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The Economic Theory of Special Jurisdictions and the Possibilities of the Lithium Valley

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Abstract:
This article analyzes a theoretical case for cost-benefit analysis of a local elite accepting the implementation of a special jurisdiction (such as a Special Economic Zone or a Charter City), in which the choice is divided between benefiting from economic prosperity (through revenue) and rent-seeking. A brief economic diagnosis of entrepreneurship and employment is made for the Lithium Valley, a region located in the north of the state of Minas Gerais, to support a discussion based on evidence about the possible creation of a special jurisdiction in the region. The paper concludes that effective implementation of SEZs or similar jurisdictions could stimulate regional development by aligning elite incentives toward economic growth rather than rent-seeking. However, achieving long-term institutional transformation requires policies that foster externalities, improve governance, and align local elites' preferences with broader economic goals.

Keywords: Special Jurisdictions, Special Economic Zones, Lithium Valley, Entrepreneurship.

Resumen:
Este artículo analiza un caso teórico de análisis coste-beneficio de una élite local que acepta la implantación de una jurisdicción especial (como una Zona Económica Especial o una Ciudad Autónoma), en el que la elección se divide entre beneficiarse de la prosperidad económica (a través de los ingresos) y la búsqueda de rentas. Se realiza un breve diagnóstico económico del espíritu empresarial y el empleo en el Valle del Litio, una región situada en el norte del estado de Minas Gerais, para apoyar un debate basado en pruebas sobre la posible creación de una jurisdicción especial en la región.
El documento concluye que la aplicación efectiva de las ZEE o jurisdicciones similares podría estimular el desarrollo regional al alinear los incentivos de las élites hacia el crecimiento económico en lugar de la búsqueda de rentas. Sin embargo, la transformación institucional a largo plazo requiere políticas que fomenten las externalidades, mejoren la gobernanza y alineen las preferencias de las élites locales con objetivos económicos más amplios.
Palabras clave: Jurisdicciones Especiales, Zonas Económicas Especiales, Valle del Litio, Espíritu Empresarial.

1. Introduction

Relocating between different institutional arrangements has proven to be beneficial throughout history in multiple settings. Private, public, and company-managed colonies existed simultaneously in the early colonization of what we now call the United States of America, providing colonists and the British Crown with the possibility of rich institutional experimentation (Mueller, 2006). The reference to important figures in the history, such as Johan Gutenberg and William Tyndale, emphasizes how institutional diversity in Europe allowed for innovation and the flourishing of ideas in various fields, including printing and literatures (Ridley, 2023). Common in these stories is the possibility of individuals relocating when there is institutional diversity at their disposal. This also applies to today. Institutional diversity can be in aspects such as governance, educational, and even in environmental management models, etc.

Institutional diversity can emerge naturally or, in a sense, be provoked. In the above-mentioned historical examples, provoked diversity emerged due to the English government's multiple colonial arrangements. But it mixed with 'natural' diversity, in the sense that there was no central authority determining the diversity of institutional arrangements in locally, nor in Europe at the time.[1]

Can institutional diversity be created and stimulated? This was the question that led Paul Romer, in 2010, to propose the so-called Charter Cities, a bold experiment in institutional change in which, in the original proposal, a country would create a city with completely distinct legal institutions in uninhabited land. This would provide citizens and residents with possibilities that were only feasible if they emigrated there. The proposal encountered several obstacles and critics to its implementation. For example, Kurtis Lockchart, executive director of the Charter City Institute, says that the model once proposed by Paul Romer, known as the 'foreign guarantor model', is impractical and potentially neo-colonial (Lockhart, 2024), but has generated interesting derivations over the years. Currently, Charter Cities are one of the possibilities within what has become known as special jurisdictions.

In this theoretical work we seek to understand how institutional experimentation and diversity can be applied to developing the region known as the "Vale do Lítio" (Lithium Valley) by changing the incentives for the local elite. The use of a theoretical framework (in other words, an economic model) serves to logically organize the various elements that play a part in implementing a special jurisdiction in the region.

The work is organized as follows: the following section conceptualizes and briefly comments on the three most common types of special jurisdiction. Subsequently, a simple

[1] The example by Tiebout (1956) is perhaps the most famous.

model of political economy is presented to detail the cost-benefit problems faced by a local elite faced with the choice of implementing a special jurisdiction in its territory. We then present and analyze what is known as the Lithium Valley is analyzed, particularly based on indicators of entrepreneurship, companies presence, and jobs. Finally, the last section concludes by saying that the success of a special jurisdiction in Lithium Valley depends on aligning local elite incentives toward economic growth through policies that enhance governance and foster sustainable development.

2. Models of Special Jurisdictions

Special jurisdictions are land extensions where a legal regime operates that is distinct from the rest of the original jurisdiction. The distinction can be in terms of specific regulations for particular areas or industries or the adoption of a completely different legal framework or code (either pre-existing or created for the specific purposes of the jurisdiction).[2]

In this sense, a 'special jurisdiction' is a kind of 'institution' created following specific economic development incentives. The term can be understood also in terms of the “formal or informal rules that govern the activities of an area.” Being the result of a collective initiative involving private, public, or public-private partners, a special jurisdiction can be shaped by its managers as it evolves.

An easy way to understand what a special jurisdiction is is to understand it as a regulatory sandboxes. According to Noda (2023), a regulatory sandbox is[3]:

> "(...) a regulatory instrument of promotion, based on regulatory incentive, through structured experimentation, which has as its inductive pillar temporary normative-regulatory exemption." (Noda, 2023: 131)

Using a sandbox allows for flexibility in testing new regulatory models for innovations, reducing the cost of regulations. Large institutions that have big areas to regulate, specially in financial market industries, such as the Securities and Exchange Commission (CVM), the Central Bank of Brazil, and the Superintendence of Private Insurance (Susep), use of this tool (Noda, 2023).[4]

Special Economic Zones (SEZs) are also a type of special jurisdiction. Without delving into the complexity of why, they encompass territories (physical or virtual) and adopt

[2] Currently, even virtual environments can fit here. Even before the publication of *The Network State* by Balaji Srinivasan in 2022, discussions around virtual communities functioning as special virtual jurisdictions were gaining some traction on social media.

[3] Translated from the original by the authors.

[4] In Cooter and Schafer (2017), the authors highlight the role of law as a driver of economic development. The relationship is not simple and is not always positive. However, with agile regulation, such as that provided by the regulatory sandbox, the likelihood of the relationship being virtuous increases.

distinct incentives, including tax exemptions, tariffs, and regulatory reforms. In Shikida et al. (2022), it is observed that the definition of SEZs can vary. For example, for UNCTAD, industrial districts, technology parks, and duty-free establishments do not qualify as SEZs, as they do not require specific regulations. For the Facility for Investment Climate Advisory Services (FIAS), on the other hand, the following would be considered SEZs:

> • Free trade areas, which correspond to enclosed duty-free areas that offer infrastructure for storage, warehousing, and distribution of goods.
> • Export Processing Zones (EPZs), which focus on foreign markets, and are formed by a single independent manufacturing unit regardless of its location.
> • Business zones, which focus on revitalizing degraded urban areas through the granting of fiscal and financial incentives.
> • Freeports which usually encompass larger areas that accommodate all types of activities (including tourism and retail sales), and can even have residents.
> • Special zones such as technology parks, petrochemical zones, logistics parks, and airport-based zones, for example." (Shikida et al., 2022, pp. 47–48).

Successful cases of SEZ would improve economic indexes such as foreign direct investment (FDI), employment, etc. Moberg and Tarko (2021) show that SEZs can be useful tools in long-term economic projects such as economic liberalization, a reform that is often not the result from strong and centralized leadership. Under certain conditions, the implementation of SEZs have the potential to generate externalities (spillovers) in neighboring regions, which in turn can cause the benefits of liberalization to outweigh the gains resulting from rent-seeking, resulting in a positive effect on regional well-being and encourage the expansion of the model in the rest of the country.[5][6]

But besides Special Economic Zones, there are also Charter Cities. Originally conceived by Paul Romer, they are cities built from scratch in a territory with their own legal system, as stated above. The distinctiveness of Charter Cities relies on how that legal system is brought from another country– to allow for 'controlled' institutional competition, among

[5] Many SEZs (Special Economic Zones) are based solely on favoring certain groups through tax incentives, which is why many, rightfully, do not believe in their potential as generators of well-being, as they would merely be 'concentrating benefits and dispersing costs,' resembling inefficient projects such as those described in Weingast, Shepsle, and Johnsen (1983). It is clear, then, that the legal design of an SEZ matters. This will be discussed further in the next section.

[6] The local elite, in the model, faces a trade-off between receiving resources through taxation or via the redistribution generated by rent-seeking. The model will be presented below.

other things. That being said, competition as a goal is not always well seen, specially by established groups who criticize it by calling these pursues 'neocolonial.' [7]

In recent years, new models of Charter Cities have emerged. They are often confused with SEZs that emphasize on regulatory innovations instead of the adoption of distinct legal systems. Some of the very recent implementations include Próspera, on the island of Roatán, Honduras, and, in a sense, the Catawba Digital Economic Zone), an Indigenous SEZ, in South and North Carolina, United States (US).[8][9]

Taxonomies can be categorized based on the degree of innovation brought by each institutional change tool, and they can vary. But it is worth highlighting a few points: (a) the application of models like these depends on the broader objective of the policy being implemented, and (b) some costs and benefits are not only economic but also political, which can generate distortions and undermine the implementation of innovation, as well as its spillover effects; (c) it is possible to imagine intermediate cases between sandboxes, SEZs, and Charter Cities. Sandboxes, for example, are adopted in Brazil at all federative levels, which expands the possibilities for implementing innovations.[10]

Now let us move on to the theoretical model. Here we present a slightly modified version of the one developed by Moberg and Tarko (2021) to explain the tradeoffs that local elites face when deciding whether or not to be part of a policy that creates a special jurisdiction in their territory. The model is therefore more suitable for the case of SEZs and Charter Cities than for regulatory sandboxes, although the reader can, with some effort, adapt the arguments to any type of special jurisdiction.

What are the opportunity costs faced by the local elite in the face of the prospect of creating an SEZ? In other words, when is it worthwhile for the local elite to accept an institutional change that favors the business environment in their region? This question was answered in a stylized way by Moberg and Tarko (2011) as a maximization problem in which the local elite of the region (understood to be composed of politicians and local interest groups) is faced with two possible sources of revenue: (a) tax revenue derived from the implementation of the SEZ or; (b) rents derived from their rent-seeking activity.

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[7] For example, an expensive and slow judiciary, already established, will not look favorably upon competition from one that is cheaper and more efficient, and will likely act to defend itself by seeking to eliminate the competition.

[8] See, for example, the publications from the Charter Cities Institute (https://chartercitiesinstitute.org/) or the journal Journal of Special Jurisdictions (https://journalofspecialjurisdictions.com/index.php/jsj). The recent World Bank publication on private cities (Li; Rama (2023)) illustrates the importance of a derivation of the same theme.

[9] Both can be found, respectively, at: https://www.prospera.co/ and https://catawbadigital.zone/.

[10] In Chapter 2 of Shikida et al. (2022), some of these problems are highlighted. Political distortions in economic policies have been studied for over 50 years in the tradition of Public Choice. A good introduction to this literature is Mueller (2003).

The version presented here has only one change in the specification of the objective function used by the authors to obtain additional insights into the role of taxation and rent-seeking in the decisions of local elites. Thus, here we use a utility function of the local elite given by[11]: $U(T,R) = A[\delta T^{-\kappa} + (1-\delta)R^{-\kappa}]^{-1/\kappa}$.

In this specification, A, which represents technology, is an exogenous parameter (A>0), T is the potential government (tax) revenue, and R is the potential revenue from rent-seeking activity. The parameter measures the weight of T in preference[12] and κ is the degree of substitutability between the sources of revenue T and R[13]. The original idea that there is a revenue possibilities frontier is maintained, which, for simplifying purposes, is linear and represented by r $B = \tau T + \rho R$. In other words, the local elite has revenue from two sources: rent extraction (rent-seeking) and/or tax revenue.

According to (1), the local elite seeks maximum well-being subject to its revenue constraint.

$$L(T,R,\lambda) = A[\delta T^{-\kappa} + (1-\delta)R^{-\kappa}]^{-1/\kappa} + \lambda(B - \tau T - \rho R) \qquad (1)$$

Assuming that R and T can only take positive values, then (1) can be solved using the Lagrangian method, resulting in (2) and (3), which express T and R in their maximum values (denoted by T* and R*). These are, therefore, the expressions of the elite's demands for T and R.

$$T^*(B,\tau,\rho,\kappa) = \frac{\left(\frac{\delta}{\tau}\right)^{\frac{1}{1+\kappa}}}{(\delta\tau^{\kappa})^{\frac{1}{1+\kappa}} + \left((1-\delta)\rho^{\kappa}\right)^{\frac{1}{1+\kappa}}} B \qquad (2)$$

$$R^*(B,\tau,\rho,\kappa) = \frac{\left(\frac{(1-\delta)}{\rho}\right)^{\frac{1}{1+\kappa}}}{(\delta\tau^{\kappa})^{\frac{1}{1+\kappa}} + \left((1-\delta)\rho^{\kappa}\right)^{\frac{1}{1+\kappa}}} B \qquad (3)$$

Unlike the Cobb-Douglas specification used by the authors, in the CES specification there is the possibility of analyzing the cross-impact of the costs of activities T and R. To study it, we simplify the notation, so that now (2) and (3) are rewritten as (2') and (3').

$$T^*(B,\tau,\rho,\kappa) = H_\tau B \qquad (2')$$

$$R^*(B,\tau,\rho,\kappa) = H_\rho B \qquad (3')$$

[11] Another interesting approach is that of Congleton and Lee (2009).

[12] As in the original model by Moberg and Tarko (2021), there are constant returns to scale since the sum of the weights between T and R equals one.

[13] For details on the CES function, see Brems (1968), Henderson and Quandt (1980), and Klump et al. (2011).

After tedious calculations, we can obtain the price elasticities for T and R:

$$\frac{\partial T^*}{\partial \tau}\frac{\tau}{T^*} = -\frac{1+\kappa H_\tau \tau}{1+\kappa} \quad (4)$$

$$\frac{\partial R^*}{\partial \rho}\frac{\rho}{R^*} = -\frac{1+\kappa H_\rho \rho}{1+\kappa} \quad (5)$$

$$\frac{\partial T^*}{\partial \rho}\frac{\rho}{T^*} = -\frac{\kappa}{1+\kappa} H_\rho \rho \quad (6)$$

$$\frac{\partial R^*}{\partial \tau}\frac{\tau}{R^*} = -\frac{\kappa}{1+\kappa} H_\tau \tau \quad (7)$$

For the analysis of (4)~(7), with some calculation, it can be seen that $0 < H_\rho \rho, H_\tau \tau < 1$. This means that local elites have well-behaved (negatively sloped) demands, according to (4) and (5). Furthermore, in the case where $-1 < \kappa < 0$, they are elastic and, when $\kappa > 0$, inelastic. In addition, another important parameter of this model is the elasticitity of substitution between R and T, denoted by σ. The higher the value of σ, the greater the "substitutability" between R and T. It can be shown that, in our function, $\sigma = 1/(1+\kappa)$ and, the elasticity of substitution between R and T is constant.

The flexibility of the CES function generates interesting scenarios. For example, it can be conjectured that local elites would present different substitution configurations between T and R depending on the parameter κ. More institutionally sclerotic societies could be characterized by a low value of δ combined with κ a close to -1. An illustration of possibilities is given in Table 1 below.

Another result is the possibility that the cross-effects (equations (6) and (7)) differ depending on the range of values of the parameter κ. When $(-1 < \kappa < 0)$, an increase in the cost of R leads to a significant increase in T (and vice versa); that is, T and R are strongly substitutable activities. In this case, the elite is satisfied with using only R or T, or even a combination of both.

T and R are perfect substitutes in the limiting case where $\kappa \to -1$, which means that the elites use either R or T with a constant opportunity cost. In other words, the configuration of society oscillates between a completely sclerotic one,[14] in which rent-seeking activity predominates, to a society in which taxes are the main source of gains for the elite. This is illustrated in the first row of Table 1 below. The extreme case of perfect substitutes is in the second row of Table 1.

When $(\kappa > 0)$, which is the case in the third line of Table 1, T and R would be weak substitutes. Note that in this case, "weak substitute" means that there is also weak complementarity between T and R. Considering, for example, the elasticity of revenue in relation to the cost of rent-seeking activity (equation (6)), it can be seen that an increase

[14] See Olson (1984).

(decrease) in the elite's opportunity cost of taxing the local economy leads to a decrease (increase) in rent-seeking activity by the same elite. This is a case where the income effect outweighs the substitution effect.

Finally, in the fourth line of Table 1, we have the case where $\kappa \to +\infty$, and T and R become perfect complements[15], meaning that the elite would tend to use both sources of revenue in a fixed proportion.

Just like in the original model, it is assumed that the externalities in creating a special economic zone are interpreted in terms of the parameter δ. Assuming, for simplicity, that there are only two cities when the creation of an SEZ in the city "i" generates a marginal change in the elite's well-being in another city "k," ($\Delta\delta_i = U_{ik}\,\Delta\delta_k$), two types of externalities can occur: (a) a liberalizing externality ($0 < U_{ik} < 1$) and (b) an anti-liberalizing externality ($-1 < U_{ik} < 0$) [16]. Thus, for example, in the case where the externality is of the first type, the SEZ would generate a pro-liberal reform impact in the neighboring city.

Table 1 - Taxation and Rent-Seeking in the model

	$\delta \sim 0$	$\delta \sim 0.5$	$\delta \sim 1$
$-1 < \kappa < 0$	Institutional sclerosis[17][18] R >> T	T and R imperfect substitutes T > 0 and R = 0, R > 0 and T = 0 or R, T > 0	Cornered Leviathan[19] T >> R

[15] As a point of interest, the function converts to a Cobb-Douglas when κ → 0.

[16] The creation of an app that reduces transportation costs for people constitutes a technological shock that seems to fit the case of a liberalizing externality, as its efficiency leads to increased usage, encouraging its spread to an increasingly wider geographic area. This dissemination forces regulators to improve the regulatory framework related to urban mobility, and these improvements also spill over into other regions (Friedman and Taylor (2011) and Henderson and Churi (2019)).

[17] This term refers to the entrenchment of rent-seeking behaviors within a society's institutional framework, where elites prioritize extracting economic rents over fostering productive activities. This rigidity inhibits institutional adaptability and economic dynamism, resulting in a stagnant system that perpetuates inefficiency and limits the potential for sustained development.

[18] *Institutional sclerosis* is a condition where institutional habits, structures, and traditions become rigid and resistant to change, thereby impeding adaptation and innovation. Over time, these institutional features become solidified, locking the organization into inflexible patterns of behavior. (Pocock,1998)

[19] This concept describes an institutional arrangement where elites derive the majority of their revenues from taxation linked to productive economic activity, rather than rent-seeking. While this configuration promotes economic growth through a focus on maintaining a conducive business environment, it may also exhibit structural rigidity, constraining innovative or alternative governance approaches.

$\kappa \to -1$	Institutional sclerosis R >> T	T and R are perfect substitutes T > 0 and R = 0 or R > 0 and T = 0	Cornered Leviathan T >> R
$\kappa > 0$	T and R weak substitutes (weak complements) T, R > 0		
$\kappa \to +\infty$	T and R perfect complements (Leviathan-Leontief) T, R > 0 and used in a fixed proportion		

Source: Authors.

One question is whether it is possible, in Table 1, to move from one cell to another, either horizontally or vertically. In the first case, it is assumed that κ is a constant, but δ varies, which means that there is some exogenous change that increases the weight of T in the local elite's preferences. In the second, it is assumed that κ varies, but δ remains constant, implying that some exogenous factor could cause the change. Either way, this is a question of *institutional transition*. This is not a simple exercise since both parameters are part of the local elite's preferences, and preferences do not change easily. The necessary assumption here is that both κ and δ can be affected by institutional changes that alter the technology of the combination of revenue collection and rent-seeking inherent in the local elite's preferences.[20]

Some insights from the literature on the determinants of institutional change can be used to analyze some possibilities for institutional reconfiguration. Consider the following (somewhat extensive) excerpt from North apud Salama (2011) concerning the creation of joint-stock companies in England.

> *The creation of this type of company, at first, would have served only the elite. With the legal institution of joint-stock companies, the state began to guarantee not only the ownership of shares (and the right to property over companies) but also limited the liability of shareholders to the amount of subscribed capital in the event of bankruptcy. However, the value of shares depends on the possibility of selling them to third parties: the larger the group of potential buyers of these shares, the greater their value. Hence the convenience of defining shares legally in an impersonal way so that any individual can buy them – and not just dukes, counts, or landowners.*
>
> *From this, North concludes that the creation of impersonally defined property rights over shares served to make these shares more valuable to elites. At the same time, and*

[20] This author presents for the reader's critique the hypothesis (based solely on intuition) that, likely, changes in κ are less difficult than in δ.

> *in an epiphenomenal (that is, secondary and unplanned) way, this movement ended up expanding the property right over shares. Examples like this would then illustrate how the impersonal definition of property rights and, therefore, the expansion of the rule of law beyond elites would have been a condition for the opening of the social order in historical circumstances in which this opening was advantageous to elites". (Salama, 2011, p. 412)*[21]

The example of the creation of joint-stock companies in England illustrates that only when it becomes advantageous for the group holding power to include other groups does sustainable change occur. In terms of the model, this inclusion could be seen as a progression from a stagnant society to one where the business environment is improved for all, in other words, moving from left to right in Figure 1.

Another example would be a government committed to improving the business environment, which can pass an Economic Freedom Law (EFL)[22], changing in the short term the opportunity cost - τ/ρ - for local elites who now see it as more advantageous to gain from economic growth rather than rent-seeking. In the long term, with the maintenance of the EFL, it is possible that the substitution elasticity, κ, itself may be altered, solidifying the improved business environment $(\kappa \to -1)$. This could be the path to transforming the Lithium Valley. It can become just another area of mineral exploitation or a vector of prosperity for the region. Let us then examine the characteristics of the municipalities in this region.

3. Brief Characterization of the Lithium Valley

Consider the Sebrae[23] Local Development Index, or Isdel initially. It is measured from 0 to 1 and classified into five ranges: very low (0 to 0.150), low (0.151 to 0.310), medium (0.311 to 0.470), high (0.471 to 0.630), and very high (0.631 to 1). In the case of the Lithium Valley, there are four municipalities with low economic development (Coronel Murta, Rubelita, Virgem da Lapa, and Itinga). All the others have a medium level.

Table 1: Sebrae Local Development Index (Isdel) - Lithium Valley (MG)

Municipality	Isdel
Coronel Murta	0,2405

[21] Translated from the original by the authors.

[22] Economic Freedom Law, or, in Portuguese, "Lei de Liberdade Econômica", is a law that reduce the bureaucracy for small enterprises. The federal version of this law is from 2019. Since then, many subnational governments has passed similar laws.

[23] *Sebrae* is a Brazilian non-profit private entity with the mission of promoting the sustainable and competitive development of small businesses. (See, for details: https://sebrae.com.br/sites/PortalSebrae/canais_adicionais/sebrae_english).

Rubelita	0,2498
Virgem da Lapa	0,2582
Itinga	0,2965
Malacacheta	0,3122
Minas Novas	0,3137
Itaobim	0,3251
Pedra Azul	0,3259
Turmalina	0,3347
Medina	0,3561
Araçuaí	0,3617
Capelinha	0,3728
Salinas	0,4003
Teófilo Otoni	0,4284

Source: Sebrae.

Let us examine the situation of municipalities in Lithium Valley, particularly focusing on their proximity to the "border" with Belo Horizonte, which has the highest Isdel value among them. Belo Horizonte, the capital, is represented on the left side of Table 2.

On the right side of the table, the column labeled EFL indicates whether a municipality has approved the Economic Freedom Law (EFL), with a value of 1 if approved by the local government and 0 otherwise. Additionally, the table includes the respective dates of EFL approval for each municipality.[24]

Table 2 warrants some observations. Most municipalities fall significantly behind Belo Horizonte in local development, as measured by their Isdel scores. Among these, Teófilo Otoni, which has the highest Human Development Index (HDI) in the region, also ranks the highest in Isdel. Interestingly, it is the only municipality among the top performers in Isdel that has not approved the Economic Freedom Law (EFL).

Regarding the EFL, only nine out of the 14 municipalities have approved it at the local level. Of these, six implemented the law in the second half of 2023. Consequently, the impact of these legislative changes on the local business environment is still recent, and their effects will require time to materialize.

Table 2: Local development and business environment

Municipality	Distance from the border	*Distance ranking*	EFL	EFL approval date
Teófilo Otoni	-0,2053	101	0	
Salinas	-0,2334	148	1	8/12/2021
Capelinha	-0,2610	208	1	20/3/2024

[24] The data comes from the survey conducted by the *Instituto Liberal de São Paulo* (ILSP).

Araçuaí	-0,2721	240	1	11/3/2024
Medina	-0,2777	254	1	6/10/2022
Turmalina	-0,2991	326	1	16/7/2021
Pedra Azul	-0,3078	354	0	
Itaobim	-0,3086	357	0	
Minas Novas	-0,3200	394	1	8/12/2023
Malacacheta	-0,3216	402	1	10/7/2023
Itinga	-0,3373	462	1	1/3/2024
Virgem da Lapa	-0,3755	637	0	
Rubelita	-0,3840	683	1	4/7/2023
Coronel Murta	-0,3932	731	0	

Source: Sebrae, ILSP.
Note: Author's calculations.

We will now analyze the Brazilian cities in the Lithium Valley using the Sebrae Local Development Index (Isdel). As outlined in the Isdel methodology, the index is composed of five dimensions - entrepreneurial capital, business fabric, governance for development, productive organization and competitive insertion - broken down into 16 sub-dimensions. After an initial analysis of the index, we now turn to a detailed discussion of these dimensions, which are summarized in Table 3.[25]

The "Entrepreneurial Capital" dimension includes three sub-dimensions: Education, Entrepreneurial Education, and Business Conditions. As shown in Table 2, the municipality closest to first place in this dimension (Perdigão) is Capelinha (highlighted in blue), while Pedra Azul ranks the lowest. Notably, the best placement achieved within this dimension is 233rd, indicating significant deficiencies across the region.

The "Business Fabric" dimension consists of two sub-dimensions: Business Networks and Solidarity Values. In this category, Teófilo Otoni stands out positively, while Virgem da Lapa is the lowest-ranked municipality. Even within this dimension, the highest ranking achieved is below the 100th position. At the state level, Contagem is the municipality with the best performance.

These are the two dimensions most directly linked to entrepreneurship in Isdel. Among the five dimensions, these have a performance that can be classified as "average", considering that the average of each of them, for the sample, classifies them as 3rd and 2nd.

Table 3: The five dimensions of the Sebrae Local Development Index (Isdel)

Municipality	Entrepreneurial Capital Distance	*Ranking*	Business Fabric Distance	*Ranking*	Governance for Development Distance	*Ranking*	Productive Organization Distance	*Ranking*	Competitive Insertion Distance	*Ranking*

[25] For the data, see: https://www.isdel-sebrae.com/acervo.

Araçuaí	-0,3353	545	-0,2893	497	-0,1938	164	-0,5525	269	-0,3969	221
Capelinha	-0,2782	233	-0,2803	461	-0,1953	168	-0,5179	122	-0,4408	301
Coronel Murta	-0,3853	734	-0,3628	718	-0,4885	729	-0,6169	576	-0,5199	449
Itaobim	-0,3485	603	-0,3239	609	-0,2115	206	-0,5594	304	-0,5073	411
Itinga	-0,3770	707	-0,3402	659	-0,3723	449	-0,6363	656	-0,3680	183
Malacacheta	-0,3275	499	-0,2520	360	-0,4123	503	-0,5743	375	-0,4494	316
Medina	-0,3648	662	-0,3322	636	-0,1267	55	-0,5562	290	-0,4161	252
Minas Novas	-0,3378	557	-0,2921	508	-0,1826	141	-0,6504	707	-0,5445	517
Pedra Azul	-0,3879	738	-0,3624	714	-0,1967	170	-0,5565	292	-0,4430	306
Rubelita	-0,3716	689	-0,4145	816	-0,3313	390	-0,6657	766	-0,5443	516
Salinas	-0,2978	339	-0,3044	557	-0,1323	60	-0,5271	154	-0,3131	149
Teófilo Otoni	-0,3084	402	-0,1638	109	-0,1908	156	-0,4969	57	-0,2742	125
Turmalina	-0,2917	303	-0,3090	566	-0,2796	313	-0,5428	222	-0,4798	357
Virgem da Lapa	-0,3496	607	-0,3847	758	-0,4413	575	-0,6477	698	-0,4618	335

Source: Sebrae.
Note: Authors' calculations.

The third dimension, "Governance for Development," includes four sub-dimensions: Articulation, Participation and Social Control, Fiscal Management, and Planning. At the state level, Contagem holds the best position in this dimension. Within Lithium Valley, Salinas stands out positively, ranking 60th in the state, a much higher placement compared to most other Isdel dimensions. Conversely, Coronel Murta ranks the lowest in this dimension.

Notably, this dimension is where Lithium Valley performs relatively better, with the municipalities' average ranking being the least negative among the five dimensions. Governance can be further understood through its sub-dimensions, as it may theoretically complement private action (crowding in) or substitute it (crowding out).[26]

"Productive Organization" is a dimension that encompasses diverse themes. They are Productive Structure, Consumption and Credit Potential, Sanitation, Innovation, and Environmental Impact. It is noted that there are elements of both demand and supply in this dimension. The reference, in this dimension, is Belo Horizonte and, regarding the Lithium Valley, Teófilo Otoni is once again highlighted, ranking 57th, while Rubelita, at 766th, is the worst placed. This is also the dimension in which the Lithium Valley has the lowest average.

Finally, the dimension "Competitive Insertion" is composed of: International Trade, Tourism and Creative Economy, Connectivity, and Complexity. It is a kind of proxy for the

[26] For example, see Fernandez et al. (2017). The authors find evidence of a virtuous relationship between government consumption and private investment.

economic relations of the municipality with other municipalities or even countries. In this dimension, Teófilo Otoni stands out again in the 125th position, and Minas Novas is the worst placed. This is the second worst dimension for the Lithium Valley. The reference municipality, in this case, is Confins.

Some additional points can be highlighted. First, the prominence of Teófilo Otoni in Isdel, or in three of its five dimensions, is consistent with other socioeconomic indicators raised by the Coordination of Social Indicators of the Statistics and Information Directorate of the João Pinheiro Foundation (CIS-Direi/FJP-MG). Secondly, it is concerning that the worst dimension is "Competitive Insertion." Interestingly, this is a dimension in which there is plenty of room for improvement. The intention of the Lithium Valley to increase the state's insertion in international trade through the electric vehicle production chain deserves increased attention from the state public administration.

Finally, the two dimensions most directly linked to entrepreneurship, "Entrepreneurial Capital" and "Business Fabric", can benefit from the implementation of EFL in all municipalities. It can be speculated that, in fact, EFL is a positive input for the other dimensions.

Once we analyze the potential for entrepreneurship in the region, it is opportune to verify what the current data on jobs and companies tell us. For example, it is interesting to see if the creation of companies is also, to some extent, related to net job creation.[27]

Table 4 presents the difference between companies created and closed each year from 2018 to May 2024. Despite the challenges of the pandemic, the Lithium Valley showed an increasing trend in net company growth until 2022, when the series experienced a slowdown.

Table 4: Company Balance - 2018-2024

Municipalities	2018	2019	2020	2021	2022	2023	2024 (Jan-May)
Araçuaí	-30	85	202	189	142	166	85
Capelinha	151	111	289	360	301	304	111
Coronel Murta	1	7	38	43	39	10	7
Itaobim	9	25	140	158	70	108	25
Itinga	1	17	29	46	26	42	17
Malacacheta	29	47	137	146	68	52	47
Medina	18	30	102	93	21	63	30

[27] Despite the diversity in production technologies—some labor-intensive and others capital-intensive—the fact remains that any enterprise involves at least two major assets: physical capital and labor. Society enjoys greater well-being when these technologies are used most efficiently. A more labor-intensive technology is not necessarily the best solution for the local economy.

Minas Novas	9	25	95	147	59	97	25
Pedra Azul	-49	31	108	94	73	67	31
Rubelita	1	7	11	16	13	10	7
Salinas	90	69	308	314	242	231	69
Teófilo Otoni	203	370	1346	1430	1120	852	370
Turmalina	38	51	181	165	163	140	51
Virgem da Lapa	55	12	101	34	51	55	12
Lithium Valley	526	887	3087	3235	2388	2197	887
MG	50336	207623	237536	260333	208041	169941	71758
Brazil	199366	1972866	2288039	2573897	1769258	1701991	733796

Source: *Painéis do Mapa de Empresas* (Map of Companies Dashboards) [28].

It is also noteworthy that there was a change in the level of lithium in Lithium Valley from 2020 onwards. Compared to the previous year, the region shows a remarkable increase in the balance: 248%, which is much higher than the growth of the balance in the state, 14.4% in the state or 16% in Brazil. Among the municipalities, some highlights: Araçuaí and Pedra Azul had a decrease in the company balance in 2018. In fact, these are the only negative balances of companies in Lithium Valley in the analyzed period.

Do companies in Lithium Valley have any economic pattern? We know, from a recent study by Fundação João Pinheiro, that:[29]

> "1. All municipalities stand out in activities related to public services, including administration, defense, education, public health, and social security, as well as in the grouping that includes all other services except commerce.
> 2. In the composition of the most important activities, extractive industry occupies the third position in Medina and Pedra Azul (...), as well as in Itinga and Coronel Murta (..).
> 3. Forestry, fishing, and aquaculture play a crucial role in the economy of Turmalina and occupy the third position in Capelinha, Minas Novas, and Rubelita.
> 4. Commercial activities play a significant role in the economies of Virgem da Lapa, Malacacheta, Itaobim, Salinas, and Teófilo Otoni (...).
> 5. Construction is the third most important activity in Araçuaí (...). [Source: Fundação João Pinheiro (2024), emphasis mine]."

[28] Available on: https://www.gov.br/empresas-e-negocios/pt-br/mapa-de-empresas/painel-mapa-de-empresas.
[29] Available on:: https://fundacaojoaopinheiro.github.io/litio/economia.html .

Table 5 below illustrates how the portrait of companies relates to another crucial variable: jobs. Specifically, it presents job balances for the period. It is important to note that the data for 2018 and 2019 were obtained from the General Employment Registry (Caged), while data from 2020 onwards come from the New Caged. Due to changes in methodology, the two sub-periods are not directly comparable. However, they provide an overall view of employment trends over time. After relative stability in 2018 and 2019, job balances showed growth starting in 2020.

Table 5: Job Balance - 2018-2024 (*)

Municipalities	2018	2019	2020	2021	2022	2023	2024 (Jan-May)
Araçuaí	-79	161	461	266	244	309	117
Capelinha	346	-82	87	106	152	165	78
Coronel Murta	-8	-6	-13	-15	-15	-7	-8
Itaobim	39	111	-8	11	33	67	-97
Itinga	-21	10	-54	-49	-32	-24	249
Malacacheta	28	31	22	11	-2	13	98
Medina	-37	-47	-12	-7	11	13	20
Minas Novas	110	-44	29	64	120	177	-11
Pedra Azul	51	21	37	55	45	72	31
Rubelita	-9	15	-7	2	10	14	-1
Salinas	20	237	-2	122	127	248	858
Teófilo Otoni	552	366	-178	-143	89	476	905
Turmalina	126	182	192	237	230	291	138
Virgem da Lapa	-70	49	-53	-21	-21	11	142
Lithium Valley	1048	1004	501	639	991	1825	2519
MG	84012	97720	2,648	320,352	176,987	138,330	71758
Brazil	546445	644079	-190626	2781059	2013875	1460109	733796

Source: until 2019, Caged. From 2020 onwards: New Caged.

Observing the period from 2020 onwards, a significant increase in the size of the job balance can be noted, notably in Araçuaí and Turmalina, as well as Capelinha and Salinas. Virgem da Lapa is a municipality where the balance oscillates between positive and negative values. Coronel Murta and Itinga also stand out for their negative balance in several years. Explanations for these oscillations would require a more detailed study of local economic dynamics.

A joint analysis of company balances and jobs in Lithium Valley shows that they generally move in the same direction every year, except for 2020 and 2021, where the correlations were negative (respectively: -0.31 and -0.34). The correlation between the two is positive for the other years, with varying intensities[30]. As mentioned earlier, there is no *a priori* 'desirable' behavior from an economic point of view: more companies can be created with either more capital-intensive or labor-intensive technologies. The economic result expressed in the municipality's GDP would be the best indicator to assess the impact of these movements of companies and jobs in the region, but this data is not available for the period 2022-2024.[31]

Specifically considering the year 2024, Table 6 provides a summary of the companies in the region.

Table 6: Summary of Companies in Lithium Valley

Companies - Lithium Valley Jan-May/24					
Municipalities	Opened	Closed	Active = (1) + (2)	Matrix (1)	Branches (2)
Araçuaí	172	87	2653	2527	126
Capelinha	282	171	3843	3721	122
Coronel Murta	17	10	406	376	30
Itaobim	96	71	1677	1582	95
Itinga	47	30	618	560	58
Malacacheta	101	54	1245	1208	37
Medina	65	35	1262	1210	52
Minas Novas	71	46	1376	1291	85
Pedra Azul	73	42	1326	1254	72
Rubelita	15	8	193	165	28
Salinas	238	169	4164	3964	200
Teófilo Otoni	962	592	13597	13082	515
Turmalina	148	97	2080	1946	134
Virgem da Lapa	47	35	821	790	31
Lithium Valley	**2334**	**1447**	**35261**	**33676**	**1585**
MG	191051	119293	2345489	2250518	94971
Brazil	1808248	1074452	21943590	21012836	930754

Source: Map of Companies Panels

[30] The highest values occur in 2018 (0.83) and 2023 (0.82).

[31] Obviously, it is important to remember other significant factors such as exogenous shocks (e.g., tax increases, commodity price shocks, etc.). Unfortunately, the latest municipal GDP data is from 2021, which prevents a more up-to-date analysis. The GDP data can be found in Fundação (2024).

The three columns on the right show us that the Lithium Valley represents 1.5% of the total number of companies in the state. On the left side of the table, we obtain the balance of companies (open minus closed), which gives us an indication of the local business environment. The balance is positive for all cities, and, again, this balance is also around 1% of the state balance (which, in turn, represents 9.7% of the country's balance).It is also possible, from the total number of active companies in each municipality, to know a little more about their areas of activity. Table 7 shows that, for example, Araçuaí has, in the period in question, 2653 active companies that are divided into 366 economic categories. It is also seen that 50% of them are in 34 categories, which gives an idea of the economic diversification in the municipality. Another way to see diversification is through the Hirschman-Herfindahl Index (HHI). In this case, all municipalities show low HHI values, indicating that there is no concentration in a single sector.

Table 7: Economic Diversity

Companies - Lithium Valley Jan-May/24				
Municipalities	Number of economic categories	50% of the categories	HHI	Active Companies
Araçuaí	366	34	0.015	2653
Capelinha	414	30	0.016	3843
Coronel Murta	139	20	0.023	406
Itaobim	285	26	0.016	1677
Itinga	166	21	0.023	618
Malacacheta	255	21	0.022	1245
Medina	235	22	0.020	1262
Minas Novas	256	26	0.018	1376
Pedra Azul	258	30	0.016	1326
Rubelita	85	15	0.029	193
Salinas	421	34	0.014	4164
Teófilo Otoni	583	33	0.013	13597
Turmalina	321	31	0.016	2080
Virgem da Lapa	187	18	0.030	821

Source: Map of Companies Dashboards.

To complement this analysis, Table 8 shows the three main economic categories of each municipality in the Lithium Valley. Most companies belong to the retail sector. Only in Itinga does mining stand out as one of these activities. It is worth noting that this is not an exclusive characteristic of the region.

Table 8: The three economic categories with the most companies[32]

Lithium Valley Jan-May/24		
Municipalities	Three main economic categories	Number of establishments
Araçuaí	Retail trade of clothing and accessories	197
	Hairdressers, manicures, and pedicures	112
	Masonry works	103
Capelinha	Retail trade of clothing and accessories	236
	Hairdressers, manicures, and pedicures	187
	Road transport of cargo, except dangerous goods and removals, inter-municipal, interstate, and international.	161
Coronel Murta	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	37
	Retail trade of clothing and accessories	21
	Masonry works	20
Itaobim	Retail trade of clothing and accessories	103
	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	64
	Masonry works	60
Itinga	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	51
	Retail trade of clothing and accessories	45
	Extraction of granite and associated processing	29
Malacacheta	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	92
	Retail trade of clothing and accessories	90
	Masonry works	70
Medina	Retail trade of clothing and accessories	96
	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	64
	Hairdressers, manicures, and pedicures	63
Minas Novas	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	87
	Masonry works	82

[32] Prepared by DIREI/FJP.

	Retail trade of clothing and accessories	58
Pedra Azul	Retail trade of clothing and accessories	92
	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	56
	Hairdressers, manicures, and pedicures	53
Rubelita	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	18
	Taxi service	14
	Retail trade of clothing and accessories	10
Salinas	Retail trade of clothing and accessories	245
	Retail trade of general merchandise, with a predominance of food products - minimarkets, grocery stores, and warehouses	192
	Hairdressers, manicures, and pedicures	170
Teófilo Otoni	Retail trade of clothing and accessories	744
	Hairdressers, manicures, and pedicures	556
	Masonry works	445
Turmalina	Masonry works	123
	Retail trade of clothing and accessories	115
	Hairdressers, manicures, and pedicures	97
Virgem da Lapa	Retail trade of clothing and accessories	101
	Masonry works	54
	Hairdressers, manicures, and pedicures	38

Source: Map of Companies Dashboards.

In Minas Gerais, the three categories with the highest number of establishments are the retail trade of clothing and accessories; hairdressers, manicures, and pedicures; and masonry works, and this is not a peculiarity of the state. For Brazil, we have the following three main categories: retail trade of clothing and accessories, hairdressers, manicures, and pedicures; and sales promotion.

4. Conclusion

Economic history shows that institutional experimentation has always been present, both in cases of success and failure. Studies in the field over the past years have demonstrated that some institutions positively impact economic development. Even inequalities can be affected by institutional shocks.

Since Paul Romer introduced the concept of Charter Cities in 2009, there has been an expansion of research on alternative regulatory arrangements that can accelerate local

development. The more general term for these and other similar arrangements is special jurisdictions. Implementing special jurisdictions that fulfill their function of generating prosperity (and not merely redistributing resources to specific interest groups) is not a trivial task.

The model presented here highlights the dilemma faced by local elites, who must choose between enriching themselves through a more prosperous business environment or through rent-seeking activities. In the short term, this choice can be influenced by incentives that make rent-seeking less attractive compared to the revenue generated by economic growth. In the long term, it is conceivable that changes in the parameters of their preferences could be stimulated by institutional reforms.

One point that deserves attention is the externalities generated by the special jurisdiction intended for implementation. In previous sections, entrepreneurship in the Lithium Valley was examined, revealing an increase in the number of companies in the region in recent years. However, this growth is heterogeneous and is not always accompanied by an increase in jobs, possibly due to the installation of companies operating with capital-intensive technologies. It was also observed that the Economic Freedom Law (EFL) has not been adopted in all municipalities in the region, and significant differences exist among municipalities regarding the ISDEL (Sebrae Local Development Index) pillars identified as drivers of local economic development. Data from the João Pinheiro Foundation similarly highlight heterogeneities in other indicators.

To gain further insights from the model, it would be valuable to consider the degree of heterogeneity among local elites and its origins. Aligning the interests of these elites in favor of economic reforms that foster institutional evolution toward a better business environment would likely stem from their perception that stimulating economic activity (generating more tax revenue) yields greater benefits than rent-seeking activities. However, this could be the focus of another paper.

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