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"Mission-oriented" public procurement and the promotion of national scientific and technological development in Brazilian law*

Contratações públicas "orientadas por missões" e o fomento ao desenvolvimento científico e tecnológico nacional no direito brasileiro

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ABSTRACT

The main objective of this article is to analyze the promotion of science, technology and innovation through the use of state purchasing power. The article assesses the importance of scientific and technological innovation for sustainable national development, highlighting the role of the State and the treatment of this topic in the Constitution. The article addresses the notion of "mission-oriented" public innovation policies, which seek to promote scientific and technological advancement with a focus on concrete results of public interest. The article analyzes the use of state purchasing power for this purpose and its potential to foster innovation in the national production system. The article concludes that the types of public procurement focused on innovation currently provided for in Brazilian law have the potential to become important instruments for encouraging national scientific and technological development. Finally, the article argues for the possibility of establishing preferences for national companies.

KEYWORDS

innovation—development—state purchasing power—promotion of innovation—public procurement for innovation.

RESUMO

O objeto central do artigo é a análise do fomento à ciência, tecnologia e inovação por meio do uso do poder de compra estatal. Avalia-se a importância da inovação científica e tecnológica para o desenvolvimento nacional sustentável, destacando-se o papel do Estado e o tratamento da matéria na Constituição. Aborda-se a noção de políticas públicas de inovação "orientadas por missões", que buscam promover o avanço científico e tecnológico com foco em resultados concretos de interesse público. Analisa-se o uso do poder de compra estatal com essa finalidade e seu potencial para fomentar a inovação no sistema produtivo nacional. Conclui-se que as modalidades de contratações públicas com foco em inovação atualmente previstas no direito brasileiro têm potencial para se converter em importantes instrumentos de incentivo ao desenvolvimento

científico e tecnológico nacional. Sustenta-se, ao final, a possibilidade de se estabelecer preferências para empresas nacionais.

PALAVRAS-CHAVE

inovação—desenvolvimento—poder de compra estatal—fomento à inovação—contratações públicas para inovação.

1. Introduction

As part of its routine activity, the public administration enters into contractual relationships with private sector entities, by which, exercising its constitutional and legal functions, goods and services are acquired and public works undertaken. State purchasing power moves a significant volume of resources, significantly and broadly impacting national economies. Estimates indicate that, in Brazil, public resources directed annually at procurement amount to between 9% to 12% of GDP.[1]

These data demonstrate the importance of this phenomenon, from a legal as well as economic perspective, not only in terms of making public procurement more efficient, transparent and fair (the main object of public tenders and administrative contract studies), but to explore how this power can be directed to public policies in the interest of society, in line with applicable constitutional and legal frameworks. The so called "regulatory function" (and the promotion) of tenders and contracts, expressly provided for in general tender laws, has, since 2010, elevated "sustainable national development" and, more recently (2021), "innovation" as key state purchasing power objectives. The traditional purposes of ensuring the best proposal and equality among interested parties should be emphasized, as well as the objective of mitigating overpricing, overbilling and unfeasible prices (art. 3 of Law No. 8.666/93; art. 11, I to IV, of Law No. 14.133/21).

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[1] RIBEIRO, Cássio Garcia; INÁCIO JR., Edmundo. Caracterização dos contratos de compras públicas existentes no Sistema Integrado de Administração de Serviços Gerais. In: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022.

Sustainable economic development depends to a large extent on scientific and technological innovation, one of its main drivers, and the State plays a vital role in this regard. Such activity cannot be left exclusively to the private sector but requires joint action by public and private entities. Historically, the most progressive innovations have invariably depended on the direct action of the State or at least its decisive support. The high risk and uncertainty typical of innovative projects are not conducive to private investment, which has a greater aversion to risk than the public sector, contrary to the common sense view.[2] More generally, this relates to the role of the state in promoting the transformation of the productive framework of national economies towards more complex activities, as seen in developed nations, including those most identified with liberal ideas in the area of economics.[3]

To promote scientific and technological development, and the innovations that result from it, it is necessary to articulate a national system based on the so-called "triple helix" of innovation (the State, private enterprises and academia), in which the State plays a key role in coordination and promotion. In recent years, the national legal system has undergone several changes, reinforcing the role of the State in promoting innovation, with important modifications to the constitutional text. This has been consolidated by the creation and improvement of public contracting instruments, such as technological orders, competitive dialogue and the public contract for innovative solutions (CPSI), among other measures. The most noteworthy are Constitutional Amendment No. 85/2015, Law No. 13.243/2016, Decree No. 9.283/2818, the new general tender law (Law No. 14,133/2021) and the legal framework for startups and innovative entrepreneurship (Supplementary Law No. 182/2021).

Paradoxically, in recent years, there has also been a significant reduction in the federal public budget for science, technology and innovation (ST&I). According to a study published by Ipea, investments in this area have seen a sharp decline since the peak in 2013, when the figure was between 25 and 30

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[2] On this topic: MAZZUCATO, Mariana. *O Estado empreendedor*: desmascarando o mito do setor público vs. setor privado. São Paulo: Portfolio; Penguin, 2014.

[3] On this topic: CHANG, Ha Joon. *Kicking the ladder*: the development strategy in historical perspective. São Paulo: Editora Unesp, 2004.

billion reais (2020 adjusted). In 2020 it was between 15 and 20 billion, a drop of around 10 billion in real value, lower than that of 2009 (2020 adjusted).[4] This has aggravated the deindustrialization seen in the country in recent decades, with the manufacturing industry share of GDP falling from above 20% in the 1980s to around 11% in 2020.[5] To reverse this situation, an industrial policy wedded to the demands of the 21st century must focus on ST&I, as currently there is no way to separate industrial policy from scientific and technological innovation policy.

There is, then, a mismatch between the variety of innovation policy instruments in Brazilian law and the progressive "defunding" of ST&I, despite signs of improvement in more recent years.[6] Thus, we must acknowledge the limitation of law in transforming reality through implementation of public policies. In fact, policy instruments aimed at implementing innovation have little value, if there is no political will to allocate resources and qualified personnel to the area.

Notwithstanding this reality check, improving legal instruments aimed at stimulating scientific and technological development should not be regarded as a minor issue. For effective formulation and execution, public policy in general requires an adequate legal-institutional framework that provides appropriate legal instruments, facilitating efficient action and legal certainty on the part of the administrators responsible. Hence, in a situation in which due attention is once again given to investment in this area, the current legal framework for implementing the necessary public policies is in a better position than it was until recently.

That said, turning our attention to the strictly legal sphere, the Constitution of the Republic expressly recognizes the importance of centralized support of scientific and technological development, given the duty of the State to promote and encourage "scientific development, research, scientific and technological training and innovation" (art. 218). One of the means of achieving this

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4 DE NEGRI, Fernanda. *Políticas públicas para ciência e tecnologia no Brasil*: cenário e evolução recente. Nota técnica nº 92/Diset. Brasilia: Ipea, 2021.

5 BERNARDINI, Mário. O recuo da indústria. *In*: MARINGONI, Gilberto (org.). *A volta do Estado planejador*: neoliberalismo em xeque. São Paulo: Contracorrente, 2022.

6 KOELLER, Priscilla. *Evolução do orçamento proposto para as políticas de ciência, tecnologia e inovação*: 2000-2024. Nota técnica nº 129/Diset. Brasilia: Ipea, 2024.

"constitutional mission" involves purchasing power: public contracts focused on innovative solutions which require more advanced technical and scientific knowledge, involving risks greater than those in a standard contract. Note that, among the list of general innovation law principles included in Law No. 13.243/2016, is the "use of State purchasing power to promote innovation" (art. 1, sole paragraph, XII, of Law No. 10.973/2004).

This topic is central to our discussion, i.e., the use of purchasing power to stimulate science, technology and innovation, to improve and refine the national productive structure. Thus, an assessment of the role of public procurement in national scientific and technological development is required. To this end, to define the object more fully, a distinction is made between merely "innovation" procurement and public procurement "for innovation". The former does not require research and development (R&D) on the part of the contractor. Rather, it involves acquisition of an innovative solution already developed, which may not have been introduced into the market or may require adaptation to meet public needs.

Public procurement "for innovation", meanwhile, requires R&D for the delivery of the intended solution, with the risk of failure inherent to the object.[7] Our specific focus is public procurement "for innovation", with an emphasis on technological orders. In this case, the public entity requires "fulfillment of certain functionalities (not met at the time of the request) within a reasonable period of time through a new or improved product". The main objective, it should be stressed, is not development of new products, but "satisfaction of human needs, the solving of social problems" in support of the needs served by the contracting public entity. In any case, "some form of innovation (product or process) is necessary" for satisfactory execution of the contractual object.[8] There may even be a direct, less costly solution, which involves fewer risks; however, "with the aim of promoting innovation" and

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[7] See: RAUEN, André Tortato. Compras públicas para inovação no Brasil: o poder da demanda pública. *In*: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022, p. 13.

[8] EDQUIST, Charles; VONORTAS, Nicholas S.; ZABALA-ITURRIAGAGOITIA, Jon Mikel. Introduction. *In*: EDQUIST, Charles *et al.* (ed.). *Public Procurement for Innovation*. Cheltenham, UK; Northampton, USA: Edward Elgar, 2015. p. 6-7.

achieving possible "indirect additional gains", the State opts for "research procurement and the development of innovation".[9]

The role of technological innovation as a function of economic progress justifies interest in studying the capacity of the State to promote research, development and innovation, particularly through public procurement. From a legal perspective, it is important to analyze how the existing legal framework may contribute to the effectiveness of such public policy, i.e., whether these "mission-oriented" contracts, designed to tackle problems that require innovative solutions, may be configured, in practice, as effective instruments stimulating national scientific and technological development.

2. The "(in)visible hand" of the State in promoting innovation and development

The role of the State in scientific and technological development through innovation has been studied extensively. The concept of "creative destruction" theorized by Austrian economist Joseph Schumpeter is important, as an instructive innovation and development reference. Recalling the contribution of Marx in this area, Schumpeter observes that capitalism is an evolutionary process by nature. It is a method of economic transformation which is not and cannot be stationary. Inherent to the system is a continuous process of industrial mutation which revolutionizes the economic structure, "incessantly destroying the old, incessantly creating the new". In these terms, creative destruction is the essential attribute of capitalism.[10] As Furtado highlights, "the development process is carried out either through new combinations of existing factors at the level of known technique, or through the introduction of technical innovations".[11]

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9 PIMENTA FILHO, Luiz Cláudio. *Compras públicas para inovação e o desenvolvimento*: um diagnóstico jurídico-institucional das Encomendas Tecnológicas no Brasil. Dissertação (mestrado)—Fundação Getulio Vargas, São Paulo, 2021. p. 45.

10 SCHUMPETER, Joseph. *Capitalismo, socialismo e democracia*. São Paulo: Editora Unesp Digital, 2017 (1942),). p. 119-122.

11 FURTADO, Celso. *Desenvolvimento e subdesenvolvimento*. Rio de Janeiro: Contraponto, 2009. p. 85.

As for the role of the State, some degree of intervention is normal in market economies. Particularly in countries with lower levels of development, greater State involvement in the economic sphere, directly or by promoting activities of greater complexity and technological content, may be necessary, to achieve a path of sustainable development. This entails an industrialization process not excessively dependent on stronger countries, but focused on stimulating science, technology and innovation at a national level.

Tackling economic underdevelopment requires promotion of change in the structure of the domestic economy, towards greater productive sophistication. As difficult as this task may be for developing countries like Brazil, it is necessary, for the production of more complex goods and services, to avoid the condition of a nation which primarily exports raw materials and imports technology. Especially in economically developing countries, with low or middle incomes, consistent progress along this path is challenging when it is based exclusively on institutional improvement. In this context, the State plays a key role, through active policies to promote structural change in the productive sector, with a special focus on scientific and technological innovation.

As Carvalho and Gala point out, "the history of nations shows that those who dominated the core of complex production activities became rich". And this did not happen spontaneously through market forces, but through an "articulated integration between the State, civil society and local markets" with results linked "to the configuration of productive networks based on a continuous process of innovation". And the State "is and always has been a key player in the technological development of strong countries". With regard to Brazil, they highlight the importance of "incorporating more complexity into our rapidly deindustrializing economy" so the nation can "take a leap forward into the future, becoming a learning society and promoting a new national growth strategy" based on technology, environmental sustainability and social inclusion. This will not happen based solely on "spontaneous market impulses".[12]

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[12] GALA, Paulo; CARVALHO, André Roncaglia de. O desafio da política industrial em tempos de pandemia. In: MARINGONI, Gilberto (org.). *A volta do Estado planejador*: neoliberalismo em xeque. São Paulo: Contracorrente, 2021. p. 457, 459-460.

In terms of higher levels of economic development, there is, undoubtedly, a tendency for government support to become less necessary, due to gains in productivity and competitiveness in the private sector, which is increasingly less dependent on assistance. In general terms, this is observed in wealthier nations and is the objective of successful industrial policies. In fact, countries in an advanced stage of development, as a rule "forget" the active industrial policies they once adopted, with the recommendation that developing countries adopt unrestricted free trade policies. In the words of Friedrich List, popularized at the end of the 19th century (recently revived by Ha-Joon Chang), they "kick away the ladder" which they themselves used to reach higher levels of sustainable development.[13]

Empirical evidence attests to the importance of state support for national technological development. Particularly in the light of examples from East Asia, studies undertaken in the scope of the IMF recommend adoption of active industrial policies as a development strategy. In the provocatively titled, "The return of the policy that shall not be named", the authors address appropriate aspects of industrial policy, suggesting that a policy based on technology and innovation is the "true industrial policy". In terms of technological progress in the United States, for example, they highlight the role of public procurement in space and defense programs. With regard to the East Asian countries, they attribute their impressive advances to implementation of ambitious technology and innovation policies over decades. The State established progressive goals and imposed obligations on industries and firms. This state intervention led to more a sophisticated domestic production sector, beyond the comparative advantages, allowing, in its second phase, adoption of an export-oriented strategy for more complex trade. The study concludes that the more a country is willing to make technological advances, notwithstanding the comparative advantages, and the more this technology is consolidated nationally, the greater the chances of sustainable growth.[14]

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[13] Chang, *Chutando a escada*, *op. cit.*, p. 14-18.

[14] CHERIF, Reda; HASANOV, Fuad. The Return of the Policy That Shall Not Be Named: Principles of Industrial Policy. *IMF Working Paper,* mar. 2019. Disponível em: https://www.imf.org/en/Publications/WP/Issues/2019/03/26/The-Return-of-the-Policy-That-Shall-Not-Be-Named-Principles-of-Industrial-Policy-46710. Accessed on: 21 Nov. 2024.

This leads to another key point: the decisive role of state action in the creation of revolutionary technologies which have become ubiquitous features of our daily lives. Mazzucato points out that the government not only finances bold research projects, but is often the source of the most radical, pioneering innovations. Mobile phones, the Internet, GPS and touch screens all began with US government funding or contracting projects, primarily for military purposes. Thus, "no significant technology behind the iPhone was *not* funded by the state." The genius of Steve Jobs owes a great deal to state investment aimed at developing technology from its initial stages; where private capital finds greater risk aversion.[15]

Governments should therefore not be restricted to the traditional role of addressing failures, such as information asymmetries between market participants, or negative externalities, such as pollution. In this sense, their scope should not be limited, for example, to adoption of extra-fiscal tax policies vis-a-vis ecologically harmful activities, or combatting income and wealth inequality (notwithstanding the undeniable importance of these measures). Neither should they act only as "last resort lenders", putting out fires in situations of serious economic crisis, to ensure the liquidity of the banking system. They must act as "first-tier investors".[16] in the development and modeling of innovations which benefit the wider society, tackling major challenges in the most diverse areas (poverty, inequality, environmental crisis, urban mobility, access to quality health care and education, etc.).

Here, so-called "mission-oriented" innovation is relevant. "Mission orientation" underpins implementation of such policies and is particularly relevant in the analysis of procurement for innovation. According to Mazzucato, it concerns how public policy can be used to direct economic growth and innovation, to address social and technological challenges, such as combating climate change. The focus is not on particular sectors of industry, but specific social problems that demand the interaction of different sectors. It was this

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[15] Mazzucato, *O Estado empreendedor*, *op. cit*., p. 509-514, 1.323, 1.565, 1.649, 1.825, 2.171.

[16] MAZZUCATO, Mariana. *Mission economy*: a moonshot guide to changing capitalism. Londres: Harper Business, 2021. p. 20-21.

approach that put men on the moon and is behind the creation of the internet and entire new sectors such as biotechnology and nanotechnology. This, then, is the aforementioned role of the State in creating and shaping new markets, moving beyond the model of market failure correction.[17]

This "mission-driven" approach involves, among other things, use of instruments such as loans and contracts, as innovative solutions to specific and diverse issues, ranging from removing plastic from the oceans to democratizing access to digital technologies. The key is to specify what is intended, not the particular path required to achieve it, to stimulate creativity and innovation across a range of actors.[18]

To this end, some commentators in Brazil argue for a policy focused on "missions geared towards solving the historical problems of Brazilian society", to attract greater popular support for policies aimed at the production sector, considering the social benefits desired. From this perspective, sectors such as urban mobility, sanitation, green technology, affordable housing, health and education would benefit from policies grounded in national concerns. The idea is to foster production diversification through creation and development of innovations aimed at meeting specific social demands. According to this model, industrial and technological policy is linked to the development of goods and services aimed at improving the standard of living. Production diversification, guided by the identified purposes, is grounded in the social impact of innovation.[19]

To achieve these objectives, as Pimenta Filho notes, "the system must be imbued with social purposes", whose elaboration is developed and supported by the legislature. In fact, the system of innovation "is not apolitical and merely technical but contains within itself substantive discussion about the distribution of resources". The law plays a key role, "in setting clear goals and objectives for solving social problems", to "ensure the resources

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17 MAZZUCATO, Mariana. Mission-oriented innovation policies: challenges and opportunities. *Industrial and Corporate Change*, v. 27, no. 5, p. 803-815, 2018. Available at: https://academic.oup.com/icc/article/27/5/803/5127692. Accessed on: 11 Nov. 2024.

18 Mazzucato, *Mission economy*, op. cit., p. 2, 5, 8, 90, 124-128.

19 FAGNANI, Eduardo *et al. Desenvolvimento social e estrutura produtiva*. Available at: http://pedrorossi.org/wp-content/uploads/2018/03/DesenvolvimentoSocialeEstruturaProdutiva.pdf. Accessed on: 11 Nov. 2024.

employed do not address social problems by way of residual *spillover*, but rather as the central aim".[20] The social benefits of state-sponsored innovation should not derive primarily from technologies developed for military purposes or space exploration, for example, but be the main focus of public policy in the area.

In this regard and linking this idea to the Brazilian Constitution, Fernandes, Clark and Corrêa affirm that the "basic idea of the mission model is planning and execution of public policies for promotion and diversification of the production sector based on specific social demands", with an emphasis on investments in research and innovation. They highlight the undeniable relationship of this idea to state planning activity provided for in the Brazilian Constitution, notably in art. 174. Hence, the mission-oriented model in the Brazilian context must take into account necessary social transformation, expanding the supply of quality public services, promoting greater income distribution and adapting the "national productive structure to the needs of the population". In this context, the domestic market is mobilized , to meet social demands and obtain the necessary gains in scale, to "facilitate the transformation of the productive structure, with a focus on industrialization of products with greater added and technological value (complex products)". For this task, greater investment is required in research and development, education, science and innovation, "which necessarily involve state planning". The authors note that this development model matches what they call "constitutionally adopted ideology", in line with the constitutional norms of economic law.[21]

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[20] Pimenta Filho, *Compras públicas para inovação e o desenvolvimento*, *op. cit.*, p. 38-39.

[21] FERNANDES, Rodrigo Mineiro; CLARK, Giovani; CORRÊA, Leonardo Alves. Desenvolvimento orientado por missões sob a ótica da Constituição Econômica brasileira. *R. Opin. Jur.*, Fortaleza, ano 21, n. 36, jan./abr. 2023. p. 37, 45, 49-50.

3. "Mission-driven" public procurement and the promotion of innovation

The idea and practice of contracting technological projects in the private sector, to facilitate public policy, is nothing new. It played a central role, for example, in the space race during the Cold War. Such potential can be developed through the "procurement for innovation" provided for in Brazilian legislation, with an emphasis on technological projects governed by the general innovation law. "Mission-oriented public procurement" focused on, for example, the development of vaccines and medicines, combating pollution, and urban solutions addresses concrete challenges of undeniable public utility.

Government procurement, as Ribeiro and Inácio Jr. note, "represents a significant portion of public spending and the gross domestic product (GDP) of countries", prompting implementation of public policies which promote "industrial, scientific, technological, social and environmental development". In Brazil, according to data collected by the these authors, public procurement in 2019 represented 9.19% of the GDP, and in the period from 2002 to 2019 this percentage averaged 12%.[22] This illustrates the immense potential for promoting science, technology and innovation of the planned allocation of a portion (albeit a small one) of public contracts for this purpose.

With regard to scientific and technological innovation, more directly, state purchasing power is an important innovation policy tool on the demand side. According to Edquist, Vonortas and Zabala-Iturriagagoitia, such policies are defined as "a set of public measures to increase demand for innovations, improve conditions for the absorption of innovations and articulation of demand to stimulate innovations and their diffusion".[23] In another article, Edquist and Zabala-Iturriagagoitia define public procurement for innovation as a policy instrument on the demand side, by which the State requires

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[22] Ribeiro e Inácio Jr., Caracterização dos contratos de compras públicas existentes no Sistema Integrado de Administração de Serviços Gerais, *op. cit.*, p. 39, 56-58.

[23] Edquist, Vonortas e Zabala-Iturriagagoitia, Introduction, *op. cit.*, p. 5-6 (trad. Do autor). See also: FOSS, Maria Carolina. *Compras públicas como instrumento de política de inovação orientada à demanda*: experiências no Brasil, nos Estados Unidos e na União Europeia. Tese (doutorado)—Universidade de Campinas, Campinas, 2019. p. 154.

fulfillment of certain functions within a reasonable period of time, by way of a solution that does not yet exist, whose development and diffusion may influence the direction and pace of technological change and innovation. The primary purpose of this is not to promote innovation per se, but to satisfy human needs or solve social problems. Its use presupposes the identification of such needs and problems yet to be resolved.[24]

These authors differentiate between "direct" and "catalytic" public procurement for innovation. The first occurs when the contracting public entity is also the end user of the object; using its own demand to influence or induce innovation. Here, contracting involves fulfilling the "mission" of the public body itself, although its results are often disseminated to other users, benefitting society as a whole. "Catalytic" contracting occurs when the contractor serves as promoter and coordinator for the benefit of the end users of the innovation. In this situation, the needs are located outside the contracting public entity, which acts to encourage the development of innovations intended for broader public use, not to directly meet its own needs. The public entity is the initial purchaser of the developed innovation, but real market penetration occurs with subsequent private demand.[25]

As Foss and Monteiro note, "public procurement for innovation is a legal instrument that seeks to meet the needs of the administration and also stimulate public policy objectives". The use of state purchasing power is the "main instrument of demand-side innovation policy". As such, public procurement ensures the "existence of a market […] for new or improved products, processes or services, reducing one of the uncertainties of innovation activity". It is more directly related to the approaches of national innovation systems and "mission orientation" in innovation. Hence, this use presupposes both the fundamental role of state action in innovation systems and "the notion that innovative procurement can instrumentalize purposes beyond the mere satisfaction of public demand", an aspect of

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[24] EDQUIST, Charles; ZABALA-ITURRIAGAGOITIA, Jon Mikel. Public Procurement for Innovation as mission-oriented innovation policy. *Research Policy*, v. 41, p. 1,758-1,759, 2012.

[25] *Ibid.*, p. 1.758-1.759, 1.766.

mission-oriented public policy.[26] On the other hand, it also pertains to the market failure argument, as it compensates for any lack of consumers for innovative products and services.

In European Union governing institutions, the decisive role of public procurement in promoting scientific and technological development is clearly acknowledged. European Commission Communication 799 (2007), "to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions", notes that "the needs of the public sector have always been an important driver of innovation in many areas, such as telecommunications, energy, health, transport, security and defense". As examples of innovative solutions resulting from R&D contracts, the text cites "IP (Internet Protocol) technology, GPS, high-performance computing and essential innovations in semiconductor technologies". It also refers to contracts related to specific social challenges, "such as the treatment of soil pollution or the diagnosis of Alzheimer's disease", which have allowed "US public authorities to create new markets for the applications of biotechnology and nanotechnology". China, it observes, has officially introduced, since 2006, "public technology contracts as a means of boosting innovation" and that the significant resources allocated by the US government to R&D contracts "has often contributed to improving the quality of public services and creating globally competitive companies".[27]

As Nuno Cunha Rodrigues states, regarding the European Union, the rules on public procurement in general "answer the question of knowing how to contract", through the observance of a set of procedural rules to be followed by public entities; but not the question of what to buy. The answer to this "may allow, through public contracts, use of the market power of contracting entities to acquire goods and services", which simultaneously enables promotion of diverse purposes, such as innovation, combating climate change, improving employment, public health, etc. Currently, we have seen "the transition from

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[26] FOSS, Maria Carolina; MONTEIRO, Victor. Diálogos competitivos motivados pela inovação. *In*: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022. p. 258, 261.

[27] UE. *COM (2007) 799*. Contratos pré-comerciais: promover a inovação para garantir serviços públicos sustentáveis de alta qualidade na Europa. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0799:FIN:PT:PDF. Accessed on: 21 Nov. 2024.

a *rational economic* approach", according to which acquisitions must only meet a logic of "public expenditure efficiency" (*value for money*), "to an instrumental understanding of public procurement".[28] Such observations apply to recent Brazilian legislative developments, as highlighted.

Even before the most recent legal innovations, there were successful examples of technological development policy in Brazil, whereby State purchasing power played a key role. An emblematic case is the national aeronautical sector. The aircraft acquisition and development programs promoted by the Brazilian Air Force generated positive effects in this sector, with an emphasis on the Brazilian Aeronautics Company (Embraer), encompassing the whole chain of local suppliers. Each procurement program in which the company participated contributed to its technological advancement. Over the years, this government strategy has positioned Brazil as one of the few countries in the world manufacturing commercial, executive and military aircraft.[29]

4. The State as an agent of innovation in Brazilian law

Before analyzing more specifically the constitutional and legal framework for State promotion of scientific and technological development, we should note the importance of avoiding legal illusionism, whereby the statement of constitutional principles themselves are sufficient to effect sustainable development. Indeed, what is often observed is merely the symbolic constitutionalizing of rights,[30] including the right to development. Nevertheless, the existence of an adequate constitutional framework is an important starting point to support implementation of public policies that contribute to the structural transformation required for sustainable national development, albeit not an effective guarantee this will occur.

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[28] RODRIGUES, Nuno Cunha. *A contratação pública como instrumento de política econômica*. Coimbra: Almedina, 2013. p. 19.

[29] RIBEIRO, Cassio Garcia. Desenvolvimento tecnológico nacional: o caso KC-390. *In*: RAUEN, André Tortato (org.). *Políticas de inovação pelo lado da demanda no Brasil*. Brasília: Ipea, 2017. p. 239, 260, 261, 281.

[30] NEVES, Marcelo. A constitucionalização simbólica. São Paulo: Acadêmica, 1994. p. 95.

Relating law to public policy, innovation promotion requires a legal framework with adequate instruments for competent bodies to apply. The law, therefore, is basically responsible for establishing such instruments, based on best practices vis-a-vis innovation policies. This is an accessory but fundamental function, as state incentive measures require legal means for their implementation. Legal provisions are also important to support public officials in their management of public development policy using public resources. Adoption of legally inadequate measures leaves administrators open to censure by control bodies.

A legal approach should not be limited to exposing and interpreting current legislation but involve a critical analysis of the legal norms themselves and their interaction with social reality. From this, changes may be proposed, possibly benefitting from subsidies from other areas, such as economics. In this sense, Bucci and Coutinho argue that, in law and public policy, the formatting and functioning of institutional arrangements which facilitate policy objectives are integral. Achievement of these ends presupposes, among other factors, existence of adequate legal means.[31] These include public contracts for innovation and, more specifically, technological procurement. The importance of the law, therefore, lies in the fact that "public procurement necessarily implies the existence of a State, organized through laws, which allows this activity to be carried out".[32]

However, again, the mere statement of established standards is not, in and of itself, to produce the desired standards. Obviously, an adequate legal-institutional arrangement is a necessary, if insufficient, condition for public policy implementation. In fact, with regard to technology and innovation, the Brazilian State has fallen short, notwithstanding the legislative framework in place. If neglect of this crucial area of development continues, the economy will stagnate, reliant as it is on importing techonology from other nations at

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[31] BUCCI, Maria Paula Dallari; COUTINHO, Diogo R. Arranjos jurídico-institucionais da política de inovação tecnológica: uma análise baseada na abordagem de direito e políticas públicas. *In*: COUTINHO, Diogo R.; FOSS, Maria Carolina; MOUALLEM, Pedro Salomon B. (org.). *Inovação no Brasil*: avanços e desafios jurídicos e institucionais. São Paulo: Blucher, 2017. p. 316.

[32] Pimenta Filho, *Compras públicas para inovação e o desenvolvimento*, *op. cit.*, p. 25.

much higher prices than the cost of the primary products that make up the majority of its exports.[33]

That said, ensuring national development, eradication of poverty and reduction of inequalities constitute "fundamental objectives" of the Republic, according to the Constitution (art. 3, II and III, of the CF/88). It should also be remembered that the "right to an ecologically balanced environment" (art. 225 of the CF/88) is linked to the principle of development established in the constitutional text. The most detailed constitutional provisions concerning the economic order are found in articles 170 to 181, which deal, among other aspects, with general principles and forms of state economic intervention.

With regard to science, technology and innovation, the provisions of articles 218 to 219-B, amended by Constitutional Amendment No. 85/2015, are instructive. For Bercovici, the theoretical inspiration for art. 219 is the "conception of 'endogenous development' developed by Celso Furtado". The "internalization of economic decision-making centers" is linked to "reducing the country's external vulnerability, to ensure a national development policy". Under the Constitution, the expansion of the domestic market is "the main strategy for economic dynamism", and the development process should "be led […] by national domestic demand, not just by exports […]".[34]

The vast internal market of a continent-sized country like Brazil is a significant lever for national manufacturing, scientific and technological development. But strategies to stimulate export of more complex goods and services should not be overlooked. Development should follow the trajectory of the most advanced countries in general, with an emphasis on the successful experience of East Asian countries in overcoming economic challenges since the mid-20th century. Nor does the constitutional text determine an exclusive focus on the domestic market. Policies encouraging

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[33] CLARK, Giovani; TORRES, Luiza Viana; CORREA, Leonardo Alves. O planejamento estatal, inovação e políticas públicas. *Revista de Direito Empresarial*, Belo Horizonte, a. 14, n. 2, p. 209-226, maio/ago. 2017.

[34] BERCOVICI, Gilberto. *Constituição econômica e desenvolvimento*. São Paulo: Almedina, 2022. p. 418, 421-422.

the national market, which promote export of more sophisticated goods and services, should be understood as complementary, not exclusive, aimed at greater technological autonomy, in line with the Constitution, as well as more qualified involvement in international markets. This will help reverse the process of deindustrialization in Brazil, through the increasing predominance of manufacture and export of primary goods and services.

To this end, we affirm the doctrine that, not overlooking the importance of the internal market "as an axis of development, this direction would provide considerable gains in scale that would enable reductions in marginal production costs", and could "result in greater competitiveness, also in the external market". Thus, "the importance of the external market for sustainable development cannot be ignored", particularly due to the relevance of "the industrial sector, which develops complex products" and pays better wages. Thereby, "an effective national development program" based on a mission-oriented model reconciles an initial focus on the domestic market with a commitment to exports. Besides focusing on the domestic market, "it can (and should) target the foreign market, developing products with advanced technology".[35]

Note, also the provisions of art. 219-B, promoted by EC 85/2015, which deals with the "National Science, Technology and Innovation System (SNCTI)". The relevance of national innovation systems was addressed in previous provisions, vis-a-vis coordination between the government, productive sector and academia, as an important lever for scientific and technological development (the "triple helix" of innovation). In this context, the reform established the competence of the Union to issue general rules on SNCTI, without prejudice to concurrent subnational entity legislation to meet their specificities (§§ 1º and 2º of art. 219-B).

Also relevant here is Art. 200, V of the Constitution, according to which one of the attributions of the unified health system is to "increase, in its area of activity, scientific and technological development and innovation". The fundamental importance of promoting science, technology and innovation in SUS (the national health system) was shown dramatically in the context of

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[35] Fernandes, Clark e Corrêa, Desenvolvimento orientado por missões sob a ótica da Constituição Econômica brasileira, *op. cit.*, p. 47-48.

the Covid-19 pandemic, when the State faced problems providing necessary equipment to tackle the emergency, such as pulmonary ventilators and protective masks, especially at the beginning of the crisis. Competition with richer countries, such as China, for the supply of vital domestic products was a major factor.

It is clear, therefore, that, in the light of the changes introduced by Amendment No. 85/2015, the Brazilian Constitution makes express provision for state support of science technology and innovation. Before this Amendment, in fact, there was no mention of state sponsorship of innovation, as the previous wording referred broadly only to science and technology. Thenceforth, the duty to establish a national innovation system became constitutionally binding, integrating public (at the various federative levels) and private entities in pursuit of the objective. These are important changes that, with the infra-constitutional legislation on the subject, provide legal backing for state action in an area regarded as fundamental to economic development.

At an infra-constitutional level, state support for science, technology and innovation was consolidated in the aforementioned general innovation law, Law No. 10.973, December 2. 2004, amended by Law No. 13.243, January 11, 2016. This is the main legal framework of the Brazilian national innovation system. One of its main provisions is "use of State purchasing power to promote innovation" (art. 1, sole paragraph, XIII). It stipulates a range of incentives for scientific and technological development in national production, including technological contracting orders, again through the "use of State's purchasing power" (art. 19, paragraphs 2-A, V and VIII). Technological procurement or orders (Etecs), undertaken by the public administration, is regulated in a more specific manner in articles 20 and 20-A and in Decree No. 9.283, February 7, 2018 (arts. 27 to 33).

The recent law on startups and entrepreneurship (Supplementary Law No. 182/2021) is noteworthy. Among other measures, it established a specific type of tendering/contracting aimed at promoting development through the acquisition of innovative solutions (arts. 12 to 15). In the same sense, the new general law on tenders and administrative contracts identified innovation and sustainable national development as objectives of tendering processes in general (art. 11, IV, of Law No. 14.133/2021). Competitive dialogues were

also established as a specific method for the procurement of more complex, innovative solutions (art. 32 of Law No. 14.133/2021).

5. Public procurement in Brazilian law and the promotion of national scientific and technological development

Public procurement is a key element of the promotion of national scientific and technological development by the Brazilian state, in line with the guidelines established by articles 218 to 219-B of the Constitution. Indeed, the use of tenders and contracts for this purpose is in line with the specific constitutional rules on tenders and contracts. The Constitution establishes the authority of the Union to issue general rules and determines that, except in cases provided for in law, public contracts require a prior tender in which "equality of conditions for all competitors" is ensured. Other clauses stipulate "payment obligations" and maintenance of the "effective conditions of the proposal, in accordance with the law", allowing only for "technical and economic requirements which are indispensable to guarantee compliance with obligations" (art. 22, XXVII; art. 37, XXI, of the CF/88).

These provisions do not imply prohibition of public contracting directed at purposes beyond meeting the immediate needs of the administration, which will be achieved directly by the regular execution of the contractual object; providing such purposes are consistent with constitutional principles or rules and there is no specific prohibition in this regard. This, then, is the "regulatory function" (and promotion) of tenders and contracts, analyzed in detail in the previous work.[36]

Law No. 8.666/1993, amended by Law No. 12.349/2010 defined the basic purposes of public tenders generically as "the promotion of sustainable national development" (art. 3, head paragraph). This objective is also included in the law on state-owned companies (art. 31 of Law No. 13.303/2016).

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[36] VIEIRA, Danilo Miranda. *Contratações públicas e desenvolvimento econômico*: o uso do poder de compra do Estado como instrumento de política industrial na lei geral de licitações. Rio de Janeiro: Lumen Juris, 2020. p. 32-48, 79-90.

The new law was more emphatic, defining the purpose of procurement as "encouraging innovation and sustainable national development" (art. 11, IV, of Law No. 14,133/2021). To this end, it provides for various mechanisms, such as preference margins (art. 26, *head paragraph* and § 2), competitive dialogues (art. 32), the tender waiver hypothesis (art. 75, IV, "c" and "d", XII, XV and XVI), expression of interest procedures restricted to startups (art. 81, § 4), and broader negotiation of intellectual property in research and development contracts (art. 93, § 2).

Niebuhr expresses reservations about this but acknowledges that section IV of article 11 of Law No. 14.133/2021 "sets the tone and openly assumes that tenders and contracts are instruments for the achievement of public policies". The starting point for the use of tenders and contracts as a public policy instrument is article 5 of the same law, "which qualifies sustainable national development as one of its governing legal principles".[37] Among such public policies are those aimed at encouraging innovation, as stated in the legal text.

Jacoby Fernandes, referencing the legal hypothesis of exemption from tendering in art. 75, V, of Law No. 14.133/2121 (which establishes, among other options, direct contracting of technological orders), affirms that it is "undeniable that the constitutional duty of the Public Authority to invest in research is significantly leveraged by government purchasing power".[38] And Nohara, in view of this legal objective, argues that it is possible and advisable, "so that the meta-contractual objective of sustainable national development is achieved", to promote innovation. Indeed, the state "uses tenders and purchasing power as instruments to foster" innovation, as "an inducer of technological development and innovation through the planned use" of this power, in a "effort to stimulate innovation […] inspired by Schumpeter".[39]

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[37] NIEBUHR, Joel de Menezes. *Licitação pública e contrato administrativo*. Belo Horizonte: Fórum, 2022. p. 345, 350.

[38] JACOBY FERNANDES, Ana Luiza; JACOBY FERNANDES, Jorge Ulisses; JACOBY FERNANDES, Murilo. *Contratação direta sem licitação na nova lei de licitações*: Law No. 14.133/2021. Belo Horizonte: Fórum, 2021. p. 238.

[39] NOHARA, Irene Patricia. Inovação na nova lei de licitação: diretriz e potencial de modernização pelo Estado. *Revista de Direito Brasileira*, Florianópolis/SC, v. 31, n. 12, p. 271-283, jan./abr. 2022. p. 275, 282.

In this regard, innovation law clearly articulates the aim of establishing measures to "encourage innovation and scientific and technological research for production, with a view to technological optimization and autonomy and developing the national and regional production system" (art. 1, head paragraph, of Law No. 10.973/2004). The instruments provided for, then, including Etec, have the general purpose of fostering the development of the national production system, through encouragement of science, technology and innovation; without prejudice, naturally, to specific purposes established in the legal measures.

With regard to Etec, specifically, the law includes technological contracting among the instruments for promoting innovation, as a legal provision concerning the duty of the state to encourage "research and development of innovative products, services and processes in Brazilian companies and in Brazilian non-profit private law entities", in line with the "priorities of national industrial and technological policies". These priorities must be established by federal regulations (art. 19, head paragraph, and §§ 1º and 2º-A, V, of Law No 10.973/2004). Note that the head paragraph of art. 19 expressly refers to the encouragement of research and development activities in "Brazilian" companies and non-profit entities. Hence, in the legal sphere, the state promotion of science, technology and innovation cannot be denied, as it is embedded in the constitution itself.

In fact, the Constitution states that technological research should focus "predominantly on solving Brazilian problems and developing a national and regional production system" (art. 218, § 2, CF/88). Etec fits perfectly into this category, as an instrument for contracting research and development aimed at specific problems. Similarly, the constitutional directives to boost the internal market, to "facilitate cultural and socioeconomic development, the well-being of the population and technological autonomy of the Country" and to organize a "National Science, Technology and Innovation System (SNCTI)" (arts. 219 and 219-B of the CF/88) reinforce the importance of fostering scientific and technological advances, exercised by Etec and other types of public procurement.

In terms of the technological contracting provided for in legislation, Rauen and Barbosa highlight that discussion on this legal instrument is part of a "more mission-oriented approach to investments in research and development

(mission-oriented R&D), the basis of the North American innovation strategy, for example". They observe that technological contracting, in a broad sense, "has long been a feature of the developed world, but in Brazil has only recently been place at the center of the debate". Technological orders entail that the requesting State, the contracting party, "defines exactly which result should be sought, whether a vaccine, an irrigation system, an urban mobility solution or a specific development, for example". In this sense, technology is the means, not the end.[40] Similarly, Chioato and Lins highlight that "one of the newest, most effective ways, in Brazil, to stimulate technological development and innovation is the use of State purchasing power". This does not mean "the ultimate goal of public procurement should be innovation", but rather to obtain the goods and services the administration needs, "fostering technological and scientific development as a side effect".[41]

In fact, Etec does not directly incentivize or promote research and technological development activities without a specifically defined public interest objective. This much is clear. As highlighted and in accordance with the express legal provision, the aim is to "solve a specific technical problem or obtain an innovative product, service or process" (art. 20, head paragraph, of Law No. 10,973/2004). A concrete problem must exist, the solution to which may not be easily available on the market nor achievable based on existing technical-scientific knowledge.

However, the objective of promoting such advances (even if aimed at a specific result) should not be minimized. The importance of science, technology and innovation for national development is inarguable, and promotion of it is the constitutional duty of the Brazilian State. Indeed, public procurement for innovation, among which technological orders stand out, is an key tool for aligning state purchasing power with this constitutional mandate. To achieve the result sought by such contracts, broad R&D activities are undertaken, with the potential to generate positive externalities typical of

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[40] RAUEN, André Tortato; BARBOSA, Caio Márcio Melo. *Encomendas tecnológicas no Brasil*: guia geral de boas práticas. Brasília: Ipea, 2019. p. 11, 13.

[41] CHIOATO, Tânia Lopes Pimenta; LINS, Maria Paula Beatriz Estellita. Compras públicas para inovação na perspectiva do controle. *In*: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022. p. 116.

the innovation process, in the service of sustainable development; hence, the significance of promoting national scientific and technological development, even if achieved indirectly, through the object established in the contract. Its importance should not be underestimated.

Such normative provisions are not a peculiarity of Brazilian law. The use of state purchasing power to stimulate innovation is grounded in international experience. Research and development contracting is provided for in Part 35 of the Federal Acquisition Regulation of the US government,[42] and pre-commercial procurement for innovative solutions has been adopted in the European Union.[43]

In Brazil, legislation on public procurement for innovation (as a type) has been subject to constant evolution, clearly influenced by examples and experiences in other countries. Currently, a toolbox of legal instruments is available to the public administration, designed for the most diverse situations, for the financing and procurement of technologies which exist or will be developed.[44] In this regard, in addition to Etec, the public contract for innovative solutions (CPSI) and the competitive dialogue tendering method are instrumental.

Here, the role of administrative law is key, as it expressly provides for legal instruments for public policy implementation. This can "bring to the attention of the administrator a possible action not originally considered…… compelling them to deal with issues and problems understood as outside their purview", which can "lead to, a more functional and innovative solution". On the other hand, care must be taken to avoid "paralysis due to misinformation or an excess of possibilities", as administrative law not only "expands the range of possibilities for the administrator", but "provides elements that facilitate sound decisions", such as setting clear objectives and goals.[45]

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[42] USA. *Federal Acquisition Regulation, part 35*. Available at: https://www.acquisition.gov/far/part-35. Accessed on: 26 Nov. 2024.

[43] EU. *European Commission/Pre-Commercial Procurement*. Available at: https://digital-strategy.ec.europa.eu/en/policies/pre-commercial-procurement. Accessed on: 26 Nov. 2024.

[44] RIBBON, Leonardo Coelho. O direito administrativo como caixa de ferramentas e suas estratégias. *RDA—Revista de Direito Administrativo*, Rio de Janeiro, v. 272, p. 209-249, maio/ago. 2016. p. 213.

[45] Pimenta Filho, *Compras públicas para inovação e o desenvolvimento*, *op. cit.*, p. 40, 43.

An indication of the potential of government procurement to foster innovation, based on the rules in force, is the technological order for development and supply of the Covid-19 vaccine, arising from a contract which Fiocruz signed with AstraZeneca. This resulted in the transfer of vaccine production technology to Fiocruz, enhancing the autonomy of the public system, in accordance with § 2 of art. 218 of the Constitution. This is a clear example of how State purchasing power can stimulate innovation: fulfilling an objective ("mission") of unquestionable social interest in the fight against Covid-19. This relates to one of the tenets of the unified health system, to "increase, in its area of activity, scientific and technological development and innovation" (art. 200, V, of the FC/88), demonstrating the importance of promoting the health care economic-industrial complex, as a vital component of reindustrialization through innovation.

6. Similarities and distinctions between Etec, CPSI and the competitive dialogue

Technological contract orders are most directly aimed at supporting public procurement of innovative solutions of uncertain efficacy. Currently, public contracts for innovative solutions (CPSIs), provided for in the startup legal framework (LC No. 182/2021), may also be used for this purpose, when their object involves technological risk. However, technological orders remain significant in this regard, as they are exclusively aimed at contracts entailing technological risk, whose presence is only a possibility with regard to CPSIs.

In Brazil, the main legal provision concerning Etecs was included in the original wording of Law No. 10.973/2004 (art. 20). In 2010, through Law No. 12.349/2010, the contracting of technological orders was included in Law No. 8.666/1993 as a hypothesis of direct contracting through exemption from tender. More recently, Law No. 13.243/2016 added express provision for direct contracting for the execution of Etecs, besides changes in the legal discipline of orders, to facilitate their administrative use and encourage potential contractors. Furthermore, the tender waiver hypothesis is expressly provided for in art. 75, V, of the new general law on tenders and contracts (Law No. 14.133/2021), which maintained a provision established in art. 24, XXXI, of Law No. 8.666/1993. Etecs may also be validly contracted by state-owned

companies, subject to Law No. 13.303/2016. Moreover, technological orders also constitute an express hypothesis for tender waivers provided for in the law on state-owned companies (art. 29, XIV, of Law No. 13.303/2016).

This type of contract, it should be noted, is intended for situations in which there is a "technological risk", as the wording of article 20 of Law No. 10.973/2004 makes clear. According to art. 2, III, of Decree No. 9.283/2018, technological risk is the "possibility of failure in developing a solution", when "the result is uncertain due to insufficient technical-scientific knowledge at the time the decision to undertake the action is made".

Yet, the originality of the intended solution is not enough to characterize technological risk, and the technical-scientific knowledge to develop it must necessarily be insufficient at the time of contracting decision. Technological risk, therefore, occurs when there is uncertainty as to the effective achievement of the intended result of the contract, due to inadequate technical knowledge at the time of its execution. Its presence, which may or may not lead to the intended final result, is instrumental. Failure may occur regardless of the failure of either party, as the achievement of the intended result is uncertain by definition. Given the uncertainty inherent in the objective, the result is not contracted, binding the contractor to an obligation of means not ends.[46]

Technological risk essentially denotes a situation of uncertainty resulting from insufficient technical-scientific knowledge at the time of contracting. If the specialized knowledge required to develop the desired result is already fully available, in line with the contractually established deadline and costs, this type of procurement will be invalid, on penalty of illegality. This may even be the case for legal hypotheses of direct procurement, under the terms of the general law on tenders and contracts or other specific legislation, but not for the technological contract orders dealt with in the innovation law. It is, therefore, a contract with a very specific application, whose use should

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[46] On technological risk in Etecs, see: BARBOSA, Caio Marcio Melo. Contrato de encomenda tecnológica. *In*: PORTELA, Bruno Monteiro; BARBOSA, Caio Márcio Melo; MURARO, Leopoldo Gomes; DUBEUX, Rafael. *Marco legal de ciência, tecnologia e inovação no Brasil*. Salvador: JusPodivm, 2020. p. 282, 287; BARBOSA, Denis Borges (org.). *Innovation law*: comments on the federal innovation law, tax incentives for innovation, state and local legislation, state purchasing power (changes to the bidding law). Rio de Janeiro: Lumen Juris, 2011. p. 167-168; Rauen e Barbosa, *Encomendas tecnológicas no Brasil*, *op. cit*., p. 19, 21-22.

not be unduly trivialized by the public administration vis-a-vis the ordinary contracting process.

With technology procurement, there is a specific additional risk, a condition of uncertainty inherent to the object, so there is no guarantee contracted R&D activities will achieve the intended result, even discounting planning defects, breach of contract or force majeure. This be present in order to make the Etec viable. Currently, uncertainty arising from technological risk may pertain to public contracts for innovative solutions (CPSI) provided for in the legal framework of startups (arts. 13 and 14 of Supplementary Law No. 182/2021). Given this peculiarity, the contractor assumes an obligation of means, which, regularly executed, exempts them from liability for the possible failure to achieve the object.

In the case of Etec, the contracting State assumes most of the risk, due to the uncertainty inherent. This can also be seen in CPSIs based on the legal framework of startups and innovative entrepreneurship, when technological risk is present (art. 13, head paragraph, and art. 14, §§ 4º and 5º, of LC nº 182/2021); unlike the general rule in other public contracts, in which contractors assume an obligation to achieve results, in the absence of technological risk. There are specific reasons for this, especially due to the uncertainty inherent. If the risk were entirely or mostly assumed by the contractor, it would be difficult to find interested parties, given the uncertainty of achieving the object. Or there would be an excessive increase in the prices charged by the contractor, including pricing the risk.

With greater assumption of risks by the administration, extra caution is needed when deciding to contract via Etec (or CPSI with technological risk). Such approaches should not be trivialized and should be restricted to situations in which uncertainty resulting from such risk is effectively present, on penalty of illegality. Hence, the fundamental importance of correctly identifying the incidence of technological risk, to determine the legality of using contractual types that involve this requirement.

Besides Etec, the legal tool most directly focused on contracting innovative solutions, CPSI and competitive dialogue require consideration, especially to clarify their similarities and differences in relation to technology procurement. Supplementary Law No. 182, June 2021, established the "legal framework for startups and innovative entrepreneurship", regulating, among other

aspects, "the tendering and contracting of innovative solutions by the public administration" (art. 1, head paragraph and sole paragraph, III). Chapter VI of the law (articles 12 to 15) deals with the tender procedure and contracts arising therefrom. The provisions of this chapter are applicable to the direct, autonomous and foundational public administration of all federative entities, and may be adopted by public companies and mixed-economy companies, under the terms of their internal tender and contract regulations (art. 12, §§ 1º and 2º). According to the law, the tenders and contracts concerned have a dual purpose: "to resolve public demands that require innovative solutions using technology and promote innovation in the production sector through the use of State purchasing power" (art. 12, I and II). The express provision of this second object is relevant, as it clarifies that such contracts are incentivizing in nature. This applies to innovation purchases in general, in line with the constitutional mission to promote science, technology and innovation (arts. 218 and 219 of the CF/88).

According to art. 13 of Supplementary Law 182/2021, "the public administration may contract individuals or legal entities, individually or in a consortium, to test innovative solutions developed, or to be developed by them, with or without technological risk", through the special tender process provided for in the Supplementary law. Here, perhaps, is the most relevant particularity of contracts signed through this special process, the object of which must expressly consist of the "testing of innovative solutions", without necessarily implying their definitive acquisition.

In theoretical terms, such contracting aims to fill a "gap in traditional government procurement mechanisms", as "a form of contracting for testing innovative solutions", specifically designed "to allow testing of different innovations, without incurring obligations—whether for contractors or public officials—that such solutions will be successful". It provides "a new perspective for administrators for testing innovations often available in the private sector, but which require adjustments for inclusion in the public system". It is especially intended for those situations where a number of innovations are available on the market, or close to introduction, whose real effectiveness "in solving specific administrative problems" is unknown. The CPSI, as a specific administrative instrument, enables the "contracting of tests to evaluate performance of innovative solutions in a real environment".

Originally designed to facilitate the contracting and remuneration of startups aimed at developing innovative public management solutions (GovTechs), CPSI can be applied to other suppliers, with no legal restriction.[47]

Regarding this provision, it should be noted that the CPSI is intended for contracts with or without technological risk. Hence, technological risk does not constitute a distinctive feature when choosing between CPSI or Etec. Since Etec is only intended for technological risk contracts, in CPSI this risk may or may not be present.

But this does not mean that, in such situations, the choice of one or another contracting instrument is irrelevant. As CPSI is intended for testing innovative solutions, it is not suitable for scenarios of higher risk, when the innovation "is still a long way from reaching the market", involving a low level of technological maturity. Furthermore, limitations on the value and duration of the CPSI (provided for in art. 14, head paragraph and § 2, of LC nº 182/2021) "restrict the use of the instrument only to the testing of new technologies and products that do not require substantial financial effort and time"; unlike ETECs, which are aimed, in principle, "at contracting ambitious innovation projects involving significant technological development, and long term or significant expenditure of financial resources".[48] In this sense, there is no financial limit for procurement contracts and their term of validity may be up to 10 years (art. 108 of Law No. 14.133/2021). CPSI is intended for situations that require a reduced effort in terms of R&D or the testing of innovative solutions already developed.

Art. 13 of the supplementary law details the special procurement procedure for the subsequent execution of the CPSI. Initially, the clear influence of the hiring procedure set forth in Decree No. 9.283/2018 for Etec is noteworthy. According to § 1, "delimitation of the scope of the bidding" may be restricted to "indication of the problem to be solved and the results expected by the public administration, including the technological challenges

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[47] MENDONÇA, Hudson; PORTELA, Bruno Monteiro; MACIEL NETO, Adalberto do Rego. Contrato Público de Soluções Inovadoras: racionalidade fundamental e posicionamento no *mix* de políticas de inovação que atuam pelo lado da demanda. In: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasilia: Ipea, 2022. p. 468-470.

[48] Mendonça, Portela e Maciel Neto, Contrato Público de Soluções Inovadoras, *op. cit.*, p. 471-472, 484.

to be overcome", dispensing with the "description of any previously mapped technical solution and technical specifications", with bidders responsible for "proposing different means of addressing the problem". This is a common characteristic of public procurement for innovation, in which the focus of the contracting public entity is to present the problem and establish an objective, while the bidders must propose ways of meeting the defined needs. The administration appeals to the market to provide solutions to challenges and issues of public interest. Etec shares this characteristic, and competitive dialogue, also, may be used to the same effect.

Given the above, CPSI differs from Etec mainly in that it is aimed at testing solutions already developed or at a more advanced stage, requiring less research and development. This arises, in particular, from limitation on the value and duration of the contract, as well as the judgment criteria observed in the tender process (art. 13, § 4, of LC No. 182/2021).

Competitive dialogue, introduced by the new general law on tenders and contracts, is a new option. According to the legal definition, the administration "holds dialogues with bidders previously selected using objective criteria", to "develop one or more alternatives capable of meeting their needs, with bidders presenting a final proposal after the dialogues are concluded" (art. 6, XLII, of Law No. 14.133/2021). It is clearly influenced by the European competitive dialogue model provided for in art. 30 of Directive 2014/2024 of the European Union.[49]

The head paragraphs of art. 32 of the new general tender law identify two exhaustive contracting hypotheses in which the administration can use competitive dialogue. It applies exclusively to contracts that meet these requirements, configuring "a modality whose application is defined in the strict terms of the law, with no resort to it beyond the cases provided for in the paragraphs of art. 32".[50]

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[49] EU. *Directive 2014/24/EU of the European Parliament and Council*. Available at: https://eur-lex.europa.eu/legal-content/PT/TXT/?uri=CELEX%3A32014L0024. Accessed on: 26 Jan. 2023.

[50] OLIVEIRA, Rafael Sérgio Lima de. Article 32. *In*: FORTINI, Cristiana; OLIVEIRA, Rafael Sérgio Lima de; CAMARÃO, Tatiana (coord.). *Comentários à Lei de Licitações e Contratos Administrativos*: Lei nº 14.133, de 1º de abril de 2021. Belo Horizonte: Fórum, 2022. p. 404.

This method is not necessarily intended for contracting innovations, since "technological or technical innovation" is a requirement only in the scenarios described in item I of the head paragraph of art. 32 of Law No. 14.133/2021. As for the hypothesis of item II, uncertainty is sufficient, for example, with respect to the "most appropriate technical solution", which may or may not entail the need for innovation. According to Foss and Monteiro, this is consistent with the European experience, whereby the approach is used for complex but not necessarily innovative purposes, i.e., "in which the public administration has a need, but is unaware of the possible alternatives, since the route to satisfying its demands may or may not involve innovation".[51]

Unlike the most common tender methods, "competitive dialogue, in its nature and scope, requires a greater degree of ignorance on the part of the bidding entity". It is intended for those cases in which "the Public Administration, aware of the objectives it desires through the tender process, cannot adequately identify mechanisms for achieving its purposes". In other words, "they know where they want to get to with the tender, but do not know or have doubts about the best solution to achieve their objective".[52]

§ 1 of art. 32 of the law describes the competitive dialogue procedure. There are distinct similarities with the procedure for contracting Etec and also CPSI, such as lack of need for precise definition of the object contracted. The administration is only responsible for defining in advance the needs and requirements to be met, without adding further detail on the technical specifications of the object. It is up to interested parties to propose means and alternatives to satisfy the needs identified.

Foss and Monteiro note the similarity of the dialogue phase to the expression of interest procedure (PMI) provided for in art. 81 of Law No. 14.133/2021 and with the "consultation with potential contractors in the pre-contractual phase of the technological contracting order", under the terms of art. 27, § 4, of Decree No. 9.283/2018.[53] In fact, in all these procedures

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[51] Foss e Monteiro, Diálogos competitivos motivados pela inovação, *op. cit.*, p. 254.

[52] ARAGÃO, Alexandre Santos de. O diálogo competitivo na nova lei de licitações e contratos da administração pública. *RDA—Revista de Direito Administrativo*, Rio de Janeiro, v. 280, n. 3, p. 54, set./dez. 2021.

[53] Foss e Monteiro, Diálogos competitivos motivados pela inovação, *op. cit.*, p. 246.

"dialogue" occurs between the administration and the private sector to identify innovative solutions.

On the other hand, a key distinction is that, notwithstanding its shared innovative purpose, competitive dialogue relates to a tender, not a contract, unlike technology order contracts and public contract for innovative solutions. This approach, at least in principle, does not apply to technological orders, since Etec is not subject to prior bidding, but rather to a direct contracting procedure via tender waiver, under the terms of art. 20 of Law No. 10.973/2004, art. 24, XXXI, of Law No. 8.666/1993, and art. 75, V, of Law No. 14.133/2021. Nor does it apply to public contracts for innovative solutions, as the CPSI is subject to a specific tender procedure, provided for in art. 13 of Supplementary Law 182/2021.

A relevant distinction in relation to Etecs and CPSIs is that the dialogue is not necessarily geared to innovative purposes. As seen, in the hypothesis of art. 32, head paragraph II, of Law No. 14.133/2021, innovation is not an essential requirement. The purpose must be complex, but not necessarily innovative, unlike the aforementioned contracts, which directed towards such solutions.

Furthermore, even when focused on contracting innovations, competitive dialogue is more conducive, apparently, to the introduction or diffusion of innovations "at a more advanced stage of maturity […] to solve public administration problems"; not to "finance the R&D of solutions and projects in the initial stages of development". Otherwise, the selection process will be "overly broadened, as the possibilities open to the administration are infinite, making the dialogue phase excessively long and costly".[54] In fact, for the development of new solutions, the most appropriate instruments, in principle, are CPSI and Etec, through a tender waiver (for those in the initial phase, with greater technological risk). In view of the reasons discussed, competitive dialogue should preferably be adopted for the supply or adaptation of an existing solution.

This is a relevant distinction, prescribing delimitation of the scope of application of the aforementioned legal instruments, to avoid improper use

[54] Foss e Monteiro, Diálogos competitivos motivados pela inovação, *op. cit.*, p. 258-259.

of one or the other in situations for which they would be inappropriate. There is a risk, for example, of implementing an illegal tender waiver vis-à-vis a technological order whose purpose is adjustment of an existing innovative solution, without configuration of technological risk, which Etec is not intended for; or, on the contrary, of undertaking a tender process through competitive dialogue to contract R&D for development of an innovative solution at an earlier stage, for which contracting Etec through a tender waiver is the most appropriate legal instrument.

Etec is more appropriate, arguably, for development of innovations with a lower degree of technological maturity, not least since it specifically deals with the technological risk inherent to innovation, ensuring payments for work regularly undertaken even in the event of failure (art. 20, head paragraph and § 3, of Law No. 10.973/2004). With regard to contracts resulting from competitive dialogue, there is no specific provision, under the general rules of Law No. 14.133/2021. Although this may be dealt with in the risk matrix of a contract subject only to the general tender law, or even the contracting of an Etec via competitive dialogue, the best option may be to adopt the contracting procedure designed for development of innovative solutions of greater complexity, whose legal regime specifically provides for technological risk and its consequences. This may endow the contract with greater legal certainty.

Notwithstanding such considerations, there will always be a risk of overlapping between the various legal instruments used in the public procurement of innovation. It will not always be possible to identify a precise delimitation, with a degree of certainty, of situations in which the use of one or another approach is appropriate. The concept of administrative law as a versatile toolbox is instructive, and adoption of more than one alternative, depending on the situation, may be advisable.

Thus, in the words of Foss and Monteiro "the uncertainty of the contracted object, which is natural to the innovative process, must be understood as part of the instrumentalization of public procurement for innovation"; and when deciding on one or another method, there is not always a "single state procurement mechanism capable of promoting innovation". There may be situations in which competitive dialogue is the best approach, but "as the dialogue progresses, it is found that the object to be contracted, which

requires R&D input, is more conducive to the technological order process". Replacement of competitive dialogue with another form of procurement may thus be appropriate in such situations, "sparing administrators stress or punishment", for effective use of innovation instruments by the public administration.[55]

The occurrence of such situations must be viewed pragmatically, especially by control bodies, especially given the uncertainty typical of innovation processes, so that these instruments are not emptied of their practical usefulness.

7. Preference for national suppliers in public procurement for innovation

A key aspect of this discussion is whether exclusivity or preference may be granted to national suppliers in the procurement of innovative solutions. In terms of Etecs, there is no legal restriction on contracting national entities, as the head paragraph of art. 20 makes reference to scientific institutions, non-profit entities and companies in general. At the same time, as we have seen, art. 19 of Law No. 10.973/2004 identifies technological orders as an instrument to encourage R&D activities in "Brazilian companies and non-profit Brazilian private law entities […], to meet the priorities of national industrial and technological policies". Although art. 20 does not impose this limitation when dealing specifically with Etec, a joint interpretation of these articles may imply that the order is only legally possible if domestic enterprises are involved; especially in terms of the express legal purpose of meeting the priorities of national industrial and technological policies.

However, the same article 19, in section VII of § 6, states that the initiatives provided for therein (among which is Etec), may be extended to actions aimed at "international cooperation for innovation and technology transfer". Innovation processes with technology transfer, it should be noted, may also contribute to national scientific and technological development, even if the original innovation was not developed locally.

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[55] Foss e Monteiro, Diálogos competitivos motivados pela inovação, *op. cit.*, p. 264.

Hence, although predominantly aimed at domestic innovation, the instruments and measures referred to in art. 19 of Law No. 10.973/2004, including Etec, may involve foreign entities; notwithstanding that, even in such cases, they must focus on meeting the "priorities of national industrial and technological policies", under the terms of the head paragraph of the aforementioned legal device.

Foreign companies may, then, be contracted, vis-a-vis elaborating a solution to a specific public-interest issue . In any case, even when a foreign entity is contracted for these purposes through an Etec, measures must be foreseen which favor national scientific and technological development, such as an additional technology transfer benefitting the domestic partner. Otherwise, the obligation to prioritize national industrial and technological policies is not met. And, in this scenario, state purchasing power will exclusively finance innovation in other countries, in breach of the Constitution and the legal principle of art. 1, sole paragraph, XIII, of Law No. 10.973/2004.

The law, however, does not prohibit restriction of the Etec contracting process to national entities. Indeed: the head paragraph of Article 19 of the Innovation Law expressly mandates federative entities, ICTs and development agencies to encourage "research and development of innovative products, services and processes in Brazilian companies and in Brazilian non-profit private law entities", to "support research, development and innovation activities, to meet the priorities of national industrial and technological policies". As noted, one of the instruments in question, provided for in § 2º-A, item V, is the "technological order"; consolidated by the legal principle of using state purchasing power to promote innovation. Certainly, such support should be directed toward the national production sector, justifying preference for national entities.

As noted, the legal provision to foster national research, development and innovation activity is an expression, in the infra-legal scope, of the constitutional duty to stimulate "scientific development, research, scientific and technological training and innovation" (to address national issues and encourage domestic production), Brazilian markets and the "National Science, Technology and Innovation System" (arts. 218 to 219-B of the Constitution).

Thus, preference for national entities does not breach the principle of fair play, since the discrimination criterion is based on a constitutional duty.

In fact, it may be stated, in light of the applicable constitutional and legal provisions referred to, that the norm for Etecs and public purchases of innovation in general should be to contract national companies. With regard to the CPSI, one of the express legal purposes of this type of contract is to "promote innovation in the productive structure through the use of State purchasing power" (art. 12, head paragraph, II, of LC No. 182/2021); a similar provision to that in the innovation law on the "use of State purchasing power to promote innovation" (art. 1, sole paragraph, XIII, of Law No. 10.973/2004).

Although neither instrument expressly refers to innovation in "national" terms, no other interpretation meets these standards. It is unreasonable to assume that the law allows for promotion of innovation in a generic and disinterested way, with no distinction as to whether public resources are allocated to national or foreign entities. Furthermore, this is inconsistent with the constitutional text, in the emphasis it places on the "development of the national and regional production system", stimulation of internal markets, pursuit of technological autonomy and organization of a national innovation system to promote scientific and technological development (art. 218, head paragraph and § 2; art. 219 and art. 219-B of the CF/88).

Situations may occur in which it is advisable to restrict participation to national entities, which would require substantial justification, as limiting the range in this way may increase the risk of failure to achieve the desired purposes. Furthermore, besides the public interest at stake (definitional to any Etec contract or innovation procurement), there may be situations where satisfaction of public interest in the national sphere is also justifiable, in terms of transfer of resources to national and non-foreign entities. Such considerations are grounded in the constitutional object of fostering domestic production and innovation, and the internal market, to create greater technological autonomy.

At the same time, given the specificities of such contracts, it may not be possible to foresee the viability of contracting supply or development of a particular innovative solution with a national entity. Procurement of

innovation always involves uncertainty in terms of the intended object.[56] The public contractor appeals to the market to provide innovative solutions to a problem which is already available or under development. Given these initial conditions of uncertainty, it may not be easy to determine in advance whether the contract should be restricted to national entities. Unlike in the example of the aviation sector, it is not always possible to contract national companies equipped to deliver satisfactory solutions.

Thus, as a rule, the best option may be to refrain from such a restriction and instead state a preference for national entities. Thus, in the proposal analysis phase, besides aspects related to the desired result and costs, the greater or lesser impact of promoting innovation domestically should be considered. This may, in fact, justify selection of a national proposal, functioning as a "tiebreaker", in line with the constitutional and legal mandate to use state purchasing power to promote innovation.

It does not follow, naturally, that contracting foreign entities will not satisfy the constitutional mandate; only that the duty to foster development and production domestically, in the scope of a national innovation system (arts. 218 to 219-B of the CF/88), is respected vis-a-vis resources directed towards foreign companies or institutions. Hence, as a rule, preference should be given to national entities in this type of contract.

Again, this does not preclude the contracting of foreign entities, depending on the scenario. A situation may arise, for example, in which there is an urgent need for a solution, which is at a more advanced stage of development abroad, and, thus, it is unreasonable to wait in order to national entity. In such cases, the provision for the transfer of technology may satisfy the public interest purposes inherent to this type of contract (solution of a specific problem and promotion of national scientific and technological development).

This was the case with the Etec contract for development of the Covid vaccine, signed by Fiocruz with AstraZeneca. Given the urgency of tackling the pandemic, it was justifiable to contract a foreign company, already at a more advanced stage of vaccine development. At the same time, the provision

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[56] On this topic, see: Edquist e Zabala-Iturriagagoitia, Public Procurement for Innovation as mission-oriented innovation policy, *op. cit.*, p. 1766.

for technology transfer ensured Fiocruz technological autonomy going forward, for its own manufacture of the vaccine. Although, strictly speaking, contracting a national entity may be more attractive from the point of view of scientific and technological development, the health emergency justified adoption of a quicker alternative that would at the same time provide national economic benefits. Contracting Etec through a foreign entity, combined with technology transfer, was, justifiably, the most appropriate course of action.

8. Conclusion

Our main focus in this article was the role of the State in promoting scientific and technological innovation, essential to sustainable economic development. The history of economic development in different countries demonstrates how this process demands a change in the productive structure, entailing elaboration of more complex activities. In this process, state action is decisive. An industrial and technological policy geared to innovation is vital in the struggle to overcome underdevelopment. This is crucial in countries like Brazil, which, after reaching middle-income levels has not achieved major advances in recent decades. On the contrary, we have witnessed a process of deindustrialization and specialization in the production and export of primary commodities.

In this context, the relevance of "mission-oriented" public innovation policy is clear. According to this model, public authorities establish social interest objectives to guide scientific and technological innovation initiatives. Thus, major national and global challenges, such as environmental pollution, poverty, inequality, expansion of access to health and education and technological autonomy drive innovation policies. To this end, state purchasing power, an innovation strategy on the demand side, serving the objectives of the public contractor, has been adopted in several nations.

As seen, the logic of "mission oriented" innovation policy is grounded in constitutional principles which mandate the Brazilian State to promote Science, Technology and Innovation, especially in the provisions of articles 218 and 219-B. The use of State purchasing power to promote innovation is also enshrined in law (art. 1, sole paragraph, XIII; and art. 19, paragraph 2-A,

VIII, of Law No. 10.973/2004). As highlighted, Etec, CPSI and competitive dialogues, with their respective characteristics, similarities and distinctions, are the main legal instruments used for this purpose.

A key point addressed concerns the legal basis for granting preference in public procurement to national suppliers, in order to stimulate national scientific and technological development. In our analysis of the national legal system, no impediment to this was envisaged. On the contrary, such preference meets the constitutional duty to incentivize the internal market and the national productive structure, towards greater technological autonomy and reduced dependence on external markets (art. 218, § 2º; and art. 219 of the CF/88). As shown, this objective, in certain situations, may be pursued through technology transfer agreements with foreign companies, as in the case of the Etec contract signed with AstraZeneca for development of the Covid-19 vaccine.

Brazilian law clearly provides legal instruments for this use of public procurement, with the potential to promote scientific and technological innovation in the national productive structure, in terms of challenges ("missions") specific to the Brazilian context. Thus, the legal system favors administrative action directed towards this end, with state purchasing power emerging as an important tool for innovation policy on the demand side.

At the same time, as highlighted in the introduction, the law alone cannot transform this reality. Effective political will is needed to formulate and implement industrial and innovation policies, with allocation of the necessary budgetary and personnel resources for development to occur. A fundamental change in attitude is vital on the part of senior public administrators, so the immense potential of public procurement to foster innovation is realized in a broad, coordinated way; not reduced to significant but isolated initiatives, such as the Etec for the Covid-19 vaccine, in the context of an unprecedented health emergency.

In this respect, we have noted the importance of the provisions of CNDI/MDIC Resolution No. 1, July 6, 2023.[57] a resolution of the National Council for

[57] BRASIL. Ministério do Desenvolvimento, Indústria, Comércio e Serviços. Conselho Nacional de Desenvolvimento Industrial. *CNDI/MDIC Resolution No. 1, of July 6, 2023*: proposes a new industrial policy, with the purpose of guiding the actions of the Brazilian State in favor of industrial development. Available at: https://www.in.gov.br/web/dou/-/resolucao-cndi/mdic-n-1-de-6-de-julho-de-2023-*-497534395. Accessed on: 13 Nov. 2023.

Industrial Development, an organ of the Ministry of Development, Industry, Commerce and Services. This act provides guidelines for a new industrial policy to be adopted by the Brazilian State. Art. 3 expressly states that "the new industrial policy is organized through missions", defined in terms of "Brazilian social issues, for which this policy will be developed based on specific objectives" (head paragraph and § 1). Six missions are identified in Art 4 along with specific objectives. There is, then, a clear attempt to incorporate the rationale of missions, to guide national industrial policies geared to combatting specific problems in Brazilian society. Another step in this direction was the launch of a new industrial policy, based on the aforementioned resolution, focused on innovation through public procurement.[58] Socially driven missions are, therefore, clearly incorporated in the scope of industrial policy, expressed through public procurement strategies.

Such steps are moving us in the right direction, grounded as they are in an industrial and innovation policy directed toward solving key social issues through national reindustrialization. Effective use of state purchasing power can play a vital role in this process.

[58] Available at: https://www.gov.br/mdic/pt-br/assuntos/noticias/2024/janeiro/brasil-ganha-nova-politica-industrial-com-metas-e-acoes-para-o-desenvolvimento-ate-2033.

References

ARAGÃO, Alexandre Santos de. O diálogo competitivo na nova lei de licitações e contratos da administração pública. *RDA—Revista de Direito Administrativo*, Rio de Janeiro, v. 280, n. 3, p. 41-66, set./dez. 2021.

BARBOSA, Caio Márcio Melo. Contrato de encomenda tecnológica. *In*: PORTELA, Bruno Monteiro; BARBOSA, Caio Marcio Melo; MURARO, Leopoldo Gomes; DUBEUX, Rafael. *Marco legal de ciência, tecnologia e inovação no Brasil*. Salvador: JusPodivm, 2020.

BARBOSA, Denis Borges (org.). *Direito da inovação*: comentários à lei federal de inovação, incentivos fiscais à inovação, legislação estadual e local, poder de compra do Estado (modificações à lei de licitações). Rio de Janeiro: Lumen Juris, 2011.

BERCOVICI, Gilberto. *Constituição econômica e desenvolvimento*. São Paulo: Almedina, 2022.

BERNARDINI, Mário. O recuo da indústria. *In*: MARINGONI, Gilberto (org.). *A volta do Estado planejador*: neoliberalismo em xeque. São Paulo: Contracorrente, 2021, p. 260-273. Kindle e-book.

BRASIL. Ministério do Desenvolvimento, Indústria, Comércio e Serviços. Conselho Nacional de Desenvolvimento Industrial. *Resolução CNDI/MDIC nº 1*, July 6, 2023: proposes a new industrial policy, with the purpose of guiding the Brazilian State towards industrial development. Available at: https://www.in.gov.br/web/dou/-/resolucao-cndi/mdic-n-1-de-6-de-julho-de-2023-*-497534395. Accessed on: 13 Nov. 2023.

BUCCI, Maria Paula Dallari; COUTINHO, Diogo R. Arranjos jurídico-institucionais da política de inovação tecnológica: uma análise baseada na abordagem de direito e políticas públicas. *In*: COUTINHO, Diogo R.; FOSS, Maria Carolina;

MOUALLEM, Pedro Salomon B. (org.). *Inovação no Brasil*: avanços e desafios jurídicos e institucionais. São Paulo: Blucher, 2017. p. 313-340.

CHANG, Ha Joon. *Chutando a escada*: a estratégia do desenvolvimento em perspectiva histórica. São Paulo: Editora Unesp, 2004.

CHERIF, Reda; HASANOV, Fuad. The return of the policy that shall not be named: principles of industrial policy. *IMF Working Paper*, sea. 2019. Available at: https://www.imf.org/en/Publications/WP/Issues/2019/03/26/The-Return-of-the-Policy-That-Shall-Not-Be-Named-Principles-of-Industrial-Policy-46710. Accessed on: 11 Nov. 2024.

CHIOATO, Tânia Lopes Pimenta; LINS, Maria Paula Beatriz Estellita. Compras públicas para inovação na perspectiva do controle. *In*: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022.

CLARK, Giovanni; TORRES, Luiza Viana; CORREA, Leonardo Alves. O planejamento estatal, inovação e políticas públicas. *Revista de Direito Empresarial*, Belo Horizonte, a. 14, n. 2, p. 209-226, maio/ago. 2017.

DE NEGRI, Fernanda. *Políticas públicas para ciência e tecnologia no Brasil*: cenário e evolução recente. Nota técnica nº 92/Diset. Brasília: Ipea, 2021.

EDQUIST, Charles; VONORTAS, Nicholas S.; ZABALA-ITURRIAGAGOITIA, Jon Mikel. Introduction. *In*: EDQUIST, Charles *et al.* (ed.). *Public Procurement for Innovation*. Cheltenham, UK; Northampton, USA: Edward Elgar, 2015.

EDQUIST, Charles; ZABALA-ITURRIAGAGOITIA, Jon Mikel. Public Procurement for Innovation as mission-oriented innovation policy. *Research Policy*, v. 41, p. 1,757-1,769, 2012.

USA. *Federal Acquisition Regulation, part 35.* Available at: https://www.acquisition.gov/far/part-35. Accessed on: 26 Nov. 2024.

FAGNANI, Eduardo *et al. Desenvolvimento social e estrutura produtiva*. Available at: http://pedrorossi.org/wp-content/uploads/2018/03/DesenvolvimentoSocialeEstruturaProdutiva.pdf. Accessed on: 11 Nov. 2024.

FERNANDES, Rodrigo Mineiro; CLARK, Giovani; CORRÊA, Leonardo Alves. Desenvolvimento orientado por missões sob a ótica da Constituição Econômica brasileira. *R. Opin. Jur.*, Fortaleza, v. 21, n. 36, p. 32-54, Jan./Apr. 2023.

FOSS, Maria Carolina. *Compras públicas como instrumento de política de inovação orientada à demanda*: experiências no Brasil, nos Estados Unidos e na União Europeia. Thesis (doctorate)—Universidade de Campinas, Campinas, 2019.

FOSS, Maria Carolina; MONTEIRO, Victor. Diálogos competitivos motivados pela inovação. *In*: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022.

FURTADO, Celso. *Desenvolvimento e subdesenvolvimento*. Rio de Janeiro: Contraponto, 2009.

GALA, Paulo; CARVALHO, André Roncaglia de. O desafio da política industrial em tempos de pandemia. *In*: MARINGONI, Gilberto (org.). *The return of the planning state*: neoliberalism in check. São Paulo: Contracorrente, 2021. p. 457-485. E-book Kindle.

JACOBY FERNANDES, Ana Luiza; JACOBY FERNANDES, Jorge Ulisses; JACOBY FERNANDES, Murilo. *Contratação direta sem licitação na Nova Lei de Licitações*: Lei nº 14.133/2021. Belo Horizonte: Fórum, 2021.

KOELLER, Priscilla. *Evolução do orçamento proposto para as políticas de ciência, tecnologia e inovação*: 2000-2024. Nota técnica nº 129/Diset. Brasília: Ipea, 2024.

MAZZUCATO, Mariana. *O Estado empreendedor*: desmascarando o mito do setor público vs. setor privado. São Paulo: Portfolio; Penguin, 2014.

MAZZUCATO, Mariana. *Mission economy*: a moonshot guide to changing capitalism. Londres: Harper Business, 2021. Kindle e-book.

MAZZUCATO, Mariana. Mission-oriented innovation policies: challenges and opportunities. *Industrial and Corporate Change*, v. 27, no. 5, p. 803-815, 2018. Available at: https://academic.oup.com/icc/article/27/5/803/5127692. Accessed on: 11 Nov. 2024.

MENDONÇA, Hudson; PORTELA, Bruno Monteiro; MACIEL NETO, Adalberto do Rego. Contrato Público de Soluções Inovadoras: racionalidade fundamental e posicionamento no *mix* de políticas de inovação que atuam pelo lado da demanda. *In*: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022. p. 467-492.

NEVES, Marcelo. *A constitucionalização simbólica*. São Paulo: Acadêmica, 1994.

NIEBUHR, Joel de Menezes. *Licitação pública e contrato administrativo*. Belo Horizonte: Forum, 2022.

NOHARA, Irene Patricia. Inovação na nova lei de licitação: diretriz e potencial de modernização pelo Estado. *Revista de Direito Brasileira*, Florianópolis/SC, v. 31, n. 12, p. 271-283, jan./abr. 2022.

OLIVEIRA, Rafael Sérgio Lima de. Article 32. *In*: FORTINI, Cristiana; OLIVEIRA, Rafael Sérgio Lima de; CAMARÃO, Tatiana (coord.). *Comentários à Lei de Licitações e Contratos Administrativos*: Lei nº 14.133, de 1º de abril de 2021. Belo Horizonte: Fórum, 2022. p. 389-421.

PIMENTA FILHO, Luiz Cláudio. *Compras públicas para inovação e o desenvolvimento*: um diagnóstico jurídico-institucional das Encomendas Tecnológicas no Brasil. Dissertation (Master's)—Fundação Getulio Vargas, São Paulo, 2021.

RAUEN, André Tortato. Compras públicas para inovação no Brasil: o poder da demanda pública. *In*: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022.

RAUEN, André Tortato; BARBOSA, Caio Márcio Melo. *Encomendas tecnológicas no Brasil*: guia geral de boas práticas. Brasília: Ipea, 2019.

RIBEIRO, Cassio Garcia. Desenvolvimento tecnológico nacional: o caso KC-390. *In*: RAUEN, André Tortato (org.). *Políticas de inovação pelo lado da demanda no Brasil*. Brasilia: Ipea, 2017. p. 235-288.

RIBEIRO, Cássio Garcia; INÁCIO JR., Edmundo. Caracterização dos contratos de compras públicas existentes no Sistema Integrado de Administração de Serviços Gerais. In: RAUEN, André Tortato (org.). *Compras públicas para inovação no Brasil*: novas possibilidades legais. Brasília: Ipea, 2022.

RIBEIRO, Leonardo Coelho. O direito administrativo como caixa de ferramentas e suas estratégias. *RDA—Revista de Direito Administrativo*, Rio de Janeiro, v. 272, p. 209-249, maio/ago. 2016.

RODRIGUES, Nuno Cunha. *A contratação pública como instrumento de política econômica*. Coimbra: Almedina, 2013.

SCHUMPETER, Joseph. *Capitalismo, socialismo e democracia*. São Paulo: Editora Unesp Digital, 2017 (1942).

EU. *COM (2007) 799*. Contratos pré-comerciais: promover a inovação para garantir serviços públicos sustentáveis de alta qualidade na Europa. Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0799:FIN:PT:PDF. Accessed on: 21 Nov. 2024.

EU. *Diretiva 2014/24/UE do Parlamento Europeu e do Conselho*. Available at: https://eur-lex.europa.eu/legal-content/PT/TXT/?uri=CELEX%3A32014L0024. Accessed on: 26 Jan. 2023.

EU. *European Commission/Pre-Commercial Procurement*. Available at: https://digital-strategy.ec.europa.eu/en/policies/pre-commercial-procurement. Accessed on: 26 Nov. 2024.

BROWN, Daniel. *Contratações públicas e desenvolvimento econômico*: o uso do poder de compra do Estado como instrumento de política industrial na lei geral de licitações. Rio de Janeiro: Lumen Juris, 2020.