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BRAZILIAN RURAL PROPERTY TAXATION AND ITS RECENT STRUCTURAL CHANGES

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Abstract

The article aims to evidence existing gap between the declarations for ITR and the amout that should be collected. To better understand its limitations, a historical backgroung is outlined along with its mechanisms and known frauds. All legal and regulatory changes were presented as well.

To achieve this objective, different databases were used to evidence disparities. The agricultural census and information from the National Treasury were the official references, as technical surveys and market values were parameters of contrast. Different hypothetical scenarious were created to estimate the unexplored potential for this revenue, in an especific region, where the information was accurate.

By this, it was possible to quantify the potencial of revenue, the municipalities with bigger disparities and the possible reason for the low collection. The declared value of the land is much lower than the technical reference that was supposed to be used.

At last, it was possible to identify a gap between declarations and results found, determine the fragilities revolving it and explore the potential of collection. Concerns with the impact a sharp increase would cost was also considered, as well with the environmental agenda. Considering all of these aspects and observations, there is possibility for improvement of the revenue, without costing the society or the environment.

Key Words: Brazil; Land policy; Land governance; Revenue potential; Rural property tax;

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INTRODUCTION

Tax on rural property was first proposed in the Magna Carta of 1891, since the proclamation of the Brazilian Federal Republic. Its current configuration was only featured in 1964 with Law 4.504 (The Land Law), that sets charge of the ITR (portuguese initials for "Tax on Rural Property"), with the criteria of progressivity and regressivety, as an attempt to change the agrarian scenario and discourage unproductive rural property.

Although it was created for fiscal reasons, it was formulated with purposes that goes beyond this, as a policy that should discourage the maintenance of unproductive properties and thus reduce the speculation effects and market opportunisms, reducing the pressure on new unopened areas.

To better understand its full collection potential, one must consider the current legal, administrative and institutional frameworks available to exercise it. Considering the difficulty in calculating the ITR and the possibility of self-declaration of significant variables that compose the tribute, it turns out to be a fragile land regularization tool, with a small share of the national gathering, even though its importance and responsibilities. In addition to its little impact and almost no effectiveness, the ITR has been incapable of meeting its goals, mainly for its low collection value, it doesn´t act as an incentive, neither triggers the need for maximize the productivity of properties or discourage deforestation.

Considering this goals, its fragility and the low revenues, the ITR has undergone several recent changes as an attempt to strengthen its features. In 2005 was approved the Law 11,205 that enables the partnership between the municipalities and RFB for collection and inspection purposes. In 2012 the National Forestry Code was reedited and now it predicts that the ITR should favor discounts to properties with proven voluntary environmental preservation areas.

There is also an intention for the integration of the different land cadasters of each different institution that deals with land in some level, it is a measure that aims to strengthen of its fundamental characteristics. Along with this measures, there is the need to favor good practices and environmental preservation.

However, how it is possible to offer discounts (according to the Forest Code) for environmental protection if the collection is already insignificant? Harder still, considering the low amount charged per property, how it is expected to exert any influence that appreciate good practices that would encourage the maximum productivity per area, with the clear possibility for fraud? Could it be possible to turn the ITR into an efficient tool for Land Governance in Brazil?

In order to do so, one must consider the previously reported weaknesses and limitations of the legal/institutional framework, but also, it must be aware that an exaggerated increase in its value could compromise the performance of the main economic sector of the country.

1. Historical Evolution of Rural Land Taxation in Brazil, Framework and Objectives

In Brazil´s history, taxation over rural property has been unexpressive, regardless it´s importance for collection, it was motivated for the State need for revenue in order to promote laws that would finance immigrant labour force. However, during that period, aristocratic interests and influence oppose to it were stronger, preventing it´s creation in 1843. It is important to highlight that the rural aristocrats had a lot of influence and power over public regulations, than and nowadays (Oliveira, T. A. M., 2010).

With the declaraion of the Federal Republic of Brazil, in its *Magna Carta* of 1891, it was authorized for the Member-States the cration of a rural land tax. It was than that the taxation was effectively created and begun to be part of the Brazilian tax system, according to the Article 9, § 2°, that says: "Art. 9 - *É da competência exclusiva dos estados decretar impostos: (§ 2°) - sobre Imóveis rurais e urbanos*". According to the law, it was responsability of the Member-States to create, legislate, administrate and regulate this tax, although, since the rural members of the legislative were still strong, the operability of the revenue was very frágil.

The Rural Land Taxation (ITR) remained in this condition for 15 years, when in 1961 it was decentralized transfering the control over the tax administration to the municipalities. After the military coup of 1964, the Federation imposed measures to reinforce its finances, aiming the national development and sovereignty, changing the control over ITR back to the

Union simultaneously to the "foundation reforms", related to the political scenario at time. The changes were published in the Constitutional Amendment n° 10, of November 9 of 1964.

Lopreato (2002) discussed that the ITR never had the intentions of increasing revenue for the municipalities, but to prevent agrarian reform from happening, specially when the taxation was given back to the control of the Union.

The Law nº 4.504/1964 (Land Statute), among other determinations, stablishes the ITR charges with a progressive status, as a land administration tool for preventing inappropriate land use. Still during the military government in 1979, the ITR is changed once more by the Law nº 6.746, defining its calculation determining as baseline the "Value of the Bare Land " (VTN) of the rural property, its "Degree of Land Use" (GUT) and its use ratio, obtained from the different types of land use, from the totality of land for a same owner.

The Federal Constitution of 1988 (CF) (still current) guarantee the property right as long it meet the "social function of the land" (9cf, art. 5º, XXII e XXIII), being rural land, its social function is met when it fullfills: I – Proper and rational use; II – Proper use of the available natural resources; III – Compliance with labour arrangements and laws and; IV – Use that favours the well being of the owner and its work force(CF, art. 186). Considering these aspects, the CF assign to the Union the jurisdiction over the ITR, it being: (I) progressive and with fixed variables to discourage the maintenance of unproductive properties; (II) It wont occur in small farms, only when the owner does not haveany other property and; (III) it will be responsibility of the municipalities to inspect, if they chose for it (CF, art. 153, VI). With these configurations, the ITR begin to have a "post-fiscal" agenda, it becomes an institutional tool for promoting good practices, considering an overcharging for inefficiencient use of land (Nishioka, 2015).

These constitutional proposals could be significant if there were simulteaneous policys related to it, that would predict ways of inspection, promotion of an updated data control, an adequate cadaster and registry over land owners (public or private), in anintegrated way. Althought it lacked mechanisms and support system, to actually promote efficient planning for the agricultural sector and control by the 'tax collecting machine'. A good example for this, is the creation and regulation of a land tax without a propper survey over land ownership and/or creation of an updated land cadaster system, that could optimize the revenue collection.

However, since 1981, the public administration failure over the ITR is evidenced, as appointed by Graziano da Silva (1981), that said: “due to the complexity over the tax calculation; unmanageability of the public administration and its declaration system, it makes very difficult for the control work over the big unexplored farms”. Reydon et. al, (2006, p. 161) also evidenced the problems associated with the tribute: "the historical experience have showed us that the complexity of the tax referred to herein and the resistance imposed by the taxpayers, combined with the inefficiencies of 'tax collecting machine' are the key elements that justifies the high levels of tax evasion observed".

Considering a retrospective over the administration of the tax, since the Land Statute, the federal agency responsible for the manegment of the national lands was the Brasilian Institute of Agrarian Reform (ABRA), that would later on become the National Institute of Colonization and Agrarian Reform (INCRA). INCRA is responsible for the majority issues of and conflicts related to land, for the ITR and all other mechanisms that would promote these actions. With the promulgation of the Law nº 8.022 in 1990 this condition changes, accordinglly: “It is transferred the administration of the tribute from INCRA to the Federal Revenue Secretariat (SRF)”.

In order for SRF to be able to identify and solve operational issues it was promulgated the Law nº 8.847 in 1994, promoting (once more) structural changes over the tax, inserting more adequate regulations to it. Therefore, the land cadaster, collection and inspection also became SRF responsabilities, the VTN begun to be fixed by adjunt calculation between the SRF and two Ministries and the tribute begun to be decisive for the acquisition of public credit, loans or fiscal exeptions. Among other resolutions.

1.1 – Methodology to calculate

As determined by the first article of the Law nº 9.393/96, the ITR is an annual tribute, based on the property, useful domain or possession of an immovable property, located outside the urban area of a municipality, charged on the first of January of each year. In general terms its calculation is mostly dependent of three variables, the VTNt, the ratio between the taxable

area over the total area of the property and an aliquot, determined by the GUT (Nishioka, A. N., 2015)

The VTNt (taxable Value of the 'Bare' Land) is determined by the VTN excluded the value of the constructions, facilities and artificial upgrades, and the value of the agricultural crops (permanent or temporary, native or planted pasture and native or planted forests). The VTN is a very controversial variable, mostly because it is (in practice) self-declaratory. All three components of the VTN are controversial because the value of the constructions and agricultural crops are easily overestimated and the value of the property should be established by a public institution. For those municipalities which don´t have those pre-determined values, the owner should present a value based on the surroundings, which makes very difficult for the SRF to inspect every declaration.

The other component for the calculation of the ITR is the ratio between the 'taxable areas' over the total size of the property. The 'taxable areas' are those incorporated within the perimeter of the rural property excluding areas of environmental protection, legal natural reserves, private reserve of natural patrimony and areas of ecological interest or public servitude.

$$\mathrm{ITR} = \mathrm{VTNt.} * (\mathrm{Area}_{\mathrm{taxable}}/\mathrm{Area}_{\mathrm{total}}) * \mathrm{Aliquot}$$

The last variable is the 'aliquot', which is determined by the 'degree of utilization' (GUT) of the property, a percentage based on the ratio between the 'suitable land' over the 'usable land. The 'aliquot' is chosen within options given in the "Table of Aliquots" presented by the SRF (table 1).

$$\mathrm{GUT}(\%) = 100{*}\mathrm{GU}$$

$$\mathrm{GU} = \frac{\text{Suitable Area}}{\text{Usabole Area}}$$

The GU is determined by a ratio between 'suitable land', correspondent to the planted areas, pastures, forestry (planted or natural), areas of extractives, poultry, aquaculture, areas

which have been compromised or intended for technical project implementation and the 'usable land', which corresponds to the totality of 'taxable land' excluding areas of construction and artificial upgrades. After this deductions and the definition of the ratio, the result is multiplied by 100 (to transform it into a percentage) and is calculated the GUT. After it is contrasted with the 'table of aliquots', it will determine the rate that should be used for that particular property.

Table 1 - Table of Aliquots for rural land taxes from law (%)

Total area (ha)/GUT(%)	Greater than 80	Greater than 65 up to 80	Greater than 50 up to 65	Greater than 30 up to 50	Up to 30
Up to 50	0,03	0,2	0,4	0,7	1
Over 50 and up to 200	0,07	0,4	0,8	1,4	2
Over 200 and up to 500	0,1	0,6	1,3	2,3	3,3
Over 500 and up to 1.000	0,15	0,85	1,9	3,3	4,7
Over 1.000 and up to 5.000	0,3	1,6	3,4	6	8,6
Over 5.000	0,45	0,3	6,4	12	20

Source: Elaborated by the authors with information from Law nº 9.393/96

According to Table 1, if a large property (over 5.000 hectares) that has a very low GUT (below 30%), for the calculation of its ITR the rate that should be used is equivalent to 20%, therefore, multiplying the whole equation (along with the other variables) for 0,2, a condition that many scholars argue that is confiscatory. As for a small property (below 50 hectares) with a high GUT, the rate being used is very little, if compared (0,0003), which means a lower amount of ITR, indicating a 'prize' for a good management of the land and property.

After the owner present its declaration it is generated an updated DIAC (Document of Information and Registration Update of the ITR), which is now integrated with the cadaster of Federal Revenue (RFB) for the collection of tax ITR for the respective property.

Reydon e Plata (1996, p. 96) evidenced that this declarations and variables induce for lower rates, once the GUT is presented by the owners and the inspection of those declarations is (in practice) inexistent:

> [...] It is evident that an important cause for the low revenue collection its the fact that a large majority of land owners (86,9%) declared that reach more than 80% of land utilization. […] INCRA it self inits 1992 cadaster point out an average rate for land utilization of 59,1% for the country, which compared with the 86,9% of ITR declarations, evidences a good share of fiscal evasion. (translated by the authors)

Since the main variable that compose the ITR is indirectly proportional to the GUT, there is an implicit incentive for the owner to declare high values of GUT and low values for the VTNt, so the price of ITR is minimized. Considering an already hard task to inspect and evaluate the GUT of each rural property, it is almost impossible to keep these proportions updates each year. Therefore, it is known that the DIAC´s are underestimated; resulting in lower collection potential for an important tribute, such as the ITR.

Table 2 - Rate used for ITR calculation changing the degree of utilization of land (GUT) (%)

Sizes of Properties (ha)	Over 5.000	Over 1.000 and up to 5.000	Over 500 and up to 1.000	Over 200 and up to 500	Over 50 and up to 200	Up to 50
Aliquot - GUT 84%	0,45	0,30	0,15	0,10	0,07	0,03
Aliquot - GUT 60%	6,40	3,40	1,90	1,30	0,80	0,40

Source: Elaborated by the authors with information from Law nº 9.393/96

As observed in Table 2, relatively small changes in the GUT for the property can increase a lot the amount of ITR paid, over ten times its value. This condition is very much related to the 'good-practices' conditioning aspect of the revenue, promoting the producers to carry on their work using as much as possible of the land available, increasing its productivity and management. Although, this noble aspect has always been underestimated since the checking of the GUT has always been problematic.

Beyond the GUT aspect, the VTNt is also problematic due to reasons previously explained. Adding to these two complex variables, there is still an overestimation of the 'non-taxable' areas, especially those related to environmental protection, since they do not count for

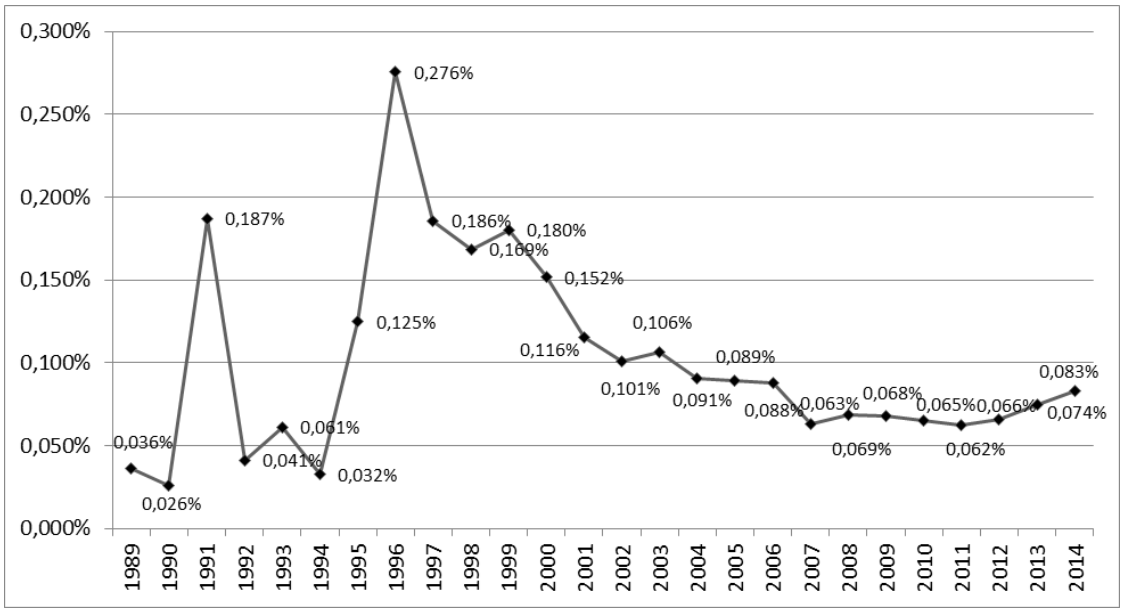
the calculation of the ITR, they are also overestimated compromising the collection of the revenue and the environmental data available for the protected areas within private properties.

2. Recent Changes within the ITR

Considering this scenario, more recently the federal government have tried to improve the collection of this revenue and to optimize its system components. Other changes in regulations from different spheres of the public administration also happened that afflicted the tribute in different ways, specially those changes revolving the environmental regulations. However, the important matter for this present article is to present and discuss the main changes, or with more relevant impact, on the collection potential of the revenue.

Even though recent important changes occurred with the intentions of improving the system, the ITR still represents a very small share of the amount collected by the Federal Revenue of Brazil (RFB), it barely reaches 1% of the GDP as can be seen in figure 1. Its unexpresion is another reason for the recurrent flaws in the inspection process, but also, it affects one of its main conception aspect, to be a tool for promoting good agricultural practices. It does not induce any changes in a property owner behavior because it has an almost null impact on the annual accountability of the farmer.

Figure 1 - Participation of ITR collection in the national GDP – U$ Millions (1989-1991) and R$ Millions (1992-2014)



Source: Elaborated by the authors with data from RFB, 2015.

Although the numbers are increasing each year, it is still a very small part considering its importance and meaning. With official data presented by the RFB, the Table 3 presents the increase and variations over the amount of ITR collected.

Table 3 - Total collection of ITR

Total collection of ITR by the RFB		
Year	R$ (Millions)	Variation between years (%)
2011	603	14,5
2012	691	6,7
2013	848	25,2
2014	986	16,3
2015	1.193	21,1
2016	1.239	3,9

Source: Elaborated by the authors with official data from the RFB

As a matter of comparison, in more developed countries, taxes over land can reach over to 5 to 6 percent of the total amount collected by the federal revenues. As an option for comparison, the Table 4 presents data from the land tax collection in the cities with higher rates and the lowest ones, in the United States of America (USA).

Table 4 - Higher and lower Homestead land taxes in urban centers in USA - properties valued between $150.000-$300.000 (2014)

Rank (of 53)	Valuated from $150.000,00			Valuated from $300.000,00		
	City, State	Tax Value ($)	%	City, State	Tax Value ($)	%
1	Bridgeport, CT	6.060	4,00	Bridgeport, CT	12.120	4,00
2	Detroit, MI	5.964	4,00	Detroit, MI	11.929	4,00
3	Aurora, IL	5.210	3,50	Aurora, IL	11.106	3,70
4	Newark, NJ	4.342	2,90	Newark, NJ	8.683	2,90
5	Milwaukee, WI	4.193	2,80	Milwaukee, WI	8.599	2,90
49	Denver, CO	994	0,70	Cheyenne, WY	2.005	0,70
50	Birmingham, AL	990	0,70	Denver, CO	1.988	0,70
51	Washington, DC	650	0,40	Washington, DC	1.897	0,60
52	Honolulu, HI	242	0,20	Boston, MA	1.746	0,60
53	Boston, MA	175	0,10	Honolulu, HI	765	0,30

Source: Lincoln Institute of Land Policy, 2014

2.1 - Decentralization of the ITR

As an attempt to reverse this scenario in Brazil, one of the most important changes in the recent years was the decentralization of the responsibilities from the Union back to the municipalities, as an agreement with conditions and compromises to be fulfilled. Although it was an attempt questioned at the time, today it is recognized as legitimate and it has been sprawling constantly.

The decentralization of the ITR was incorporated to the Federal Constitution by the Constitutional Amendment nº 42 of 2003. However the proper regulation for this feature only came in 2005 with the Law nº 11.250, and also regulated further on by the Decree nº 6.433 of 2008 and the Normative Ruling of the Federal Revenue nº 884 of 2008.

According to the Law nº 11.250 of 2005, the decentralization of ITR must be formalized by the celebration of an agreement between interested cities and the RFB. By these

agreements the RFB delegate to the municipality duties related to inspection and collection of the ITR, considering the supplementary competence of the RFB (which means they grant the possibilities but they also can reconsider the possibility).

After its approval the municipalities that agreed to the terms of the RFB could collect 100% of the revenue (twice as much than before – for the municipalities that do not adopt the conditions, still receive 50% of the correspondent ITR). However, the duties that were once of the RFB are passed on to the respective city, being subjected to the operationalization of the duties related to the revenue, such as updating the rural cadaster, promote the calculation, the release of charges, control of the collection, debt, among others. With the agreement, the RFB grant the benefits of a greater collection considering that this difference would be enough to cover administrative expenses to fulfill the previous agreement and duties associated.

At the time, many scholars questioned the new law and its negative impacts. Many argued that the counterpart for dealing with the administration onus was much bigger than the amount transferred with the agreement, what would inhibit the provision of services. However, since it was a voluntary agreement, the appraisal of the benefits (or not) from it always was an interest of the municipality itself, after a consistent analysis of the particularities of each different reality. Despite all the general discussion, many cities adopted the new revenue system and many others kept on signing in, with increasing numbers every year.

In more recent years, different issues with the decentralization of the ITR had emerged. The Public Prosecution Office (MP) found recurrent issues related to the definitions of VTN in different municipalities and occasions. There were occurrences from opposite sides of the issue, municipalities that were underestimating the VTN (as an example of Costa Rica/MS – MPF, 2015) and those that were overestimating the VTN (as an example of Três Lagoas/MS e Brasilândia/MS – MPF, 2014).

Despite this occurences, the general scenario has been positive after the Law nº 11.250 of 2005, with an increasing number of municipalities adopting to the agreement terms and the revenue collection increasing at each year. The RFB is aware of these irregularities and is acting towards it, but still evaluate as positive the outcomes from the decentralization.

2.2 - New Forest Code and its intervention on ITR

Another relevant and recent change that affected directly the ITR was the structural changes in the National Forestry Code in the year 2012. The changes in the code was an attempt to soften environmental restrictions and to reduce the onus of reforestation for the owner of rural property, that is responsible for maintaining fixed proportions of natural landscape and protection areas. Since deforestation had occurred previously to the settlement (in most cases), there was no reason for the current occupant to be penalized for it. That was the general feeling when the changes were being discussed.

To be more specific, the 3º paragraph of the 41 Article of the new Forestry Code predicts that the rural land owners properly enrolled in the CAR (Rural and Environmental Cadaster) that were defaulting with their environmental requisites, would have to adhere to a 'deed of undertaking' or to the Program of Environment Regularization (PRA) and would not be eligible to incentives, such as the "deduction of Areas of Permanent Preservation (APP), Legal Natural Reserve (RL) and restrict use for the baseline of calculus of ITR" (Calcini e Grili, 2015).

This penalty for the non-compliance with the environmental obligations determined by the Forestry Code, it still was not incorporated to the ITR legislation. Since its regiment is prior to the Forestry Code, there is no precise adaptation between the description of the areas of environmental interest in the different legislations. According to Bernard Appy (2015), the regulation for the ITR consider as 'non-taxable areas' those of ecological interest for preservation (as declared upon a federal or State institution), however, this concept it is not used by the Forestry Code, causing a communication gap between legislations.

The environmental awareness appears in the regulation of ITR only for the exclusion of the areas of ecological interest from the 'taxable areas', as used for baseline to calculate the revenue. Although the productive use of rural land and the combat on land speculation do have a positive impact on the environment, there is a clear focus on the productive occupation of land rather than ecological preservation. This condition is so relevant that some argue it can prejudice voluntary conservation.

There is almost no impact over the value of ITR for a rural property that inflict the environmental laws. It promotes the productive occupation with crops over natural forests,

except for the APP and RL areas, compelling the owner to do so for a lower rate of tax concerning the property. Therefore, there is not only no penalty predicted, but also, clearing natural land escapes is more advantageous than leaving them standing.

> *"Since the environmental protection is not seen by the ITR as a productive land occupation, soon, an owner that could preserve bigger area than demanded by the Forestry Code, could be interpreted as an inefficient use of land, resulting in a lower GUT and, thus, an higher rate of ITR" (pg. 21 Appy, 2015)*

2.3 – Other matters

There are other matters being discussed revolving the ITR legislation, especially considering the aspects and categories revolving around the determinations of GUT. For example, for the determination of GUT, only agricultural activities are relevant, but what about generation of energy? How efficient can be the use of land in a solar farm that has bad soil for crops or pasture? This new types of use and land occupation must be considered if the ITR is going to be modernized.

Other issue is related to the taxation of different types of use that have the same attribute value but perform very different natural services to humanity. An important example of that is the same value attributed to voluntary preservation areas and to 'developing pastures'. The declaration of 'developing pastures' as an efficient use of soil has being named as an "official form of unproductive land declaration", since an owner can display this use for any area that he cannot make use for but still is more cost-efficient to keep it that way. Again, it is almost an "official" mechanism of fraud for this important revenue.

3 – Estimation of potential Revenues with the use of census information

3.1 – New propositions and changes

Considering these issues presented, the recent changes in the ITR legislation and in other governmental sectors related to land regularization, the RFB is considering new ways of strengthening the revenue along with other mechanisms of public control. In other to do so, many options were considered, including fixing the VTN per property along with the RFB

rural cadaster and improving the update of changes in land occupation by optimizing inspection.

As informed by a RFB auditor, the greater effort being done to reinforce the revenue system is related to the CNIR, the integrated rural land cadaster between INCRA and RFB. Considering the structural advances in this land governance tool, it will be possible to have a better idea of the type of land occupation for each property, projecting a trustworthy GUT and environmental changes, besides, it will be possible to focus the inspections in areas or specific owners depending on their historical background and development.

The integration of information and data between public agencies is very important, not only for public control but, for the economic development of the whole agricultural sector, penalizing those who are defaulters and promoting the regular properties. In the recent years, a major improvement has been made in the brazilian cadastral system, with the integration of CNIR with other thematic cadasters (such as public forests, indigenous people and others). But (maybe) the main advent was the creation of SINTER, the recently approved National System of Territorial Information Management, an initiative promoting the integration of cadastral, legal and geospatial data, combined in layers plotted over the national territory.

With these new improvements, it will be easier to confront frauds and legal insecurity, to promote credit and sustainability for the agricultural sector. The land regularization (a major issue today) will be easier and the debt from tax evasion will be minor. These possibilities can be simplified when the inspection of cross-checked data be available for RFB auditors at a distance, because the inspection 'on the field' is too costly for the brazilian national territory dimensions.

3.2 – Methodology

To confront these assumptions of tax evasion and undervalued ITR, we propose scenarios using official and secondary data of the collection potential of the ITR. Since there are significant information gaps and the RFB cannot display compromising private data, for this study, it was used the database closest to official results available.

For the information related to the price paid of ITR it was used the database from ITRNet[1], an research company that review official data from the National Treasury. To determine the agrarian structure of the municipalities and the plot sizes for the region, it was used the agricultural census of 2006 (IBGE, 2006). To define the value of land in the region two parameters were used, one from a technical perspective, from a public agency Council of Municipalities Secretariat of Revenue, Treasury and Finances of the State of Matos Grosso do Sul (CONFAZ, 2015) and another from a market perspective, the Agrianual Report from Informa Economics (FNP, 2016).

Because of the characteristics of the database of the Agrianual from FNP, it was discounted 20% of the value of land presented, since they evaluate the land price based on the whole property and to determine the VTNt it must be deducted the value of artificial improvements (such as housing, roads, among others). In other to balance the information, it was determined by calculation that the imporvements are equivalent to 20% of the total value of the property, thus the discount.

Considering the available data, it was possible to estimate the value of ITR paid for all the different types of properties for the region of Campo Grande, State of Mato Grosso do Sul (MS), accordingly to the official and most recent census available. The chosen region was due to the type and quality of information available. Specifically, because the State of MS promotes official data regarding the VTN for the different regions within the State and, according to this report, the region of Campo Grande contains all categories of land use/types.

According to the census, there are different types and proportions of land use in different municipalities and they vary a lot according to the plot size. Considering each category of size, the used rate and formula of ITR, it was determined the amount of ITR paid, along with the amount per hectare and the contrasts according to different databases used. Beyond this, it was possible to extrapolate the variables and present estimates for scenarios considering the literature observed.

According to the literature presented in this article, there are many forms of fraud and tax evasion for the ITR, therefore scenarios were determined by using the fixed VTN value,

[1] Represented by the "*WV Engenharia, perícias e avaliações ltda – me",* it is a private planning company that provide services to municipalities revolving ITR valuation. (http://itrnet.com.br/site/home/)

determined by technical survey from the CONFAZ – M/MS, developed in 2015, and the FNP Report from 2016. A different alternative using a different GUT was also developed using 60% instead of 85%, because the large majority of establishments declare a GUT over 85%, but due to an estimative done by Reydon e Plata, 1996 and by "unofficial prediction" from RFB, a different rate was tested. With this, there is a propose of an existing gap between what is declared and paid of ITR for a majority of producers, against what it should be collected if the calculation were closer to reality.

3.3 –Estimated ITR that should be collected

Before presenting the data and results found it is important to describe the land-ownership structure present in the region. In order to do so, the database of the census with the categories for different plot sizes stratified was used. For better comprehension, we transformed them into percentages and compared with structure found in the State and the brazilian territory.

Table 5 - Rural land ownership structure

Municipality	Size of properties and number of units in the national land structure in percentages													
	from 0 to 50		from 50 to 200		from 200 to 500		from 500 to 1000		from1000 to 2500		from 2500+		TOTAL (x100)	
	Units	Size	Units	Size	Units	Size	Units	Size	Units	Size	Units	Size	Units	Size (ha)
Bandeirantes	21,0	0,8	22,8	4,1	22,8	11,8	13,2	15,1	13,9	34,7	5,2	33,6	4,61	2.716,12
Campo Grande	52,4	1,3	12,4	2,9	10,6	7,8	10,7	17,2	8,8	29,6	3,7	41,2	16,63	7.343,22
Corguinho	36,9	0,9	19,2	4,3	18,6	12,8	11,6	17,1	10,4	34,1	3,2	30,9	4,99	2.433,91
Jaraguari	64,2	4,1	15,3	5,8	8,1	10,4	5,3	15,6	5,3	32,6	1,8	31,5	9,81	2.379,46
Rio Negro	54,8	3,0	16,1	4,9	11,1	11,8	8,3	17,2	6,9	31,7	2,8	31,4	5,04	1.596,44
Rocehdo	48,6	3,0	24,2	11,7	13,1	19,4	8,1	26,0	4,5	31,3	0,6	8,7	6,27	1.355,21
Sidrolândia	77,7	8,0	6,1	3,5	6,4	11,4	3,9	14,3	3,9	29,3	1,5	33,6	22,07	4.089,02
Terenos	80,6	9,7	8,3	8,0	5,6	16,3	3,0	18,3	1,9	28,1	0,6	19,5	22,66	2.431,13
MS	58,9	2,1	13,1	2,9	10,0	7,0	7,2	11,0	6,4	21,3	3,8	55,8	648,64	302.749,75
BRAZIL	**78,4**	**13,2**	**11,8**	**16,7**	**2,9**	**13,9**	**1,0**	**11,2**	**0,6**	**14,6**	**0,3**	**30,4**	**51.756,36**	**3.336.800,37**

Source: Elaborated by the authors with data from IBGE, 2006;

According to Table 5, the agrarian structure of the Campo Grande region, as for the State of MS, do not differ much from the national pattern. Although in these region the disparities involving the size of plots and the number of properties vary a lot. In general, the large majority of farms (over 60%) are under 50 ha and occupy a smaller portion of territory, as a vast majority of land (properties over 2,500 ha) is detained by (around) 30% of the population. This inequality of land distribution represents more than economic disparities, for fiscal issues, represent those properties that should be closely watched for proper tax collection.

3.3.1 – Differences between official data and measures using other database

Considering the variety of information found, specific comparisons were presented, using different sources of data to compose the variables of calculation of ITR, for the different municipalities of Campo Grande region. For the scenarios presented, the ITRNet was the database for the amount of ITR paid for States, municipalities and respective hectares. On the Table 6, the data from ITRNet is contrasted with the calculated estimative using as baseline the VTN determined by the CONFAZ and the FNP.

Table 6 - Differences between official data and the VTN fixed by different agencies

Campo Grande Region	Areas according to IBGE (ha) (x100)		Estimated ITR				
			Value (R$ x100)			Ratio	
Municipality	Area (total)	Taxable Area	ITRNet	Fixed VTN - CONFAZ	Fixed VTN - FNP	CONFAZ/ ITRNet	FNP/ ITRNet
Bandeirantes	2.716,12	2.287,40	9.303,07	36.089,70	57.455,32	3,88	6,18
Campo Grande	7.343,22	6.069,20	39.025,95	92.003,94	149.760,00	2,36	3,84
Corguinho	2.433,91	1.904,00	9.935,25	25.120,28	41.373,36	2,53	4,16
Jaraguari	2.379,46	1.895,95	9.364,39	21.202,76	33.773,50	2,26	3,61
Rio Negro	1.596,44	1.301,06	3.357,64	15.542,21	24.824,51	4,63	7,39
Rochedo	1.355,21	1.113,90	3.949,48	10.250,62	16.265,83	2,60	4,12
Sidrolândia	4.089,02	3.504,56	39.566,45	45.432,39	64.816,56	1,15	1,64
Terenos	2.431,13	2.116,90	12.004,54	23.645,28	37.345,25	1,97	3,11
Total	**24.344,51**	**20.192,97**	**126.506,78**	**269.287,18**	**425.614,33**	**2,13**	**3,36**

Source: Elaborated by the authors with data from IBGE, 2006; ITRNet, 2015; CONFAZ, 2015 and FNP, 2016.

The diferences noted between the prices paid per hectare and the value collected are noticeable due to differences in the price of VTN declared. So it is clear that the land owners declarations in the region uses land values estimations much below the value determined by the CONFAZ or the FNP report, which induces that there is a large gap between what they should pay and what is being collected.

Table 7 - Price of land worth according to CONFAZ and FNP

VTN (R$) for the Region of Campo Grande			
Typology		Agency	
		FNP	CONFAZ
I	Good for Agriculture	17.200,00	14.466,24
II	Medium for Agriculture	12.800,00	8.879,11
III	Bad for Agriculture	8.000,00	5.133,23
IV	Good Pasture	12.000,00	7.638,46
V	Natural Pasture	8.000,00	2.638,13
VI	Natural Preservation	5.600,00	2.221,59
VII	Non-taxable	0,00	0,00

Source: Elaborated by the authors with data from CONFAZ, 2015 and FNP, 2016.

Table 7 is presented to demonstrate that even between agencies there is a large disparity of determined value market prices in Brazil. These variations have specific reasons, specially due to the purpose of each survey. Spite this differences, the value is presented here to justify the differences found between the amount ITR estimated with both agencies.

3.3.2 – Scenarios using Market prices for land versus the technical survey from CONFAZ

In Table 8 it is presented the data gathered from the FNP report, contrasted with the technical value attributed by the CONFAZ and the ITRNet, considering the differences

observed per hectare. Again, evidences point to a higher value of land than what it has been declared by land owners. The regions and typologies had to be altered in order to equalize the data, but the regularities and proportions were kept in order to present a consistent comparison.

All municipalities presented a large difference between results, being the value of the agencies (CONFAZ and FNP) higher in every observation. The cities with the biggest variation, (probably) are those with the biggest differences between the value declared and the real price for land.

Table 8 – Land Tax Collection: comparison between results from ITRNet, CONFAZ and FNP measured by hectare

Municipality	R$/ha		
	ITRNet	Fixed VTN – CONFAZ/ ITRNet	Fixed VTN – FNP/ ITRNet
Bandeirantes	2,99	15,78	25,12
Campo Grande	4,82	15,16	24,68
Corguinho	3,76	13,19	21,73
Jaraguari	3,21	11,18	17,81
Rio Negro	1,86	11,95	19,08
Rochedo	2,53	9,20	14,60
Sidrolândia	7,48	12,96	18,49
Terenos	4,22	11,17	17,64

Source: Elaborated by the authors with data from IBGE, 2006; ITRNet, 2015; CONFAZ, 2015 and FNP, 2016.

3.3.3 – Determination of collection potential changing the GUT

Using information from the agricultural census of 2006, the average of GUT for the region was 84%, a value declared that allocate the property in the lower rate possible for the ITR declaration, a condition found in almost all of the declaration presented until today. Considering the literature observed, an estimative with a GUT of 60% was calculated in order to extrapolate the results into a possible scenario. However, even though a GUT of 60% it is not a reality for all the properties, it is also distant to reality a possibility where almost every

single property has an efficiency rate higher than 80%. Nevertheless, this estimates present a realistic potential of increasing the amount of ITR collected, if it was proven the inefficiency of properties through proper inspection.

Table 9 – Potential Collection using a GUT of 60%

Campo Grande Region	**Estimated ITR - with GUT 60%**					
	Value (R$ x100)		**Value (R$/ha x100)**		**Ratio compared with official data**	
Municipality	Fixed VTN - CONFAZ	Fixed VTN – FNP	Fixed VTN - CONFAZ	Fixed VTN - FNP	CONFAZ/ ITRNet	FNP/ ITRNet
Bandeirantes	513.157,30	816.953,80	2,24	3,57	55,16	87,82
Campo Grande	1.350.474,89	2.198.244,07	2,23	3,62	34,60	56,33
Corguinho	354.324,06	583.575,44	1,86	3,06	35,66	58,74
Jaraguari	300.864,98	479.229,87	1,59	2,53	32,13	51,18
Rio Negro	220.712,99	352.522,92	1,70	2,71	65,73	104,99
Rochedo	130.691,18	207.381,44	1,17	1,86	33,09	52,51
Sidrolândia	654.879,97	934.007,89	1,87	2,67	16,55	23,61
Terenos	235.009,60	371.151,17	1,11	1,75	19,58	30,92
Total	**3.760.114,97**	**5.943.066,60**	**1,72**	**2,72**	**29,72**	**46,98**

Source: Elaborated by the authors with data from IBGE, 2006; ITRNet, 2015; CONFAZ, 2015 and FNP, 2016.

By applying the GUT of 60% into the calculation for revenue collection, the value raises tens of times, due to the cumulative changes, with the value for land (VTN) and for the higher aliquot applied to the formula. These projections have a very significant difference, that may represent an enormous collection potential unexplored by the public administrators. Even considering only the database from CONFAZ, which is the technical and official survey, with only a few large properties in the national territory with a GUT of 60%, still it would represent an considerable change in the agricultural sector and for the representativeness of the ITR.

4 - Discussion over its fragilities and unexplored potentials

4.1 - Fragilities

Ever since its conception, the Rural Land taxation never had much significance, first because of pressure from empowered rural oligarchies and then for lack of public structure, missing side politics and an effective cadastral information. The troubled historical background for this type of taxation in Brazil, has weakened the 'tax collecting machine', rendering its capacity for conducting good practices in the agricultural sector, what was supposed to be one of its key elements.

The recurrent changes in the tax public administration, also has contributed for its fragility. By changing the responsible agency, duties and destination of the tribute, in different occasions, the uncertainty compromises the planning, enforcement and inspection, reducing the reliability for those involved and for the taxpayer affected. Many of the changes promoted, or reconstructions done, never had the proper strategic planning, many of them were done to fulfill momentary needs without considering other factors.

The 'unwilliness' of the tax payer for its voluntary contribution is already expected, but, due to recurrent changes and its complexity, it 'forced' the tax evasion to a point where (now) the national tax over one of the most important natural attributes is almost irrelevant. Considering its calculation method and the amount of laws and regulations regarding it, made possible the conditions for fraud and underestimation. Associated with the size and number of properties and the lack of public control over them, it all contribute for the neglects of the uneven.

However, probably the most important element that compromises the revenue, it is involved with its calculation formula, the variables that compose it and the information that is presented for its determination. Beyond its complexity of calculus, the type of variables and their construction, facilitate the overestimation and undervaluation of important aspects. Besides, even with the description of the basis that should be used, there are still declarations values that do not match the reality expected.

Although, even with its limitations and contradictions, the revenue has been improving each year, improving its technical and administrative aspects. There are good indicators for its recent changes done and yet to come, such as, the decentralization,

improvement of cadasters, remote monitoring of changes in the landscape, among others. However, there are still areas that need better improvement, such as the environmental aspects of the revenue and the sinergy among the agencies involved.

4.2 – Unexplored potentials

The results presented evidence the gap between the value of tax declaration being done and the amount that was supposed to be presented for the VTN. The agency or parameter that should be considered is relative, but the standardization based on a single, impartial and fair measure must be consider to prevent irregularities. Even considering neither of the agencies used, there is still a big and an unexplored revenue potential that is being bypassed. Considerable changes, without much cost, could increase the amount collected without compromising regular and efficient rural producers.

There is also an exaggeration of the collection potential by normalizing the GUT with 60%, but it shows that very few properties that are undercovered with lower productivity, already would represent a significant improvement. In the same manner, even with inspection improvements, not all of properties in Brazil would have a bad performance represented by a GUT of 60%, but it is also hard to believe that almost all rural producers have reached over 80% of effectiveness. If these assumptions are correct in only a minority of cases, even still, there is a great potential for collection with that.

Considering any possible scenario, a sharp increase in the amount charged in any productive aspect within the accountability of any entrepreneur might compromise its operations. There are those who advocate that the agricultural sector already operates with short margins of income return and profitability. Even though it is one of the most important national economic sectors, a sudden increase on the land maintenance costs could difficult the conditions for rural producers and, therefore, have a negative impact on the sectors performance. Always considering that this tribute should not have confiscatory characteristics, neither promote a rural evasion, even thought, there are possibilities for strengthening this revenue without damaging efficient landowners.

The possibilities around the increase and improvement of the ITR does not need to be dramatic or compromising, there are brand measures and arrangements that can be made with

the agreement of all parts involved. Any change does not need to be sudden or decisive, it just needs to be strong enough to bring back the conductor aspect of the revenue, such was in its conception. The adjustment can be made as a projected perspective, with a proper planning, prediction of goals and objectives, considering penalties if not achieved, but also promoting those how adequate themselves. There is no need to jeopardize anyone, only the need for establishing coherent regulations and restrictions, with a clear agreement of conducting good practices towards land use and fulfillment of the social function of the rural property.

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