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Agency theory, monitoring problems, and tax morale: effects on tax collection in municipalities

Teoria da agência, problemas de monitoramento e moral tributária: efeitos na arrecadação de tributos em municípios

Teoría de la agencia, problemas de monitoreo y moral tributaria: efectos en la recaudación de impuestos en los municipios

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Abstract
The research analyzed the effect of agency problems on the collection of the Inter Vivos Property Transfer Tax (ITBI) in Brazilian municipalities, considering the conflicts between the collecting agent (notaries) and the principal (City Halls). The study considers the fact that local governments manage the ITBI with total discretion, and assumes that lack of control associated with problems of regulation, enforcement, and inefficient collection mechanisms may cause losses in tax collection, which could be aggravated by agency problems. An online questionnaire was used to obtain data on ITBI collection from notaries, which were then compared with data from Brazilian municipalities, considering their revenues from this specific tax from 1998 to 2018. The results show that agency problems combined with a low perception of control possibly leads to reduction in the collection of ITBI.
Keywords: ITBI; Agency theory; Tax evasion; Tax-morale

Resumo
A pesquisa analisou o efeito do desalinhamento de agência na arrecadação de tributos. Para isso, a análise se concentrou na arrecadação do imposto sobre transmissão onerosa de bens imóveis intervivos (ITBI), sujeito à existência de problemas de agência entre o agente arrecadador (Cartórios) e o principal (Prefeituras). Considerando-se a total discricionariedade dos municípios na organização do tributo, o artigo apresenta que a falta de controle pode potencialmente estar acarretando perda de arrecadação pelos municípios, que além de estar associada a problemas de regulação, fiscalização e estrutura de arrecadação, pode estar sendo acentuada na presença de desalinhamento de agência. O trabalho foi realizado por meio da aplicação de um questionário coletado eletronicamente pela internet, com respondentes de Cartórios, comparados com dados da estrutura de arrecadação dos municípios e com os valores de arrecadação do período de 1998 a 2018. Os resultados apontam que o desalinhamento de agência combinado com menor percepção de controle pode levar a redução da arrecadação do IBTI.
Palavras-chave: ITBI; Teoria da agência; Evasão fiscal; Moral tributária

Resumen
La investigación analizó el efecto de la desalineación de la agencia en la recaudación de impuestos. Para ello, el análisis se centró en la recaudación del impuesto sobre la transferencia de bienes inmuebles (ITBI), sujeto a la existencia de problemas de agencia entre el agente recaudador (notarios) y el principal (municipalidades). Teniendo en cuenta la discreción total de los municipios en la organización del impuesto, el artículo presenta que la falta de control podría estar, potencialmente, provocando la pérdida de la recaudación por parte de los municipios que, además de estar asociada con problemas de regulación, fiscalización y estructura de recaudación, puede estar siendo acentuado por la presencia de la desalineación de la agencia. El trabajo se llevó a cabo mediante la aplicación de un cuestionario recopilado electrónicamente a través de internet, donde los encuestados fueron los responsables de las oficinas de registro de bienes, en comparación con los datos de la estructura de recaudación municipal y con los valores de recaudación desde 1998 hasta 2018. Los resultados apuntan que la desalineación de la agencia en conjunto con una menor percepción de control, pueden conducir a la reducción de la recaudación del ITBI.
Palabras clave: ITBI; Teoría de agencia; Evasión de impuestos; Moral fiscal

1 Introduction

The state is the sole responsible entity for collecting taxes with the purpose of financing public services. In Brazil, the Federal Constitution of 1988 led the country to an intense movement of decentralization in tax collection to local governments, who gained tax autonomy and a certain level of independence from states and the union (SILVA; BONACIM, 2010), but have remained with low tax effort (CASTRO; SANTOS, 2017). The debate on taxes in Brazil, therefore, entails a discussion about federalism and consequent revenue distribution (OLIVEIRA; BARBOSA; FRANCE, 2013).

The state wishes (and needs) to collect taxes, while citizens are subject to the effect known as tax-morale – or the willingness or intrinsic motivations to pay taxes. However, in general, reduced tax morale among the population is observed (CUMMINGS et al., 2006; FILIPPIN; FIORIO; VIVIANO, 2013). In Brazil, for example, the population is not very willing to pay taxes (MATTOS; ROCHA; TOPORCOV, 2013), even when considering social-demographic differences such as region, religion, or gender (MARTINEZ; COELHO, 2019).

Studies report the existence of a socially accepted non-compliance social norm toward paying taxes (MATTOS; ROCHA; TOPORCOV, 2013). In addition, the propensity to pay taxes is affected when there is uncertainty about state enforcement (SCOTCHMER; SLEMROD, 1989), and when there are reservations about the return of the taxes in the form of public services (HOFMANN; HOELZL; KIRCHLER; 2008, BARONE; MOCETTI, 2011).

Thus, an alternative to tackle the issue of tax evasion is to recognize the importance of enforcement and the implementation of control mechanisms, such as laws and norms to increase compliance. An example is the legislation making it mandatory for companies to issue electronic invoices, prepared in systems integrated with the City Hall's online platforms – which facilitates monitoring transactions and assessing the due taxes (MATTOS; ROCHA; TOPORCOV, 2013).

The issue of non-compliance and tax evasion in the case of the Inter Vivos Property Transfer Tax (ITBI) is particularly interesting for two reasons. First, the population is more sensitive to the collection of direct than indirect taxes. Direct taxes, such as ITBI, are those paid together with other economic transactions (CASTRO; SANTOS, 2017). Second, the presence of a third party (the agent – in this case, the notary) collecting the tax on behalf of the state (the principal), classifies as a situation subjected to agency problems and conflicts and may be discussed as part of the respective literature. This research will use the popular term notary to refer to the Brazilian *Ofício de Registro de Imóveis or Cartórios* (registry of deeds).

Agency conflicts arise when the agent's objectives differ from the principal's objectives (JENSEN; MECKLING, 1976; ZIMMERMAN, 2001). The consequences of this situation include a decrease in revenue, especially when there is insufficient monitoring (CHYZ; WHITE, 2014).

The tax burden on assets in Brazil is 3.3%, while in OECD countries, it is 6% (CASTRO; SANTOS, 2017). The collection of ITBI is the local governments' responsibility. The authorities pass laws to create the tax and the rules governing its operation, as well as mechanisms of control and enforcement. Among the elements related to this tax are the city's *Planta Genérica de Valores* (PGV), or a standard real estate value map, which determines a referential value of land and improvements per meter square for tax purposes (and must be updated regularly) (NADOLNY, 2016), internal controls to guide tax collection (GOMIDE, 2015), and the real estate tax register (TCE-SP, 2013). There are also different forms of property control by city halls, which are automated or manual. These controls may require advisory obligations to monitor transactions.

Torgler et al. (2008) say that there is still a lack of empirical evidence on the relationship between attitudes and behavior in the tax compliance literature. This research emphasizes the role of a third party (notary), who acts on behalf of the state amidst the steps toward tax compliance.

The study seeks elements to answer the following research question: Do monitoring problems affect the municipalities' collection of ITBI when agency conflicts are detected?

ITBI collection was compared using data from the SICONFI (Brazilian public sector accounting and tax information system) with information collected via a survey sent by e-mail to the notary offices in the country, with 475 respondents from 449 municipalities and 24 states.

Revenues from ITBI are essential to fund local public services such as health and education. Therefore, planning and control to guarantee appropriate collection are crucial. According to the National Treasury Secretariat (STN), there is a large difference in ITBI collection among Brazilian municipalities. Numbers show a ratio between ITBI and revenues from other taxes varying from 11.7% to 80% among municipalities in 2013, which may indicate control problems.

Despite the practical relevance of the topic, there are few studies on local governments' tax efforts in Brazil. Research on taxes usually focus on models to estimate budget revenues (AZEVEDO; SILVA; GATSIOS, 2017; SCARPIN; SLOMSKI, 2005), on comparisons in collection among other municipalities and states (FURTADO, 2012; GOUVÊA, VARELA; FARINA, 2007; MASSARDI; ABRANTES, 2016), analyze specific effects, such as the publication of the Brazilian Fiscal Responsibility Law (LRF) (FILHO; DINIZ; VASCONCELOS, 2003), or focus on estimating the potential collection of certain municipal revenues (CASTRO; SANTOS, 2017).

This research has high social applicability and contributes to the literature on the association between implemented controls and tax collection, in the same lines as the work by Angeli Neto and Martinez (2016), who found that the control through the implementation of electronic invoices did not increase the collection of municipal taxes. The study also contributes by offering a test of the agency theory in response to Zimmerman (2001), who criticized that of the studies that mention the theory, few tests it.

2 Literature Review and Development of Hypotheses

2.1 *Inter Vivos* Property Transfer Tax (ITBI)

The ITBI appeared in Brazilian law in 1809, referred to as "sisa tax". It was first added in the Brazilian Federal Constitution of 1891, levied by the states. In the Federal Constitution of 1988, the tax collection became the responsibility of the municipalities.

The moment of tax collection varies between municipalities and may occur when buyer and seller formally sign and notarize the sales contract or when they update the property deed in the notary public office (HARADA, 2008). The ITBI is due in case of i) any transfer of immovable property or rights of using an immovable property; ii) any transfer of real rights to property, except for real security; iii) the assignment of rights regarding the transfers referred to in the previous items.

There are several ways to determine how to calculate ITBI. Some examples are a) the calculation of a percentage based on the PGV, or the city's standard real estate value map (also used to calculate the Property Tax for Urban Land - IPTU); b) based on the amount actually paid in the transaction; c) or a percentage based on the property's market value (MACEDO, 2009). For Barreto (2012), the market value may not necessarily correspond to the amount paid in the transaction.

Brazilian local governments usually adopt the referential value of land and improvements per meter square established in the PGV to calculate ITBI, which considers the market value. This referential value is adopted using technical criteria, observing the properties' physical aspects, location, infrastructure, the type of activities allowed in the region, the development potential, and the regulation related to land use and occupation (NADOLNY, 2016). This value per meter square is an estimated evaluation applied to properties with similar characteristics made on a large-scale (BARRETO, 2012).

Nadolny (2016) highlights the importance of constantly updating the city's standard real estate value map (PGV) – which is required by law – to calculate property taxes (as mentioned before, IPTU also uses the same information to calculate the tax levied). The author stresses, however, that this measure is a hard-political task because updating the PGV means, in practice, raising taxes. Thus, it involves negotiation between the local executive and legislative branches.

Another source to estimate real estate value is through the city real estate register (HARADA, 2008). The register and the PGV are tax control instruments that list the properties registered with the local government, containing an estimation of their value.

Several studies approach the different tax bases of ITBI. Nadolny (2016), for example, discusses the many obstacles hindering the fair collection of taxes on goods due to differences in the tax base adopted. The use of PGV as the tax base of ITBI does not consider the variation of market prices, which may result in a different tax value than if using the amount actually paid in the transaction (freely assessed by buyer and seller).

For Harada (2008) and Barreto (2012), the referential value of a given property must be the same to assess both taxes, IPTU and ITBI. The authors criticize the practice of using the value estimated in the PGV to calculate IPTU while using the higher value between the value estimated in the PGV and the transaction value to calculate ITBI. For Harada (2008), the transaction value should not be used as the referential value to calculate ITBI, arguing that buyer and seller, when friends or relatives, may declare a lower value than the

actual price practiced, paying less tax. The author says that tax agents must act with objectivity when establishing the value of land and property, resorting to an estimation based on pre-established legal criteria.

According to Gomide (2015), between the transaction value the taxpayer declared and the estimated value registered in the PGV, local governments should choose the highest value as the referential value to calculate ITBI. However, this practice may lead to the taxpayer declaring a value lower than the price paid in the transaction, i.e., evading part of the ITBI; or result in overvalued properties, indicating money laundering.

2.2 Tax Evasion and Agency Problems

Tax evasion is a tax behavior subject to criminal and civil sanctions (CROCKER; SLEMROD; 2005). For Lazar (2013), tax evasion is considered in the fine line between licit and illicit activities, often motivated by morality issues. Similarly, Slemrod (2007) understands that tax underestimation or overpayment can be the result of unintended error due to confusion or ignorance about the law.

Other authors refer to the reduction in taxes payable as tax non-compliance. Allingham and Sandmo (1972) developed a model to analyze tax evasion based on four attributes: the declared income (which may be equal or less than the actual income); the rate the tax is levied; the probability of investigation; and the penalty imposed in case of non-compliance.

Siqueira (2004) applied this model in Brazil, observing that the higher probability of investigation and more substantial penalties can lead to less tax evasion in the case of individual income tax (IRPF). Other studies say that individuals are influenced by internal (will) and external (other people's stimuli or situations) rewards regarding tax evasion (PEREIRA; SILVA; 2020). Pommerehne and Weck-Hannemann (1996) identified that non-compliance is positively related to the tax burden and negatively related to the probability of auditing. The literature on auditing shows that the actors' behavior can change if there is the possibility of an auditing process in person (GUSTAVSON; ROTHSTEIN, 2013). Thus, the feeling of monitoring matters.

The need for monitoring, in the case of ITBI, can be explained by the agency theory. In one of the three branches of the theory's literature, the agent-principal literature (BAIMAN, 1990), the agency relationship occurs between two parties, with one acting on behalf of the other (ROSS, 1973). The theory assumes that when the cooperative behavior in the relationship is replaced by the individuals' own interest, the agent can adopt behaviors to maximize their interests at the expense of those of the principal (LOURENÇO; SAUERBRONN, 2017). However, the principal can use tools to avoid these behaviors, such as offering appropriate incentives to the agent and accepting the burden related to monitoring costs. It should be noted that these agency costs can arise in any cooperative relationship, even if the principal-agent relationship is not so well defined. It may be observed in firms, universities, mixed companies, public agencies, and others (JENSEN; MECKLING, 1976).

The relationship in the case of ITBI may be described as cooperative, in which the principal (city hall) transfers to the agent (notary) the activity of calculating and/or collecting taxes. In an attempt to combat ITBI tax evasion, there are cases of municipalities that apply a progressive remuneration for the notary, according to the declared value of the deed. In this way, it offers incentives so that the notary representatives do not reduce the value at the base of the calculation, favoring the principal's welfare, and avoiding tax evasion.

In the Brazilian city of São Paulo, for example, according to the Central de Registradores de Imóveis (central of real estate registrars), the municipality is divided into sub-districts, and each notary public office is responsible for one or more sub-districts. Thus, the municipality eliminates competition so that notaries do not feel encouraged to reduce the tax base in order to attract clients (taxpayers) by promising reduced taxes. Therefore, the progressive remuneration of the notary and the monopoly of registrations in certain regions suggests that the local authorities find agency conflicts in the relationship with notaries, which are addressed with the provision of incentives for them not to incur in practices that favor tax evasion.

Concomitantly with monitoring and incentive problems, Mascagni (2018) points out that non-compliance is a major obstacle for tax authorities. Raising taxes through coercion or aggressiveness is more expensive than encouraging taxpayers to pay tax. The author also shows that, in any country, although instruments of coercion exist, the payment of taxes is derived from an almost voluntary connection between compliance and enforcement.

Torgler (2002) says that the main conclusions about non-compliance studies are that i) people who comply with the rules tend to consider tax evasion immoral, ii) compliance is greater if there is a moral appeal for the taxpayer, iii) those with friends who evade taxes are more likely to behave in the same way, and iv) tax compliance is greater in societies with a strong sense of social cohesion.

Bird, Martinez-Vazquez, and Torgler (2008) argue that responsive and legitimate governments are essential for an adequate level of tax effort in both developed and developing countries. Thus, low corruption and government accountability are basic conditions for tax performance.

Kirchler et al. (2007) suggest that compliance stems from trust in the government. In a climate of distrust, there is a need for authorities to ensure compliance with tax obligations, increasing fines, and the probability of auditing. When taxpayers trust state authorities, other variables gain importance (such as knowledge, moral appeals, justice, and democracy), so that abusive fines and invasive audits can have effects contrary to those desired.

Therefore, part of the tax non-conformity may be explained by the concept of tax morale. Luttmer and Singhal (2014) define tax morale comprehensively, seeking to capture non-pecuniary motivations for tax compliance and other factors outside the expected rational utility. The model by Allingham and Sandmo (1972) and many others do not capture these elements. Luttmer and Singhal (2014) identify five classes of tax morale mechanisms (Table 1).

Table 1 – Tax morale mechanisms

Motivation	Description
Intrinsic	An additional term in the utility function that increases in the amount of taxes the individual decides to pay (possibly with a discontinuous upward jump to pay the required amount).
Reciprocity	Paying taxes depends in some way on the individual's relationship with the state (for example, on public goods provided by the state or perceptions of the fairness of the tax system).
Peer effects and social influences	Paying taxes depends on views or behaviors of other individuals.
Long-run cultural factors	Studies generally find differences across countries in tax evasion despite similar subject pools and experimental protocols.
Information imperfections and deviations from utility maximization	Individuals may misperceive the probability of being detected in evading taxes.

Source: Elaborated by the authors based on Luttmer and Singhal (2014)

In this research, reciprocity is one of the tax morale mechanisms that stand out. It refers to the view that taxes are part of a social contract where taxpayers pay the state as a service provider (LUTTMER; SINGHAL, 2014).

Torgler (2005) reports a correlation between tax morale and the shadow economy in Latin American countries. Among the perceptions that can influence tax evasion are the tax burden, lack of honesty, and corruption. Torgler (2004) points out that in Asian countries, trust in the legal system and government is the element that influences tax morale.

Pommerehne and Frey (1992) say that, in this line of reciprocity, if the exchange between taxes paid and services government provides is considered equivalent, the taxpayer will be more inclined to comply with tax laws than if they consider the exchange unfair. According to the authors, tax evasion occurs if public expenditure is at odds with the taxpayer's individual preferences. Thus, both the volume and the management of government spending can affect reciprocity, which, in turn, affects tax compliance. Touchton, Wampler, and Peixoto (2019) demonstrated that municipalities that voluntarily adopt participation models such as participatory budgeting and councils collect significantly more taxes than similar municipalities without these mechanisms.

The following hypothesis is proposed, based on the agency relationship between local governments (principal) and notaries (agents), the non-conformity behavior expressed in the model by Allingham and Sandmo (1972), the probability of investigation (auditing), and the relationships of reciprocity as a tax morale mechanism that can cause agency problems:

H1: The amount of taxes collected is lower in municipalities where the notary public presents an agency conflict with the city hall, and there is a low perception of control.

3 Methodology

The study used primary and secondary data. First, secondary data on local governments' collection structure and tax rules were accessed from the Brazilian Institute of Geography and Statistics (IBGE, 2016). Also, data on budgetary information on revenue from IPTU and ITBI taxes, from the period 1998 to 2016 were accessed from the Brazilian Public Sector Accounting and Tax Information System (SICONFI) (STN, 2019). Primary data were collected using a questionnaire, responded by employees *of Ofício de Registro de Imóveis or Cartórios* (registry of deeds) from all over Brazil, referred to here as notaries.

The questionnaire was applied in two stages: i) pre-tests with five respondents to validate the questions; ii) the validated questionnaire was sent, via email, to a list of all notary offices in the country in January 2018. The list was obtained online, from the federal government's open data portal.

The questions sought (i) general information about ITBI revenue such as rate and calculation basis; (ii) characterization of existing control mechanisms related to the collection of ITBI in the municipality (such as the processes to prepare invoices for taxpayers and whether tax was calculated automatically or manually); (iii) the respondent's perception of the local government's tax enforcement and monitoring capacity; and (iv) the respondents' perception of the tax collection and government spending, to capture the participants' bias regarding their role as agents in the process. For this last item, two statements were presented, and a Likert scale used for the responses: "In my opinion, the amount charged for ITBI is very high" and "In my opinion, the taxes collected in the municipality are not well spent." The identification of the respondents' bias was used as

a proxy for the presence of incentives in the agency problems between notaries (agents) and local governments (principals).

The analysis of the influence of agency problems on tax collection followed this order: (i) descriptive analysis; (ii) average tax collection tests; and (iii) estimation of two multiple linear regression models, whose dependent variables were IPTU and ITBI in the same period. The comparison between IPTU and ITBI was conducted to test if the results attributed to agency problems found for ITBI would also be observed in other types of taxes that are not subject to the same agency conflicts (notaries are not involved in the collection of IPTU). The estimated models used the variables presented in Table 2.

The econometric model assumes that tax collection is the result of factors such as taxable base (GDP), tax rates, and tax effort (AGRA, 2017; MORAES, 2006). For Massardi and Abrantes (2016), reliance on intergovernmental transfers results in a low rate of tax effort in municipalities. Thus, the model presented here advances this discussion by introducing variables related to agency problems and the presence of control mechanisms.

Table 2 – Variables used in the two regression models

Variable	Model 1	Model 2	Source
(D)	Budget revenue of ITBI	Budget revenue of IPTU	SICONFI
(I)	Agency problem (1)		Questionnaire
(I)	Perception of control of tax collection (2)		Questionnaire
(I)	Interaction among agency problem and control		Questionnaire
(C)	GBP per capita		IBGE – According to Agra (2017) and Moraes (2006)
(C)	Number of properties of each municipality		IBGE
(C)	Municipality has a *planta genérica de valores* (PGV) (city's standard real estate value map) (0) no - (1) yes		IBGE
(C)	Years since the last PGV update until 2018		IBGE
(C)	Dependence on intergovernmental transfers: Tax revenues ÷ (tax revenues + current intergovernmental transfers)		SICONFI, as in Massardi and Abrantes (2016); and Agra (2017)
(C)	Dummy to control the country's region		IBGE

Notes. (D) Dependent variable; (I) Independent variable; (C) Control variable; (1) response collected via questionnaire ("In my opinion, the taxes collected in the municipality are not well spent"). The variable adopts a binary scale: (0) – less control; (1) – more control; (2) response collected via questionnaire, Likert scale (It is a rigorous control, and different forms of calculating ITBI are not possible)

To analyze the effect of agency problems and the perception of lack of control in the collection of ITBI, the following control variables were used: (i) the GDP per capita in each municipality, which indicates the situation of the economy and its effects on tax collection (AGRA, 2017; MORAES, 2006); (ii) number of properties in each municipality; (iii) existence of a PGV in the municipality, which would provide an estimated value of properties to calculate property taxes; (iv) years since the last PGV update until 2018, which can control the variation of property values, affecting tax collection; (v) dependence on intergovernmental transfers, considering the ratio between tax revenue and current intergovernmental transfers, according to Massardi and Abrantes (2016); Agra (2017); and, finally, (vi) a dummy variable to control the differences among the country's regions, capturing the effects and specificities of the local economy.

4 Results

4.1 Tax collection structure in the municipalities

Municipalities have different tax collection structures. Table 3 shows that 340 municipalities (6%) in the country did not have a real estate register in 2012, a problem more frequent in the North (15.6%) and Northeast (11.6%) regions. This situation greatly jeopardizes tax collection on properties since local governments without access to a real estate register are unaware of the number of properties in their territory.

Data from 2015 shows that more than 19% of the country's municipalities (out of 5570) did not have an updated PGV. Therefore, if these municipalities were using the land and property value indicated in the PGV as a collection base, ITBI levied was dissociated from the real values practiced in the market. Cases were found in which the last update of the PGV was from the 1960s. In addition, the average year of the last update of the PGV is 2010, with a standard deviation of 6.5 years. The region where municipalities have the most updated PGV is the Central-west (2012), with the lowest standard deviation between regions.

The collection of ITBI increased until 2014, after which there was stagnation, until a further increase in 2017 (Figure 1), which may result from factors related to the economy, but it can also be related to control problems or organizational factors in tax collection.

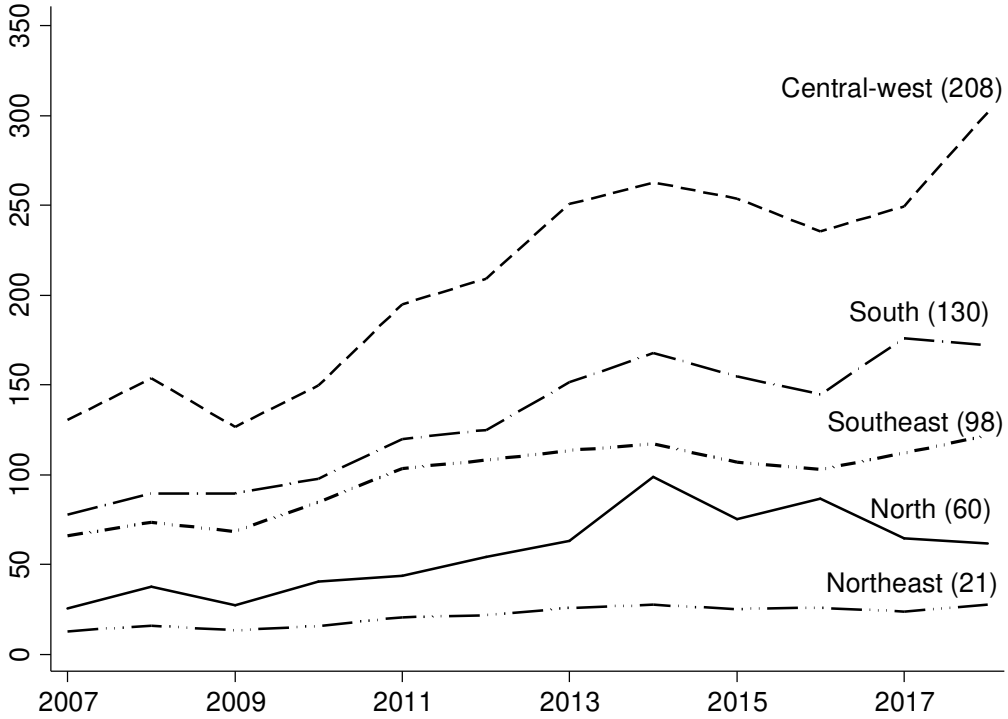
Table 3 – Information on municipal real estate management, per region

Region	Number of municipalities	No real estate register (2012)		City's standard real estate value map - PGV		
				Without PGV (2015)		Average year of last update
		(%)	(n)	(%)	(n)	(standard deviation)
1 – North	450	15.6	70	25.3	114	2011 (4.7)
2 – Northeast	1,794	11.6	209	17.7	318	2010 (5.8)
3 – Southeast	1,668	1.8	30	19.9	332	2009 (7.2)
4 – South	1,191	1.1	13	17.7	211	2009 (7.1)
5 – Central-west	467	3.9	18	18.2	85	2012 (4.6)
Total	5,570	6.1	**340**	**19.0**	**1,060**	**2010 (6.5)**

Source: Elaborated by the authors based on data from IBGE (2015).

The evolution of ITBI collection in the Central-west region is an example of this phenomenon. In addition, the fact that this region is the one that most recently updated the PGV (Table 3) may explain the recent accentuated growth.

Figure 1 – Mean of ITBI revenues per property in the municipalities grouped according to the Brazilian region.



Source: Elaborated by the authors based on data from the National Treasury Secretariat (STN,2019).
Note: The numbers in brackets represent the mean of ITBI revenues per property between 2007 and 2018. Values were adjusted to 2018 Brazilian Reais.

The results indicate that the collection of ITBI per property is associated with the size of the municipality. There was a difference in the mean revenue (Mann-Whitney test, p-value = .000) among the various sizes of municipalities, indicating that exogenous effects influence local governments differently, which may be associated with tax collection structure.

Among the 5,570 municipalities, 646 reported zero revenue from ITBI in 2018, which demonstrates the importance of this discussion. The provisions of the Brazilian Fiscal Responsibility Law state the local government's duty to institute, account, and effectively collect all taxes within its competence (BRASIL, 2000), under penalty of being prevented from receiving intergovernmental transfers. Due to the high number of reports of zero revenues from ITBI, it is fair to state that legislation is ignored in many municipalities in Brazil, which may explain the dependence of many municipalities from federal transfers from the Municipal Participation Fund (FPM) (MASSARDI; ABRANTES, 2016; SAKURAI, 2013).

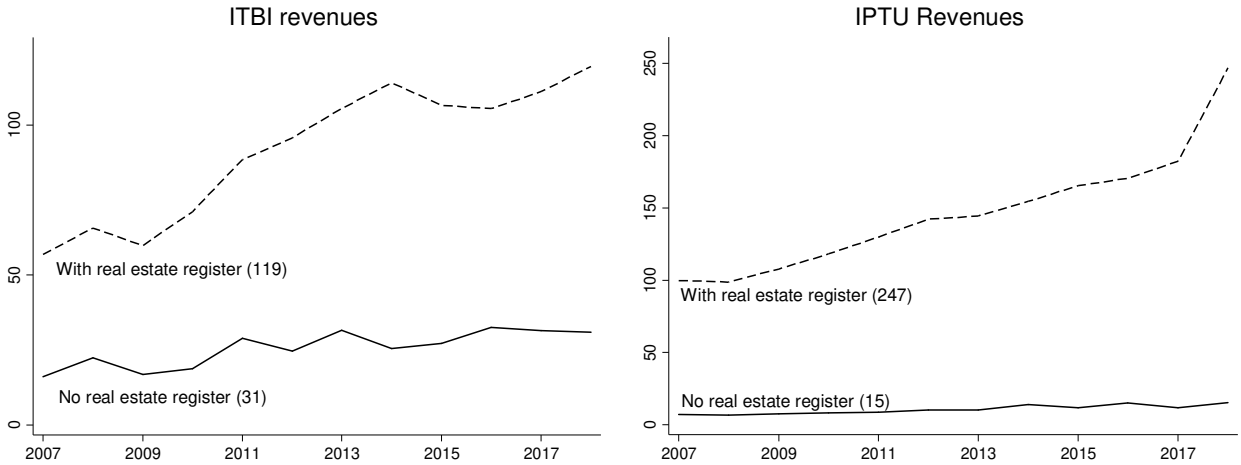
Figure 1 also shows a substantial difference in ITBI revenues per property among the regions for the entire series analyzed. The Central-west region accounts for 160% of the south region and 9.9 times more than the northeast region. The result was unexpected for the southeast region because it has the highest current national GDP.

The variation in the collection of ITBI among the municipalities is also significant, even considering the variation per property. One of the main management instruments to increase collection of ITBI and IPTU is the

existence of a real estate register. The real estate register is associated with a higher collection of IPTU and ITBI (Figure 2).

The average IPTU for municipalities that did not have a real estate register in 2018 was BRL 9.82, while for the others, it was BRL 139.43. In the case of ITBI, data from 2018 showed that municipalities without real estate register had an average ITBI revenue of BRL 21.13 per property, against revenue of BRL 88.09 for municipalities that counted on the register. In addition, the collection of ITBI grew in the entire period analyzed for municipalities using the real estate register as a control mechanism, while there was little variation or falls for the other municipalities. The behavior of the IPTU shows that the real estate register has an even greater effect on tax collection. Figure 2 shows that municipalities without this control mechanism showed stagnation in the IPTU revenues, against the real growth of the municipalities with this control.

Figure 2 – Mean of ITBI and IPTU revenues per property in municipalities



Source: Elaborated by the authors based on data from the National Treasury Secretariat (STN, 2019).
Note: (i) values adjusted to 2018 Brazilian Reais (BRL); (ii) Values in brackets refer to the mean of revenue per property in the year 2018.

Therefore, the real estate register matters for the collection of property taxes. The results found in this study are different from the work of De Angeli Neto et al. (2016) from the perspective of control mechanisms. The authors concluded that the implementation of electronic invoices did not increase tax collection on services (ISS). Despite being different taxes, it is possible to compare the studies observing the relationship between greater control and an increase in tax collection. While this study showed that the control mechanism of real estate register influences an increase in tax collection, De Angeli Neto et al. (2016) found that the implementation of electronic invoices as a control mechanism did not have the same effect. Their findings suggest that other variables such as the specificities of the tax on services or the size of the municipalities analyzed may greatly affect ISS revenues, i.e., the introduction of electronic invoices may not have made a difference because of other previous controls related to advisory obligations.

4.2 Respondents

The questionnaire was completed or partially completed by 475 respondents from notary offices located in 24 Brazilian states. To expand the number of responses to be analyzed, all questionnaires were considered valid, even when respondents left questions unanswered. Therefore, the number of responses in each question varied from 210 to 284 (Table 4).

Table 4 – Respondents and their municipalities

Variable	N	Mean	Standard Deviation	Min	Max
Respondents' experience (in years)	243	20.1	14.2	1	60
Population of respondent's municipalities in 2015 (in thousand inhabitants)	278	87	254	1,8	2,915
ITBI rate	284	2.2	.5	1	5
Calculation = (0) manually (1) automatically	284	.574	.495	0	1
ITBI revenues per property (average in BRL in 2018)	278	102.85	104.58	0	687
Municipalities with real estate register in 2015	278	.9964	.0600	0	1
Municipalities with PGV in 2015	260	.7923	.4064	0	1
Years since the last update of the PGV	210	8.8	7.6	3	47
Number of properties per municipality	278	24.703	69.728	586	774.021

Source: Elaborated by the authors using research data and data from IBGE (2016) and SICONFI (2016)

Respondents were experienced notaries, working in both small (1,800 inhabitants) and large (2.9 million inhabitants) municipalities. The ITBI calculation is automated in just over half of the municipalities, and practically all have an operating real estate register. The wide variation in the ITBI rate among the municipalities is noteworthy, which ranges from 1% to 5% of the transaction value. Most municipalities have a PGV. However, several of them do not periodically update the PGV. In one of the cases, the last update occurred 47 years ago.

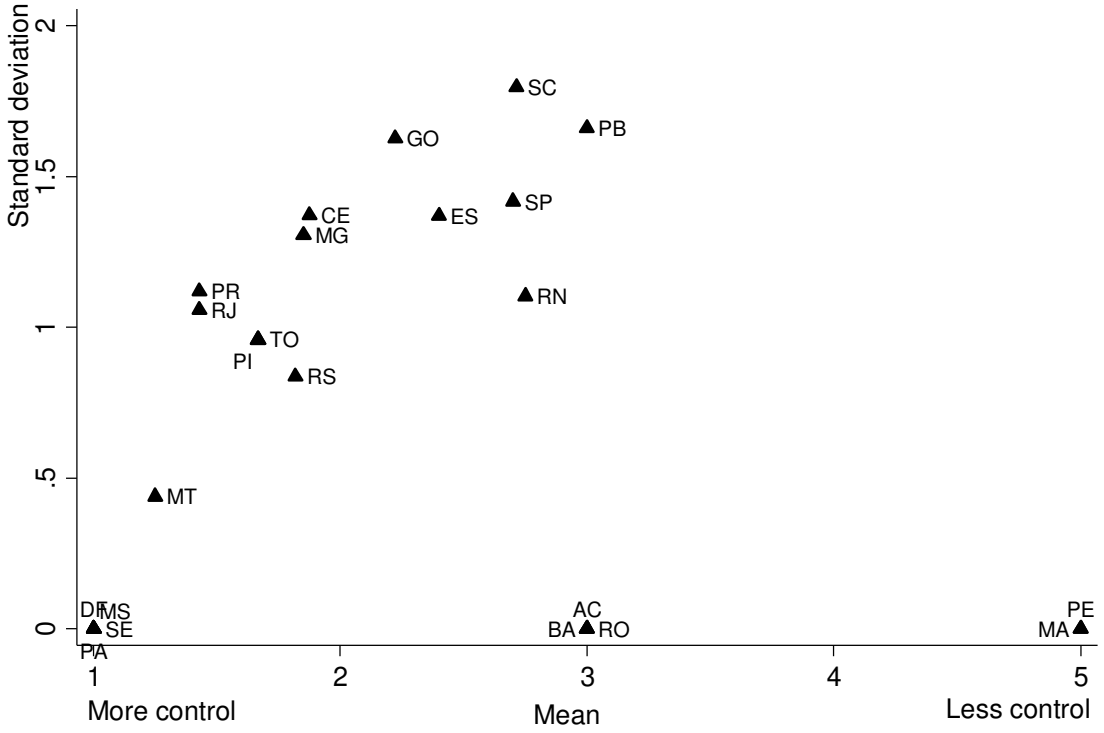
Notaries operate in a monopolized activity. The fees charged when registering deeds are variable, according to the range of value of properties registered. In addition, it is a business of low incentive, which would favor the emergence of agency problems and the need for agency costs to monitor the notaries. As a comparison, in São Paulo, for a deed registered for BRL 205,600.00, the notary office's fee is BRL 1,663.45 (0.81%), while if the registration is BRL 514,000.00, the fee will be BRL 2,161.82 (0.42%), decreasing proportionately (CNB, 2018). This could affect reciprocity motivation and indicate potential agency problems, as discussed by Allingham and Sandmo (1972).

4.3 Agency conflict and collection of ITBI

The responses on the perception of control exercised by local governments over the collection of ITBI varied widely among the cases analyzed (Figure 3). Although the low number of respondents per state does not allow generalizing the notaries' answers for the entire state, it stands out that some respondents' perception of extremely low control, observed in their agreement to the statement "strongly agree that there is no control." In addition, the standard deviation for other responses is high, which suggests no standard per state, i.e., the reality of control is defined locally.

According to Gustavson and Rothstein (2013), the perception of control is relevant to change the behavior of the actors. Behavior changes when there is a concern about the existence of monitoring, which reduces incentives for opportunistic acts. The work by Pommerehne and Weck-Hannemann (1996) identified that non-compliance is negatively related to the probability of auditing.

Figure 3 – Perception of respondents about local government's control



Note: (I) Column Y presents the standard deviation of responses and column X presents the mean referring to the statement: "there is little control. In practice, the notary determines the amount to be collected." The answers on a Likert scale could be between (1) strongly disagree and (5) strongly agree. (II) number of respondents to this question by state: AC (2); BA (1); CE (8); DF (1); ES (5); GO (9); MA (1); MG (57); MS (1); MT (4); PA (3); PB (3); PE (1); PI (3); PR (14); RJ (7); RN (4); RO (1); RS (11); SC (14); SE (1); SP (55); TO (3). The question was answered by 209 respondents.

The analysis of the ITBI revenue per municipality and the notaries' perception about local governments' control suggests – even if it was not possible to attribute causality since other factors were not controlled – that ITBI revenue per property is higher in the municipalities the notaries perceived more control (Table 5).

As a way of using a more objective measure to capture the existence of the relationship between control and the collection of ITBI, respondents were asked how the tax was calculated, whether automatically (electronically) or through manual calculation, performed directly by the notary.

From the answers, an average test was applied to verify if there was a difference in the collection per property among municipalities. There was a difference in the mean (Mann-Witney test, p-value = .0211) of the tax collection. It should be noted that values per property updated until 2016 were used to eliminate the effect of the municipality's size. In other words, it is possible to conclude that the ITBI calculation method, relative to the control implemented, may be influencing the tax collection.

The hypothesis tested in this research, based on tax evasion literature (CHYZ; WHITE, 2014), associated tax collection with agency conflicts – observed by the respondent's bias – and low monitoring. The hypothesis was tested in two ways. First, a mean test was conducted, followed by a regression to control other factors that could be affecting tax collection.

Table 5 shows the mean test. The results reveal an association between the respondent's bias – identified in their perception of local governments' spending, and if they consider the municipality's taxes too high – and the collection of ITBI. The results indicate that incentives for tax evasion – such as little government control – and respondent's bias may be leading to a loss of revenue.

Table 5 - Correlation between the control perceived by the respondents and the collection of ITBI

Question	Collection of ITBI per property	Collection of ITBI per property (adjusted)
There is little control. In practice, the notary determines the amount to be collected	-.0686*	-.0801*
Although there is control, there is also room for alternative calculations for ITBI	.0114	-.0410
There is strict control and no margin for alternative calculations for ITBI	.0563*	-.0932*

Note: (I) Pearson's correlation at 5%; (II) The "adjusted" column made the correlation disregarding the municipalities with zero ITBI revenues; (III) The question was answered through a Likert scale (1 – strongly disagree; 5 – strongly agree); (IV) The data collected corresponds to the period from 2007 to 2016.

The same mean test was applied to the collection of IPTU (collected directly by municipal tax authorities) for control analysis, obtaining no significant results. The respondent's opposite bias toward taxes affected revenues only in the case the respondents played the role of agents in tax collection, i.e., for ITBI. This finding may be evidence of agency problems since the other control mechanisms of local governments, such as inspection and real estate register, are the same for IPTU and ISS.

The phenomenon of collecting taxes differently according to the taxpayers' profile was described by Andrade (1991, p.27) with the term "godfatherism." The author pointed out this practice in Brazilian history during the period the country was an empire. At that time, the state authorities did not levy taxes from relatives, friends, and supporters, while opponents were charged exorbitantly.

Table 6 - Mean test – respondent's bias

Question: respondent's bias	Difference in ITBI collection (automatically/manually)
In my opinion, the amount charged for ITBI is very high	.0868*
In my opinion, the municipalities' taxes are not well spent	.0126***

Notes: (I) The mean test analyzed the collection of ITBI per property, comparing the municipalities that automated the issuance of invoices for taxpayers and those that calculate and issue invoices manually; (II) Test performed: Mann-Whitney test; (III) * significance at 10%; *** significance at 5%.

The estimated regression models (Table 7) indicate that the effects of agency problems were not significant in IPTU revenues but were substantial for ITBI. The result of the agency problem tested together with the respondents' perception of little control (interaction variable) demonstrated that ITBI revenues were positively affected when there was a greater perception of local governments' control.

The findings obtained after analyzing the negative correlation between the notaries' perception of government's control (Table 5) and the respondents' bias regarding the amount of taxes or the quality of government spending (Table 6), when compared with the collection of IPTU (Table 7), allow concluding that the ITBI revenues suffer due to agency problems. Thus, the results present various theoretical and practical implications, which can be described in three major strands.

The first is the interpretation of the context of tax collection operated by third parties on behalf of the public administration, through the lens of the Agency Theory (JENSEN; MECKLING, 1976). The theory assumes the existence of monitoring costs in an agency relationship due to informational asymmetry (moral risk and adverse selection). Thus, this study showed a set of effects that, combined, corroborate the need for actions to change incentives for agents operating on behalf of the state. Such incentives could be based on

monitoring actions or incurring costs such as the payment of flexible fees for notaries, varying according to the value of the property registered when calculating ITBI for taxpayers.

Table 7 – Results of estimated regressions: effects of agency problems on tax collection

Variable	ITBI Revenues			IPTU Revenues		
	Coeff.	P>t		Coeff.	P>t	
Agency problems (0) greater bias; (1) lowest bias[1]	-2,591,472	**.091**	*	2,512,015	.277	
Perception of control over collection (0) less control; (1) more control[2]	2,387,092	.921		-9,441,939	.674	
Interaction between agency problem and government control (0) less control and more bias (1) more control and less bias)	5,891,176	**.017**	**	-3,842,694	.315	
GDP per capita (IBGE)	3,592,674	**.054**	**	7,469,603	**.059**	***
Number of properties in the municipality (IBGE)	-1,436,558	.321		-3,752,055	.242	
The municipality has a PGV (0) no - (1) yes	,9092321	.949		-7,283,066	.028	**
Years since the last update of the PGV (IBGE)	1,872,768	**.089**	*	**-,9601245**	.429	
Dependence of intergovernmental transfers	7,489,256	**.001**	***	**3,332,287**	**.000**	***
Region - North	1,227,601	**.067**	**	**4,831,689**	.565	
Region - Northeast	1,374,817	**.010**	***	9,536,267	.157	
Region - Southeast	1,159,335	**.030**	***	1,411,575	**.049**	**
Region - South	1,325,201	**.006**	***	6,929,598	.353	
Constant	-3,206,764	.179		-528,092	.289	
R2 Adjusted	.3320			.6122		
Prob>F	.0000			.0000		
N	219			259		

Notes. * 10% significance; ** significance at 5%; *** 1% significance (1) Question used for ITBI "In my opinion, the amount charged for ITBI is very high"; Question used for IPTU: "In my opinion, the municipality's taxes are not well spent." (2) Question to assess control: "It is a rigorous control, and different forms of calculating ITBI are not possible." OBS: (i) For regressions, the variables were transformed from Likert to dummies, disregarding the intermediate responses. (ii) OLS regression with robust correction adjustment. (iii) Period of analysis period: 2013 to 2018. (iv) Tests were conducted to consider the possibility of suitability for fixed or random panels. (v) the population variable was excluded from the model, after observing a high value for VIF.

The second strand to describe the results' theoretical and practical implications assumes that the findings are in line with the literature when it comes to the perception of the existence of audits and penalties (ALLINGHAM; SANDMO, 1972; SIQUEIRA, 2004; GUSTAVSON; ROTHSTEIN, 2013). In other words, the lower the perception of being controlled, or the lower the probability of an audit, the greater the incentives for adverse behavior.

Finally, the third strand addresses the issues of tax morale, as described by Torgler (2002) and Bird, Martinez-Vazquez, and Torgler (2008), who argue that more responsive and legitimate states present lower tax evasion. The findings of this study agree with the results by Kirchler et al. (2007) and Pommerehne and Frey (1992), who link citizens' tax-compliance to trust in government (meaning that less trust would require more control mechanisms). The results are also in line with the literature on the effects of external incentives, more precisely the reward for behavior (PEREIRA; SILVA, 2020).

The combination of elements analyzed in this research brings to the discussion a new relationship: that the tax morale does not affect only the taxpayer, as proposed by the various authors. It affects the agent operating the tax collection on behalf of the state. Thus, even when the state delegates its functions to other agents, assigning them variable remuneration for their efforts, it still needs more effective control mechanisms.

5 Conclusion and Implications

This research sought to answer the following question: Do monitoring problems affect the municipalities' collection of ITBI when agency conflicts are detected? The results show an association between the collection of ITBI by notaries (agents) and the existence of agency problems. The municipalities where respondents understand that the tax is high or not well spent, and perceive little control by the state over tax collection, showed lower ITBI revenues per property.

The results show there is great variation in the collection of ITBI among municipalities, which may indicate tax evasion regarding this source of municipalities' revenue. Recognizing and correcting these situations is crucial since part of the amount collected will finance essential services such as health and education.

The research joins the debate on public administration's tax collection efforts, contributing to examine the adoption and effectiveness of tax collection controls. It also runs empirical tests, supporting the analysis, in response to Zimmerman (2001), who pointed out that studies using agency theory rarely test its assumptions.

The results implications are direct for both municipalities and the Brazilian Courts of Accounts. For local governments, the results point out the need to implement controls over the collection of ITBI, given the variation in revenues possibly caused by agency problems. As for the Courts of Accounts, that monitors the governments' tax collection and control mechanisms, the results shed light on the lack of attention this control body put in the topic. The study found several cases of municipalities that, even though overseen by the Court of Accounts, did not show the slightest control over their own revenues – no real estate register and failing to update the city's standard real estate value map (PGV), for example – or did not collect taxes at all.

Finally, the findings suggest the need for investments to improve control of tax collection in the case of ITBI. Among such investments are forming tax enforcement teams, implementing software to automatize the calculation of ITBI value, and data crossing tools to capture the value of the effective transaction.

The discussion is relevant, especially at a time when Brazil experiences economic stagnation and revenue loss while spending continues to grow. In this context, improving tax collection could help the municipalities' financial situation and keep offering quality public services to the population.

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Authors can provide the data set and the data collection instrument, if requested.

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