credits
Vehicles Tax	100%	Yes	Tax rates and tax credits
Tax on land value increases (**)	100%	Yes	Tax rates, allowances and tax credits
Tax on constructions, facilities and infrastructure (**)	100%	Yes	Tax rates and tax credits
Tax on luxury expenditures (hunting and fishing grounds) (**)	100%	Yes	Full
Personal income tax (^)	2.1336%	No	No
Value-added tax (^)	2.3266%	No	No
Excise duties (^)	2.9220%	No	No

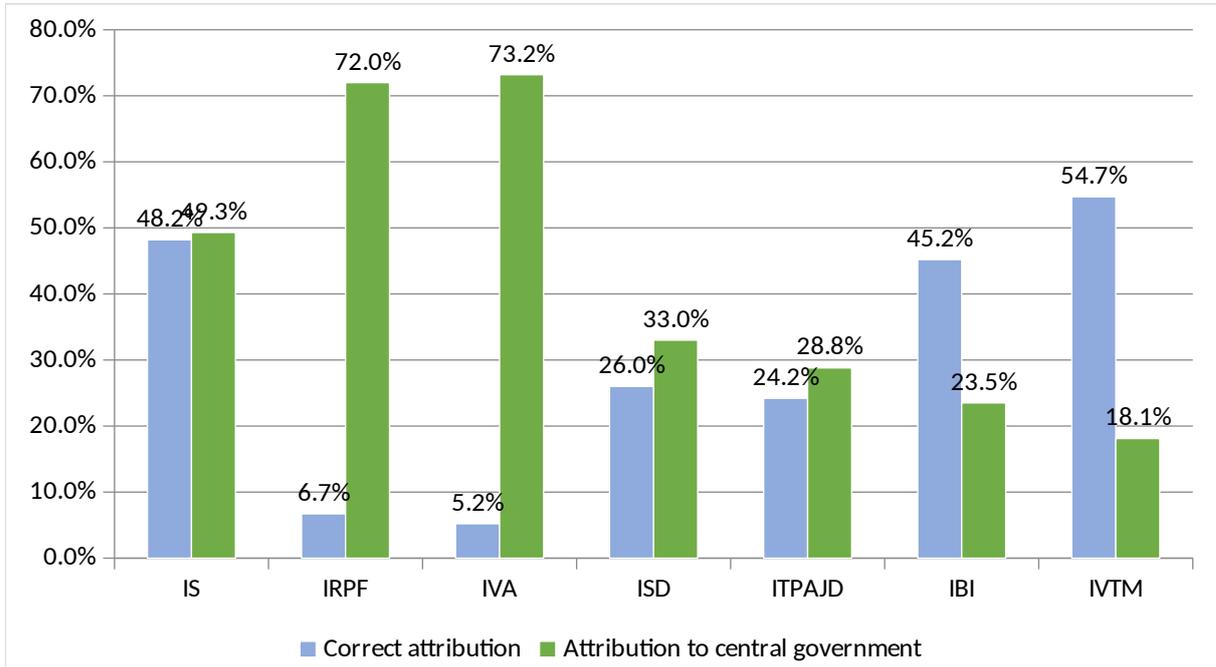
(*) The only tax assigned to provinces is a surtax on the Local Business Tax.

(**) This is an optional tax. Municipalities can choose not to levy it.

(^) This sharing applies only to large cities in the ACs under the common region: Cities with a population larger than 75,000 inhabitants, and also the capital cities of all provinces or of the ACs, regardless of their population size.

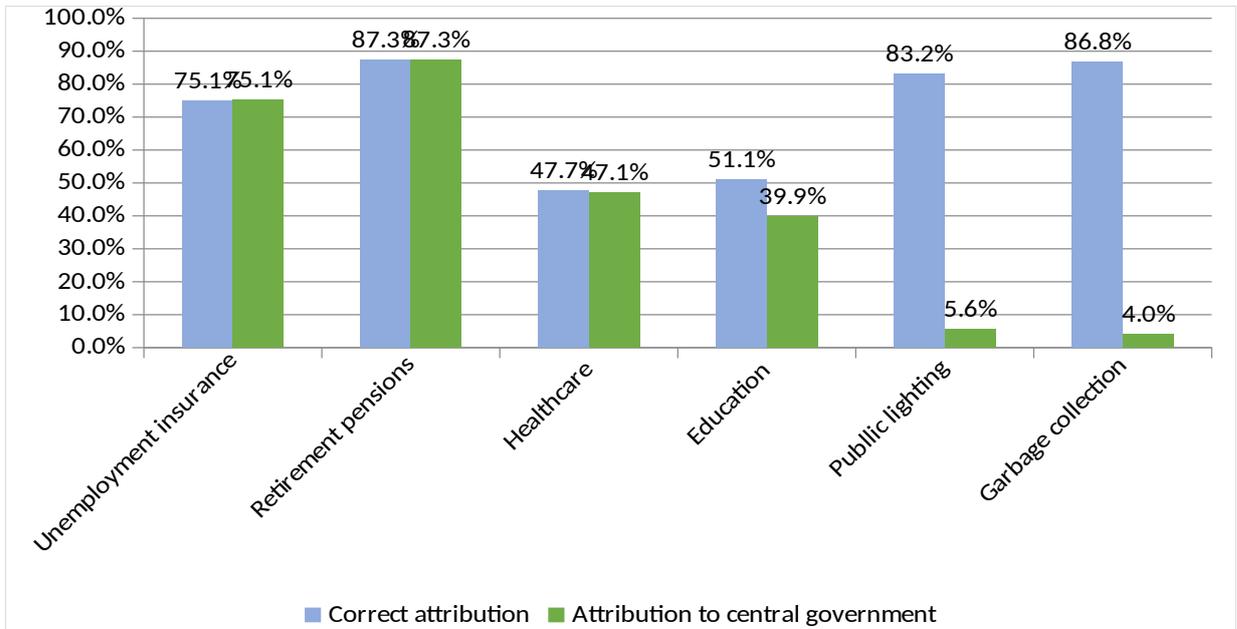
Source: Authors' elaboration.

Figure 1. Percentage of accurate attribution of taxes to the different levels of government and percentage of attribution to the central government, 2015



Source: Authors' elaboration with data from the Spanish Institute for Fiscal Studies' Fiscal Barometer.

Figure 2. Percentage of accurate attribution of public services to the different levels of government and percentage of attribution to the central government, 2015



Source: Authors' elaboration with data from the Spanish Institute for Fiscal Studies' Fiscal Barometer.

Table 3. Dependent variables, and expected signs, for each specification

Dependent variables	<i>IS</i> <i>VISIBILITY</i>	<i>IRPF</i> <i>VISIBILITY</i>	<i>IVA</i> <i>VISIBILITY</i>	<i>ISD</i> <i>VISIBILITY</i>	<i>ITPAJD</i> <i>VISIBILITY</i>	<i>IBI</i> <i>VISIBILITY</i>	<i>IVTM</i> <i>VISIBILITY</i>	<i>TOP</i> <i>NOTCHVISIBILITY</i>	<i>REGIONAL</i> <i>TAXVISIBILITY</i>	<i>LOCAL</i> <i>TAXVISIBILITY</i>
<u><i>Visibility of public services and benefits (H1)</i></u>										
<i>CENTRALEXPVISIBILITY</i>	+							+		
<i>REGIONALEXPVISIBILITY</i>		+	+	+	+			+	+	
<i>LOCALEXPVISIBILITY</i>						+	+	+		+
<i>UNEMPLOYMENTUSER</i>	+							+		
<i>EDUCATIONUSER</i>		+	+	+	+			+	+	
<i>HEALTHUSER</i>		+	+	+	+			+	+	
<i>MORETRANSPARENCY</i>		+	+	+	+			+	+	
<i>NOREGIONALTV</i>	-	-	-	-	-	-	-	-	-	-
<i>HIGHLEVEL</i>	+	+	+	+	+	+	+	+	+	+
<i>MAJORITY</i>	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
<u><i>Tax visibility (H2)</i></u>										
<i>REGIONALTAXVISIBILITY</i>		+	+	+	+					
<i>IBIVISIBILITY</i>							+			
<i>IVTMVISIBILITY</i>						+				
<i>LOCALTAXVISIBILITY</i>								+	+	
<i>NOTAXPAYER</i>	-	-	-	-	-	-	-	-	-	-
<i>SELFFINANCING</i>	+	+	+	+	+	+	+	+	+	+
<u><i>Exercise of taxation powers (H3)</i></u>										
<i>REGIONALIRPFRATE</i>		+						+	+	
<i>REGIONALITPAJDRATE</i>					+			+	+	
<i>NOINHERITANCETAX</i>				+				+	+	
<i>NOGIFTTAX</i>				+				+	+	
<i>FORAL</i>	+	+	+	+	+	+	+	+	+	+
<u><i>Preference for Public intervention (H4)</i></u>										
<i>PUBLICSECTOR</i>	+	+	+	+	+	+	+	+	+	+
<i>REDISTRIBUTION</i>	+	+	+	+	+	+	+	+	+	+
<i>POPULARPARTY</i>	-	-	-	-	-			-	-	

Source: Authors' elaboration.

Table 4. Basic descriptive statistics of the endogenous and exogenous variables used in the specifications

Exogenous variables

VARIABLE	CENTRALEXPVISIBILITY	REGIONALEXPVISIBILITY	LOCALEXPVISIBILITY	UNEMPLOYMENTUSER	EDUCATIONUSER	HEALTHUSER	MORETRANSPARENCY	NOREGIONALTV	HIGHLEVEL	MAJORITY
Mean	0.90	0.59	0.91	0.20	0.44	0.93	0.32	0.09	0.61	0.06
Median	1	1	1	0	0	1	0.26	0	1	0
Maximum value	1	1	1	1	1	1	0.89	1	1	1
Minimum value	0	0	0	0	0	0	-0.11	0	0	0

Table 4. Basic descriptive statistics of the endogenous and exogenous variables used in the specifications

Endogenous variables

VARIABLE	IRPFVISIBILITY*	IVAVISIBILITY*	ISVISIBILITY*	ITPAJDVISIBILITY*	ISDVISIBILITY*	IBIVISIBILITY	IVTMVISIBILITY	TOPNOTCHVISIBILITY*	REGIONALTAXVISIBILITY*	LOCALTAXVISIBI
Mean	0.07/0.08	0.05/0.06	0.48/0.50	0.24/0.26	0.26/0.28	0.45	0.55	0.02/0.03	0.03/0.04	
Median	0/0	0/0	0/0	0/0	0/0	0	1	0/0	0/0	
Maximum value	1/1	1/1	1/1	1/1	1/1	1	1	1/1	1/1	
Minimum value	0/0	0/0	0/0	0/0	0/0	0	0	0/0	0/0	
Standard deviation	0.25/0.28	0.22/0.25	0.50/0.50	0.43/0.44	0.44/0.45	0.50	0.50	0.13/0.16	0.17/0.21	

Table 4. Basic descriptive statistics of the endogenous and exogenous variables used in the specifications

Endogenous variables

VARIABLE	IRPFVISIBILITY*	IVAVISIBILITY*	ISVISIBILITY*	ITPAJDVISIBILITY*	ISDVISIBILITY*	IBIVISIBILITY	IVTMVISIBILITY	TOPNOTCHVISIBILITY*	REGIONALTAXVISIBILITY*	LOCALTAXVISIBI
Mean	0.07/0.08	0.05/0.06	0.48/0.50	0.24/0.26	0.26/0.28	0.45	0.55	0.02/0.03	0.03/0.04	
Median	0/0	0/0	0/0	0/0	0/0	0	1	0/0	0/0	
Maximum value	1/1	1/1	1/1	1/1	1/1	1	1	1/1	1/1	

Exogenous variables

VARIABLE	CENTRALEXPVISIBILITY	REGIONALEXPVISIBILITY	LOCALEXPVISIBILITY	UNEMPLOYMENTUSER	EDUCATIONUSER
Mean	0.90	0.59	0.91	0.20	0.44

Table 5 Results of the estimates for the endogenous variables. Baseline scenario.

Dependent variables	IS VISIBILITY	IRFF VISIBILITY	IVA VISIBILITY	ISD VISIBILITY	ITPAJD VISIBILITY	IB VISIBILITY	IVTM VISIBILITY
Visibility of public services and benefits (H1)							
CENTRAL EXP VISIBILITY	1.17***						
REGIONAL EXP VISIBILITY				0.41***	0.39***		
LOCAL EXP VISIBILITY						1.41***	1.02***
UNEMPLOYMENT USER	-0.28**						
EDUCATION USER							
HEALTH USER							
MORE TRANSPARENCY		1.67***	1.52**				
NOREGIONAL TV							
HIGH LEVEL							0.33**
MAJORITY	0.85***			0.42**	0.15**	-1.21***	
Tax visibility (H2)							
REGIONAL TAX VISIBILITY		1.71***	1.67***	1.65***	1.71***		
IB VISIBILITY							1.17***
IVTM VISIBILITY						2.00***	
LOCAL TAX VISIBILITY							
NOT A XPA YER						-0.24*	-0.32***
SELF FINANCING							
Exercise of taxation powers (H3)							
REGIONAL TRIFFRATE							
REGIONAL ITRAJDRATE							
NON INHERITANCE TAX							
NO GIFT TAX							
FORAL	-1.28***	3.07**	2.24***				
Preference for Public intervention (H4)							
PUBLIC SECTOR						0.29**	
REDISTRIBUTION	0.22***						
POPULAR PARTY	-0.39*						
Sociodemographic characteristics							
AGE	0.07***						
AGE ²	-0.0008***						
FEMALE							
COUPLE				0.10*			
IMMIGRANT					-1.07***	-1.30***	
BIG CITY						0.52***	
RURAL							
TERTIARY EDUCATION		0.65***				0.40***	
SECONDARY EDUCATION				0.37**			
RETIRED							
UNIVERSITY						-0.68***	-0.27*
SALARIED							
UNEMPLOYED							
CONSTANT	-2.01***	-5.22***	-5.12***	-2.03***	-1.68***	-3.05***	-1.26***
Number of observations	2977	2977	2977	2977	2977	2977	2977
LR χ^2	1010.65	179.53	129.91	2266.17	1162.99	986.38	852.51
Prob > χ^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Log pseudolikelihood	-1.9403652	-643.86551	-547.61272	-1.213247	-1.1439354	-1.6217532	-1.6094064
Coefficient p	0.014231	0.213565	0.0842259	0.0809096	0.0451924	0.0557836	0.0513762
LR test vs. unilevel (probit/ logit) regression	16.57 (0.00)	47.21 (0.00)	7.94 (0.00)	36.40 (0.00)	7.86 (0.00)	50.93 (0.00)	46.23 (0.00)

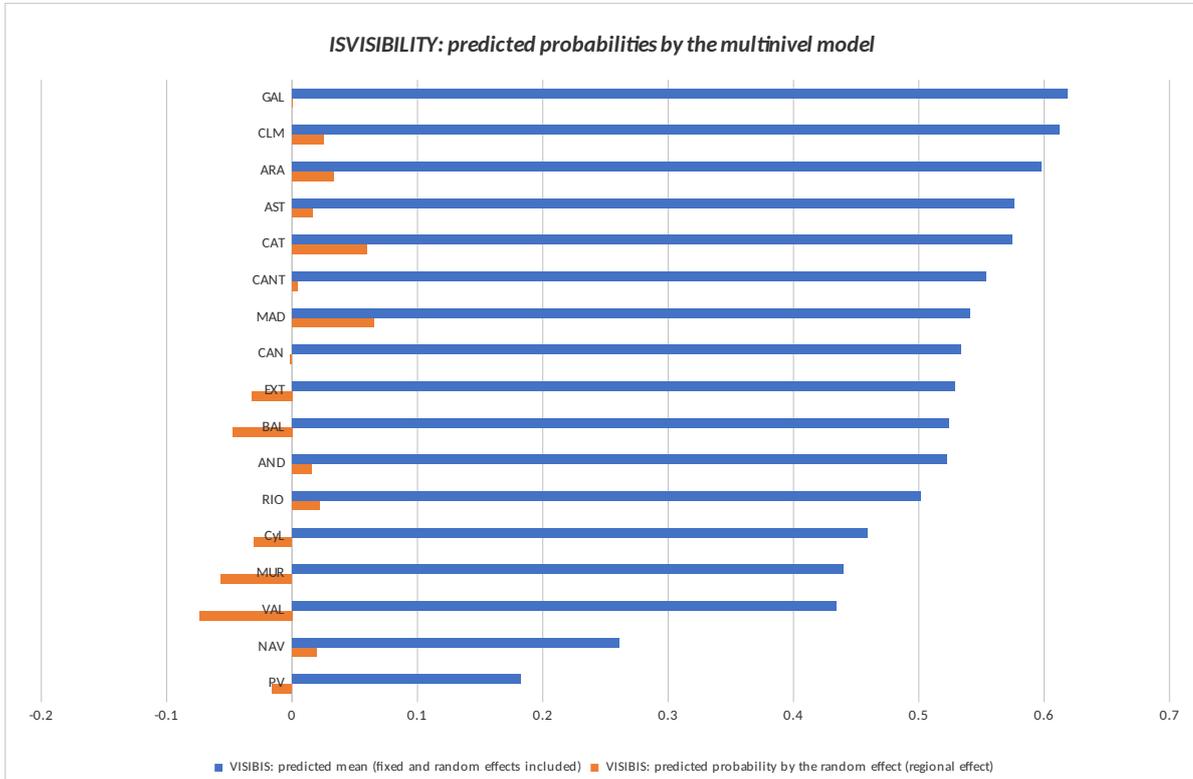
BUSINESS PEOPLE has not been finally included in the estimates because of multicollinearity problems related to the used this variable have been found

*** Significant coefficient at 1%. ** significant coefficient at 5%. * significant coefficient at 10%.

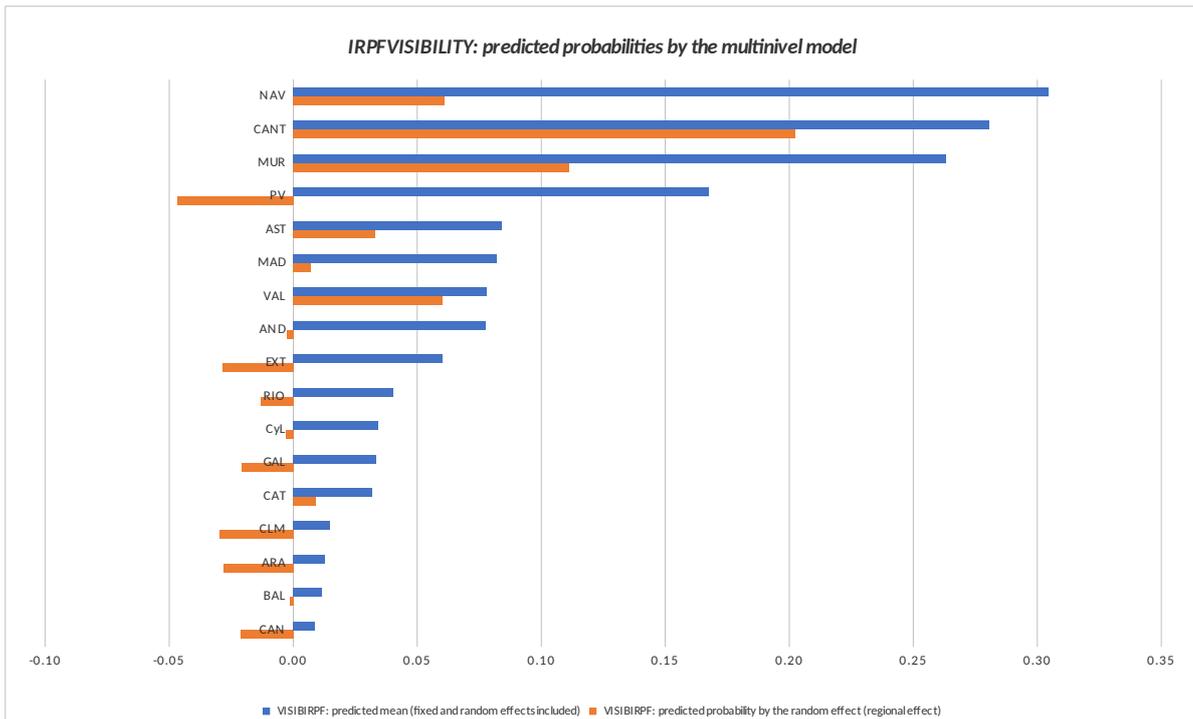
Source: Authors' elaboration.

Figure 3. Predicted probabilities for the endogenous variables (multilevel models). Baseline scenario

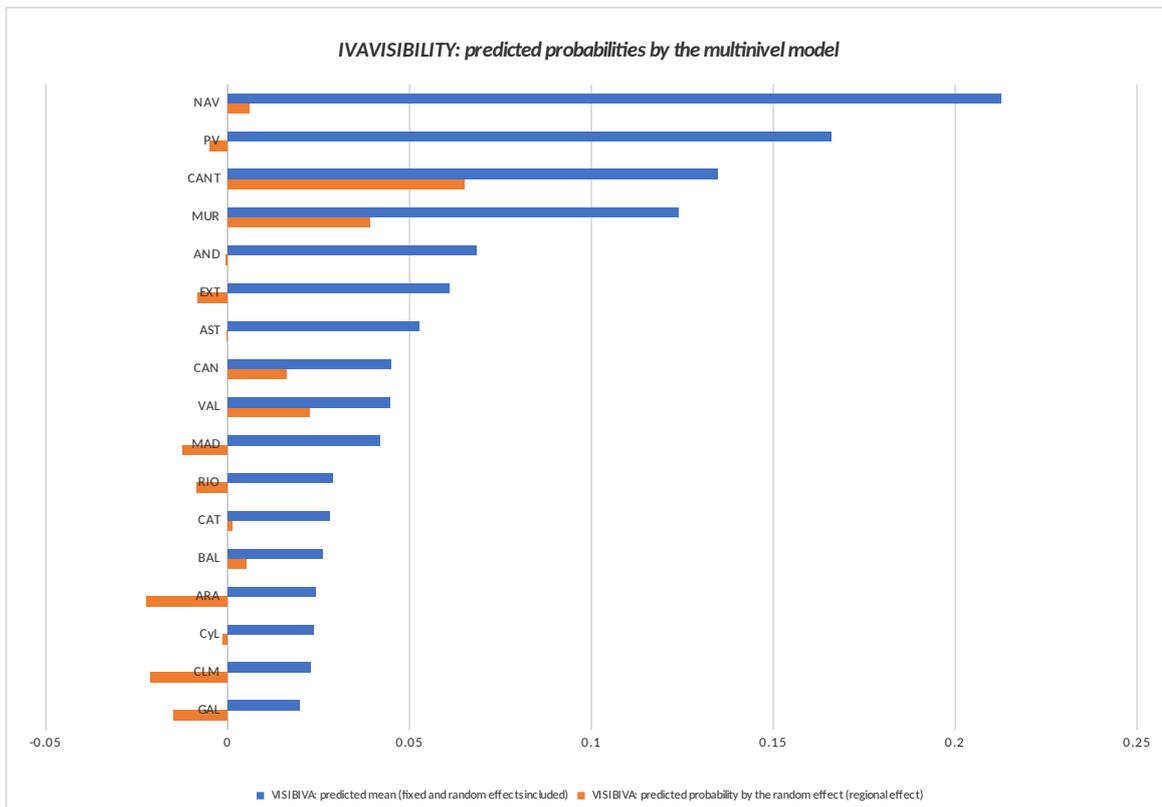
3.1. ISVISIBILITY



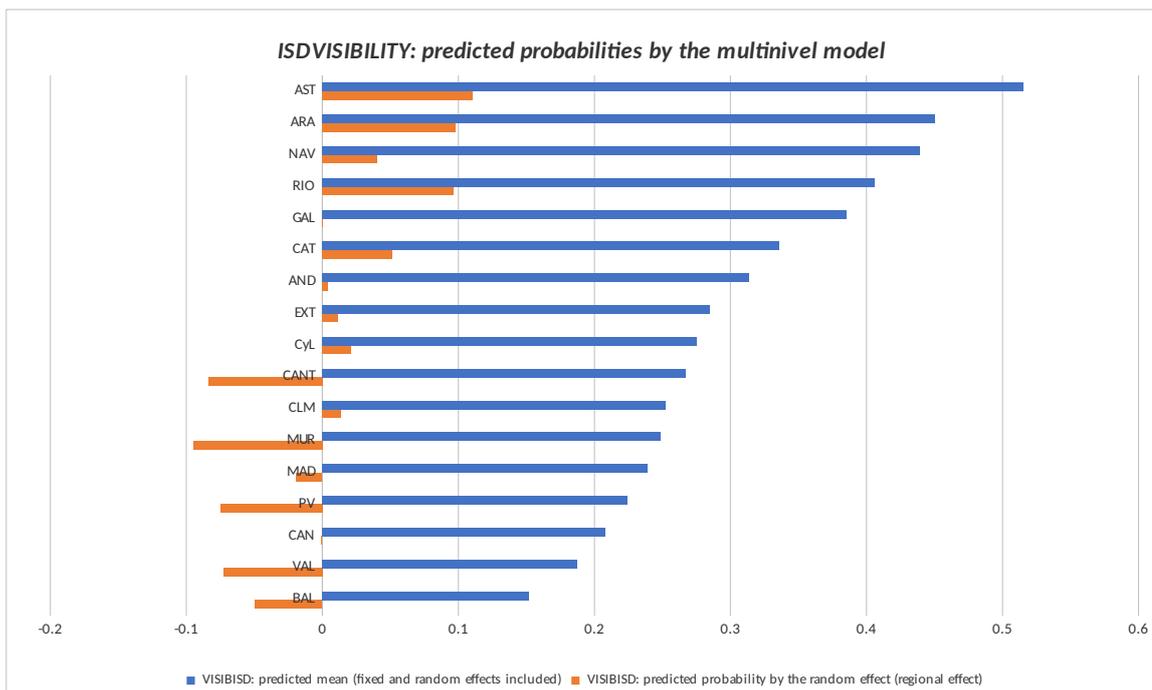
3.2. IRPFVISIBILITY



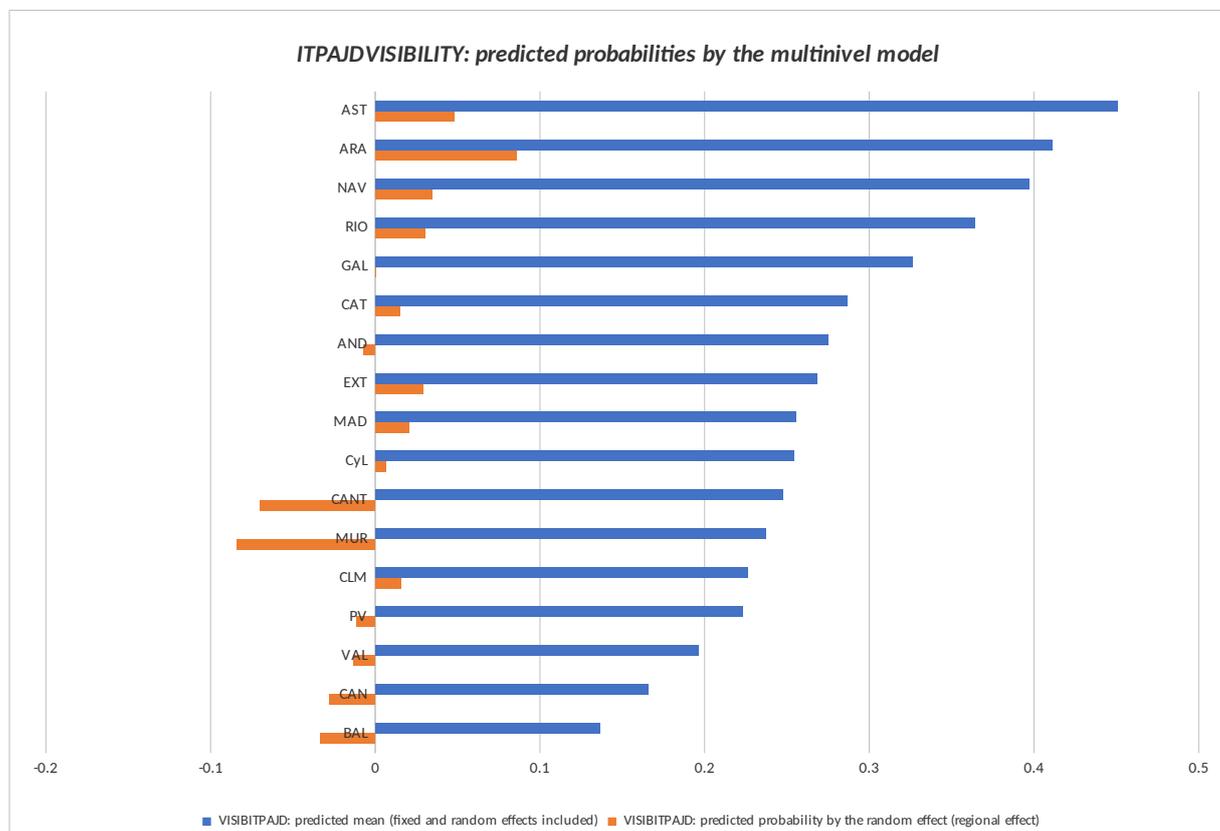
3.3. IVAVISIBILITY



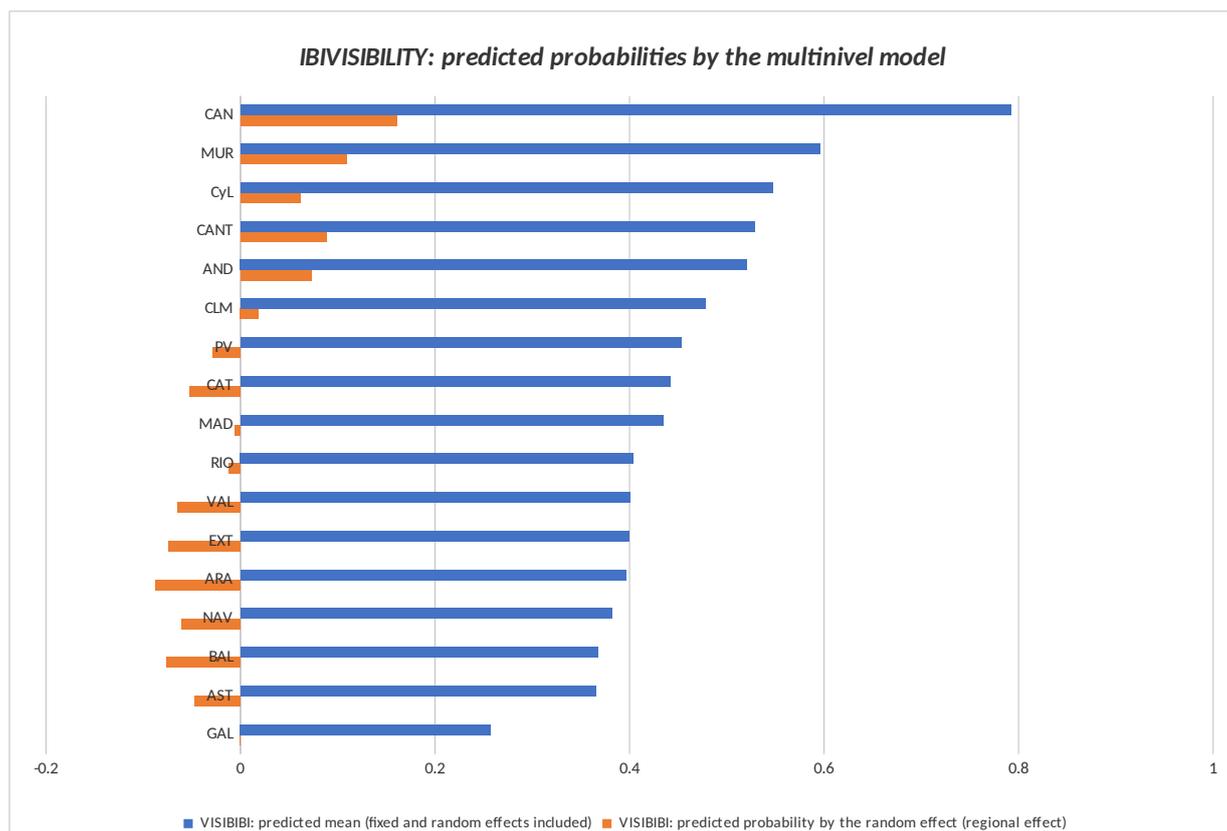
3.4. ISDVISIBILITY



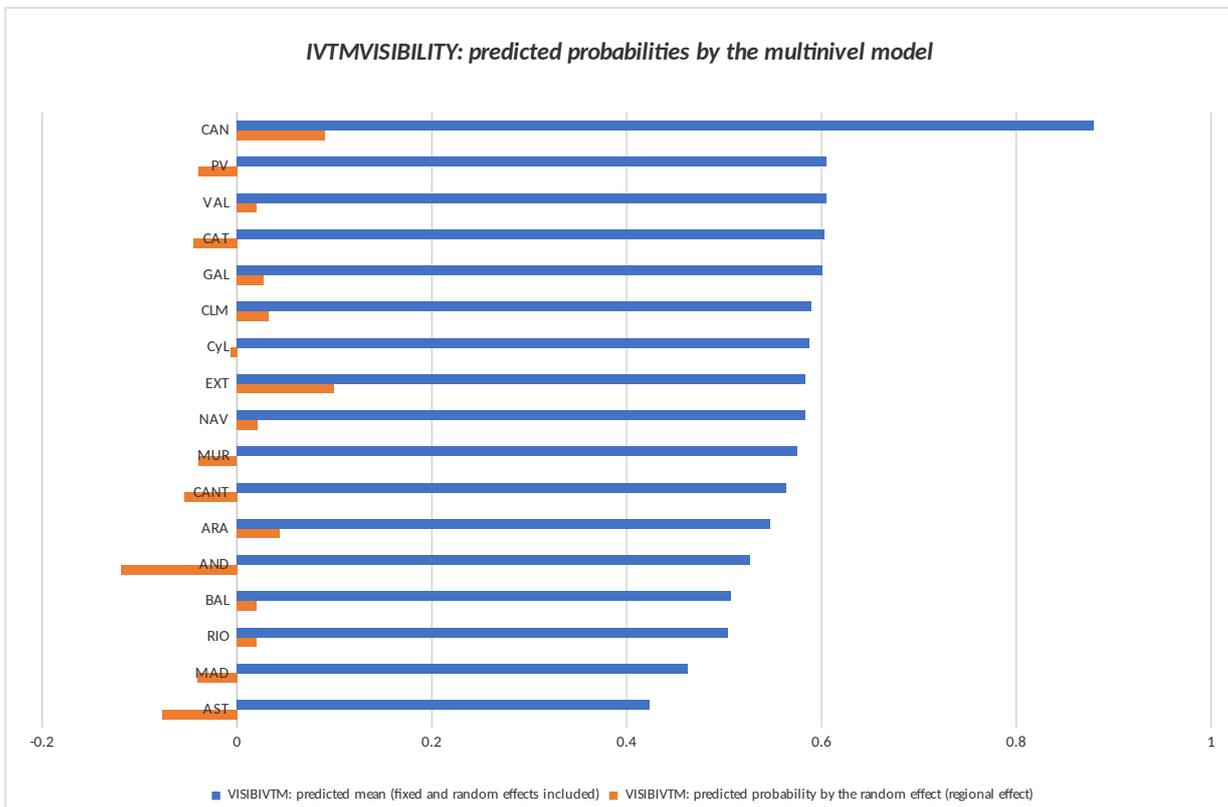
3.5. ITPAJDVISIBILITY



3.6. IBIVISIBILITY



3.7. IVTMVISIBILITY



Source: Authors' elaboration.

Table 6. Results of the estimates for the endogenous variables. Citizens with high tax visibility.

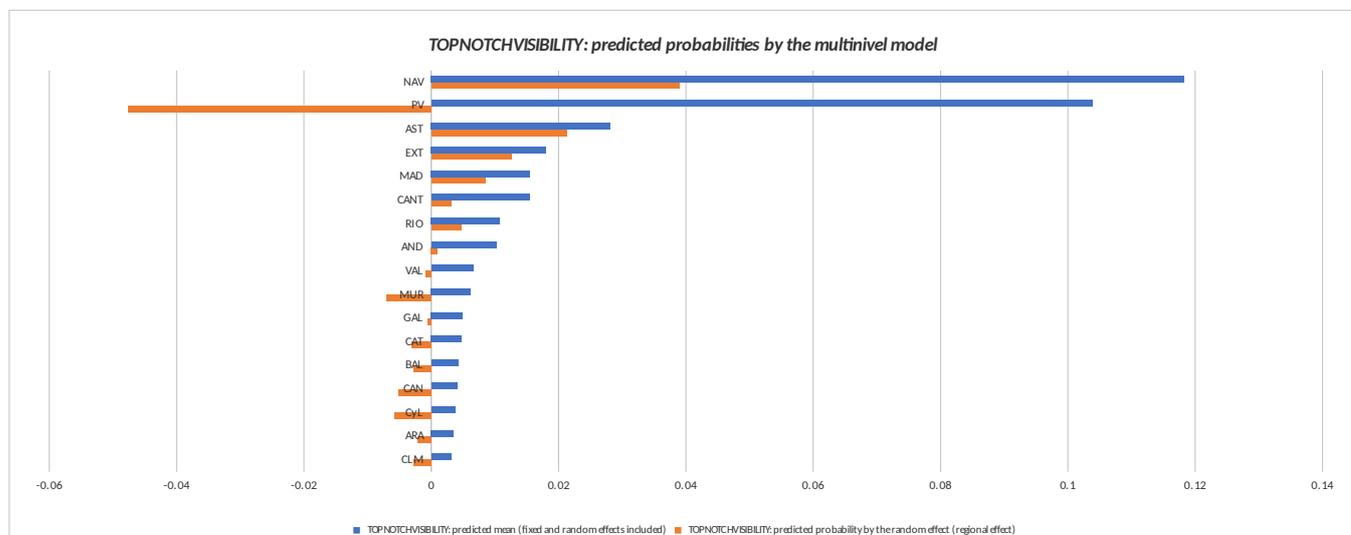
Dependent variables	TOP NOTCH VISIBILITY	REGIONAL TAX VISIBILITY	LOCAL TAX VISIBILITY
Visibility of public services and benefits (H1)			
CENTRAL EXP VISIBILITY			
REGIONAL EXP VISIBILITY	0.99*	1.80** (0.01)	
LOCAL EXP VISIBILITY			1.05***
UNEMPLOYMENT USER			
EDUCATION USER			
HEALTH USER			
MORE TRANSPARENT		1.92*** (0.01)	
NO REGIONAL TV		2.38*** (0.04)	
HIGH LEVEL			
MAJORITY		2.30** (0.04)	
Tax visibility (H2)			
REGIONAL TAX VISIBILITY			
IBI VISIBILITY			
IVTM VISIBILITY			
LOCAL TAX VISIBILITY	0.84***	1.66*** (0.01)	
NOT A TAXPAYER			
SELF FINANCING		3.02*** (0.05)	
Exercised taxation powers (H3)			
REGIONAL IRR FRA TE			
REGIONAL ITRAJ DRA TE			
NO INHERITANCE TAX		-1.87*** (-0.007)	
NO GIFT TAX			
FORAL	1.50***		
Preference for Public intervention (H4)			
PUBLIC SECTOR		1.32* (0.005)	
REDISTRIBUTION			0.15*
POPULAR PARTY		-1.65*** (-0.007)	
Sociodemographic characteristics			
AGE			
AGE ²			
FEMALE		-0.69* (-0.004)	
COUPLE			0.23***
IMMIGRANT			-0.78**
BIG CITY			
RURAL			
TERTIARY EDUCATION	5.21***	2.77** (0.05)	0.25***
SECONDARY EDUCATION	4.98***	1.90* (0.01)	
RETIRED		1.14*** (0.01)	
UNIVERSITY			-0.71**
SALARIED			
UNEMPLOYED			
CONSTANT	-8.77***	-10.29***	-1.61**
Number of observations	2977	2977	2977
LR χ^2	425.33	81.17	237.50
Prob > χ^2	0.00	0.00	0.00
Log pseudolikelihood	-173.84762	-278.42312	-180.83442
Pseudo R ²		0.3175	
Coefficient p	0.1556933		0.1083202
LR test vs. unilevel (probit/ logit) regression	5.67 (0.01)		101.95 (0.00)

BUSINESS PEOPLE has not been finally included in the estimates because multicollinearity problems related to the used this variable have been found. In the REGIONAL TAX VISIBILITY estimates, marginal effects are shown in brackets.

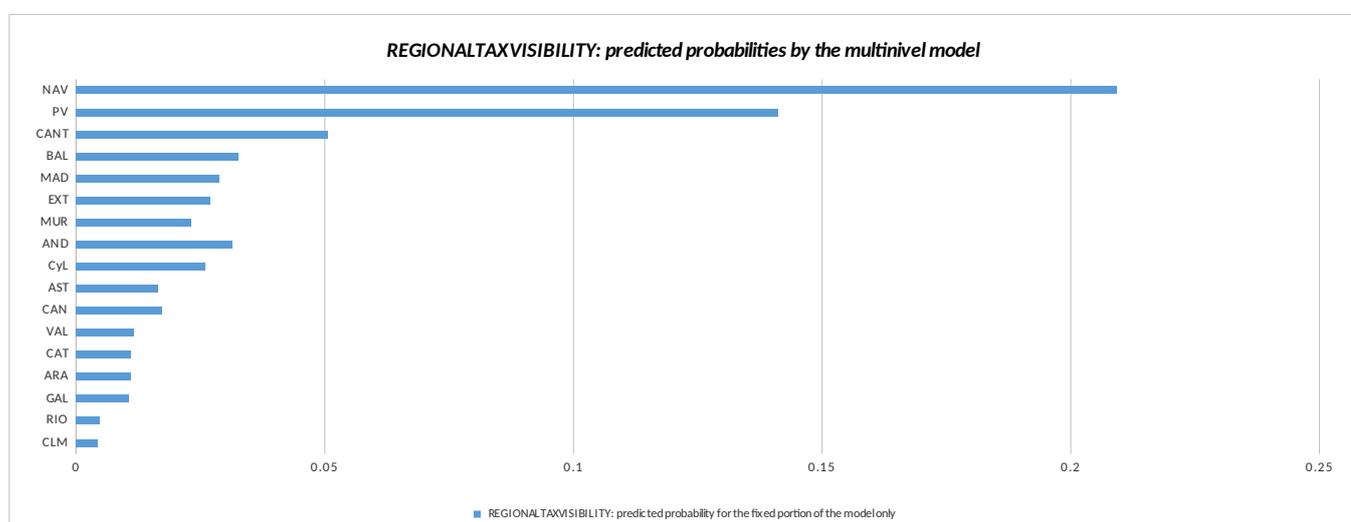
*** Significant coefficient at 1%. ** significant coefficient at 5%. * significant coefficient at 10%.
Source: Authors' elaboration.

Figure 4. Predicted probabilities for the endogenous variables (multilevel models). Citizens with high tax visibility

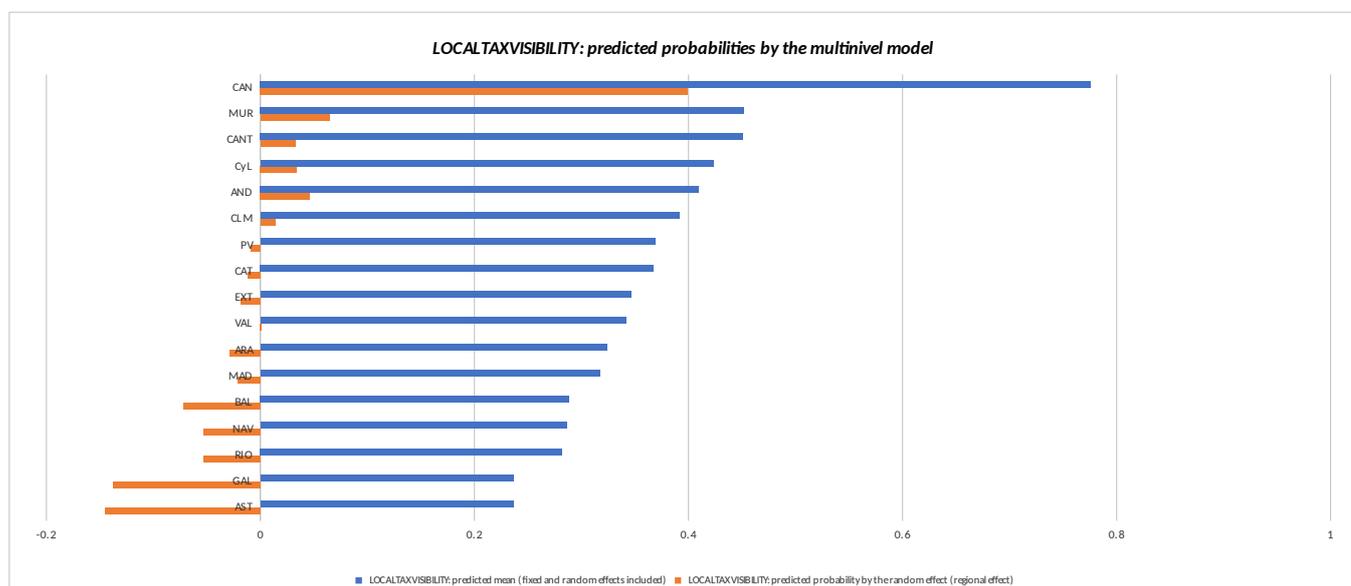
4.1. TOPNOTCHVISIBILITY



4.2. REGIONALTAXVISIBILITY



4.3. LOCALTAXVISIBILITY



Source: Authors' elaboration.

Table 7. Results of the estimates for the endogenous variables. Alternative definitions for the endogenous variables of Basque Country citizens.

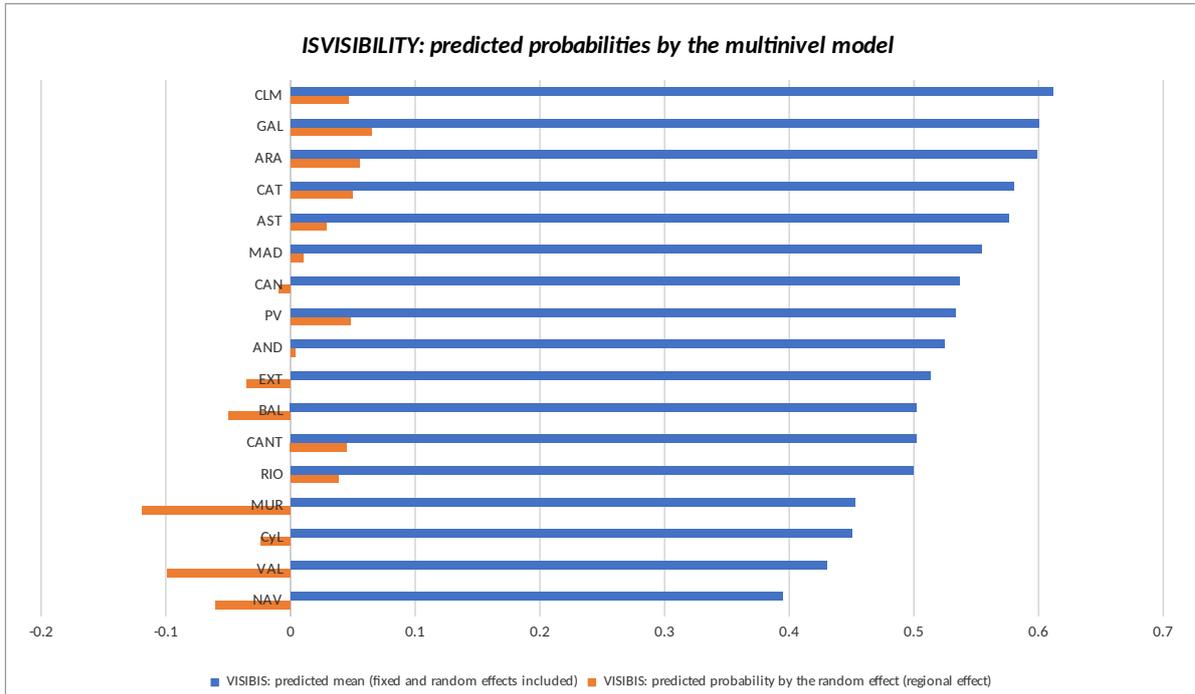
Dependent variables	ISVISIBILITY	IRRF VISIBILITY	IIVA VISIBILITY	ISD VISIBILITY	ITRAJD VISIBILITY	TOPNOTCH VISIBILITY	REGIONAL TAX VISIBILITY
Visibility of public services and benefits (H1)							
CENTRALEXPVISIBILITY	0.96***						
REGIONALEXPVISIBILITY		0.74***		0.44***	0.41***	2.43*** (0.004)	0.79*** (0.02)
LOCALEXPVISIBILITY							
UNEMPL OYMENTUSER	-0.27**					0.99* (0.002)	
EDUCATIONUSER							
HEALTHUSER							0.58** (0.007)
MORETRANSPARENCY		1.70**	1.30**				0.66*** (0.01)
NOREGIONALTY							
HIGHLEVEL						-2.06*** (-0.003)	
MAJORITY					0.31*	3.89*** (0.06)	
Tax usability (H2)							
REGIONAL TAX VISIBILITY		1.57***	1.70***	1.65***	1.71***		
ISIVISIBILITY							
IIVISIBILITY							
LOCAL TAX VISIBILITY						1.92*** (0.005)	0.51*** (0.01)
NOTAXPAYER						-0.25*	
SELFFINANCING							
Exercised taxation powers (H3)							
REGIONALIRPFRATE							
REGIONALITRAJD RATE					-4.54***		
NONHERITANCE TAX							
NOGIFT TAX							
FORAL		4.09***	2.99***			5.08*** (0.16)	2.40*** (0.43)
Preferences for Public intervention (H4)							
PUBLICSECTOR							
REDISTRIBUTION	0.29**						
POPULARPARTY						-2.27*** (-0.003)	
Sociodemographic characteristics							
AGE	0.07***						
AGE ²	-0.0006***	0.0001**					
FEMALE							-0.36** (-0.006)
COUPLE				0.20*		0.85* (0.001)	
IMMIGRANT					-0.86***	-3.28** (-0.002)	
BIGCITY	-0.27*						
RURAL							
TERTIARY EDUCATION	0.34***	0.38*			0.36***	2.44** (0.01)	1.11*** (0.06)
SECONDARY EDUCATION	0.25***			0.32***		2.21** (0.004)	0.64** (0.06)
RETIRED						1.23** (0.003)	0.73*** (0.03)
UNIVERSITY							
SALARIED							
UNEMPLOYED							
CONSTANT	-2.22***	-5.71***	-5.08***	-1.93***	-1.29***	-9.84***	-4.54***
Number of observations	2,977	2,977	2,977	2,977	2,977	2,977	2,977
LR χ^2	335.36	973.73	96.44	2,670.21	1,322.29	106.23	140.07
Prob > χ^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Log pseudolikelihood	-1,978.9035	-658.42712	-577.30307	-1,229.3059	-1,152.1732	-184.96566	-310.94954
Pseudo R ²						0.4801	0.4205
Coefficient p	0.0294052	0.1938356	0.104141	0.0671093	0.0446661		
LR test vs. unilevel (probit/ logit) regression	22.34 (0.00)	39.27 (0.00)	13.41 (0.00)	29.69 (0.00)	7.89 (0.00)		

BUSINESSPEOPLE has not been finally included in the estimates because multicollinearity problems related to those of this variable have been found in columns 6 and 7, marginal effects are shown in brackets

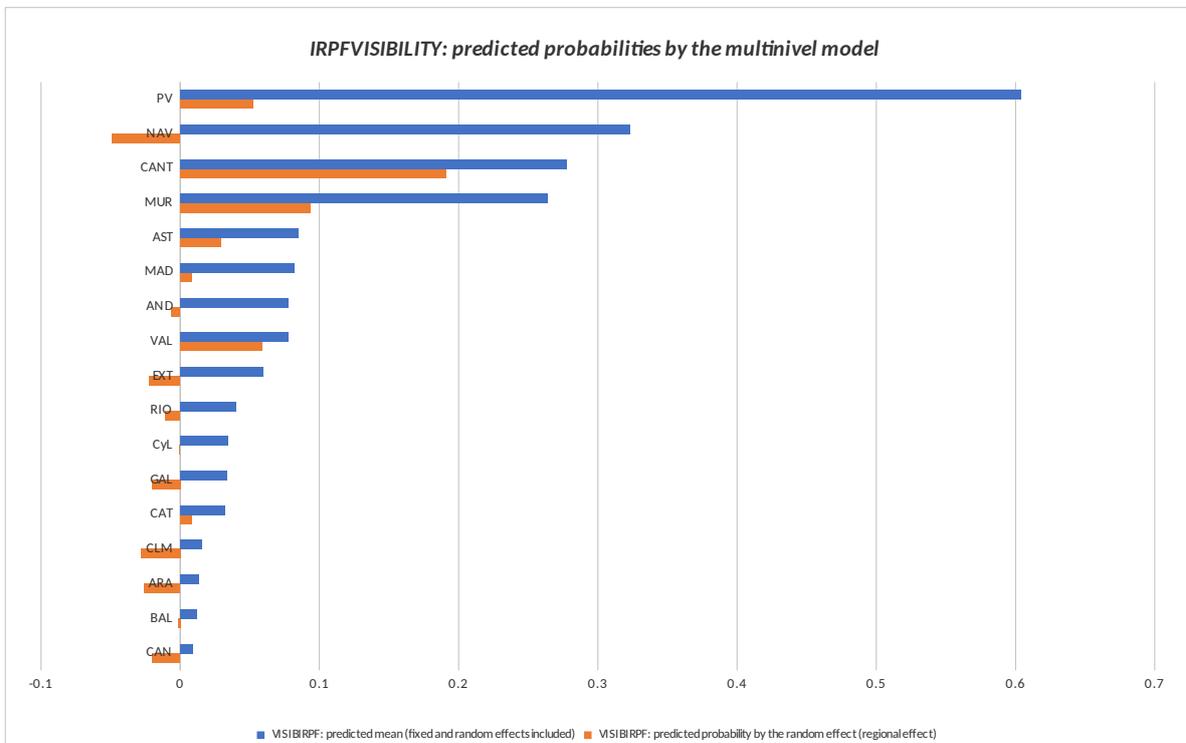
*** Significant coefficient at 1%. ** significant coefficient at 5%. * significant coefficient at 10%.
Source: Authors' elaboration.

**Figure 5. Predicted probabilities for the endogenous variables (multilevel models).
Alternative definitions for the endogenous variables of Basque Country citizens**

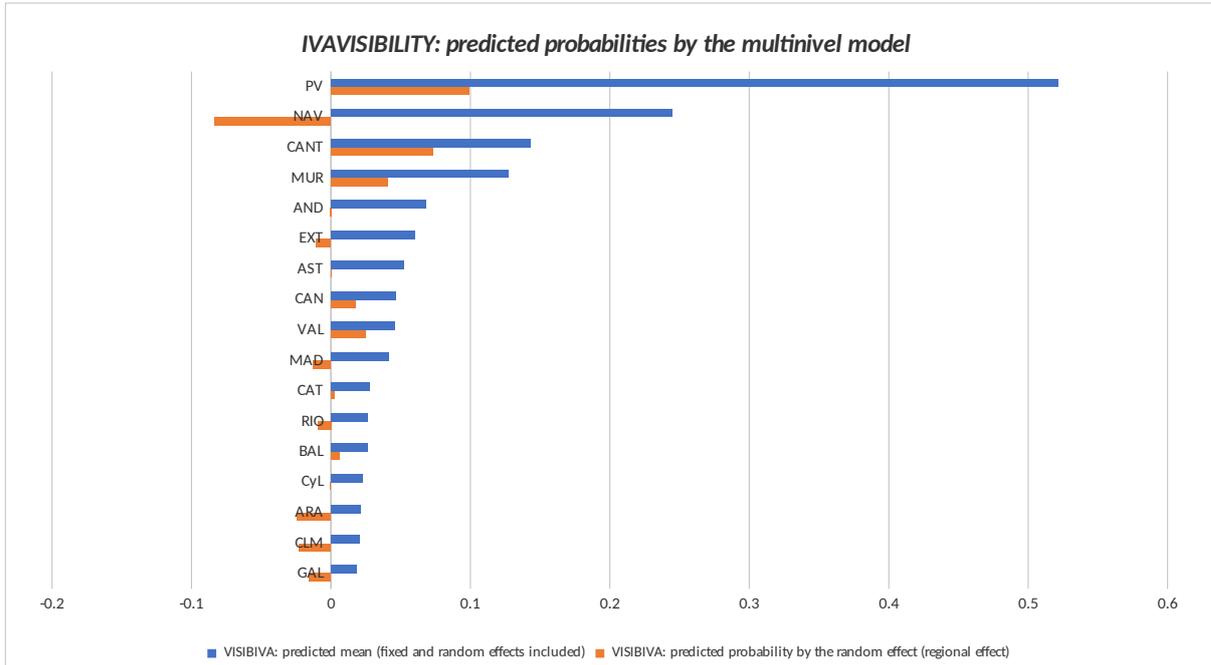
5.1. ISVISIBILITY



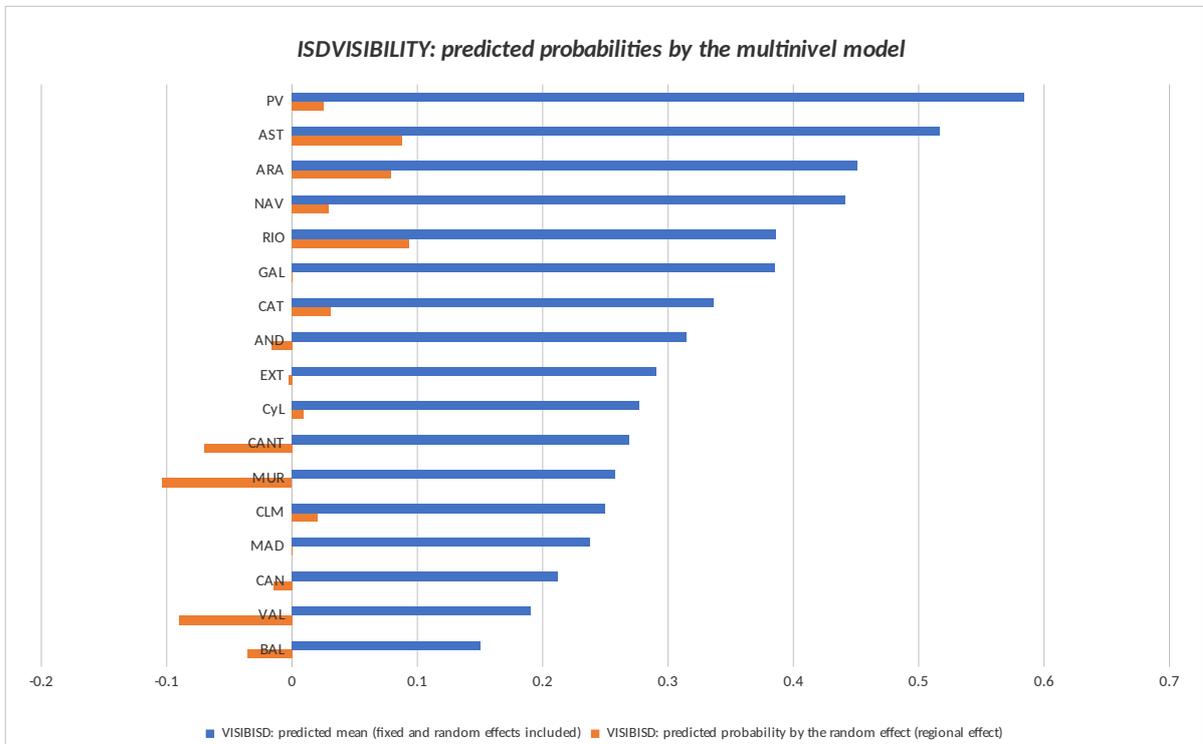
5.2. IRPFVISIBILITY



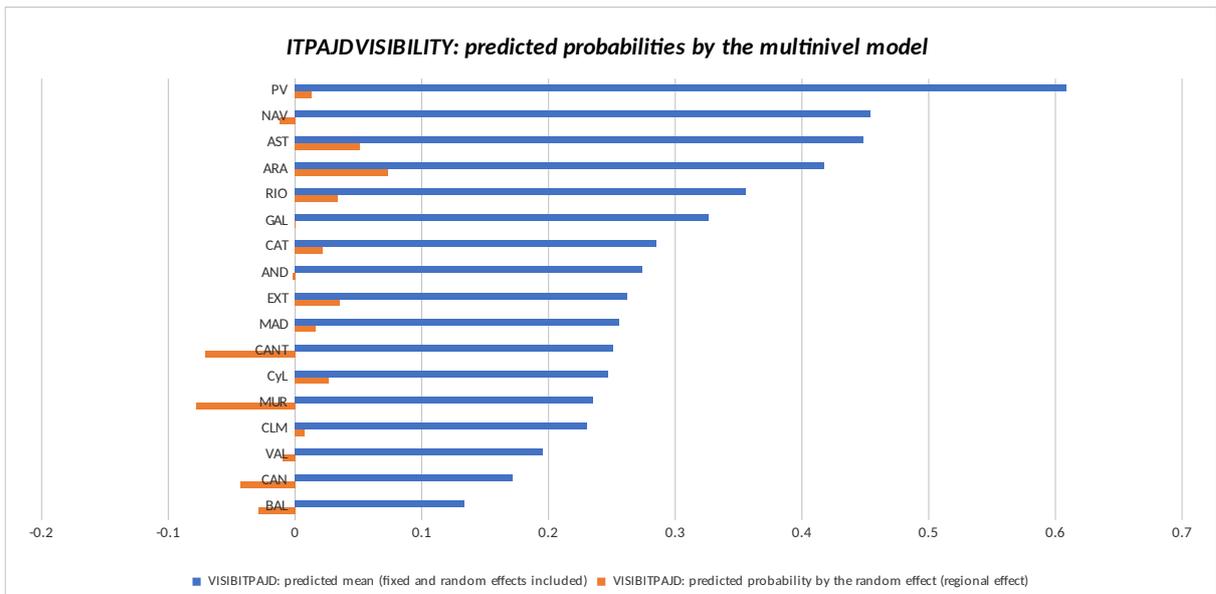
5.3. *IVAVISIBILITY*



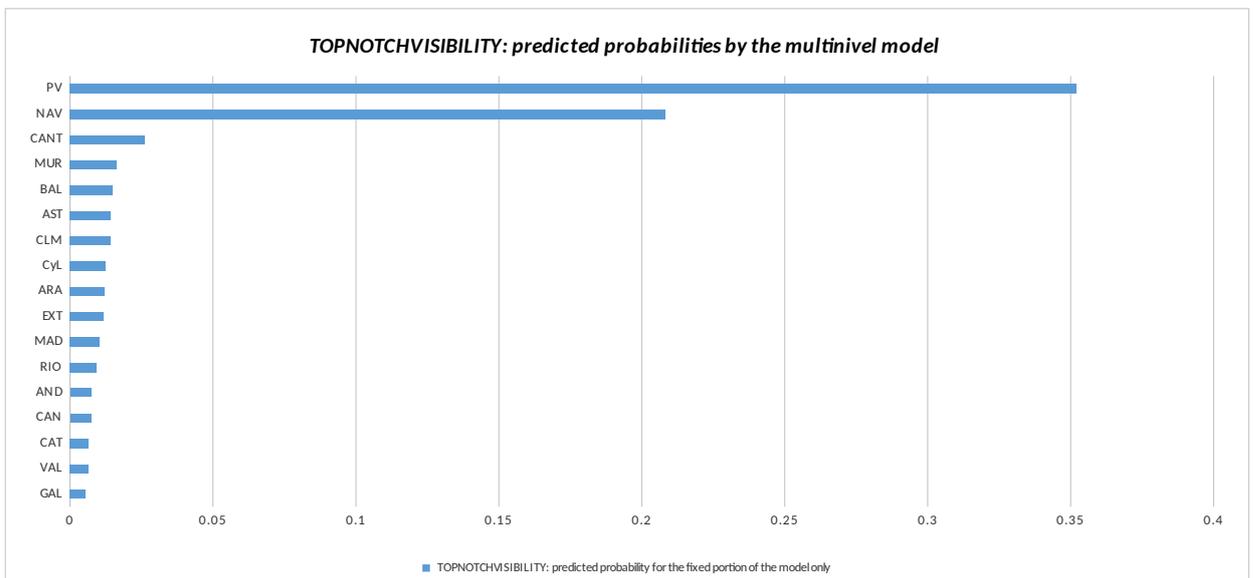
5.4. *ISDVISIBILITY*



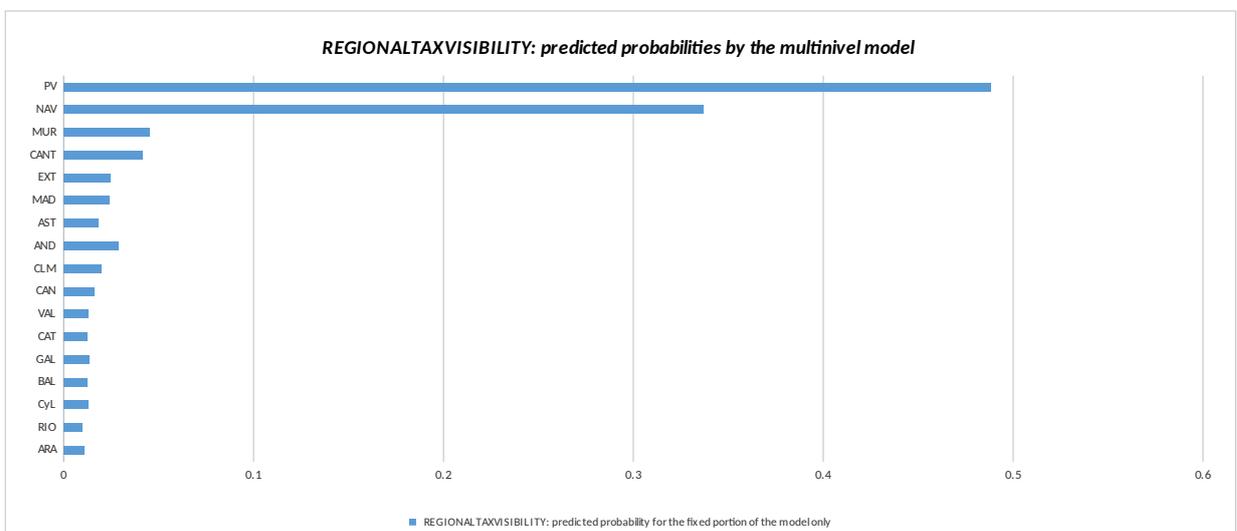
5.5. ITPAJDVISIBILITY



5.6. TOPNOTCHVISIBILITY



5.7. REGIONALTAXVISIBILITY



Source: Authors' elaboration.