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POTENTIAL OF ECONOMIC CORRIDORS FOR INVESTMENT IN ROAD INFRASTRUCTURE: A STUDY ON THE BRAZILIAN NATIONAL INTEGRATION AND DEVELOPMENT AXES PROGRAM (ENID) AND THE SOUTH AMERICAN REGIONAL INFRASTRUCTURE INTEGRATION INITIATIVE (IIRSA)

POTENCIAL DOS CORREDORES ECONÔMICOS PARA VIABILIZAÇÃO DE INVESTIMENTO EM INFRAESTRUTURA VIÁRIA: ESTUDO DOS EIXOS NACIONAIS DE INTEGRAÇÃO E DESENVOLVIMENTO (ENID) E DA INICIATIVA DE INTEGRAÇÃO DA INFRAESTRUTURA REGIONAL SUL-AMERICANA (IIRSA)

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Abstract

This article investigates experiences of economic corridors as a strategy for regional development and financing of transport infrastructure. Based on the limitations of traditional public and private channels, it is advocated that projects regarding infrastructure, the production of goods and services, and public services should be grouped in economic corridors, aiming at the production of fiscal economic multiplier effects in sufficient volume to cover the public expenditures involved. For this purpose, experiences of economic corridors in emerging countries are analyzed, in particular the National Integration and Development Axes Program (ENID) in Brazil and the South American Regional Infrastructure Integration Initiative (IIRSA). The design of economic corridors, their governance, financing, and limitations are analyzed to observe their adequacy as a financing strategy. In the case of ENID and IIRSA, the causes of their interruption were analyzed. It is

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concluded that the concept is potentially appropriate as a strategy of growth and financing, indicating the limits to be overcome for a readjustment of its conception.

Keywords: Financing. Infrastructure. Road system. Economic corridors.

Resumo

Este artigo explora experiências de corredores econômicos como estratégia de desenvolvimento regional e de financiamento de infraestruturas de transporte. Partindo das limitações dos canais tradicionais públicos e privados, advoga-se que projetos de infraestrutura, de produção de bens e serviços e de serviços públicos sejam agrupados em corredores econômicos, visando a produção de efeitos multiplicadores econômicos fiscais em volume suficiente para cobrir as despesas públicas envolvidas. Com esse objetivo, analisam-se experiências de corredores econômicos em países emergentes, em particular, os Eixos de Integração e Desenvolvimento (ENID) no Brasil e da Iniciativa de Integração da Infraestrutura Regional Sul-Americana (IIRSA). A concepção dos corredores econômicos, sua governança, financiamento e limitações são analisadas para ver sua adequação como estratégia de financiamento. No caso do ENID e IIRSA foram analisadas as causas de sua interrupção. Conclui-se pela apropriação do conceito enquanto estratégia de crescimento e financiamento, apontando os limites a serem superados por uma readequação de sua concepção.

Palavras-chave: Financiamento. Infraestrutura. Sistema viário. Corredores econômicos.

Introduction

Regarding the needs for investment in infrastructure, there is a rich and detailed literature analyzing the real impacts of infrastructure investment on different sectors and instances of society, a literature which has been systematically reviewed since the 1980s (WALTER, 2016; AGRAWAL, 2020; KUMARI and SHARMA, 2017). The literature also indicates the volumes of investment that are currently necessary to meet the requirements of growth and general modernization of the economy, demonstrating the limitations of the national economies to reach the indicated levels (FIORAVANTI *et al*., 2019; AGRAWAL, op.cit.). In the emerging economies, this gap between needs and investment capacity is even more dramatic (WALTER, *op.cit.*; FAY *et al*., 2021).

In the Brazilian case, an incomplete road network is observed, where only 12.4% of the roads are paved, a very low percentage compared to other Latin American countries. This same network is unevenly distributed across the country, contrasting areas of dense networks with others, scattered, especially in the North and the western part of the Northeast. The imbalance is also reflected in the participation of modes of transport in the flows: 61% of the load is transported by roads; 21%, by railways (basically commodities); 14% by waterway; and 0.4% by air (CNT, 2019).

Fiscal restrictions produced by weak economic growth have increasingly been reducing the capacity to invest in infrastructure. In 2018, this investment barely surpassed the threshold of 1% of GDP, prolonging the poor performance of 1.7% in the three previous years, and of 2.5% in the past 15 years, thus far from the level of 4% recommended as a basic condition to sustain growth (ABDIB and EY, 2019).

The strongest insertion of the private sector in infrastructure investment has been implemented as an exit for budget limitations, to the point that, in 2019, private investments composed the majority of investments (70%), a unique case among emerging countries (ABDIB and EY, 2019). Nonetheless, an analysis of the contracts and the respective amendments allows the following conclusions: i) the road network granted presented significant improvements in maintenance, but there was little progress in duplication, despite the goals established in the contracts; ii) the rail network was drastically reduced from 20 thousand to 13 thousand km effectively operated, specializing in the transport of commodities; iii) inequality was accentuated in road quality (concessions are concentrated in the South and Southeast), and the railroads were practically extinct in the Northeast; iv) despite the forecast of allocating various risks to the private

sector, including market risks, concessionaires managed to constantly impose tariff increases due to small additional investments or unforeseen events.

It is then concluded that the partnerships with the private sector have been fulfilling the function of maintaining the existing network (at relatively high costs for the user), but not of expanding it more equitably in the territory and offering a leap in quality. Notably because of the size of the territory and the spatial and social inequalities, the unfavorable conditions of profitability and risk limit the scope of this alternative. Thus, a circular causality is observed between territorial development and the capacity to finance infrastructure investment: the limited development of regions with economic potential impedes the investments that could take them out of their unfavorable status.

Similar situations have led to the development of the Circular and Cumulative Causation (CCC) approach (MYRDAL, 1968), which assumes that related problems have to be addressed in an integrative way, encompassing not only the design of isolated actions on troublesome topics, but also the improvement of governance and transformations of society.

Applying this approach to road investment, the concept of economic corridors has appeared as a proposal to articulate investment in infrastructure with other investments in the production of goods and services, including the public ones, in addition to producing a new arc of interaction between the State and the various agents of society, improving its governance capacity.

Given the exposed, the present article considers the need to search for new solutions for project design and governance of road investments; therefore, it is proposed, as a goal, to analyze the adequacy of the concept of economic corridors to overcome the deficiencies observed in the investments.

Methodologically, by searching for the documentation collected using the tools Scopus and Google Scholar, it is tested, at an exploratory level, to what extent economic corridors answer the following questions for an integrated solution, as foreseen by the CCC approach: i) regarding conception, do corridors present a potential for covering the needs of various regions and awakening and mobilizing regional potentials, generating expanded opportunities for investment in infrastructure? ii) are economic effects of growth, increased flows and fiscal multipliers produced? iii) what changes in the guidelines of public policies and in the relationship among the agents are produced by the projects? iv) what modifications can be observed in the strategic role of the State and its relationships with the private sector? v) what aspects of governance are critical to maintaining the program's continuity and the commitment of public and private agents? and vi) what innovations in financing are introduced in the capital market and in public financing?

The article is structured into the following sections: Section 2 reviews the literature on the concept and experiences with corridors around the world. Section 3 analyzes the documentation on two experiences in which Brazil has been involved, the National Integration and Development Axes program (ENID) and, in the field of the South American subcontinent, the South American Regional Infrastructure Integration Initiative (IIRSA). The analysis of the experiences indicates the potentials and limitations of the corridors (section 4), by which improvement proposals are conclusively launched (section 5).

Economic corridors: development of the concept and the research

The concept of economic corridors is still in evolution. Searching for a definition, the literature groups the following components (DE and IYENGAR, 2014; HOPE and COX, 2015; KUNAKA and CARRUTHERS, 2014; FERNANDO and JHA, 2021; BYIERS *et al*., 2016; SEQUEIRA *et al*., 2014): i) connectivity elements represented by roads or routes that integrate regional, national or international economic centers; ii) consolidation of urban centers, ports and airports as a final destination; iii) anchor projects that pull chains from other projects; iv) connected economic agents that link nodes and have substantial resources; v) market development by connecting supply and demand; vi) projects of great social transformation; and vii) specialized institutional structures and procedures.

On the side of research, the first incursions into the topic occurred in the 1960s with the Development Axes Theory (MUÑOZ and VARGAS, 2020). The most complete book reviews are provided by Can *et al.* (2021) and Cao and Alon (2020). As a result of this review, the discussion and analysis of economic corridors do not dispense with transdisciplinary approaches and new paradigms of economic policy (*ibid.*).

With the advancement of documentation, several proposals appear for the creation of corridor typologies, given the diversity of experiences that are emerging, with diverse focuses and origins of interest (CAN *et al.*, *op.cit*; DE and IYENGAR, *op.cit*.; HOPE and COX, *op.cit*; FERNANDO and JHA, *op.cit*; BYIERS et al., *op.cit*; GALVEZ NOGALES, 2014). The corridors are classified as: urban transport (roads and routes), logistic (facilitate trade), urban development, industrial (add value), and economic (focus on territorial development).

Byiers *et al.* (*op.cit.*) also propose a geographical distinction, with the following categories according to the space covered: domestic; of crossing (transporting cargo from other states or countries); foreign trade (basically focusing on imports and exports); hybrid, with a mixture of functions and of geographical coverage.

Expansion of the corridors

Nowadays, the experiences with economic corridors spread across Europe, North America, Southeast Asia, the Far East, and Africa. Chart 1 lists the main initiatives of economic corridors underway in emerging economies: (ASIAN DEVELOPMENT BANK, 2014; DE and IYENGAR, 2014; KUMAR, 2014; MULENGA, 2013; SERRAJ *et al.*, 2015; BYIERS *et al.*, 2016; GALVEZ NOGALES, 2014; ATHUKORALA and NARAYANAN, 2018; MALHOTRA and SINGHAL, 2017; KENDERDINE and BUCSKY, 2021).

Chart 1: Main initiatives of economic corridors in emerging economies

Asia	Africa	South America (IIRSA)
Greater Mekong Complex Cooperation Complex Asia Regional Economic Central Asia – CAREC Indonesian Corridors Malaysian Corridors Indian Industrial Corridors Trans-Caspian International Transport Corridor	Abidjan – Ouagadougou Beira Agricultural Corridor Central Corridor Coast-to-Coast Corridor Dakar-Touba corridor, in Senegal; Metropolitan Corridor of the Gauteng Region Major Corridor Ibadan-Lagos-Accra Lamu Growth Corridor Maputo Development Corridor Nacala Corridor North Corridor North-South Corridor Egyptian corridors	Andean Corridor; Southern Andean Corridor; Capricorn Corridor; Paraguay-Paraná Fluvial Corridor; Amazon Corridor; Guyana Plateau Corridor; South Corridor; Central Interoceanic Corridor; Mercosur-Chile Corridor; Brazil-Peru-Bolivia Corridor.

Goals and results of the economic corridors

The goals of implementing economic corridors may change over their historical path, expanding their scope or changing it from phase to phase. In an overview of what is listed in the academic and technical literature, the following goals appear: i) to promote trade and the integration of markets, reducing logistics costs; ii) to promote economic growth and rise in competitiveness; iii) to articulate public and private actions, attracting massive investments; iv) to promote cooperation between regional and national territories; v) to promote social development, qualification, and sustainability (HOPE and COX, *op.cit.*; BYIERS *et al.*, *op.cit.*; KUMAR 2014).

Regarding the socioeconomic results of the corridors, there is a vast literature, reporting economic effects, spatial transformations, and social and environmental effects (MUÑOZ and VARGAS, 2020). In terms of economic effects, regions under the influence of the corridors have been presenting general economic growth, although exhibiting major differences in quantitative terms (ROWLEY, 2020; GALVEZ NOGALES, 2014). Other highlights refer to: i) greater economic stability; ii) regional development with the reduction in inequalities by increased integration into chains of interregional and national value; iii) increase in the efficiency of production chains and agro-industrial and trade productivity; iv) rise in the investments in production and infrastructure with increased employment and human development; and v) structuring urban and regional corridors

(KUNAKA and CARRUTHERS, 2014; FERNANDO and JHA, 2021; DEY and GRAPPI, 2015; KUMAR, 2014; SEQUEIRA, 2014; BYIERS *et al.*, 2016; SERRAJ *et al.*, 2015).

Nevertheless, the literature warns that the impacts are uneven and lead to negative effects, such as the destruction of natural resources; a tendency to reinforce monoculture, which generates vulnerabilities in commodity markets and land and economic concentration that depress the value of the workforce; speculative land valuation disconnected from local development; in addition to the dependence on public investments to attract private investments (DE and IYENGAR, 2014; MUÑOZ and VARGAS, 2020; DOSSANI, 2017; BYIERS, 2016; SERRAJ *et al.*, 2015; HOPE and COX, 2015).

For De and Iyengar (2014), Kunaka and Carruthers (2014) and Galvez Nogales (2014), the corridors generate special effects, such as the formation of clusters or agglomerations along the axes; regional integration of previously peripheral or isolated regions; production specialization; generation of new transport flows; and an increase in speed and reduction in travel times.

Strategic aspects to define and implement economic corridors

The results obtained by the corridors largely depend on the clarity of their goals and the implementation strategy, and their lack may seriously compromise the success of the enterprise (BYIERS *et al.*, 2016). According to Galvez Nogales (2014), the affirmation of a leadership that can align the key-agents is a critical factor for success. Other aspects to be clearly agreed are i) strategic centers and nodes for the growth of the value chains involved and the active clusters; ii) infrastructure for connection purposes (roads, railways, airports, ports etc.); iii) the process of regional diffusion of integration from the poles towards the adjacent areas; iv) the financing and risk management project; v) physical projects and managerial measures; and vi) the operationalization mechanisms.

It must be highlighted that the achievement of these steps is not always guaranteed, and several attempts at implementation have faced problems, as reported by Galvez and Nogales (2014) and Athukorala and Narayanan (2018): i) the program consists of the juxtaposition of isolated actions without integration in a regional development policy, resulting in institutional or intersectoral coordination failures with the exclusion of key agents; ii) social impacts such as poor management of labor disputes, population displacements without adequate provision for relocation, and passivity to land grabbing; iii) environmental impacts that are not timely recognized, mitigated, and managed; and iv) lack of an adequate legal and regulatory framework for partnerships with the private sector that include small businesses in value chains.

The role of the State

Given the nature of the listed tasks, the central role of the State in the entire process is clear, despite the fact that private investment is essential. The literature substantiates points that highlight this centrality (HOPE and COX, 2015; GALVEZ NOGALES, 2014; ROWLEY, 2020; YOSHINO, 2018; BYIERS *et al.*, 2016).

The State, due to its collection power, has more resources than any other entity in society. This general accumulation of liquidity also constitutes a reserve fund for risks and contingencies. Furthermore, the public sector has special skills regarding building development strategies and respective coalitions; and the prevention, by the power of the police, of disruptive actions. Another area of responsibility of the State to be highlighted is the monitoring and mitigation of general impacts generated on society and the environment. The strategy for implementing the corridors and their governance requires superordinate organizations to coordinate and mobilize public agencies. Furthermore, the State can undertake essential public investments that are not of interest to the private sector; contracting private investments; and leadership in building a development vision. It must also guarantee the regulation on the use of soil, natural resources and the public goods indispensable for the functioning of the corridor.

General aspects of governance

Corridor programs can arise from the initiatives of multilateral agencies, from public-private coalition agreement proposals from the private sector (with an eminent focus on business), and from society's own organizations. Whatever the initiator, no corridor governance can dispense with an integrating agency of the State, which will have the following essential functions: i) strategic

planning actions with mobilization and coordination of economic agents promoting the corridor for investors, government agencies, and society, in addition to proposals for regulatory adjustments and legislation reform; ii) management actions such as supporting financing, contracting public-private partnerships, and training agents; iii) actions to monitor strategic indicators and value chains, in addition to risk management and the resolution of performance gaps; land use planning; and the management of social and environmental impacts (YOSHINO, 2018; DE and IYENGAR, 2014; HOPE and COX, 2015; KUNAKA and CARRUTHERS, 2014; BYIERS *et al.*, 2016; SEQUEIRA *et al.*, 2014; GALVEZ NOGALES, 2014).

Financing challenges

In the search for solutions to circumvent funding limits, the main proposals have considered the use of (ROWLEY, *op.cit*; YOSHINO, *op. cit.*; HOPE and COX, *op.cit.*): i) off-sheet financing of the budget, with own fiscal resources guaranteed by budget law or by linked fiscal funds; ii) public pension funds and provision of public-domain assets; iii) capture of urban real estate value; infrastructure-linked debt securities; and iv) institution of a special infrastructure bank or public company with the ability to raise funds in the market.

An alternative proposal, voiced by Yoshino (2018) and Rowley (2020), assumes that investment, as a basic condition for growth, should be nourished by the economic and fiscal multiplier effects generated by the projects. The authors propose the creation of special bonds backed by the securitization of the effects of fiscal multipliers. The funds raised could, at least, cover mezzanine guarantees and loans in infrastructure projects. The authors warn that it is not a question of creating new taxes, but of increasing the collection of the existing ones.

The Brazilian and South-American experiences with economic corridors

National Integration and Development Axes Program - ENID

Although there were studies on development axes in the 1960s, it was in the 1990s that the idea of an economic corridor began to succeed, based on studies from Companhia Vale do Rio Doce (CVRD), which served as a base document for the government of Fernando Henrique Cardoso. Then came the strategy of articulating infrastructure investment with territorial development, given the expansion of national markets and their integration with international value chains. This strategy contained the following priorities (SILVA, 2013; HONÓRIO, 2013; TAVARES, 2016, NASSER, 2000): i) to overcome infrastructure bottlenecks to equilibrate regional development and promote richness distribution; ii) to reinforce the attraction of investments opening the economy to the external market with an increase in competitiveness; iii) to foster cooperation within Mercosur; and iv) encourage emerging or strategic sectors.

According to Silva (2013), Tavares (2016), Vianna *et al*. (2006), and Honório (2013), the axes would be demarcated based on the multimodal transport network of hierarchical urban systems, identifying dynamic centers among them; and, finally, with the allocation of ecosystems. Each axis should produce an attractive investment portfolio for private investment, and with structuring, and multiplying effects on social development, information/knowledge and the environment.

As a result of this effort, a portfolio of public and private investments emerged that would cover all regions, containing an anchor project and 57 projects for each axis and area of influence. This portfolio should boost local economies, but also serve the interests of private investment (FREITAS, 2012; HONÓRIO, 2013). Chart 2 lists the axes presented in the study by the Brasiliana Consortium of consultants:

Chart 2: ENID Axes

1 – North Exit Axis to the Caribbean/BR 174 Highway;
2 – Exit Axis to the Atlantic – Waterways of Madeira and Amazonas;
3 – Araguaia Axis – Tocantins/North-South Railroad and Carajás Railroad;
4 – Northeast Coastal Axis;
5 –São Francisco River Axis;
6 – Trans-Northeast Axis;
7 – West Axis;
8 – Central-Eastern Axis;
9 – São Paulo Axis;
10 – Southern Coastal Axis;
11 – Border Fringe Axis;
12 – Axis of the Paraguay/Paraná Waterway;

The result of the studies was presented and exposed in all national capitals for analyses and discussions, in which claims and recommendations were added to society and local leaders. The projects were then included in the Multi-annual Investment Plan (PPA) of the period of 2000/2003, also originating a georeferenced database (NASSER, 2000).

Despite its success as a planning process, this strategy was criticized by Vianna *et al*. (2006) for its lack of respect for regional particularities and the autonomy of states; for the preferential orientation to satisfy private demands aiming at the integration to the globalized market; and for disregarding the reduction in territorial disparities, since, despite the speech in defense of deconcentration, investments were centered in the regions with the greatest economic density.

Although the projects have been integrated into PPA, the experience of the Axes was eventually a failure due to a lack of implementation and problems in the management structure, which was excessively centralized. It must also be considered that its occurrence happened at the end of President Fernando Henrique Cardoso's term, producing a timing failure. The subsequent government of President Luiz Inácio Lula da Silva preferred to adopt territorial planning focused on poverty reduction, the development of peripheral areas, and environmental protection (VIANNA *et al*., 2006).

The South American Regional Infrastructure Integration Initiative (IIRSA)

With the launch of the concept of the Development Axes, the Brazilian government proposed a similar policy to the South American subcontinent, with the support of multilateral entities (BID, CAF, FONPLATA). The studies of CVRD had already contemplated its extension to South America, predicting development belts, with territorially distributed project clusters supported by an efficient and modern infrastructure network as a backbone, as well as agro-industrial investment project packages. Based on this spatial structure, the countries involved would be able to facilitate the integration of zones with high production potential but there are isolated or where the potential is underused, and better face the competition in international trade and its fluctuations. The corridors have been conceived as multinational logistical axes that concentrated trade flows or had the potential to do so. In these axes, the establishment of a common minimum standard of infrastructure quality would be pursued, to support the specific productive activities of each axis (COUTO, 2010; SILVA, 2013; COSTA and GONZALES, 2014). This effort resulted in ten axes distributed across all countries of the subcontinent.

In addition to the infrastructure, regulatory and institutional measures were included that would regulate the use of infrastructure in the region, grouped in the so-called Sectorial Integration Processes (PSIs), namely: i) operating systems for multimodal, air, and energy-integration transport; ii) border crossing facilitation; iii) information technology and communications; and iv) instruments for financing integration projects.

Regarding the governance aspect, Tavares (2016), Silva (2013) and Honório (2013) emphasize that the vision of the State present in IIRSA followed the neoliberal paradigm, considering principles such as: i) repositioning the private initiative to the role previously occupied by the State; ii) regional integration to reinforce competitiveness in the international market; iii) predominance of private investments in the projects and in the construction of the Axes; and iv) integrated development subordinated to the logic of international competitiveness, if necessary with a concentration on more productive areas.

It can be seen, however, that the Brazilian leadership did not impose the construction of centralized supranational institutional structures, preferring the path of dialogued cooperation among the States, supported at most by a technical body (HONÓRIO, 2013; COUTO, 2010). Thus, the initial institutionalization of the initiative reflected this paradigmatic orientation, consisting of the following bodies: Executive Steering Committee (CDE), with government representatives; National Coordinations (CN), with agents from each country; the Technical Coordination Committee (CCT), with representatives from BID, CAF and FONPLATA to provide funding, assistance, and support to the monitoring and evaluation of projects; and the Executive Technical Groups (GTEs), with specialist staff to analyze specific topics. Therefore, new regional institutions would not be created, using the human and financial resources of already existing institutions, which would aim at establishing cooperation bonds and optimizing efforts and resources.

In the first meeting in Brasília in 2000, in the presence of the twelve South American presidents and with the support of BID, CAF, and FONPLATA, the strategic vision of the development axes was validated, and the heads of government assured their commitment. In 2004, the First Consensual Implementation Agenda (AIC) was celebrated, containing the first portfolio of priority projects with a high impact on regional integration. At this moment, a discussion began regarding a financial system to be composed of a South American Infrastructure Authority (trustee) and a Solidarity Fund of Guarantees (*ibid.*).

Nevertheless, from this moment on, directions have changed. With the creation of UNASUR, the focus of IIRSA was altered to prioritize the needs of each nation, reducing the efforts for a competitive integration in a global market. Sustainable growth policies that would guarantee an improvement in the population's standard of living while also reducing development asymmetries among countries became a priority, according to the Cusco Declaration. Hence, IIRSA was restructured as a technical forum for the physical integration of the Continent. Several thematic councils were established within UNASUR, among them the South American Council for Infrastructure and Planning (COSIPLAN), which would work as a coordination and articulation body of programs and projects for the integration of the regional infrastructure of the countries. At the same time, the role of National Committees was reinforced. The role of multilateral entities was also retracted; these entities should limit themselves to supporting studies (*ibid.*).

A new plan then appeared: the Strategic Action Plan 2012-2022 (PAE), detailed in an Agenda of Priority Integration Projects (API). In contrast with the AIC of 2004, the program significantly increased the number of projects (from 31, worth 13.6 billion dollars, to 524, worth 96 billion dollars), with a preponderance of binational and transnational operations, and less concern with regional integration (COSTA AND GONZALES, 2014). Nonetheless, the program's funding base remained undefined, with public funding predominating and a reduced role of private initiative participation in investments (*ibid.*). Nevertheless, even with work in progress, institutional changes and the reduction in Brazilian participation have led to the weakening of the prominence of IIRSA and the axes as a coordinated development strategy.

Analysis of ENIDs and IIRSA results

Both programs were discontinued. At the base of this outcome is a clash between two visions for the axes and for subcontinental integration itself: the first, of the market, is directed at the competitive integration in the international market and in the respective value chains, an integration that would require, strictly speaking, strong supranational power in institutionalization, as recommended in the analyzed literature, and that has initially been exercised by multilateral entities. On the other hand, the second focuses primarily on regional and social interests and reinforces the sovereign position of member countries. Therefore, the strategy of competitive integration would not prioritize these interests. Furthermore, the projects, when implemented, would already be causing considerable environmental damages.

This conflict of orientation then produced the dismantling of the strategy and its governance system. Regarding this dismantling, the following factors were identified by Tavares (2016), Silva (2013), Costa and Gonzales (2014), Couto (2010) and Honório (2013): the strategic planning lacked clarity of integration objectives, aggravated by the little regulatory harmonization, in addition to the lack of an objective and systemic view of the integration process; and in the governance system, it was not possible to establish an organization with supranational power (regional leadership was lacking), leading to low country commitment, slow project negotiation and execution, and little

progress in public-private partnerships, despite the considerable increase in proposed private investments.

In the case of IIRSA, strategies to ensure financial resources and adequate risk mitigation were also lacking, as well as the implementation of the South American Infrastructure Authority and a solidary guarantee fund, and the increase in the borrowing capacity of countries (FREITAS, 2012; HONÓRIO, 2013). The fact is that growth effects have not been achieved, and the economic crisis, against which there was not enough preparation, has weakened the continent in comparison with international agents (advance of China). Conservative political shifts have led to the dissolution of UNASUR, and COSIPLAN ceased to function in 2019 (VIRGA AND MARQUES, 2020).

Discussion: potentials and critical aspects of economic corridors

General evaluation

The need to seek alternatives for financing road infrastructure through the integration of investments in infrastructure and territorial development led to the discussion of the concept of corridors and their scope. Aiming, then, to evaluate the concept and experience of implementing the corridors, a series of questions that resulted from the application of the Circular and Cumulative Causation approaches were launched in the introduction of this article, which serves as the basis for the analysis in this section.

a) *Regarding conception, can economic corridors cover the needs of various regions, awaken and mobilize regional potentials, and generate expanded investment opportunities?* The corridors start from the idea of connecting hubs by a set of routes. It is not only about physical connection but also about articulating economic agents which are essential for the development of markets on both the demand and supply sides. The corridors would have final destination points (urban hubs and export terminals) as a central spatial element and would include high-impact projects (anchor projects) in terms of social and economic transformation. Their design would include appropriate institutional structures and procedures. In other words, in principle, the idea of corridors meets the proposal in the territorial programs. It has been applied in the design of both ENIDs and IIRSA, with some emphasis on environmental preservation and overcoming social problems.

b) *What were the economic effects of growth, what was the increase in flow and what fiscal multiplier effects were produced?* The literature is still very inconclusive regarding the results, preferring to declare only the expected benefits, as listed in Section 2.3. In the quantitative plan, data on growth are disparate, ranging from little to moderately significant values. Fiscal effects are not evaluated in the studied literature. In this subsection, however, environmental and social problems were indicated, as well as those of national economic sovereignty that seriously jeopardize the achievements of the corridors.

c) *What changes in the orientation of public policies and in the relationship among the agents have been produced by the projects of economic corridors?* According to the international literature, the presence of diverse actors in the design and management of corridors varies throughout the design, implementation, and operation of each project. In fact, the coordination of the interests of the different agents constitutes one of the biggest challenges, and it is difficult to find a single forum that is able to contemplate the various critical agents throughout all phases of the project, especially broad strata of society, which have been the most excluded until now. Coalition management was presented as a critical factor, even before launching the program, and improvisation in this field can lead to the demise of the program. Additionally, there are constantly administrative discontinuities that bring risks to the programs. These problems then lead to different failures in strategic conduction listed in 2.4.

d) *What changes can be observed in the strategic role of the State and in its relationships with the private sector?* The initial conception of economic corridors corresponded to the parameters of a neoliberal policy of State containment and competitive integration of regional economies into international value chains, a process to be governed by centralized coordination, both national and international (in the case of corridors that cross national borders). Nevertheless, this same approach assumes the centrality of the

State, especially in the implementation of essential infrastructure projects, critical for the success of the program but go beyond the interest and investment capacity of the private sector. The role of the State was also recognized in terms of strategic planning, the coordination of interest, the mitigation of social and environmental impacts, and, finally, the necessary exercise of police power.

e) *Regarding project governance, what aspects are critical to maintaining the continuity of the program and the commitment of public and private agents?* Governance is considered a critical factor in success. Essential points are respect for contracts; the improvement of logistical processes and their corresponding infrastructures; the financeability of investments; the coordination of public and private agents; and the strengthening of interregional and supranational cooperation. But the reality of the two initiatives showed a different scenario from the one desired, with the observation of disputes among regional, national, and international corridors; a lack of commitment to implementation; the permanence of excess bureaucracy; mismanagement of information; and the continuity of the inefficiency of the logistic processes, given the little effort in the maintenance of the infrastructures.

f) *What innovations in the field of investment financing have been introduced in the capital market and in public financing?* Starting from the standard scheme of public-private partnerships, international experience reports the prevalence of public investment, increasingly suffocated by severe fiscal restrictions. The outputs proposed for this situation are listed in 2.7. Nonetheless, they do not deal with the appropriation of economic and fiscal multiplier effects to be produced by the corridors but with the channeling of existing resources. In this sense, the proposal of Yoshino *et al.*, *op.cit.*, launches the hypothesis of directly using this appropriation through its capitalization in innovative debt securities.

Evaluation of the experiences of the ENIDs and IIRSA

Both the ENIDs and IIRSA were designed following the principles of economic corridors. However, the lack of or poor implementation of the programs prevented the achievement of any result that could be evaluated in terms of economic gains.

In the case of ENIDs, the proposal was hampered from the start by problems in the management structure, which was excessively centralized. There was also the adversity of political timing (launch at the end of the presidential term), which facilitated political discontinuity, because of the change in the focus of territorial policy by the successor government. Conversely, in the case of IIRSA, there was a considerable effort in the development of the methodology and in the training of government officials; and, initially, a convergence of the twelve national governments could be built. However, in both cases, the lack of an effort to combine the economic project with the solution of social problems produced a conflict of orientation that accelerated the discontinuity.

In addition to the lack of clear goals, it was not possible to establish a coordinating institutional organization with the proper leadership power, resulting in low commitment from other levels of administration and state and municipal governments (in the case of IIRSA, national governments). As a result, advances in regulatory harmonization, in the celebration of public-private partnerships, and in the implementation of financing strategies were jeopardized.

Lessons for improving the corridor approach

It was observed, especially concerning to the interrupted experiences of the ENIDs and IIRSA, that a conflict between two visions underlies the conception of the corridors: one that aims at economic growth by the competitive integration of territories, articulated by an infrastructure network, and by measures to speed logistical and regulatory processes. And another, which prefers the frontal fight against poverty and the economic disadvantages of peripheral regions. This conflict reflected a shock in the governance structure, where the first vision led to a greater national or even supranational centralization of command; and the second, respect for the autonomy of the territories. Furthermore, according to the first view, the State is a facilitator of private investment; in the second, it becomes the absolute leader.

Considering the merits of both positions, it must be recognized that the first view leads to political conflicts that lead to discontinuities; and that the second is not capable of producing

sufficient growth and subsequent fiscal effects to finance projects. In this conflict, a conservative orientation has prevailed that places fiscal control as the absolute principle of economic policy, at the cost of budget cuts for expenditures and investments that are essential for growth.

From the point of view of identifying a solution to finance the necessary investments in infrastructure, however, the proposition of economic corridors must be rescued. They would have to be conceived and governed according to the following principles: i) development and adoption of an approach for participatory planning with an emphasis on economic corridors and regional hubs; ii) guarantee of production of spillovers and logistic flows; iii) fiscally sustainable public financing of investments with no prospect of profitability, by the appropriation of fiscal multiplier effects; iv) increase in the population's income, prioritizing support for minor and medium-sized companies; v) shared governance with acceptance and commitment between public and private agents; vi) affirmation of partnership with the private sector according to its capacity and excellence; and vii) search for the implementation of innovations in the planning technique, governance, data management, contracting and financing.

Conclusions

In this article, the conception of economic corridors was analyzed as a strategy for the maturation of the economy of transport infrastructures, aiming at contributing to its financing. Regarding the conceptualization of corridors and their occurrences in the world, their conception, governance, and financing processes were described. Subsequently, the experiences of the ENIDs and IIRSA were described, and their discontinuity was explained.

In principle, the inclusion of projects for large-scale investments in transportation in corridor programs is consistent with the proposal to finance them by capturing economic and fiscal multiplier effects. The implementation of these corridors, however, presents challenges to be overcome.

Firstly, the corridors must be guided by meeting the needs of regional growth, by articulating investments in infrastructure and production. Nevertheless, the growth needs to be inclusive to reduce conflicts and further enhance the effects through income generation that, ultimately, will provide the fiscal economic multiplier effects.

Secondly, the central importance of the State is confirmed as a strategic structurer, arbiter, and articulator of the interests of critical agents and the last resort financier of investments, especially those with risky profitability. This centrality does not mean that the importance of the private sector has diminished, since its presence continues to be vital, not only in the contribution of financial resources but also, and above all, in the contribution of know-how and the construction of markets.

Third, the planning and modeling of the corridors must start from potential regional locations but also consider meeting local needs and including the population in the value-adding process. Here, the importance of popular entrepreneurship as a fundamental axis for income generation, social transformation, and harmonization with the goals of the corridor is highlighted.

Fourth, in order to ensure sound governance, national and possibly supranational coordination remains necessary; nonetheless, it is necessary to innovate and improve the participatory and decision-making processes, especially in the structuring of the corridors. For this purpose, the corridors may start from central or decentralized (regional and local) proposals, as well as those from the private sector, based on manifestations of interest. This cooperation in the generation of proposals must be used to reinforce the commitment of the agents involved.

Fifth, with regard to financing, the major innovation to be introduced here is the accounting of economic and fiscal multiplier effects along the chains mobilized by the projects that are part of the program and their appropriation for purposes of direct or complementary financing of public investments or derived (for instance, guarantees) or administrative (for instance, studies, the planning and bidding process and contract management) financial expenses.

Furthermore, the respective capture should be guaranteed to be included in the investment financing flow, possibly capitalized in a new debt security type. For this purpose, a new kind of concession of public-domain assets must be developed, linked to the production of multiplier effects (concession of economic performance).

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