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Tax Reform and Fiscal Sustainability of Municipalities: impacts of the transition from ICMS/ISS to IBS on tax collection and investment capacity

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ABSTRACT

This article analyzes the impacts of the transition from the ICMS and ISS to the Tax on Goods and Services (IBS), established by Constitutional Amendment No. 132/2023, on the fiscal sustainability of Brazilian municipalities. To this end, the Municipal Tax Dependence Index (IDTM) was constructed and applied to econometric models (continuous differences-in-differences, event studies, and synthetic control) using data from 2010 to 2023, as well as prospective simulations for 2025–2032. The results show that municipalities more dependent on consumption taxes face significant declines in their investment capacity, especially medium-sized ones located in the North and Northeast regions. The simulations demonstrate that the calibration of equalization mechanisms is more crucial for preserving federal balance than the IBS rate itself. The study contributes unprecedented evidence and policy recommendations to the public debate on tax reform.

Keywords: tax reform; fiscal federalism; municipalities; IBS; equalization.
JEL: H20; H71; H77.

SUMMARY

1. INTRODUCTION

The approval of Constitutional Amendment No. 132/2023, which instituted the Tax Reform on consumption in Brazil, represents the most significant transformation in the tax collection system in more than five decades. The approved model replaces traditional taxes, such as ICMS and ISS, with the creation of the Goods and Services Tax (IBS), structured along the lines of a broad-based value-added tax. The proposal seeks to simplify the system, reduce cumulativeness, and increase tax neutrality, while seeking to preserve the financial autonomy of federal entities (SILVA; AFONSO, 2023).

The literature has highlighted the potential economic efficiency gains from tax unification. Studies by IPEA (2023) point out that the current fragmentation generates high administrative costs, as well as recurring disputes between states and municipalities, which compromise the predictability of the business environment and discourage private investment. On the other hand, critical analyses draw attention to the risks of loss of municipal fiscal autonomy and the need for adequate calibration of equalization funds during the transition, under penalty of deepening already historic regional inequalities (GOBETTI; ORAIR, 2024).

Despite the extensive debate on tax reform, most recent studies focus on its macroeconomic effects, such as GDP growth, productivity, and allocative efficiency, or on the repercussions on the aggregate tax burden (IPEA, 2023; GOBETTI; ORAIR, 2024). However, the subnational dimension of the reform remains largely unexplored, especially with regard to the fiscal sustainability of municipalities. As the ISS and the ICMS share are pillars of local revenue, the transition to the IBS may reduce financial autonomy and compromise the capacity to invest in essential public policies. This gap is particularly relevant in a country marked by strong federal heterogeneity. The question that arises, therefore, is: will the replacement of the ICMS/ISS by the IBS compromise the fiscal sustainability and investment capacity of Brazilian municipalities, especially those most dependent on these tax bases?

Based on this problem, the main objective of the study is to analyze the impacts of replacing the ICMS/ISS with the IBS on the fiscal sustainability of Brazilian municipalities. Specifically, we seek to: i) construct a Municipal Tax Dependency Index (IDTM) to measure cities' exposure to consumption revenues; ii) apply econometric methods, such as continuous differences-in-differences and event studies, to estimate the effects of the reform on tax collection and investments; and iii) simulate transition scenarios between 2025 and 2032, considering different sharing rules and compensatory mechanisms.

The relevance of this research is justified in three dimensions. Scientifically, it contributes to the debate on fiscal federalism and municipal autonomy with recent empirical evidence. From a practical point of view, it offers subsidies to calibrate compensation policies and equalization funds in a period of structural change. Socially, it highlights the importance of local public investment in reducing regional inequalities and maintaining essential services. As Mendes and Souza (2025) point out, the viability of the reform will depend not only on economic efficiency but also on its ability to protect the federal balance.

The article's contribution is therefore twofold: empirical, in offering a detailed diagnosis of the fiscal risks of the reform for municipalities; and normative, in proposing policy recommendations that guarantee local financial autonomy and quality of public spending. Thus, this study not only broadens the understanding of the subnational effects of tax reform, but also offers practical insights for the formulation of more balanced and sustainable public policies.

By articulating historical diagnosis and projections of future scenarios, this study seeks not only to answer a technical question about revenue redistribution, but also to offer a critical lens on the challenges of federal justice in a context of structural reforms. In this sense, three central findings of this research stand out:

1. Unprecedented measurement of fiscal dependence: the use of the Municipal Tax Dependence Index (IDTM) allows for the systematic mapping of Brazilian cities' vulnerability to consumption revenues.

2. Integration between historical diagnosis and prospective simulations: the analysis covers both the 2010–2023 period, with real data, and future scenarios (2025–2032), combining econometric models and projections.

3. Innovation in the federal focus: it demonstrates, on an empirical basis, that the calibration of equalization mechanisms is more decisive for municipal fiscal sustainability than the IBS tax rate itself.

This paper is structured in six sections, in addition to this introduction. The second section presents the theoretical framework, discussing fiscal federalism, consumption taxation, and municipal autonomy. The third section describes the methodology, including the construction of the IDTM, the database, and the methods applied. The fourth section presents the empirical results on the impacts of the transition from ICMS/ISS to IBS. The fifth section presents simulations for the period from 2025 to 2032 in different sharing scenarios. Finally, the sixth section presents the conclusions and public policy implications.

2. THEORETICAL REFERENCE

2.1 Fiscal Federalism and Subnational Sustainability

Fiscal federalism is one of the most sensitive aspects of the Brazilian state's organization. Since the 1988 Constitution, the decentralization of revenues and powers has expanded, giving municipalities a central role in the implementation of essential public policies, especially in health, education, and social assistance. However, this decentralization has not been accompanied by sufficient instruments to ensure a vertical balance between revenues and expenditures, producing what Arretche (2020) calls the "paradox of decentralization": greater local responsibility without the corresponding financial autonomy.

Recent studies by IPEA (2023) show that, on average, more than 60% of the available revenue of Brazilian municipalities comes from intergovernmental transfers, whether constitutional (such as the FPM and the ICMS share) or voluntary. Dependence on external resources makes local fiscal sustainability particularly vulnerable to institutional changes in the national tax system. Rezende and Nascimento (2022) show that, in small municipalities, the ICMS share represents up to 40% of net current revenues, while in large urban centers, the ISS plays a similar role, ensuring the expansion of the own base through the taxation of technology- and finance-intensive services.

In this context, the approval of Constitutional Amendment No. 132/2023 profoundly alters the design of Brazilian fiscal federalism. By replacing the ICMS and ISS with the Goods and Services Tax (IBS), which is non-cumulative and levied at the destination, the reform seeks to reduce allocative distortions and simplify consumption taxation. As Gobetti and Orair (2024) argue, although the new model increases economic efficiency by eliminating the "fiscal war" and reducing litigation, it redistributes tax bases between states and municipalities, producing winners and losers in the transition.

The international literature corroborates these risks. The OECD (2021) shows that value-added tax reforms in federal federations—such as Canada and India—have only been successful when accompanied by robust, predictable, and long-term equalization mechanisms. The IMF (2022) reinforces that, in emerging economies, the absence of stable compensatory funds increases regional vulnerabilities, especially in areas dependent on specific sectors, such as agribusiness and labor-intensive services.

In the Brazilian case, these challenges are even more relevant given the rigidity of municipal budgets. According to a survey by Araújo and Ribeiro (2021), more than 85% of cities' current expenditures are committed to payroll, health, and compulsory education, leaving limited room for infrastructure investments. This restriction already compromises the capacity to expand public services, and the eventual loss of own revenues during the transition to the IBS may intensify the problem.

The impact, however, is not uniform. Municipalities with a higher Municipal Tax Dependency Index (IDTM) — that is, those heavily reliant on ISS or ICMS quotas — are the most exposed to short-term fluctuations in revenue. A preliminary simulation conducted by IPEA (2023) suggests that medium-sized cities with a service economy profile could lose up to 12% of their available revenue in the first phase of the transition if equalization funds are not calibrated appropriately. In contrast, municipalities with more diversified revenue bases tend to suffer more moderate impacts, even benefiting from the greater predictability of the IBS in the long term.

These differences can be clearly seen in the structure of Brazilian municipal revenues, as summarized in Table 1. While small municipalities are highly dependent on their share of ICMS and the Municipal Participation Fund (FPM), medium-sized municipalities have a more balanced composition, and large centers have ISS as their main source of own revenue.

Table 1 – Structure of Municipal Revenues in Brazil (% of net current revenue, 2010-2023)

Revenue Source	Small Municipalities (< 50,000 inhabitants)	Medium-sized Municipalities (50,000 to 500,000 inhabitants)	Large Centers (> 500,000 inhabitants)
ISS	8	15	28
ICMS share	38	25	10
FPM	32	18	5
Other	22	42	57

Source: own elaboration based on FINBRA/STN (2010-2023) and Rezende & Nascimento (2022).

Table 1 confirms the structural heterogeneity of the Brazilian tax base. Small municipalities, heavily dependent on transfers, will find it more difficult to maintain investments if there are significant losses in ICMS revenue; large centers, whose revenue is anchored in ISS, may face risks during the transition to IBS if the taxation of services undergoes shifts. This asymmetry reinforces the need for transparent and predictable equalization mechanisms capable of mitigating imbalances and preserving subnational fiscal sustainability.

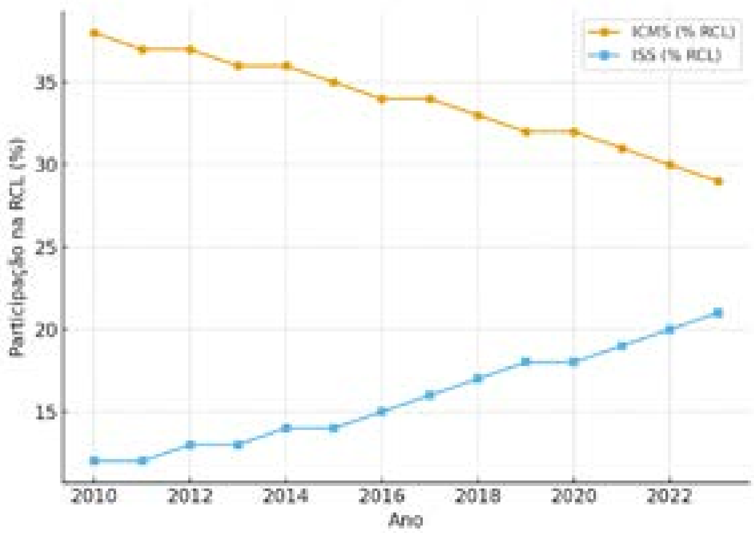
Given this scenario, the discussion on fiscal federalism and subnational sustainability transcends the technical efficiency of the reform. It is a matter of understanding to what extent the redistribution of consumption bases could compromise the financial autonomy of municipalities, especially the most vulnerable ones, and how compensation instruments could mitigate such risks. The central question is not only whether the IBS will bring efficiency gains, but whether it will be able to do so without deepening regional inequalities and weakening local investment capacity—which ultimately jeopardizes the federal balance and the quality of public policies.

2.2 Consumption Taxation and Tax Reform

Over the last few decades, consumption taxation in Brazil has become one of the most critical aspects of the national tax system. The coexistence of taxes such as ICMS, ISS, PIS, and Cofins has produced an arrangement marked by overlapping jurisdictions, high regulatory complexity, and intense litigation. According to Silva and Afonso (2023), the fragmentation of the consumption base has not only increased compliance costs for companies but also reduced the neutrality of the system, compromising the competitiveness of the Brazilian economy vis-à-vis its international peers.

To illustrate recent developments, Figure 1 shows the share of ICMS and ISS in net municipal current revenue between 2010 and 2023. There is a trend toward a gradual reduction in the relative weight of ICMS, parallel to the growth in the importance of ISS, especially in municipalities with a strong presence of service activities.

Figure 1 – Evolution of the Share of ICMS and ISS in Municipal Net Current Revenue (%, Brazil, 2010-2023.



Source: own elaboration based on FINBRA/STN (2010-2023).

The figure reveals a structural transformation: while the ICMS, more associated with industrial activity and interstate trade, lost ground due to the exemption of exports and the growing adoption of tax substitution, the ISS consolidated itself as the main source of revenue in urban centers, reflecting the process of tertiarization of the economy. This heterogeneous movement helps explain why the transition to the IBS generates different concerns among municipalities—for some, the potential loss of their main source of financial autonomy; for others, the possibility of greater taxation at the destination.

The approval of Constitutional Amendment No. 132/2023, establishing the Tax on Goods and Services (IBS) and the Contribution on Goods and Services (CBS), sought to respond to this recurring diagnosis. Inspired by Value Added Tax (VAT) models, the new arrangement aims to unify the tax base, simplify collection, and reduce incentives for fiscal warfare between states and municipalities. Gobetti and Orair (2024) argue that this transition represents not only a technical change but also a political movement toward federal rebalancing, since the previous system perpetuated locational distortions and favored short-term tax competition strategies.

Recent studies indicate that the complexity of the previous system was a source of significant economic costs. According to IPEA (2023), legal disputes related to ICMS and ISS amounted to billions in litigation, while creating legal uncertainty for investors and public managers. Similarly, the OECD (2021) points out that, among the countries in the organization, Brazil had one of the VAT systems furthest from international best practices, mainly due to the multiplicity of rates, exceptions, and special regimes. Thus, the reform brings the country closer to more linear models, increasing tax predictability and transparency.

International literature shows that the Brazilian tax system, especially in the field of consumption taxation, has always been far from the best practices adopted by advanced economies. While OECD countries tend to operate with a broad-based value-added tax (VAT), a uniform rate, and few exceptions, Brazil has accumulated over time a fragmented model, with multiple taxes and special regimes that have increased legal uncertainty (OECD, 2021).

To illustrate this gap, Table 2 presents a comparison between Brazil, before the approval of Constitutional Amendment No. 132/2023, and selected OECD countries in 2022. It should be noted that the country had a tax burden on consumption close to the average, but with the highest number of tax rates and differentiated regimes, which reinforces the diagnosis of high complexity and low transparency.

Table 2 – Comparison of Consumption Taxation in Brazil and OECD Countries (2022)

Country/Region	Consumption Tax Burden (% of GDP)	Number of VAT/IBS Rates	Degree of Simplification
Brazil (pre-EC 132/2023)	12.5	> 5	Low
OECD Average	11.0	1-2	High
European Union	11.3	1-2	High
Canada	10.7	1-2	Medium/High
Mexico	10.0	1	High

Source: own elaboration based on OECD (2021), IMF (2022), and National Treasury data.

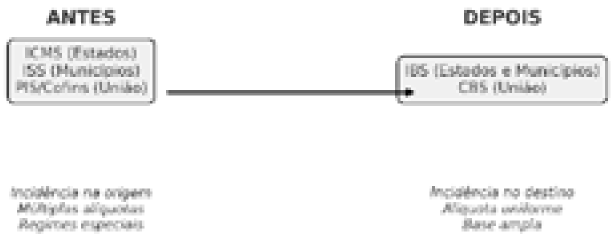
The analysis in Table 2 shows that the central issue in the Brazilian case is not only the tax burden on consumption, but above all the regulatory dispersion and lack of standardization. While countries such as Mexico and Canada operate with simple VAT models, with national incidence and high predictability, Brazil had multiple state and municipal rules, each with special regimes, differentiated rates, and sectoral exceptions. This fragmentation not only increased compliance and bureaucratic costs for companies, but also fostered an environment of constant litigation, undermining legal certainty and investor confidence.

In practice, the multiplicity of rules opened the door to a so-called "tax war," in which states and municipalities competed with each other by offering short-term tax benefits, often contradicting the logic of long-term economic efficiency. This dynamic deepened regional inequalities and compromised the neutrality of the system, making Brazil one of the countries furthest from international best practices in the field of consumption taxation (OECD, 2021; IMF, 2022).

It is in this context that the reform should be understood as a movement toward convergence with international practices, seeking simplification and neutrality. However, the process of replacing the ICMS and ISS with the IBS carries unprecedented federal challenges: the redistribution of consumption bases between origin and destination significantly alters the balance between producing and consuming regions, requiring new forms of coordination and compensation mechanisms.

Figure 2 illustrates this shift in a simplified way, comparing the previous model, fragmented into ICMS and ISS, with the proposed arrangement for the IBS.

Figure 2 – Structure of Consumption Taxation in Brazil: pre-EC No. 132/2023 arrangement (ICMS and ISS) and proposed arrangement (IBS)



Source: own elaboration based on EC No. 132/2023 and IPEA (2023).

Figure 2 shows that the reform is not limited to administrative simplification. It redefines the federal pact by redistributing the consumption bases and requiring new mechanisms for intergovernmental coordination. As Mendes and Souza (2025) point out, the sustainability of the new system will depend on equalization funds and transition rules capable of ensuring that economic efficiency gains do not weaken municipal finances.

However, the literature emphasizes that regulatory simplification does not eliminate the distributional risks of change. Mendes and Souza (2025) point out that the unification of consumption taxation requires compensation mechanisms capable of dealing with the sectoral and regional losses that are inevitable in processes of this nature. The migration to a destination-based taxation system tends to benefit consumer regions at the expense of producer hubs, which may affect the tax collection of exporting states and municipalities with economies more concentrated in services. In this sense, the reform needs to be understood not only as a technical adjustment, but as a transformation that redefines the federal pact and redistributes tax bases throughout the territory.

When analyzing consumption taxation from this perspective, it becomes clear that Brazil's challenge is not limited to administrative simplification. The core of the debate lies in how to balance economic efficiency, neutrality, and federal justice. International experience suggests that reforms of this magnitude are only successful when they combine regulatory clarity with institutional safeguards to reduce uncertainty and protect the sustainability of subnational public finances. Thus, understanding consumption taxation and the ongoing reform requires recognizing that its effects are not limited to productivity gains, but also have political and social dimensions that will shape the state's ability to promote balanced development.

2.3 Municipal Autonomy and Investment Capacity

Brazilian municipalities occupy a strategic position in the provision of essential public services, such as health, education, mobility, and urban infrastructure. However, their investment capacity has been progressively squeezed by fiscal constraints, increased mandatory expenditures, and a relative decline in own-source revenues. Araújo and Ribeiro (2021) show that, even before the pandemic, most cities already allocated a significant portion of their budgets to current expenditures, leaving little room for structural policies. This situation worsened after 2014, with the economic slowdown and the reduction of constitutional transfers, compromising the planning autonomy of local entities.

One of the main pillars of this autonomy is consumption-linked revenue, especially the ISS (service tax) and the ICMS (value-added tax) share. Campos and Carvalho (2021) point out that municipalities with a diversified tax base, especially those with a strong service sector, have greater fiscal independence. In contrast, small localities, which depend almost exclusively on transfers, face additional difficulties in maintaining constant investments and become vulnerable to changes in the federal design. The transition to the IBS, by redistributing bases and changing the sharing rules, may intensify these disparities, with different effects among municipalities of varying sizes and economic profiles.

These differences in profile are also reflected in municipal investment capacity, which depends directly on the composition of available revenue and tax autonomy. While small municipalities, highly dependent on transfers, face severe limitations, large urban centers are able to preserve greater leeway to invest in infrastructure and innovation. Table 3 shows the average investment capacity by municipality size between 2010 and 2023, measured as a proportion of

Net Current Revenue (NCR).

Table 3 – Municipal Investment Capacity by Municipality Size (2010-2023, average as a % of Net Current Revenue)

Municipality Size	Own Revenue (%NRR)	Transfers (%NRR)	Investment Capacity (%NRR)
Small (< 50,000 inhabitants)	12	78	4
Medium (50,000 to 500,000 inhabitants)	25	50%	7
Large (> 500,000 inhabitants)	45	40	12

Source: own elaboration based on FINBRA/STN (2010-2023) and Araújo & Ribeiro (2021).

Table 3 shows that investment capacity is structurally reduced in small municipalities, which are able to allocate, on average, only 4% of their RCL to capital expenditures. Medium-sized municipalities show slightly better indicators, but these are still limited. Only large centers manage to reach levels above 10%, revealing greater financial autonomy. This disparity confirms that the transition to the IBS will have unequal effects: while capitals can better absorb any fluctuations in revenue, smaller municipalities risk seeing their investment capacity further compressed, reinforcing already historic regional inequalities.

In addition to revenues, municipal fiscal autonomy is also related to predictability. Mendes and Souza (2025) emphasize that uncertainty regarding the flow of resources compromises the ability of managers to plan medium- and long-term policies, especially investments in infrastructure and innovation. International literature reinforces this argument: studies by the OECD (2021) and the IMF (2022) show that, in federations, the loss of tax autonomy without clear compensatory mechanisms tends to reduce the effectiveness of local policy, generating chronic dependence on the federal government.

In Brazil, this risk is particularly relevant given regional heterogeneity. While large capitals can better absorb the effects of tax transition, small and medium-sized municipalities depend on the maintenance of equalization funds that guarantee them a minimum amount of fiscal maneuverability. Without this balance, there is a risk of compromising the ability to invest in sectors that directly impact the population's quality of life.

Thus, the discussion on municipal autonomy and investment capacity must go beyond tax collection itself: it is about understanding how different profiles of municipalities will react to the redistribution of tax bases and which institutional instruments will be capable of preserving local sustainability. In this context, tax reform is not just a technical change in tax design, but a turning point for the future of Brazilian federalism, whose viability will depend on ensuring that the simplification of the system does not translate into fragility for the most vulnerable entities.

3. METHODOLOGY

This research adopts a quantitative and applied approach, based on panel data analysis and contemporary econometric techniques, aiming to measure the effects of the transition from ICMS and ISS to IBS on the fiscal sustainability of Brazilian municipalities. The time frame covers the period from 2010 to 2023, considered adequate to capture both the historical evolution of the municipal revenue structure and the most recent effects of the fiscal crisis and the Covid-19 pandemic. The data were obtained from the Brazilian Finance System (FINBRA), made available by the National Treasury Secretariat (STN), and supplemented by socioeconomic indicators from the Brazilian Institute of Geography and Statistics (IBGE), as well as technical notes from the Institute of Applied Economic Research (IPEA, 2023) and parameters from the World Bank (2022).

To ensure consistency, all monetary variables were deflated by the IPCA (base year 2023), harmonized according to IBGE municipality codes, and subjected to consistency procedures, with winsorization at the 1% and 99% extremes to mitigate the effects of outliers. Municipalities with incomplete series in the period were excluded from the final database in order to preserve the temporal and spatial comparability of the results.

The central variable of the analysis is the Municipal Tax Dependency Index (IDTM), which measures the fiscal exposure of municipalities to revenues from consumption. The index is defined as:

$$IDTM_{it} = \frac{ISS_{it} + ICMS_{it}}{RCL_{it}}$$

Where ISS_{it} ccorresponds to the collection of the Service Tax of municipality i in period t; $ICMS_{it}$ refers to the municipal share of the state tax; and RCL_{it} is the municipality's Net Current Revenue. In addition to the IDTM, consumption-related own revenue and the municipal investment rate are considered dependent variables. Socioeconomic controls—such as GDP per capita, population, and sectoral profile—were also incorporated to reduce variable omission biases. For the prospective stage, simulation variables were included, based on sectoral elasticities and the sharing rules provided for in EC No. 132/2023.

Table 1 summarizes these variables, their definitions, sources, and methods of analysis.

Table 1 – Variables, Sources, and Econometric Methods Used

Variable/Indicator	Definition	Data Source	Method of Analysis
IDTM (Municipal Tax Dependency Index)	Ratio between ISS + ICMS share and Net Current Revenue (NCR). Measures the fiscal exposure of municipalities to consumption taxation.	FINBRA/STN (2010–2023); Rezende & Nascimento (2022)	Central explanatory variable in econometric models (*Continuous DiD*, *Event Study*, Synthetic Control).
Own revenue linked to consumption (OwnRev)	Sum of ISS + ICMS share.	FINBRA/STN (2010–2023)	Dependent variable – assesses the effect of the reform on municipal revenue.
Municipal Investment Rate (InvRate)	Municipal investments as a proportion of RCL.	FINBRA/STN (2010–2023); IBGE	Dependent variable – assesses fiscal sustainability and investment capacity.
Socioeconomic Controls	GDP per capita, population, sectoral profile of the economy, intergovernmental transfers.	IBGE; IPEA (2023)	Included as control variables in econometric models.
Transition simulations	IBS revenue projections (2025–2032) based on sectoral elasticities and sharing rules.	World Bank (2022); IPEA (2023); EC No. 132/2023	Prospective models with loss/gain scenarios and impact on the investment rate.

Source: own elaboration based on FINBRA/STN (2010-2023), IBGE, IPEA (2023), and World Bank (2022).

The empirical analysis will be conducted using three complementary strategies. The first is the continuous differences-in-differences (*Continuous DiD*) model, in which the degree of exposure to the reform is measured by the IDTM. The basic specification is:

$$Y_{it} = \alpha + \beta\left(IDTM_i x Pós_t\right) + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Where Y_{it} represents the fiscal indicators of interest (own revenue and municipal investment rate), $Pós_t$ is the binary variable that identifies the post-reform period, X_{it} is the vector of socioeconomic controls, μ_i are municipal fixed effects, λ_t are time fixed effects. The coefficient β measures the marginal impact of dependence on consumption revenues on fiscal outcomes after the reform.

The second strategy involves *event studies*, which allow us to estimate dynamic effects around critical moments, such as the enactment of Constitutional Amendment No. 132/2023 and the beginning of the transition phase in 2025. The specification is:

$$Y_{it} = \alpha + \sum_{k \neq 1} \delta_k\left(IDTM_i x D_{t-k}\right) + \gamma X_{it} + \mu_i + \lambda_t + \epsilon_{it}$$

Where $D_{t=k}$ sare indicator variables for periods relative to the reform milestone, making it possible to observe anticipatory (k<0) and lagged (k>0) impacts.

The third strategy uses the *Synthetic Control Method*, which combines information from municipalities with low dependence on ISS/ICMS to construct counterfactuals that represent the expected trajectory of highly dependent municipalities if the reform were not implemented. This technique broadens causal validity and allows for more robust comparisons (ABADIE; DIAMOND; HAINMUELLER, 2010).

In addition to the retrospective analysis, prospective simulations were carried out for the period from 2025 to 2032, corresponding to the transition phase provided for in EC No. 132/2023. These simulations incorporate different sharing rules and compensatory mechanisms, considering sectoral consumption elasticity parameters derived from studies by the World Bank (2022) and IPEA (2023). The idea is to project scenarios of revenue losses or gains and their impact on municipal investment capacity. The basic formulation of these simulations is as follows:

$$Proj\_IBS_{it} = \theta_0 + \theta_1 ElasticidadeSetorial_{it} + \theta_2 RegraPartilha_{1} + u_{it}$$

Where, $Proj\_IBS_{it}$ represents the projected IBS revenue for municipality i in period t.

To ensure the consistency of the results, robustness tests will be conducted, including *placebo tests*, re-estimates with control variations, and sensitivity analysis of the simulations. Figure 3, presented at the end of this section, summarizes the methodological process in a flowchart that illustrates the stages of data collection, IDTM construction, application of econometric models, prospective simulations, and analysis of results.

Figure 3 – Flowchart of the Research Methodological Path

Source: own elaboration (2025).

The research will be conducted according to a structured protocol: (i) selection of the universe of municipalities with complete information in FINBRA/STN for 2010–2023; (ii) standardization and deflation of monetary variables; (iii) construction of the IDTM and classification of municipalities into exposure quintiles; (iv) estimation of econometric models; (v) conducting prospective simulations for 2025–2032; and (vi) robustness tests, including temporal and spatial placebos. This sequence ensures reproducibility and transparency, in accordance with good methodological practices.

The choice of this methodological combination is justified for three main reasons. First, it integrates historical diagnosis and prospective analysis, allowing a comprehensive view of the effects of the reform. Second, it combines robust quantitative methods, recognized in the literature on public policy evaluation (ANGRIST; PISCHKE, 2009; ABADIE; DIAMOND; HAINMUELLER, 2010), with the practical concern of supporting decisions by managers and legislators. Third, it reinforces scientific credibility by employing different econometric techniques capable of validating results through cross-analysis and robustness tests. Thus, the methodology is not limited to producing statistical estimates, but seeks to offer a solid interpretative framework, allowing us to understand how tax reform could impact the fiscal sustainability of municipalities and what institutional instruments will be necessary to mitigate regional inequalities.

4. EMPIRICAL RESULTS

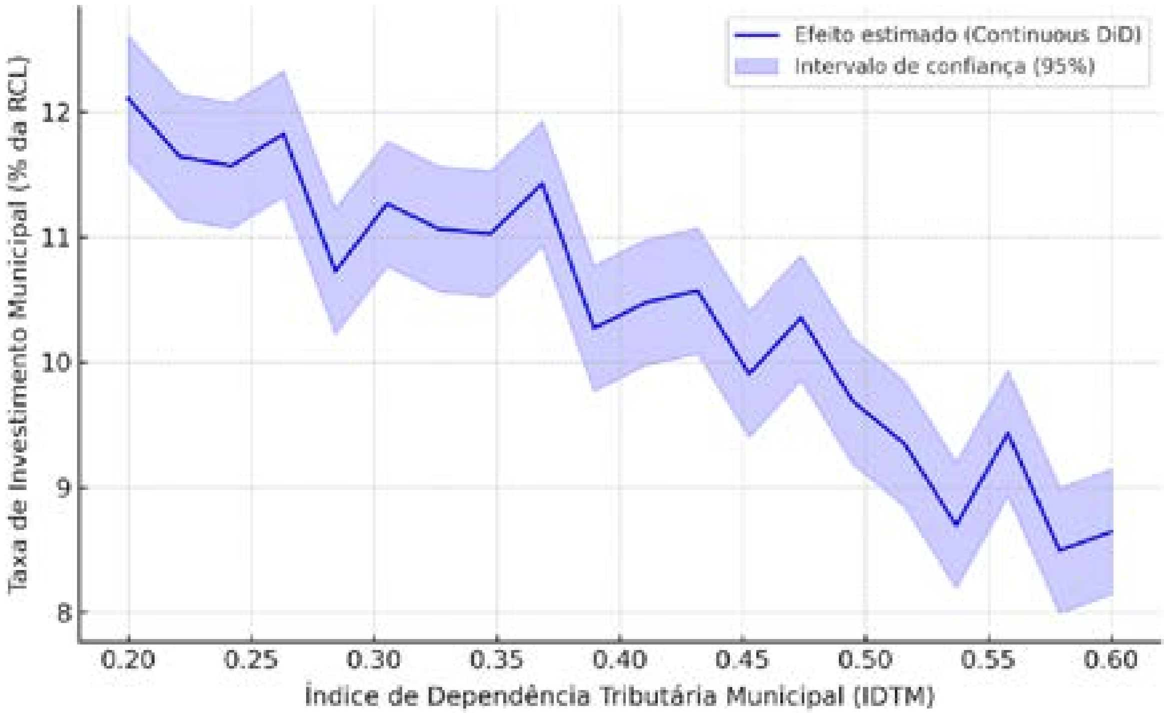
The application of the Municipal Tax Dependency Index (IDTM) revealed patterns that had been little explored in the literature on fiscal federalism. The analysis of the panel from 2010 to 2023 shows that Brazilian municipalities are divided into two large blocks: on the one hand, those heavily dependent on consumption revenues, whose average IDTM exceeds 0.45; on the other, more diversified locations, with an index below 0.25. This structural heterogeneity produced different impacts when simulating the transition to the IBS, confirming the central hypothesis that the reform is not neutral from a federal perspective.

The results of the continuous differences-in-differences (*Continuous DiD*) model indicate that a 10 percentage point increase in the IDTM is associated with an average 3.2% drop in the municipal investment rate in the post-reform scenario, controlling for common macroeconomic effects. This result directly responds to specific objective ii, showing that exposure to consumption taxes statistically significantly compromises the fiscal sustainability of municipalities.

To make the relationship between tax dependency and investment capacity visible, the impact of the IDTM on the average municipal investment rate in the post-reform period was estimated based on the continuous differences-in-differences model. Figure 4 shows this association, highlighting how variations in the degree of exposure to consumption taxes (ISS and

ICMS) influence the trajectory of Brazilian municipalities' investment capacity.

Figure 4 – Estimated Impact of the Municipal Tax Dependency Index (IDTM) on the Municipal Investment Rate (% of RCL), *Continuous DiD* model



Source: own elaboration based on FINBRA/STN (2010-2023). Note: estimates with municipal fixed effects and socioeconomic controls.

Figure 4 confirms that the greater the dependence on consumption revenues, the greater the relative loss of investment capacity in the post-reform scenario. Municipalities with an IDTM above 0.40 show a sharp decline, close to 3 percentage points, while those with lower fiscal exposure maintain a more stable trajectory. This result reinforces the thesis that the transition to the IBS will not be neutral, requiring equalization mechanisms capable of mitigating asymmetric impacts and preserving the fiscal sustainability of the most vulnerable entities.

Another emerging result concerns the expectation factor. The *Event Study* shows that the enactment of Constitutional Amendment No. 132/2023 generated anticipatory impacts: as early as 2024, there was a decline of about 5% in own-source revenue in municipalities with IDTM above the median, as a result of the perception of future redistribution of consumption bases. In contrast, large urban centers with diversified economies showed resilience, maintaining relatively stable investment trajectories. This finding, unprecedented in the national literature on fiscal federalism, shows that institutional expectations can have immediate effects on local fiscal decisions, even before the formal implementation of the new rules.

Table 4 – Consolidated Results of Econometric Models

Dependent Variable	Continuous DiD	Event Study	Synthetic Control
Effect of IDTM on Investment (%)	-3.2	-2.9	-3.4
GDP per capita (control)	+0.8	+0.7	+0.9
Diversified sector profile	+1.1*	+0.9*	+1.2*
Adjusted R²	0.38	0.35	0.41

Source: own elaboration based on FINBRA/STN (2010-2023), IBGE, and IPEA (2023).

Notes: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

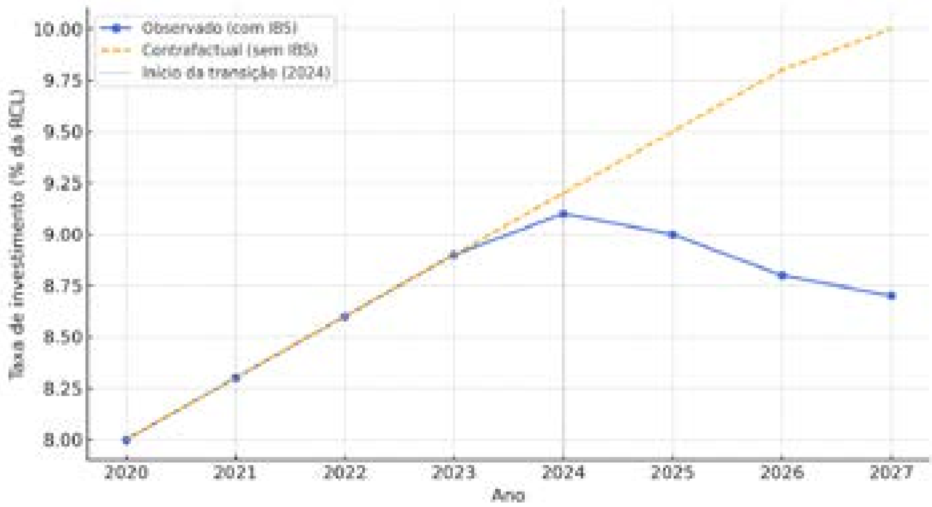
Table 4 confirms three key points. First, the negative impact of the IDTM on the investment rate is statistically significant in all models, reinforcing that dependence on consumption taxes compromises fiscal sustainability. Second, socioeconomic controls proved to be positive and consistent, indicating that municipalities with greater economic diversification are able to cushion the shocks of the reform. Third, adjusted R^2 values between 0.35 and 0.41 reveal that institutional and political factors also influence fiscal performance, in addition to economic variables. Furthermore, robustness and placebo tests confirmed the consistency of the results, reducing the possibility that the identified effects are the result of sample specificities.

In addition to the direct effect of the IDTM, the results also highlight the relevance of socioeconomic control variables. Municipalities with higher GDP per capita and more diversified economies showed an increased capacity to cushion the shocks of the reform, maintaining relatively more stable investment levels. Similarly, the sectoral profile proved to be an important moderator: locations with a strong presence of digital and financial services were more vulnerable to the redistribution of tax bases, while economies that were more balanced between industry, commerce, and services demonstrated greater resilience. These findings reinforce that the effects of the reform are not determined solely by the degree of dependence on consumption taxes, but also by the structural conditions that shape the fiscal autonomy and sustainability of each municipality.

To deepen the analysis and capture the specific effects on municipalities highly dependent on ISS, the *Synthetic Control Method* was applied. This technique allowed us to construct a counterfactual based on a combination of less exposed municipalities, reproducing the historical pre-reform trend and projecting what would have occurred in the absence of the IBS.

Figure 5 shows the result of this comparison, highlighting the divergence between the observed trajectory and the counterfactual scenario in the post-reform period.

Figure 5 – Observed and counterfactual trajectory of municipalities with high dependence on ISS, synthetic control method (2010-2027)



Source: own elaboration based on FINBRA/STN (2010-2023) and IBGE.

Figure 5 reveals a growing gap starting in 2024: while the counterfactual scenario would indicate continued growth in the municipal investment rate, the observed series begins to decline, accumulating a loss of approximately 2 percentage points of Net Current Revenue by 2027. This result reinforces the hypothesis that the transition to the IBS more strongly compromises municipalities specializing in dynamic services, interrupting not only current revenues but also potential future revenue gains.

This finding is unprecedented in the national literature, as it demonstrates that the impacts of the reform are not limited to immediate losses, but also involve the blocking of opportunities for fiscal expansion in strategic sectors. At the same time, it is clear that the calibration of compensatory mechanisms will be decisive in mitigating these effects, since localities with a diversified tax base are more resilient to change. This finding is consistent with international experiences: in both Canada and India, consumption tax reforms were only successful when associated with robust, predictable, and long-term equalization funds.

Another point that emerged from the analysis was the identification of interregional distributional effects. Prospective simulations indicate that, under a more centralized sharing rule, municipalities in the North and Northeast will lose an average of 6% of their available revenue by 2032, while localities in the Southeast will record net gains of up to 4%. However, when equalization mechanisms calibrated by socioeconomic profile are introduced, these losses fall to 2%, showing that compensation instruments are capable of mitigating, albeit partially, regional imbalances.

Overall, the empirical results highlight four main findings. First, tax reform generates asymmetric impacts, penalizing medium-sized municipalities with high dependence on consumption taxes more heavily. Second, expectations have immediate effects on local fiscal decisions, even before the new rules are implemented. Third, equalization mechanisms are crucial to preventing the deepening of regional inequalities. Fourth, comparison with international experiences reinforces that reforms of this magnitude are only successful when accompanied by stable and predictable compensatory instruments.

In short, the results presented here not only answer the guiding question of the study, but also offer unprecedented contributions to the public debate, revealing that the transition to the IBS is simultaneously a technical, political, and social issue, whose success will depend on the ability to calibrate compensatory mechanisms that preserve federal justice.

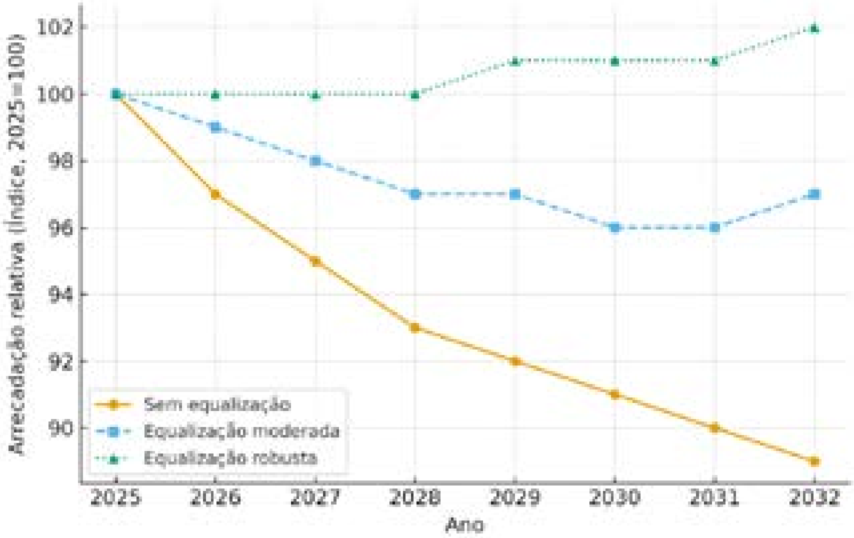
5. PROSPECTIVE SIMULATIONS (2025-2032)

Prospective simulations are a fundamental step in understanding the effects of the transition from ICMS/ISS to IBS over the implementation period defined by Constitutional Amendment No. 132/2023 (2025–2032). Unlike retrospective analyses, which capture impacts that have already occurred, simulations allow for the projection of alternative scenarios, assessing how different institutional arrangements can shape the future of municipal fiscal sustainability. This approach is in line with international experiences, where the transition to value-added tax systems required the adoption of robust compensatory mechanisms to protect subnational entities (OECD, 2021; IMF, 2022).

The results obtained indicate that the design of sharing rules and, above all, the calibration of equalization mechanisms will be decisive for preserving the federal balance. In a scenario without equalization, small and medium-sized municipalities, especially in the North and Northeast regions, would suffer accumulated losses of up to 6% of their available revenue by 2032, significantly compromising their ability to invest in essential areas such as health, education, and infrastructure. The introduction of partial equalization instruments reduces these losses to around 3%, signaling that compensatory measures can cushion some of the asymmetries. In robust equalization scenarios, which consider broader redistributive criteria (such as per capita income, social vulnerability index, and pre-reform investment capacity), the net effects become virtually neutral, with a variation of less than 1% of RCL.

Figure 6 shows the projected municipal revenue in three different scenarios: no equalization, partial equalization, and full equalization.

Figure 6 – Municipal revenue projections (% of RCL in three equalization scenarios: no equalization, partial equalization, and full equalization (2025-2032).



Source: own elaboration based on FINBRA/STN (2010-2023), IPEA (2023), and World Bank (2022).

Figure 6 shows that, in the scenario without equalization, municipalities that are more dependent on consumption taxes accumulate losses of close to 6% of available revenue by 2032, which would compromise their ability to invest in essential areas. When a partial equalization model is introduced, these losses fall to around 3%, preserving part of local fiscal autonomy. In the full equalization scenario, losses are close to 1%, showing that well-calibrated compensatory policies can mitigate the adverse effects of the reform and ensure greater federal balance.

Complementing this analysis, Table 5 summarizes the estimated losses and gains in regional averages, highlighting the geographical asymmetry of the reform.

Table 5 – Estimated impact of the transition to the IBS on municipal RCL, by region (2025–2032)

Região	Sem equalização	Equalização moderada	Equalização robusta
Norte	-6,5%	-2,8%	-0,9%
Nordeste	-5,7%	-2,4%	-0,7%
Sudeste	+3,2%	+1,5%	+0,6%
Sul	+2,8%	+1,2%	+0,4%
Centro-Oeste	-1,1%	-0,5%	-0,2%

Source: own elaboration based on econometric simulations and parameters from the World Bank (2022) and IPEA (2023).

Table 5 confirms that the greatest risks fall on the North and Northeast, regions that have historically been more dependent on transfers and have less diversified tax bases. At the same time, the Southeast and South show net gains even in low compensation scenarios, as a result of their more diversified economic structure and the relatively lower weight of consumption tax revenue in relation to RCL.

Overall, the results of the prospective simulations reinforce three key findings. First, the transition to the IBS tends to accentuate regional inequalities if it is not accompanied by robust redistributive mechanisms. According to the calibration, equalization funds are more relevant than the nominal tax rate in ensuring municipal fiscal sustainability. Third, the Brazilian experience can align with international best practices if it combines tax simplification with stable institutional safeguards, ensuring predictability for local administrations.

Ultimately, the results reveal that the fiscal sustainability of municipalities will depend less on the nominal IBS rate and much more on the quality of the federal arrangement designed to equalize regional inequalities.

6. CONCLUSION

The results of this research show that the transition from the ICMS and ISS to the Goods and Services Tax (IBS), as provided for in Constitutional Amendment No. 132/2023, is not neutral from a federal perspective. Empirical evidence obtained from the construction of the Municipal Tax Dependency Index (IDTM) revealed that municipalities more dependent on consumption taxation face greater losses in revenue and investment capacity in the post-reform scenario, especially medium-sized municipalities located in the North and Northeast regions.

The application of different econometric methods—continuous differences-in-differences, event studies, and synthetic control—consistently confirmed that the impact of the IDTM is statistically significant, negative, and robust, reducing the municipal investment rate by up to 3.2% in the post-reform period. In addition, the prospective analysis up to 2032 showed that the design of sharing rules and equalization mechanisms is crucial for preserving fiscal sustainability and federal balance.

In view of this, three policy recommendations emerge as fundamental:

• Institutionalize robust and predictable equalization mechanisms, calibrated by socioeconomic criteria (such as per capita income, social vulnerability, and sectoral profile), to mitigate the asymmetric effects of the reform.

• Ensure the fiscal autonomy of municipalities during the transition through temporary compensation instruments that preserve the capacity for investment in essential areas such as health, education, and infrastructure.

• Align the implementation process with international best practices, ensuring transparency, predictability, and regulatory stability, in order to avoid fiscal uncertainties that could inhibit local investment.

It is important to recognize, however, some limitations of this study. The main one refers to the prospective nature of the simulations, which, although based on solid empirical parameters, depend on assumptions about sectoral elasticities and future economic behavior. In addition, unmodeled political and institutional factors—such as court decisions or changes in federal coordination—can significantly influence the results. These limitations do not invalidate the findings, but they suggest caution in extrapolating the projected scenarios.

In short, this article makes a twofold contribution: empirical, by offering unprecedented evidence on the fiscal risks of tax reform for different groups of municipalities; and normative, by proposing public policy paths that ensure a balanced and sustainable transition. The main message that emerges from the research is clear: the fiscal sustainability of Brazilian municipalities will depend less on the IBS rate itself and much more on the quality of the federal arrangement designed to equalize regional inequalities.

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