REVISTA CADERNOS DE FINANÇAS PÚBLICAS

TESOURONACIONAL

Volume 03

2021

INVESTMENT IN INFRASTRUCTURE IN MUNICIPALITIES FROM PUBLIC SOCIAL SECURITY FUNDS: AN EXPLORATORY STUDY

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Resumo

The Brazilian economic crisis, aggravated by the COVID 19 pandemic, forced the State to increase public spending, which worsened the country's fiscal situation. Given this scenario, it is urgent to create public policies that meet the generation of jobs, increase in tax collection, GDP growth, reduction of poverty and inequality. One of the main instruments for resuming economic growth and promoting sustainable economic development is the increase in investments in infrastructure. The objective of this work is to assess whether the use of public pension funds can encourage investment in infrastructure in Brazil. The methodology used was qualitative research through the survey of articles and documents. The application of resources from public pension funds in investments in infrastructure is presented as a new model to promote these investments and bring other safe and more profitable sources of income for these pension funds.

Palavras chaves: Infrastructure investment. Public pension funds. Municipalities.

Classificação JEL: 010. 020. 029.

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SUMÁRIO

1. INTRODUCTION

The present Brazilian economic crisis, which began in 2014 and was seriously aggravated by the COVID-19 pandemic in early 2020, forced the Brazilian State in its three spheres of government (Federal, State, and Municipal) to expand public spending on health services, which further aggravated public finances.

In the context of the economic crisis, the unemployment rate between September 20 and September 26, 2020 reached 14.4%, with 15.3 million unemployed, with industry shrinking by -4.2%, the services sector by -7.8%, and retail trade growing 0.4% in the accumulated period between March 2020 and February 2021 (IBGE 2021).

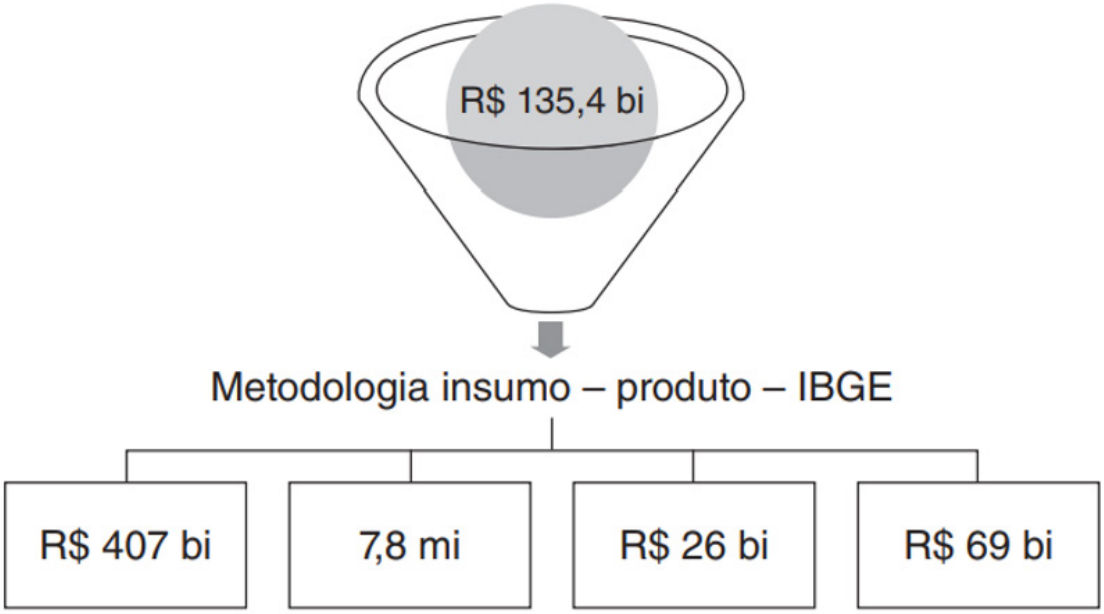
Therefore, because of one of the worst economic, social, and health crises in the country's history, it is imperative that public policies be created and executed to generate jobs and income, improve the situation of the national public accounts, and provide for the resumption of economic growth. In this sense, one of the best ways forward is to increase investments in infrastructure.

Increased investment in infrastructure generates a dual effect on the economy, both in supply and demand. On the supply side, the following stand out: increased labor productivity, competition for market access by more firms, and horizontal cost reductions (Oliveira 2018).

From the perspective of demand, the effect can also be significant. Increased investment in infrastructure generates an increase in the Gross Domestic Product (GDP), the employment rate and tax collection, as well as in the wage bill (Oliveira, 2018).

Considering the input-output matrix, we can illustrate in Figure I below, the importance of investments in infrastructure to boost GDP growth.

Figure 1 - Methodology Input Output



(Figure de Oliveira 2018, Infrastructure Challenges in Brazil. (São Paulo: Editora Trevisan) 312)

As we can see in figure I, investments of the order of R$ 135 billion, would generate an increase of R$ 407 billion in GDP, R$ 26 billion in tax collection, R$ 69 billion in wage bill and would create a total of 7.8 million jobs. (Oliveira 2018).

However, this type of investment requires a substantial amount of capital that can be invested in the construction of logistic corridors such as highways, railroads, subways, cabotage and bus corridors, as well as in basic sanitation, electricity generation, transmission and distribution, and finally, telecommunications.

Notably, the Brazilian State, in its three Federative Entities (Union, States, Federal District and Municipalities), facing an adverse fiscal scenario, does not have the financial capacity to make the necessary investments in infrastructure and, consequently, promote economic growth, employment generation, income and quality of life for citizens. The present situation becomes more dramatic when the demand for infrastructure investments in municipalities and the deterioration of the public accounts of these entities are observed (Silva 2020).

However, an alternative to the above-mentioned financial framework is the use of municipal, state, and federal pension funds to invest in infrastructure in the municipalities, through credit operations that are currently carried out with public banks (Banco do Brasil – Bank of Brazil and Caixa Econômica Federal – Federal Savings Bank) and could be carried out directly with the public pension fund.

Besides representing an important measure to inject resources into the economy and boost the resumption of GDP growth and employment rates, this alternative contributes to greater profitability of the investment portfolios of public pension funds, since, according to the current legal framework, the resources of these funds should be mostly invested in government bonds, which provide low rates of return on investment (Carvalho 2018).

In this sense, given the capacity of economic dynamism from investments in infrastructure, in the face of the social and health crisis that the country is going through, as well as the degree of debt of the Municipalities, States and the Union, a study on the use of public pension funds in infrastructure investment is justified, with emphasis on the municipal scope, through the following problem: **What is the feasibility and relevance in the use of public pension funds for investments in municipal infrastructure?**

To answer this question, the general objective of this research is to dissect on investment in municipal infrastructure as an inducer of economic development with national multiplier effect. In the face of these investments, one can highlight the goal of systematic improvement in strategic sectors of Brazilian society, such as mobility, sanitation and housing, promoting job creation, increased tax collection, GDP growth, poverty reduction and income inequality.

2. METHODOLOGY

2.1. Research Classification

The present research is classified as applied, as it aims to prove, through the study of the governing law, the importance of investment in municipal infrastructure as an inducer of regional economic development and with a national multiplier effect from the public pension funds of the Municipalities, States, and the Federal District.

Furthermore, there is a proposition to be answered about investments in municipal infrastructure from public pension funds in Brazil. The object of the study is considered exploratory, since it analyzes a theme that has been little addressed by the scientific community and, consequently, little published in the main scientific journals in Brazil. Box 1 summarizes the methodological descriptors:

Box 1 - Methodological descriptors

Category	Type
Degree to which the research question has been crystallized	Formal study
Object of study	Exploratory
Power of the researcher to produce effects on the variables being studied	Ex post facto
Time Dimension	Transversal
Research Environment	Web

(Authors' Table 2021)

2.2 Data Collection Instrument

To achieve the objective, qualitative research was adopted, by means of articles published in national and international journals, as well as in the digital library of theses and dissertations of Universities. In addition, documents were collected from the annals of the National Congress, the Central Bank of Brazil, the National Monetary Council, and the Securities and Exchange Commission.

2.3 Data Analysis

By means of the information collected from the literature review, as well as the primary documents, the discourse analysis was applied both on the scientific articles referenced in the work and on the primary documents, in which the objective was to question the meanings established in several kinds of scientific production, which can be verbal and non-verbal, if their materiality produces meanings for interpretation (Caregnato and Mutti, 2006).

2.4 Proposition

The analysis of the information obtained in the databases was based on theoretical propositions, and the objectives of the present research are based on the propositions that reflect the research problems, the literature review, and the new interpretations.

Thus, the proposition of this paper is the following: the use of public pension funds can foster investment in infrastructure in Brazil, in line with the rules governing the contracting of Credit Operations by States, Federal District and Municipalities.

Thus, in the legal sphere, the Federal Entities' contracting of Credit Operations must be subordinated to Complementary Law no. 101, of 05/04/2000 (Fiscal Responsibility Law - LRF) and to Federal Senate Resolutions (RSF) no. 40/2001 and 43/2001.

Propositions "are statements about concepts that can be judged as true or false if they refer to observable phenomena" (Cooper and Schindler 2003). In this sense, the summary of objectives, propositions, literature background, data collection methods, and data analysis can be seen in Box II.

Box 2 - Summary of objectives, propositions, literature background, data collection methods, and data analysis.

Goal	Prove the investment in municipal infrastructure as an inducer of regional economic development and with a national multiplier effect from the public pension funds.
Proposition	The use of pension funds can foster investment in infrastructure in Brazil.
Collection Method	Survey of articles and documents
Data Analysis	Interpretive Analysis

(Authors' Table 2021)

3. INFRASTRUCTURE INVESTMENT IN BRAZIL: IMPORTANCE AND HISTORY

Infrastructure is the gathering of conjunctions necessary to enable the future production of goods and services and flow of raw materials, data, goods, and labor that allow economic transactions to take place in each geographic space (Oliveira 2018).

Furthermore, investments in infrastructure also contribute to the improvement of social indicators such as the reduction of poverty and the improvement of the quality of life of the population through the increase of the salary mass, the creation of new jobs, the capacity of school learning and the capacity of adults to work, and the decrease of diseases in the population.

Given the importance of investment in infrastructure for sustainable development, in Brazil, at the beginning of the 20th century, infrastructure sectors such as energy, basic sanitation, communications and transportation were operated essentially by private organizations, based on concessions granted by the government. However, the economic challenges of the period, and the scarce and deficient regulatory environment, led to slow expansion and deterioration of services.

In the same way, coupled with a scenario of population growth, urbanization of the country, underdeveloped capital markets and lack of interest from foreign investors led the state to lead the investments in the infrastructure sector, accentuated by World War II, This development model was executed by the Brazilian state until the late 1970s when it began to show signs of exhaustion, either by the growing foreign debt as well as by the high interest rates in the United States, also known as the counter monetary revolution, which consequently caused the crisis of the 1980s, also known as the lost decade (Ferreira and Azzoni 2011).

Because of the model mentioned above, there was little competition in the Brazilian economy, inefficiency and excessive diversification of the production structure, which were the main reasons for the low national competitiveness. Based on this diagnosis, the economy was opened and privatizations began during the Fernando Collor de Mello administration (1990-1992), but it was during the Fernando Henrique Cardoso administration (1995-2002) that these measures were promoted, with the main objective of achieving efficiency, greater production specialization, increased competition, and private participation, since these agents would make a better allocation of resources.

Furthermore, during Fernando Henrique's administration "the National Privatization Plan (PND) was expanded to include the Vale do Rio Doce Company, public service concessions to private enterprise and support for state privatizations. The government created an institutional environment to stimulate private investment. The Concessions Law 8.987/95, a fundamental landmark for privatization of the sector, regulates article 175 of the Federal Constitution, authorizing private concessionaires to operate public services. Between 1995 and 2002, privatizations of companies in the infrastructure sector exceeded the figure of US$ 163 billion, with Brazil accounting for 42% of this total" (Ferreira and Azzoni 2011)

Consequently, the State's share in investments in infrastructure fell from 3% of GDP in 1990, to 1.1% in 1998, with the electric power and transportation sectors being the most affected, which contributed to the growth of bottlenecks in these important economic sectors (Pêgo Filho, Cândido Júnior and Pereira 1997).

With the beginning of the Luiz Inácio Lula da Silva administration (2003-2010), institutional measures were taken to optimize public-private investment in infrastructure. In this sense, one can highlight Law No. 11,079/2004 of December 30, 2004, which regulated public-private partnerships - PPPs, as well as created important changes in the contracting by the public administration of services and public works. According to Lins (2017) this type of contracting has become fundamental for governments to contract infrastructure works.

However, the great mark of the PT administration in promoting infrastructure was the Growth Acceleration Program - PAC, launched at the beginning of Lula da Silva's second term. In 2007, the PAC aimed to eliminate bottlenecks that hindered the country's economic growth through investments in major social, urban, logistical, and energy infrastructure works in the country, aiming to increase the number of jobs, boost income, and reduce social and regional asymmetries in the country,

encourage access to credit, financing, and fiscal and tax measures (Brazil, 2014).

The investment forecast for the first phase of PAC was around 500 billion Reais between 2007 and 2010. In addition, in 2009, the federal government announced an additional 140 billion Reais in investment as an instrument to minimize the impacts of the 2008 subprime economic crisis in the United States. It was specifically during this period that the construction of large hydroelectric plants such as Santo Antonio in 2008, Jirau in 2009, and Belo Monte in 2011 began (Lins 2017).

In 2011, the Dilma Rousseff administration (2011-2016) began, ideologically aligned with the previous administration, which announced the second stage of the Growth Acceleration Program - PAC 2. This stage of the program was characterized by an increase in the resources financed by the National Treasury with the National Bank for Economic and Social Development (BNDES), with an investment forecast of 955 billion reais by 2014.

However, according to the 7th PAC Balance Sheet, released in August 2018 by the Ministry of Planning, Budget and Management, the program had executed, as of June 30, 2018, 95.4% of the total planned for the 2015-2018 period, going from 547.5 billion reais, realized by December 2017, to 603 billion reais. Of this total amount, 168.8 billion reais were corresponding to the amounts executed by the Financing to the Public Sector and Minha Casa, Minha Vida program; 175.3 billion reais from state companies; 120.5 billion reais from the private sector; 127.6 billion reais from the Fiscal Budget and Social Security; and 8.5 billion reais from counterparts from states and municipalities. However, only 69.7% of the projects were completed (Brazil 2018).

The Growth Acceleration Program, in both phases, fulfilled its goal of increasing public investment in infrastructure. However, this public spending led the country into a fiscal crisis and an acceleration of the inflationary process, very close to what occurred at the end of the II PND (Lins 2017a).

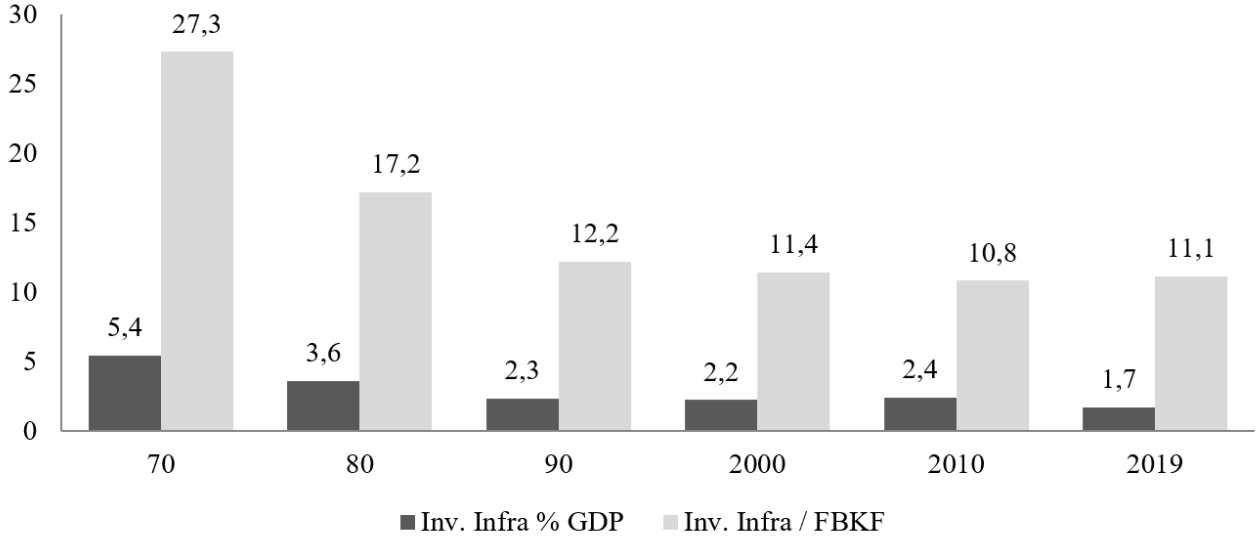
Moreover, the PAC projects were poorly designed and management failures led to high costs and delays in the delivery of the works, especially in its first phase, during the Lula da Silva administration. Moreover, the focus on new projects did not solve the bottlenecks in Brazilian infrastructure, which consequently generated projects with low social and economic impact. Although the figures for PAC 1 and 2 are substantial, 95% of the investment made, 70% of the projects were not completed, due to the fiscal crisis, inflationary pressure; poorly elaborated projects, management flaws raised costs and delayed deliveries, especially during the Lula da Silva administration with 4,700 PAC projects halted.

Even with policies such as the Growth Acceleration Program, in the last two decades, investment in the infrastructure sector in Brazil in relation to the Gross Domestic Product was lower compared to other developing nations, in which it reached just over 2% of GDP, compared to around 5% in India and over 8% in China (Oliveira 2018).

The significant lack of investment in infrastructure continues to mark the Brazilian economy, and the central reason for this lies in the absence of regulatory models and mechanisms to foster these investments (Amann et al. 2014).

Over the past 20 years, Brazil has invested an average of 2.1% of GDP in infrastructure, below the world average (3.8%) and countries like China (8.5%) and India (4.7%). In 2019, 1.71% of GDP was invested in infrastructure and to reach the world average of infrastructure stock, it would be necessary to invest between 4.8% and 7% of GDP annually to obtain sustained growth rates. (ABDIB, 2020). The historical series of investment in infrastructure in Brazil can be seen in graph I.

Chart 1 - Infrastructure investment in Brazil - History



(Figure from ABDIB, 2020, Blue Book of Infrastructure: A Radiography of Infrastructure Projects in Brazil. (São Paulo: ABDIB) 117)

To modernize the national infrastructure will require investments of at least 4.15% of GDP, equivalent to R$ 274 billion (CNI 2020). Table I compares the amounts invested and the amounts needed in infrastructure investment in the main economic sectors.

Table 1 - Reality and Infrastructure Investment Needs

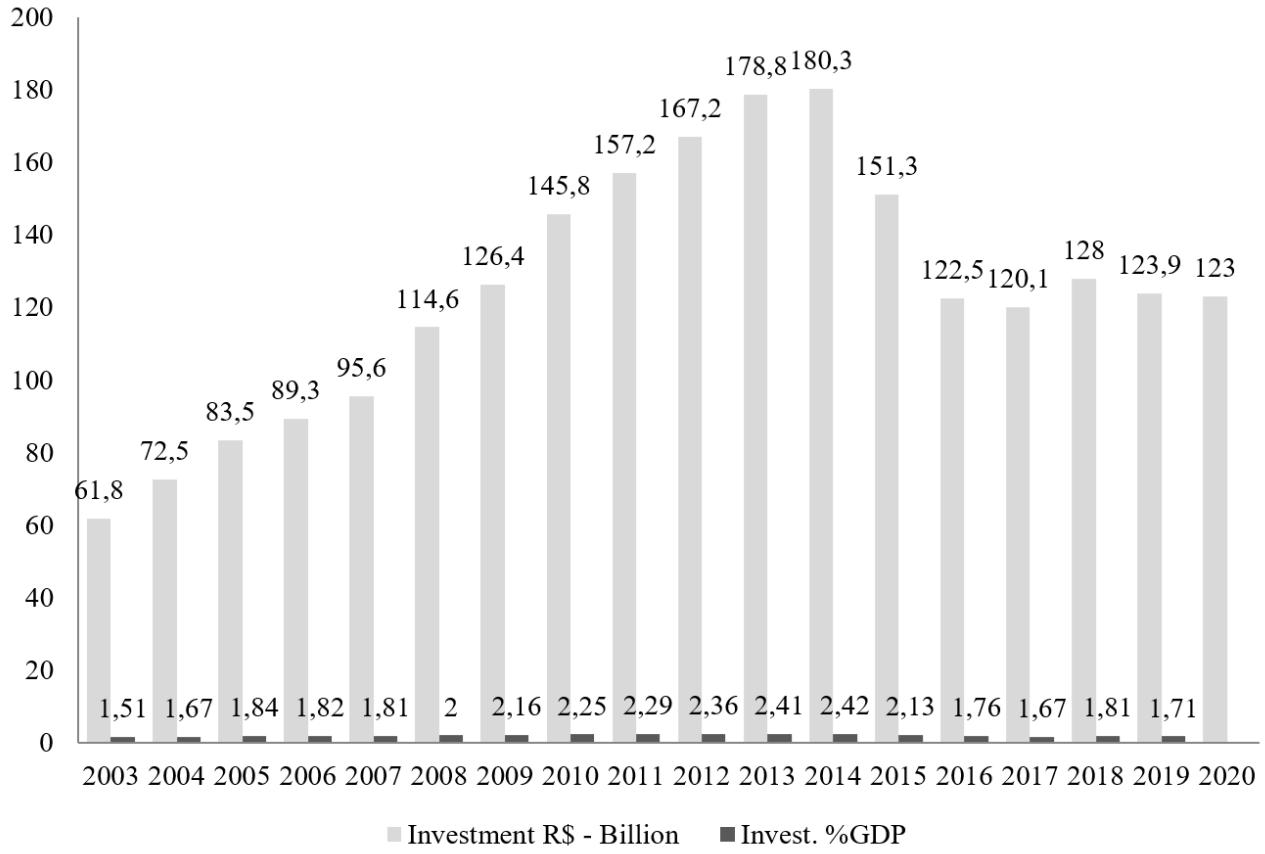
Sector	Investments (2019) - R$ billion	In % GDP	Investments Needed - R$ Billion	In % GDP
Transportation/Logistics	R$ 25.00	0.34	R$ 149.00	2.26%
Electric Power	R$ 51.40	0.71	R$ 55.40	0.84%
Telecommunications	R$ 33.10	0.46	R$ 50.00	0.76%
Sanitation/Waste	R$ 14.40	0.2	R$ 30.00	0.45%
Total	**R$ 123.90**	**1.71%**	**R$ 284.40**	**4.31%**

(Figure from ABDIB, 2020, Blue Book of Infrastructure: A Radiography of Infrastructure Projects in Brazil. (São Paulo: ABDIB) 117)

The present situation has become even more serious due to the enactment of Constitutional Amendment No. 95, which limits public spending for 20 years. As of 2018, federal spending could only increase according to accumulated inflation as measured by the National Wide Consumer Price Index (IPCA).

Consequently, the Federal Government had to cut spending on other fronts to comply with the spending cap. Given this perspective, federal investments in infrastructure in 2021 reached the lowest proportion since 1947, about 0.1% of Gross Domestic Product, which is not even enough to make operation and maintenance in the existing infrastructure. Graph II illustrates the perspective of investments in infrastructure in the country with updated values for 2019.

Graph 2 - Evolution of infrastructure investments - (2003-2020) with constant values at 2019 prices and % GDP



(Figure from ABDIB, 2020, Blue Book of Infrastructure: A Radiography of Infrastructure Projects in Brazil. (São Paulo: ABDIB) 117)

4. MUNICIPAL INFRASTRUCTURE AND TAX SITUATION

The federal government's investments in urban infrastructure, through the municipalities, constitute a fundamental mechanism for the promotion of economic and social development in the cities. From them, it is possible to enable the access of the less favored population to essential public services such as health, education, safety, housing, and transportation, as well as boost the regional economy by promoting the generation of employment and income, with a view to increasing social welfare (Linhares and Messenberg 2018).

Another advantage of the execution of investments by municipalities is the ability to "format" the supply of urban infrastructure according to the preferences of citizens, thus contributing to greater effectiveness in solving the problems prioritized by them in the various localities. (Linhares and Messenberg 2018).

Regarding the economic aspect, urban infrastructure aims to provide the development of economic activities, through the production and marketing of goods and services. As for the institutional aspect, urban infrastructure should provide the fundamental means for the development of administrative and political activities, including the management of the city itself (Zmitrowicz and Angelis Neto 1997).

The improvements in the aspects are in line with the construction of an urban space that is favorable and necessary for the exercise of citizenship and democracy, as sustained by the Federal Constitution in its Article 6 - "Education, health, food, work, housing, transportation, leisure, security, social security, protection of motherhood and childhood, and assistance to the destitute are social rights, in the form of this Constitution" (Brazil 1988).

However, according to the FIRJAN Index of Fiscal Management that evaluated the economic-financial situation of the 5,337 Brazilian municipalities, 70% of these municipalities are in a difficult or critical fiscal context. There are 3,944 cities in this condition, including nine capitals: Florianópolis, Maceió, Porto Velho, Belém, Campo Grande, Natal, Cuiabá, Rio de Janeiro and São Luís, in which 97% of the population resides. Still according to the study, 40.5% of the municipalities are in a critical situation, 33.4% in a difficult situation and only 26.1% in a good and excellent situation (FIRJAN Index of Fiscal Management, 2019).

Moreover, regarding the autonomy of the municipalities, 1,856 are not sustained, since the revenues do not cover the costs and expenses with the structure itself, both the executive and legislative branches. On average, the above municipalities executed in 2018 about R$ 4.5 million with expenses, however, had a local revenue of only R$ 3 million. Furthermore, 57.5% of the municipalities are in critical situation, 9.7% in difficult situation and only 32.8% in good and excellent situation (FIRJAN Index of Fiscal Management, 2019).

With respect to spending on human resources, half of the Brazilian cities are in a critical situation, employing financial resources on payrolls above the limit, in which 2,635 municipalities are at the spending limit compared to the Net Current Revenue. Another point to highlight is that this study showed that 821 cities are outside the legislation, to the extent that they committed in fiscal year 2018 more than 60% of Net Current Revenue with payments of public employees. Moreover, 49.4% of the municipalities are in critical situation, 20.5% in difficult situation and only 30.2% in good and excellent situation (FIRJAN Index of Fiscal Management, 2019).

From the perspective of investment capacity (capital expenditure), 47% of municipalities showed a critical level and invest an average of only 3% of revenue (FIRJAN Fiscal Management Index, 2019).

One of the possibilities to overcome the above fiscal situation is the use of state and municipal pension funds to finance urban infrastructure, especially basic sanitation, transportation, public roads, energy, and communication, instead of investing these resources strictly in the financial market.

5. VOLUNTARY TRANSFERS AND CREDIT OPERATIONS FOR INFRASTRUCTURE INVESTMENTS

The Federal Constitution of 1988 brought more administrative and political autonomy to Brazilian municipalities, however, most of the financial resources remained in the power of the Union. Thus, Brazilian cities came to depend on transfers of federal resources for the implementation of public policies.

The transfer of federal resources to municipalities can be classified in the following modalities (CGU, 2005): constitutional; legal; from the Unified Health System (SUS); direct to the citizen and voluntary.

Of the previous modalities, the intragovernmental transfer that covers investment in infrastructure are voluntary transfers. Voluntary transfers, considered within the scope of budgetary and financial management of the Union's resources, are defined in the Fiscal Responsibility Law (LRF) as the delivery of current or capital resources to another entity of the Federation, as cooperation, aid, or financial assistance, not resulting from a constitutional or legal determination or those intended for the SUS.

The Interministerial Ordinance of the Ministry of Planning, Budget and Management - MPOG No. 424, December 30, 2016, which establishes rules for the execution of voluntary transfers, considers as transfer contract the transfer that involves investment in infrastructure. According to the Ordinance, a transfer agreement is the administrative instrument through which the transfer of financial resources takes place through a federal public financial institution or agent (Caixa Econômica Federal - CEF), acting as the Union's agent.

Voluntary transfers from the Union to states and municipalities for investments in infrastructure (transfer contracts) are non-onerous resources, i.e., they do not generate obligation to return resources. On the other hand, credit operations are onerous resources and, therefore, generate an obligation of financial return, as well as depend on the attestation of payment capacity and debt limit.

The contracting of Credit Operations by States, Federal District, and Municipalities, including their Independent States, Foundations, and Dependent State Companies (item III, art. 2 LRF), is subject to the norms of Complementary Law no. 101, of 05/04/2000 (Fiscal Responsibility Law - LRF) and to Federal Senate Resolutions (RSF) nos. 40/2001 and 43/2001.

Notably, the Federative Entity that wishes to contract a credit operation, besides following the above-mentioned rules, must follow the instruction procedures for analysis requests directed to the Ministry of Economy - ME (verification of limits and conditions, and analysis of the granting of a guarantee), through the National Treasury Secretariat - STN.

Among the credit operations for the States, Municipalities and the Federal District, one can highlight the financing with the Federal Government from resources of the Employment Time Guarantee Fund - FGTS for investment in infrastructure in the cities.

The Growth Acceleration Program - PAC, launched in 2007, at the beginning of Lula da Silva's second mandate, using FGTS resources, presented municipalities with a financing alternative for housing, sanitation, transportation infrastructure and urban mobility. Even today, with a considerably smaller volume of resources from the FGTS, the Ministry of Regional Development presents the program Avançar Cidades in sanitation (Saneamento para Todos – Sanitation for All), as well as transport infrastructure and urban mobility (Pró-Transporte – Pro-Transport).

The financing with the Federal Government, originating from the FGTS for investment in infrastructure in the cities, as well as the on-lending contracts, presents the Caixa Econômica Federal as the financial agent, ensuring the execution of the works according to the legal and technical requirements.

Thus, the financial agent (Caixa Econômica Federal - CEF) performs the control and inspection of investments in infrastructure, respecting, above all, the object of the work foreseen in the on-lending or financing contract.

CEF's remuneration in the financing with the Federal Government, using FGTS funds, is the administration fee of around 2% per year, levied on the outstanding balance; and the credit risk fee of around 1% per year, levied on the outstanding balance of the contract. The voluntary transfers from the Federal Government to the States and Municipalities for investments in infrastructure (transfer agreements) present as remuneration an administration fee of around 2% to %4 of the contracted value, depending on the service provision contract that the granting agency has with CEF.

The financing with the Federal Government, originating from the FGTS for investment in infrastructure in cities require a counterpart financial contribution of 5% to 10% (approximately) of the value invested. As for transfer agreements, a minimum counterpart is currently required around 1% to 10% (approximately) of the value of the investment.

In the case of financing with the Federal Government, originating from the FGTS for investment in infrastructure in the cities, another point to highlight is the security of payment of the credit operation, since the guarantee is the Municipal Participation Fund - FPM.

Notably, by linking the FPM as collateral in the financing with the Federal Government, originating from the FGTS, for investment in infrastructure in the cities, the risk becomes significantly low, even resembling the risk of government bonds issued by the Union.

6. INFRASTRUCTURE INVESTMENT IN MUNICIPALITIES FROM PUBLIC PENSION FUNDS

As previously mentioned, Brazilian municipalities present, in their majority, a serious financial crisis, presenting a fiscal scenario of difficulty for the maintenance of the administrative structure itself.

Furthermore, many municipalities have an unbalanced Social Security System (RPPS), making the fiscal situation even worse, since the municipalities need to contribute budget resources to guarantee the benefits of retired employees.

According to data surveyed by the Social Security Secretariat, linked to the Ministry of Finance, the actuarial deficit (long-term calculation that estimates future revenues minus future payments) of municipalities in 2016 was 769 billion reais. The subject is sensitive, but it does not change one fact: more and more public budgets are committed to pension shortfalls. (Seta 2018)

As an example, we can cite the fiscal situation of the municipality of Ribeirão Preto that, from the municipal budget, made the following contributions to the RPPS and investments in urban infrastructure:

Table 2 - Resource allocation in the RPPS and investments in infrastructure

Year	Municipal Budget[1] (A)	Transfer of resources in the RPPS (B)	B/A	Infrastructure Investment (C)	C/A
2018	R$ 2,004,188,522.17	R$ 214,939,096.27	10.72%	R$ 36,726,507.71	1.83%
2019	R$ 2,053,541,279.37	R$ 237,818,576.52	11.58%	R$ 65,005,359.88	3.17%
2020	R$ 2,140,220,296.60	R$ 171,773,605.73	8.03%	R$ 146,400,226.12	6.84%
2021[2]	R$ 2,251,313,321.00	R$ 137,216,389.90	6.90%	R$ 37,028,023.28	1.64%
		R$ 761,747,668.42		**R$ 285,160,116.99**	

[1] Annual budget for Direct Administration only

[2] Until August 2021

(Authors' table 2021)

The RPPS funds must reach financial and actuarial balance, but if there is financial insufficiency, the federative entity, as in the case of the municipality of Ribeirão Preto, must contribute resources to the social security system.

Other measures adopted to contain the financial and actuarial imbalance by the Municipalities, including Ribeirão Preto as of 2019 (Law 2,988/19), was to increase the social security contribution rate of the public servants and the City Hall, from 11% to 14% and from 22% to 28%, respectively. However, just increasing the rate does not solve the problem, and it is necessary to establish other sources of revenue.

From Chart III, the City Hall of Ribeirão Preto has made a low rate of investment in infrastructure in relation to the annual budget of the Municipality. Moreover, it is important to note that, in the period from 2018 to August 2021, the amount of the contribution of resources in the RPPS was 2.67 times higher than the investment in infrastructure in the city of Ribeirão Preto.

Another point to highlight is that, according to the following table, a large part of the source of resources for infrastructure investments comes from sources outside the municipality (credit operations represent more than 98% of the investments in the years presented):

Table 3 - Infrastructure investments in the municipality of Ribeirão Preto

Year	Infrastructure Investment - own source (A)	A/C	Infrastructure Investment - other sources (B)	B/C	TOTAL (C)
2018	R$ 1,344,136.94	3.66%	R$ 35,382,370.77	96.34%	R$ 36,726,507.71
2019	R$ 3,627,665.42	5.58%	R$ 61,377,694.46	94.42%	R$ 65,005,359.88
2020	R$ 3,698,806.10	2.53%	R$ 142,701,420.02	97.47%	R$ 146,400,226.12
2021[1]	R$ 1,610,863.87	4.35%	R$ 35,417,159.41	95.65%	R$ 37,028,023.28
	R$ 10,281,472.33		**R$ 274,878,644.66**		**R$ 285,160,116.99**

[1] Until August 2021

(Authors' table 2021)

Therefore, given the precarious fiscal situation of municipal governments, highlighting the importance of investments in infrastructure in the cities, aiming not only at access to citizenship, but also at generating jobs, income and competitive advantages for the country and reducing inequality, financing models for investments in urban infrastructure are needed.

One of the possibilities to overcome the fiscal situation is the use of state and municipal pension funds to finance urban infrastructure, especially in basic sanitation, mobility and housing, instead of investing these RPPS resources strictly in the financial market. Furthermore, the investment of RPPS resources in infrastructure investments is a way to bring other sources of more profitable revenue for the pension fund.

The application of the resources of the social security funds is regulated by Resolution 3922 of November 25, 2010 of the Central Bank of Brazil - BCB, which provides for the applications of the resources of the social security funds, instituted by the Union, States, Federal District, and Municipalities, as per Article 9 of Law 4595 of December 31, 1964, based on the sole paragraph of Article 1 and on item IV of Article 6 of Law 9717 of November 27, 1998.

According to Art. 2 of Resolution 3,922/2010, observing the limitations and conditions established in this Resolution, the resources of the social security's own regimes must be allocated in the following investment segments: fixed income; variable income and structured investments and investments abroad.

Notably, in view of the limitations and conditions for the application of RPPS resources, an amendment to Resolution 3,922/2010 is necessary to allow the operationalization of financing in Infrastructure in cities from public pension funds of the municipalities themselves or their respective states.

However, another point to highlight the relevance of using state and municipal pension funds to finance urban infrastructure is that, in the face of the adverse financial situation, municipalities have started to carry out credit operations directly with national and international financial institutions. Only between the years 2017 and 2021, the Bank of Brazil financed to the thirty Brazilian municipalities with the highest GDP about R$ 2,067,216,445.36. Caixa Econômica Federal, on the other hand, financed R$ 8,267,078,634.80, which is described in the following table:

Table 4 - Investment in infrastructure made by Caixa Econômica Federal through internal contractual operations with and without Union guarantees between 2017 and 2021.

Class, by GDP	City	State	2017	2018	2019	2020	2021	Total
1st	São Paulo	SP		R$ 249,000,000.00				R$ 249,000,000.00
2nd	Rio de Janeiro	RJ	R$ 852,000,000.00	R$ 49,000,000.00				R$ 901,000,000.00
3rd	Brasília	DF						
4th	Belo Horizonte	MG	R$ 120,000,000.00	R$ 44,500,000.00	R$ 181,326,470.21	R$ 200,000,000.00		R$ 545,826,470.21
5th	Curitiba	PR				R$ 250,000,000.00		R$ 250,000,000.00
6th	Osasco	SP						
7th	Porto Alegre	RS		R$ 24,905,053.84	R$ 220,711,911.94	R$ 99,793,578.54		R$ 345,410,544.32
8th	Manaus	AM		R$ 307,819,695.50	R$ 350,000,000.00			R$ 657,819,695.50
9th	Salvador	BA	R$ 75,000,000.00		R$ 139,100,000.00			R$ 214,100,000.00
10th	Fortaleza	CE	R$ 48,885,559.47	R$ 35,000,000.00				R$ 83,885,559.47
11th	Campinas	SP	R$ 100,000,000.00					R$ 100,000,000.00
12th	Guarulhos	SP			R$ 25,000,000.00			R$ 25,000,000.00
13th	Recife	PE		R$ 200,000,000.00	R$ 50,000,000.00	R$ 201,000,000.00	R$ 153,274,427.44	R$ 604,274,427.44
14th	Goiânia	GO		R$ 115,000,000.00	R$ 780,000,000.00	R$ 795,000,000.00		R$ 1,690,000,000.00
15th	Barueri	SP						
16th	São Bernardo do Campo	SP		R$ 145,000,000.00		R$ 110,826,107.68		R$ 255,826,107.68
17th	Jundiaí	SP		R$ 10,877,954.19	R$ 173,801,000.00			R$ 184,678,954.19
18th	Duque de Caxias	RJ				R$ 150,000,000.00		R$ 150,000,000.00
19th	São José dos Campos	SP		R$ 32,114,230.95				R$ 32,114,230.95
20th	Paulínia	SP						
21st	Ribeirão Preto	SP		R$ 120,000,000.00	R$ 115,466,002.68		R$ 70,000,000.00	R$ 305,466,002.68
22nd	Uberlândia	MG						R$ 140,200,000.00

continue

Continued

Class. by GDP	City	State	2017	2018	2019	2020	2021	Total
23rd	Sorocaba	SP						R$ 108.527.397,16
24th	Belém	PA	R$ 110.000.000,00		R$ 193.520.000,00	R$ 139.982.875,03		R$ 443.502.875,03
25th	São Luís	MA			R$ 133.390.425,68			R$ 133.390.425,68
26th	Contagem	MG	R$ 22.976.058,07	R$ 194.727.755,67	R$ 79.292.915,93	R$ 50.000.000,00		R$ 346.996.729,67
27th	Niterói	RJ						
28th	Santo André	SP	R$ 84.045.733,41	R$ 25.885.129,06	R$ 60.000.000,00	R$ 20.000.000,00	R$ 27.380.000,00	R$ 217.310.862,47
29th	Joinville	SC						
30th	Campo Grande	MS		R$ 11.595.000,00	R$ 55.000.000,00	R$ 216.153.352,35		R$ 282.748.352,35
			R$ 1.412.907.350,95	R$ 1.705.624.819,21	R$ 2.556.608.726,44	R$ 2.341.283.310,76	R$ 250.654.427,44	R$ 8.267.078.634,80

(Source: Adapted from the Federal, State and Municipal Public Debt, Credit Operations and Guarantees Analysis System - SADIPEM, 2021).

The financing line offered directly to the public sector by CEF is the FINISA (Financing for Infrastructure and Sanitation) and has a high interest rate compared to the Federal Government and FGTS financing. In FINISA, the interest rate applied is a percentage plus 100% per year of the CDI (Interbank Deposit Certificate). Moreover, to consolidate the low risk of the credit operation, the FINISA financing contracts, as a rule, require the FPM - Municipality Participation Fund as a guarantee.

The situation can be observed in the city of Ribeirão Preto, from table III that presents the cash flow of the internal contractual operation for investment in infrastructure carried out with CEF, in which one can see the charges, amortizations and final installment paid by the municipality.

Table 4 - Flow of contractual operation performed with Caixa Econômica Federal in the City of Ribeirão Preto

Federation Entity: Municipality of Ribeirão Preto - SP
Financial Institution: Caixa Econômica Federal
FINISA - Financing for Infrastructure and Sanitation.

YEAR	PLANNED RELEASE	CHARGES (A)	AMORTIZATION (B)	INSTALLMENT (A + B)
2019	R$ 35.000.000,00	R$ 1.861.554,95		R$ 1.861.554,95
2020	R$ 35.000.000,00	R$ 6.711.059,93		R$ 6.711.059,93
2021		R$ 8.153.834,99	R$ 8.842.105,32	R$ 16.995.940,31
2022		R$ 7.060.499,83	R$ 8.842.105,32	R$ 15.902.605,15
2023		R$ 5.967.164,67	R$ 8.842.105,32	R$ 14.809.269,99
2024		R$ 4.888.109,53	R$ 8.842.105,32	R$ 13.730.214,85
2025		R$ 3.780.494,37	R$ 8.842.105,32	R$ 12.622.599,69
2026		R$ 2.687.159,20	R$ 8.842.105,32	R$ 11.529.264,52
2027		R$ 1.593.824,06	R$ 8.842.105,32	R$ 10.435.929,38
2028		R$ 502.743,62	R$ 8.105.263,21	R$ 8.608.006,83
Total	**R$ 70.000.000,00**	**R$ 43.206.445,15**	**R$ 70.000.000,45**	**R$ 113.206.445,60**

(Authors' table 2021)

As can be seen, the City of Ribeirão Preto, for a financing of R$ 70,000,000.00, must pay a total of charges and amortization in the amount of R$ 113,206,445.60. In this FINISA financing contract made in 2018 with CEF, the interest rate was 5.7% + 100% CDI per year.

In this sense, in view of the information presented, instead of the Municipalities and States of the federation seeking financing sources with financial institutions, it would be interesting for municipal public finances to acquire such resources from credit operations with the public pension funds (RPPS) of the respective Municipality or State.

Notably, the contracting of credit operations with the RPPS must be subordinated to the rules of the Complementary Law no. 101, of 05/04/2000 (Fiscal Responsibility Law - LRF) and to the Resolutions of the Federal Senate (RSF) nos. 40/2001 and 43/2001. Inclusively, it must follow the instruction procedures of the analysis requests directed to the Ministry of Economy - ME (verification of limits and conditions and analysis of the granting of a guarantee), through the National Treasury Secretariat - STN to ensure the financial and payment capacity before the effective contracting.

As for the interest rate perspective, the contracting of financing for investment in Infrastructure by the Municipality with the RPPS of the respective Municipality or State, one could use a rate similar to that used by FINISA, i.e., a percentage plus 100% per year of the CDI (Interbank Deposit Certificate). Notably, a higher return on investments foreseen for the RPPS, according to Resolution 3922/2010 of the Central Bank of Brazil - BCB.

In the scope of risk, the FPM - Municipal Participation Fund could be used, as in other credit operations carried out by the Municipalities, as a guarantee of payment of the operation. Thus, the contracting of financing for investment in infrastructure by the Municipality with the RPPS of the respective Municipality or State, would present a low risk, even lower than the risk currently provided for applications for the RPPS, according to Resolution 3,922/2010 of the Central Bank of Brazil - BCB.

The financing with the Federal Government, originating from the FGTS, as discussed earlier in this research, presents, through the CEF as the financial agent, a good methodology for the control and supervision of investments in infrastructure. CEF's remuneration in the financing with the Federal Government, from FGTS resources, is an administration fee of around 2% per year, levied on the outstanding balance; and a credit risk fee of around 1% per year, levied on the outstanding balance of the contract.

Thus, the contracting of financing for investment in Infrastructure by the Municipality with the RPPS of the respective Municipality or State, could have CEF as the financial agent, ensuring the execution of the works according to the legal and technical requirements. Notably, despite presenting a lower gain for CEF assisting in the management of these financings, if compared to operations such as FINISA, it meets the institutional mission of the bank itself which is "to promote the sustainable development of Brazil, generating value to customers and society as a public financial institution and agent of State policies" (CEF, 2021).

Despite the mature control system implemented to monitor and manage the on-lending and financing contracts with the Federal Government, through CEF as the financial agent, the execution of public works presents several problems that generate delays and stoppages.

There are about 4.7 thousand stopped works of the Growth Acceleration Program (PAC) that are equivalent to R$ 135 billion of investments. Of this total, approximately 65 billion have already been executed (CBIC 2018). It should be noted that a large part of the problems that cause delays and stoppage of a construction project are due to the fragility of the planning stage.

An alternative to bring better planning and, consequently, efficiency and effectiveness in the execution of public works that involve federal transfers and financing contracts, would be to establish instead of a financial counterpart, the executive project of the work to be performed in the contract as a technical counterpart. It is important to emphasize that the executive project has a cost around 3% to 6% of the total value of the work, similar percentages to the value required as financial counterpart.

7. CONCLUSION

Investments in infrastructure can be considered one of the main catalysts for sustainable economic development and the resumption of growth. Moreover, investments in infrastructure also contribute to increasing competitiveness and improving social indicators, promoting the generation of employment and income, reducing inequality and increasing the social welfare of the population.

However, the significant lack of investment in infrastructure continues to mark the Brazilian economy, and the central reason for this lies in the absence of regulatory models and mechanisms to foster these investments.

Over the past 20 years, Brazil has invested an average of 2.1% of GDP in infrastructure, below the world average (3.8%) and countries like China (8.5%) and India (4.7%). In 2019, 1.71% of GDP was invested in infrastructure and to reach the world average of infrastructure stock, it would be necessary to invest between 4.8% and 7% of GDP annually to achieve sustained growth rates.

The financial incapacity of the state, coupled with changes in the priorities of the Federal Government, accentuated the downward trend in investments in this area. In response, an attempt was made to increase the participation of the private sector through privatization and concession of public services.

However, the private sector is not capable of promoting all the necessary infrastructure investment. In fact, it is important to note that investments in infrastructure, public and private, are complementary rather than substitutive. There are infrastructure investments that in certain places and/or sectors do not present private interest, but have public interest for its realization. Moreover, public investment in infrastructure can be determinant for the realization or volume of private investment. Thus, one can infer that by reducing public investment, the government ends up discouraging private investment.

Most of the Brazilian population, 84.72%, lives in urban areas. In contrast, 15.28% of Brazilians live in rural areas. The Southeast region reaches the highest percentage, with 93.14% of people living in urban areas.

Given the Brazilian scenario of a high percentage of people living in urban areas and the low level of investment in infrastructure, cities present themselves as a prime source of investment in infrastructure for sustainable economic development and the resumption of growth in the country.

In the current situation, the Brazilian State, in its three Federative Entities, does not have the fi-

nancial capacity to make the necessary investments in infrastructure and, consequently, promote economic growth, employment generation, income and quality of life for citizens. The present situation becomes even more dramatic when the demand for infrastructure investments in the Municipalities and the deterioration of the public accounts of this Federative Entity are observed.

Given this adverse fiscal scenario, this research proposes the use of state and municipal pension funds to finance urban infrastructure, especially in waste management, mobility, and housing, instead of investing these RPPS resources strictly in the financial market. Moreover, the investment of RPPS resources in infrastructure investments is a way to bring other secure and more profitable sources of revenue for the pension fund.

Notably, in view of the study developed, one can positively answer the proposition of this research: the use of public pension funds can foster investment in infrastructure in Brazil.

Furthermore, the general objective of this work was successfully achieved, proving the investment capacity in municipal infrastructure as an inducer of regional economic development and with a national multiplier effect from the public pension funds. In view of these investments, one can highlight the goal of systematic improvement in strategic sectors of Brazilian society, promoting job creation, increased tax collection, GDP growth, poverty reduction, and income inequality.

Finally, because Brazil has a high rate of delay and stoppage of public works, it is inferred as relevant not only the search for a source of funds to increase investments in infrastructure, but also to stimulate the planning stage of public works. Thus, an alternative to bring efficiency and effectiveness in the execution of public works, would be to establish, instead of a financial counterpart, the executive project of the work to be performed in the contract, as a technical counterpart in the financing from public pension funds.

This measure would stimulate the engineering and architecture areas to develop quality basic and executive projects. The planning of a public work is an essential step to ensure the success of a venture, since it provides predictability.

The lack of planning in public works harms the country's economic growth and favors losses, waste, and delays in the infrastructure sector, which already presents indices below what is necessary to promote Brazil's sustainable economic development.

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