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The Variation of Bureaucratic Capacities in the Brazilian Federal Public Administration: an Analysis with Survey Data

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Abstract

This paper aims to demonstrate the variation in bureaucratic capacities within the Brazilian Federal Public Administration concerning organizations belonging to different policy sectors and verify theoretical propositions in the literature about the relationship between the characteristics of public bureaucracy and state action. For such purposes, data from a questionnaire applied to Brazilian federal civil servants were analyzed using a set of multivariate analysis techniques. The findings indicate that organizations with a greater perception of bureaucratic "weberianess" are correlated with innovative organizations and organizational cultures that restrict corruption. Likewise, organizations with greater bureaucratic autonomy are associated with more effective organizations. However, the observed variation between perceived capabilities and performance did not characterize a clearly identifiable pattern of organization type with public policy sectors. In this sense, the article contributes to the literature by adding nuances to the "islands of excellence" approach by verifying that the asymmetry of capabilities within the Brazilian executive branch is more complex than indicated by previous research.

Keywords: bureaucracy; public organizations; state capacity; corruption, innovation and effectiveness; policy sectors.

Introduction

The proliferation of studies on state capacity in recent years indicates that the concept remains current for analyzing state action and its performance (Centeno et al., 2017). The concept has served several purposes, from classic studies on state-building, developmentalism, to combating corruption, violence, public safety, among others (Cingolani 2018). Nevertheless, it should be remembered that State capacity is not a fixed or uniform attribute, as it varies within the state apparatus itself, between areas of public policy, and between the organizations that comprise them. It is this topic that this article focuses on.

The disaggregation and discrimination of organizations and sectors of public policy and its analysis through the lens of the concept of state capacity, precisely the bureaucratic dimension of the concept, is a relatively recent theme in the literature. In a comparative study with Latin American countries, Gingerich (2012) found more significant variation in bureaucratic capacity between organizations within national states than between countries. Bersh, Praça, and Taylor (2013; 2017) mapped an archipelago of excellence in the Brazilian federal bureaucracy, indicating a plurality of organizations regarding issues of autonomy and meritocracy in the Brazilian federal public service. Souza (2016) states that some public policy sectors in Brazil, such as infrastructure and social policy, are less professionalized than control sectors. Cavalcante and Lotta (2021) also found essential variations in the skills and relationships of bureaucracies across different policy areas.

The measurement of the concept at hand is another issue discussed in the literature, as the level of capacity that state organizations have cannot be directly assessed by observing the result of their actions, under the risk of tautological conclusions (Kocher, 2010). Analytically, the preceding capacity is separate from the results of state action, a point that is often overlooked in analyzes based on the concept (Gomide, Pereira, Machado, 2018; Centeno et al., 2017; Cingolani, 2018). Furthermore, the concept of state capacity has a wide range of purposes and levels of abstraction (Williams, 2020), ranging from macro-comparative analysis to the examination of organizations. In this sense, this work adopts the approach of Fukuyama (2013), Centeno et al. (2017), Dahlström and Lapuente (2017), among others, to associate state capacity with the quality of bureaucracy or the organizational competence of public servants for the implementation of public policies, regardless of their purposes. This endows the concept of normative neutrality. Thus, when we analyze the organizations of the federal executive branch of the Brazilian State through performance variables, we are not issuing any value judgment about the purposes or content of the policies implemented by them.

Empirically, this work contributes by verifying through evidence the assumption of variation in capacities within the Executive Branch of the State, both at the level of individual organizations and between sectors of public policy,¹ answering the following questions: How does the variation in capacities occur between organizations of the Brazilian federal public administration? Is there any pattern of association between the organizations' perceived performance variables and the public policy sector in which they are inserted?

The operationalization of the organizational performance concept adopted in this research had three dependent variables adopted in the literature (Dahlström & Lapuente, 2017): effectiveness, innovation, and restriction to corruption. As explanatory variables, we list (also based

on theory) what we define as "weberianess", bureaucratic autonomy, organizational resources, intra-state coordination, and State-society relationship.

The hypothesis test carried out served to assess the explanatory power of different approaches on the determinants of state capacity. In addition to the "Weberian" approach to bureaucracy, which emphasizes the professionalization and impersonality of the public service, we go through theories about 'embedded autonomy', in which the connectivity of public bureaucracy with non-state actors matters (Evans, 1995); bureaucratic autonomy vis-à-vis political interests (Fukuyama, 2013); and the skills and resources that public servants rely on to perform their functions (Wu, Ramesh & Howlett, 2018).

For such purposes, data collected through a Survey with the Brazilian federal bureaucracy were analyzed using multivariate analysis techniques: a series of beta regressions to test the hypotheses of correlations between the dependent and explanatory variables in this work; and multiple correspondence analysis to identify existing associations between types of organizations, capabilities, and performance.

In addition to this introduction, this article is organized as follows. The following section presents the theoretical approach, the variables used, and the research hypotheses. The database used and the operationalization of the concepts are covered in section 3. The results of the Beta regressions and correspondence analyzes are presented in section 4. Section 5 discusses the findings of the multivariate analysis. Finally, the last section completes the work.

Theory, variables, and hypotheses

In recent decades, the concept of state capacity has grown both in intensity and in scope (cf. Sartori, 1970). This promoted various uses of the concept, which, according to Cingolani (2018, p. 91), present at least four approaches: warmongering, Weberian, relational and rational choice. Although these approaches are not isolated from each other, they have nuances in understanding the dynamics of conceptual construction.

The warmongering tradition (Tilly, 1992) seeks to answer how variations in the processes of state formation respond to the military needs of different countries and the impact of internal and external wars affecting the functioning of States (Centeno 2002). The Weberian (or state-centric) perspective presents the State as an autonomous power, capable of implementing official objectives, even concerning the opposition of powerful social actors or in the face of adverse socioeconomic circumstances (Skocpol, 1985, p. 9). This perspective inserted the debate on the historical determinants of a public administration guided by merit versus the (neo)patrimonial use of state institutions (Dahlström & Lapuente, 2017). The isolation of bureaucracies to achieve the goals of political leaders is the subject of the work of Geddes (1990, 1994), who emphasize the exchanges between politicians and bureaucrats in appointing public managers capable of increasing the country's chances of growth and development, thus as the construction of political support for his continuity in the leadership of the State. On the other hand, the relational tradition indicates specific interactions between State and society as the primary determinant of the construction process of State power. Migdal (1988) defines state capacity as the ability of state leaders to use state agencies to lead the population to their purposes. For the author, some leaders can establish

effective behavior rules for society, while others are unsuccessful. The central explanation for state capacity lies in distributing social control among various organizations, including the State. Finally, the institutionalist perspective of rational choice understands the state capacity with a focus on the legal dimension, in which institutions are essential to promote a suitable environment for investment and innovation (North, 1990; Cárdenas, 2010). From this perspective, Besley and Persson (2011) analyze that high correlations between fiscal and legal capacity result in more efficient states and better indicators of state effectiveness. This analytical and conceptual plurality reflects a field of study in development, deepening knowledge about state action and its economic, political, and social development (Cingolani, 2018).

The determinants of government performance have been debated in the literature over the last decade from the perspective of the executive branch's bureaucracy (Fukuyama, 2013; Centeno et al., 2017; Dahlström & Lapuente, 2017). For Fukuyama (2013), governance (or the executive power's capacity to make and apply laws and provide goods and services) is associated with the performance of bureaucrats (the agents) in carrying out the guidelines set by political representatives (the main ones). In other words, governance would be related to the bureaucrats' capacity to execute public actions decided in the political sphere. For the author mentioned above, procedural criteria would be the most adequate to measure such capacity since outcome measures would bring with them problems. As Kocher (2010) and Enriquez and Centeno (2012) warn us, measuring capacity by results can generate tautology and circularities in the analyses, making it difficult to interpret and search for causal links. Therefore, the attributes of bureaucracy, how public bureaucrats are recruited and promoted (based on merit or political criteria), and the level of individual autonomy they have to implement the actions attributed to them (or the degree of discretion granted to bureaucrats for the implementation of their mandates) would be the main variables to assess governance or state capacity. It is clarified that, for Fukuyama (2013), the opposite of bureaucratic autonomy would be the subordination or political interference in the implementation of actions via micro-management of the bureaucrat (agent) by the politician (principal).

Dahlström and Lapuente (2017) relate the quality of governments to the way they work. That is, for them, high-quality governments would be those that perform their actions in an impersonal, honest, and effective way. It is worth mentioning the emphasis they give to administrative probity and effectiveness as one of the factors to assess government action. According to Dahlström and Lapuente, how relations between politicians and bureaucrats are shaped affects the performance of governments. Thus, the separation of careers between politicians and bureaucrats would be the way to obtain a government of high quality and performance. For this separation to occur, the existence of an impersonal and merit-based bureaucracy is a *sine qua non* condition. In the words of the authors:

We think the most important signal of the extent to which the careers of politicians and bureaucrats are separated is sent when recruitments are made. Recruits based on political loyalty signal that, regardless of de jure regulations, bureaucratic careers are tied to politicians. In these cases, the professional destinies of bureaucrats are integrated with those of their political masters. On the other hand, when recruitments are based on the candidate's merits, it indicates that professional

colleagues, rather than political masters, influence bureaucratic careers. Therefore, institutions that ensure a recruitment system based on merit rather than political considerations are essential resources for a high-quality government. (Dahlström & Lapuente, 2017, p. 2.)

Therefore, with two careers cohabiting the state apparatus, each with distinct accountability channels (one based on political criteria and the other on professional peer-review criteria), one could oversee and restrict the other's (potentially) corrupt activities.

It should be noted that the need to separate the political and administrative careers was also an essential concern for Max Weber, who emphasized the need to operate the public service within ethics of conviction, exclusively focused on the obedience of codes and regulations for the effective implementation of decisions distributed by politicians who are ultimately decision-makers (Weber, 2004).² In this sense, Evans and Rauch (1999) suggest that a public bureaucracy based on merit and with distinctive status (i.e., possessing terms and conditions of employment) would create a unique ethos and esprit de corps capable of insulating this institution from capture by interest groups and hindering corruption.

Despite the arguments that highlight the critical role of Weberian ideal-type bureaucracies for government performance, the New Public Management (NGP) approach raises doubts about the relationship between the attributes of that ideal type and the effectiveness of governments, especially in the capacity for innovation, either through the adoption of new administrative processes or through the development of new goods and services (Osborne and Gaebler, 1992). This would happen, according to NGP, due to the inability of hierarchical, formal, and impersonal systems to adapt to a rapidly changing, information-based, and knowledge-intensive society and economy (Verhoest, Verschuere and Bouckaert 2007).

Nevertheless, works such as those by Suzuki and Demircioglu (2017) present evidence that bureaucracies characterized by recruitment and promotion based on merit (that is, with characteristics of the Weberian ideal type) are indeed capable of promoting innovations as well. This is because, according to the authors, a merit-based recruitment system would bring to public sector organizations the most competent and skilled people who, in turn, would apply their knowledge and expertise to the development of new processes and services. Otherwise, their reasoning continues. The lack of professionalism and stability would discourage public servants from engaging in their roles and bringing in new ideas. Equally, Nistotskaya and Cingolani (2016) argue, supported by evidence, that meritocratic recruitment and job stability increase trust in the work environment and that this leads to a more innovative bureaucracy. Fukuyama (2013) also claims that bureaucratic autonomy allows experimentation and the bureaucracy's risks associated with innovation. In a merit-based and autonomous bureaucracy, the boss gives general orders for something to be done, the subordinates discover how best to do it. Consistent with these propositions, the work of Bysted and Jespersen (2014), as well as that of Bysted and Hansen (2015), point out that autonomy and bureaucratic discretion have strong positive effects on innovation. Finally, from a historical-institutional development perspective, Skowronek (1982) and Skocpol and Finegold (1982), analyzing the case of the US State, and Sikkink (1993), comparing Brazilian and Argentine institutions, indicate that training of professional bureaucracies with relative autonomy in the political game is essential to leverage significant opportunities for institutional innovations in

the functioning of public administration.³

Variables

Based on Dahlström and Lapuente (2017), we operationalize organizational performance through three variables: i) effectiveness, ii) restriction of corruption, and iii) innovation. The first one concerns the degree of achievement of the objectives or results intended by the organizations. The second refers to an organizational environment that inhibits corruption and the misuse of public resources. Finally, the last variable alludes to innovative organizational practices, allowing the risks associated with innovation to be assumed by bureaucracy.

As for the explanatory variables, five were selected based on the literature. In addition to the characteristics of bureaucracy (meritocracy and autonomy) discussed by Fukuyama (2013), it was also taken into account: the interaction of bureaucrats with the private sector and civil society organizations; the allocation of organizational resources; and the existence of intra- and inter-organizational coordination.

It should be noted that autonomy does not mean that bureaucrats should be isolated from society or political power. If bureaucracies' mandate is to provide quality public services, they need feedback from the citizens they are serving, and this does not exclude collaboration with private sector companies or civil society organizations (Fukuyama, 2013). This refers to Evans' (1995) concept of embedded autonomy, in which bureaucrats need to be protected from capture by interest groups and be responsive to political power and society concerning more significant goals.

Furthermore, the State's Executive Power's capacity for action depends not only on the degree of professionalization and expertise of its bureaucracy but also on the existence of adequate human and material resources. Wu, Howlett, and Ramesh (2018) state that these factors are critical for organizational performance. Finally, the action of the bureaucracy must be cohesive and organized. Instruments of intra- and inter-organizational coordination are essential for this. According to Logde and Wegrich (2014), coordinating state action is critical for government performance. For them, coordination problems undermine the effectiveness and performance of government organizations.

Therefore, this research works with the following hypotheses:

1. Are positively associated with **effective** public organizations bureaucracies: (a) based on merit; (b) autonomous; (c) endowed with human and material resources; (d) that interact with society and the private sector; and that (e) act in coordination with other public organizations.
2. Associated with **innovative** organizations are public bureaucracies: (a) based on merit; and (b) with a high level of autonomy.
3. Merit-based public bureaucracies are associated with organizations that **hinder corrupt practices**.

Data

The data used to analyze and test hypotheses were collected through a survey applied by the Institute for Applied Economic Research (Ipea) with Brazilian federal public administration employees between May and July 2018 (see details in Pereira et al. 2019). The questionnaire was developed in partnership with the team of the "Project Governance" conducted by the Center on Democracy, Development, and The Rule of Law (CDDRL) at Stanford University. The questions formulated were based on the Federal Employee Viewpoint Survey (FEVS), which seeks to measure the perceptions of US federal bureaucrats about the characteristics and working conditions present in their respective organizations. Questions used by Ramesh, Howlett, and Saguin (2016) were also adapted and inserted, as well as other questions suggested by the researchers from Ipea because of the specificities of the Brazilian case.

The sample universe of the research was composed of federal civil servants, with permanent employment and commissioned positions, both from direct administration and indirect administration bodies, such as autarchies, foundations, and regulatory agencies. Banks and so-called frontline bureaucrats (police, doctors, nurses, teachers) were excluded from the sample.

It is believed that arguing with public servants directly to obtain information about the functioning of the bureaucracy is a way to obtain more reliable data when compared to survey data carried out only with specialists. Bureaucrats have an experience-based understanding and therefore have something unique to offer to study governments' workings by shedding new light on processes that shape the performance of public organizations (Boittin et al. 2016). A limitation of using public servants' perceptions as a data source is not having an external measure to check the distance between the respondents' perception and the objective reality of the organizations. There is also the possibility of the so-called "halo effect" (interference caused due to the sympathy that the evaluator has for the person or entity being evaluated). However, as noted, the advantages of working with a significant sample of respondents directly engaged in the federal government apparatus are believed to outweigh the existing disadvantages of using questionnaire data.

The representative sample of the Brazilian Federal Public Administration bodies made up 3,200 civil servants out of a universe of approximately 263,000. Of the questionnaires sent, 21% were answered (Pereira et al, 2019). Based on the sampling formula,⁴ we selected 36 organizations, with a margin of error of less than 10% concerning the sample, preserving the integrity and reliability of the respondents' perceptions. This selection represented 90% of the initial survey sample. Organizations that did not reach an acceptable margin of error, below 10%, were excluded from the analysis. Descriptive statistics of the responses to the applied questionnaire are in annex I. To not expose the organizations, nor to allow any attempt to identify the respondents, the agencies received a code according to the public policy sector in which it is inserted.

We know that federal public organizations are different in several aspects regarding autonomy and nature. According to the objectives of this work, we differentiate organizations according to their type (direct and indirect) and public policy sector, see Table 1. in Annex II.

Table 1

List of organizations analyzed

Type of organization	Public Policy Sector	Code	Number
Indirect - Regulatory Agency	Oil, gas and telecommunications	AR	5
Indirect - Regulatory Agency	Land, waterway and aviation transport	AT	3
Indirect - Regulatory Agency	Complementary health and health surveillance	AS	2
Indirect - Autarchy and Foundations	Land regulation and health	S	2
Direct - Ministry and Foundation	Rights Protection	D	2
Indirect - Public and mixed economy companies	Infrastructure and the productive sector	E	3
Direct - Department	Police force	F	2
Direct - Ministries	Productive	MI	3
Direct - Ministries	Socioenvironmental	MS	5
Direct - Ministries	Government Nucleus	N	6
Indirect - Autarchy and Foundations	Research and Technology	P	3

Source: Elaborated by the authors

Measurement

There are three dependent variables: i) effectiveness, ii) innovation, and iii) restriction of corruption. The first one measures the perception of bureaucrats regarding the achievement of expected results for their organizations in the year prior to the application of the questionnaire. The second dependent variable measures the employee's opinion about the level of creativity and innovation of the organization he belongs to. Finally, the third dependent variable concerns the bureaucrat's perception of the degree of restriction of the organization's culture to which he belongs with corrupt practices. The survey questions selected to measure the dependent variables can be found in Table 1, with the original questionnaire code. All questions are on the Likert scale, ranging from 1 to 5, with 1 being total disagreement with the statement and 5 being total agreement.⁵ It is essential to mention that in the absence of objective measures for the dependent variables and in the face of the challenge of finding standard measures for different policy sectors, we chose to use only the survey questions as they are common to all of them, despite the limitations of this strategy.

Table 2

Dependent Variables and Indicators

Variable	Indicators (Questions)
Innovation	H5 - My organization is creative and innovative
Efficiency	H2 - The policies produced by the organization I work for achieved the expected results
Restriction on corruption	D1 - The culture of my work organization makes corrupt practices difficult

Source: Elaborated by the authors.

The five explanatory variables were constructed based on the questions indicated in table 3. The questions selected to measure the variables 'weberianess' and 'autonomy' were the same used by Boittin et al. (2016). The choice of questions for 'resources' and 'coordination' was based on Ramesh et al. (2016), while the 'relationships' questions were based on Evans (2014).

The instrumentalization of the explanatory and dependent variables was made based on the proportion of concordance answers to the questions, considering answers 4 and 5 on the Likert scale. That is, each variable in this article was calculated for each agency, taking the ratio between the number of concordant responses ("agree" and "strongly agree") to the total number of responses (i.e., the proportion of concordant responses).

A confirmatory factor analysis (CFA) was conducted to validate the composition of the independent variables or factors (see Annex III). To assess the fit of the factorial model, the fit indices Comparative Fit Index (CFI), Tucker Lewis Index (TLI) and Standardized Root Mean Square Residual (SRMR) were used. The CFI and TLI indices measure the relative fit of the observed model when comparing it with the base model, where values above 0.95 indicate optimal fit and values above 0.90 indicate good fit (Bentler, 1990; Hu & Bentler, 1999). In turn, the SRMR reports the standardized mean of the residuals (discrepancies between the observed and modeled matrix), and indices lower than 0.10 indicate a good fit (Kline, 2005).

The adjustment measures of the AFC, CFI (0.98), TLI (0.97) and SMSR (0.028) show an excellent adjustment and adherence of the factors to the data. In this sense, these results empirically validate the composition of the constructs, which are operationalized as explanatory variables in the regression analysis. It was noted the presence of significant covariance between the factors 'weberianess' and 'autonomy' (0.46) and 'coordination' and 'relationships' (0.56). However, the calculated variance inflation factor (VIF) values do not suggest the multicollinearity problem in the model. The highest VIF found is 2.12 for the weberianess variable, below critical values such as 5 or 10 (Fox & Monette, 1992; Fox, 2016) [see Annex IV].

Table 3

Explanatory variables and indicators

Variable	Indicators (Questions)
Weberianity	B1 - My work unit is able to recruit people with the right skills B2 - Promotions for commissioned positions in my work unit are based on merit B5 - Technical competence is important for nomination to a commissioned position [in my organization]
Autonomy	C1 - My perception is that the government makes the most of my skills C2 - In my current position I feel encouraged to bring new and better ways of working C5 - What is the level of satisfaction with your involvement in decisions that affect your work?
Resources	The following items are obstacles to the good performance of your work unit: E1 - Human resources E2 - Budget resources E3 - Technological resources
Coordination	In the last 12 months, how often have you interacted with: F1 - other organizations or agencies linked to the body you currently work for F2 - other organizations or agencies linked to other ministries
Relationship with society	In the last 12 months, how often have you interacted with: F8 - Private companies F10 - Civil Society Organizations

Source: Elaborated by the authors.

Note: All the questions in the questionnaire refer to the respondent's perception of the organizational environment in which he is inserted (cf. Pereira et al., 2019).

Results

Two multivariate data analysis techniques were used. The first was the Beta Regression, suitable for testing hypotheses in situations where the dependent variable is restricted to the range (0 to 1), as is the case with rates and proportions. In Beta regression, the data are analyzed according to the theoretical model, indicating the distribution of responses and establishing correlations between the different indices of the model (Ferrari, Cribari-Neto, 2004).

Secondly, a Multiple Correspondence Analysis was performed, a descriptive data analysis technique, in order to provide a visual understanding of the associations or relationship patterns between the research variables and the organizations surveyed (Greenacre, 2017). In this sense, two two-dimensional graphs were plotted: one containing the performance indicators (innovation, corruption, and results) and their association with the type of organizations analyzed; and another relating these organizations and the dimensions of the concept of state capacity analyzed (meritocracy, autonomy, resources, coordination, and relationship with society).

Beta Regression

The Beta regression model was used to test the hypotheses about the correlations between the dependent and explanatory variables of the research. Using the log binding function, the model specification is given by:

$$\log(\mu_i) = \beta_0 + \beta_1 WEB_i + \beta_2 AUT_i + \beta_3 REC_i + \beta_4 CG_i + \beta_5 RS_i$$

with $i=1, \dots, 36$, where $\log(\mu_i)$ is the logarithm of the mean proportion for the i -th organ; $[[WEB]]_i$ denotes the proportion of agreement responses in the Weberianity index for the i -th organ; similarly, $[[AUT]]_i$ represents autonomy; $[[REC]]_i$ represents Resources; $[[CG]]_i$ Governmental Coordination and $[[SR]]_i$ Relationship with Society.

The model coefficients represent an average change in the dependent variable for one unit of change in the explanatory variable, all else being constant in the model. Since all variables then in the range 0 to 1, including the explanatory variables, the unit of change is considered to be equal to 0.01. Thus, according to the specification of the model, it is possible to show that a coefficient equal to β represents an increase of $\beta \times 0.01$ (that is, $\beta/100$) in the average proportion of the dependent variable. One can also formulate such an interpretation in terms of percentages: for each 1% increase in the explanatory variable, an increase of $\beta\%$ in the dependent variable is expected.

The hypothesis test between the association of the dependent variable effectiveness and the set of explanatory variables indicated that individual autonomy is positively and significantly correlated with organizational effectiveness (p -value < 0.05), see table 1 below. This means that the respondents' perception of organizational effectiveness is greater as the perception of bureaucrats' autonomy in carrying out their functions and the availability of resources increases. The model adjustment can explain about 40% of the variation present in the dependent variable. For every 1% increase in the autonomy variable, it is expected, on average, that the organizations' perception of effectiveness is 1.54% higher. However, the correlation between the efficacy variable with the other independent variables of the model was not statistically significant, contrary to theoretically expected. Thus, only hypothesis 1.b was supported.

Table 1

Results - Beta Regressions

	Efficiency	Innovation	Restriction on Corruption
Intercept	-2,03*** (0,336)	-3,36*** (0,48)	-2,69*** (0,36)
Weberianity	1,20 (0,76)	4,41*** (1,06)	4,15*** (0,8)
Autonomy	1,54** (0,72)	0,28 (0,99)	-1,36 (0,75)
Resources	0,69 (0,41)	-0,20 (0,61)	-0,17 (0,41)
Coordination	-0,17 (0,35)	-0,03 (0,48)	0,61 (0,36)
Relacionamento	-0,40 (0,33)	-0,52 (0,45)	0,10 (0,36)
Pseudo R2	0,38	0,39	0,38

Note: * $p < 5\%$, ** $p < 1\%$, *** $p < 0,1\%$, in bilateral test.

Notes: In parentheses, the standard error value of the estimate. The pseudo R2 is a generalized version of the coefficient of determination R2 and extends its formula associated with the interpretation of the percentage of explained variance. This case is the squared correlation between the linear predictor and the log-transformed response variable.

Source: Elaborated by the authors.

As for the dependent variable innovation, it was found that only the explanatory variable bureaucratic weberianess is positively correlated to it in a statistically significant way (p -value < 0.001). According to the second group of hypotheses of this work, it was expected that, along with weberianess, individual autonomy was also significantly correlated with innovation. However, this was not found. That is, only hypothesis 1.a was corroborated. Thus, for every 1% of positive perception about the existence of Weberian characteristics in the organizations analyzed, it is expected, on average, that the perception of the innovation variable has an increase of 4.41%.

Finally, corroborating hypothesis 3 of this work, we found statistical significance in the positive correlation between the explanatory variable weberianess (p -value < 0.001) and the dependent variable perception of inhibition of corruption. The perception of bureaucrats about the organizational culture of their work organization in hindering corrupt practices increases together with the perception of bureaucratic weberianess. For every 1% increase in this variable in organizations, it is expected to increase by 4.15% on average. It should be noted that the correlation coefficients between weberianess and innovation and weberianess and restriction to corruption (4.41% and 4.15%, respectively) were much higher than that found in the relationship between autonomy and effectiveness (1.54%).

Regarding the efficacy variable, regulatory agencies (AR4, AR5), the ministry of the socio-environmental area (MS1), and a social autarchy (S1) stand out in proximity to the vector of this variable. Among the organizations farthest from the vector of the effectiveness are indirect administration bodies linked to the research sectors (P1) and regulatory agencies (AR1), and direct administration bodies linked to the rights protection sectors (D2, D1) and from the core of government (N6).

Finally, direct administration bodies linked to the government nucleus (N6), organization of indirect administration for the defense of rights (D1) and federal police force (F1), regulatory agency (AR1), and public company in the productive sector (E2) are associated with the variable restriction to corruption. On the other hand, the most distant organizations from this vector are direct administration organizations linked to the socio-environmental (MS1, MS4) and police (F2) sectors, indirect administration organizations linked to the research (P3) and land and health regulation (S2) sectors. What stands out in the analysis of the restriction on corruption variable is that many organizations nested at this point in Figure 1 are further away from the innovation and effectiveness variables. This seems to indicate that the perception of restriction on corruption goes in the opposite direction to innovation and the effectiveness of organizations.

The second multiple correspondence analysis (figure 2) aimed to associate the researched organizations with the researched dimensions of the concept of state capacity (weberianess, autonomy, resources, coordination, and relationship) to assess how such capacities vary between the types of organizations-policy sectors. The first two dimensions of the graph explain 72.6% of the variability [figure 2]. The chi-square test of independence between the rows and columns of the table [Annex II] was equal to 302.56, with a p-value <0.0001. This indicates that the test was significant and that the results are replicable.



Figure 2. Dispersion of organizations and explanatory variables

Source: Elaborated by the authors.

Figure 2 reveals a concentration of organizations with more human and material resources from indirect administration linked to the land transport, water and aviation (AR2, AT1), complementary health and health surveillance (AS1) sectors, and direct administration organizations of the core sectors of government (N5), socio-environmental (MS2) and infrastructure and productive sector company (E1). On the other hand, among the organizations that appear less associated with the resource variable are organizations in the direct administration of the socio-environmental sectors (MS3, MS5), defense of rights (D2) and government nucleus (N6), and only one indirect administration body connected to the land regulation and health sector (S1),

For the variable relationship with civil society and private companies, we observed two organizations that directly manage the socio-environmental sector (MS3, MS5) and three indirectly manage the land transport, waterway and aviation sectors (AT3, AR3, AR1). This can be explained, in part, by the institutionalized relationship channels of these bodies through councils with the representation of concessionaires and users. On the other hand, opposed to the vector of relationship with society, there are direct administration organizations linked to the core sectors of government (N1, N5, N2) and socio-environmental (MS2), indirect administration organizations linked to the research and technology sectors (P3) and land regulation and health (S2).

Direct administration organizations linked to the defense of rights sectors (D2), government

nucleus (N5, N1, N6, N2, N3) and socio-environmental (MS5) are closer to the point of the coordination variable, being perceived as nodal bodies in the interior of the Brazilian federal public administration. Indirect administration organizations are farther from the representative point of coordination linked to the sectors of complementary health and sanitary surveillance (AS1), oil, gas and telecommunications (AR3), land transport, waterway and aviation (AT1) and research (P3, P1).

The representative points of the autonomy and weberianess variables, in turn, did not prove to be good discriminators of the organizations analyzed since they are closer to the point of origin of the Cartesian plane. Concerning autonomy, the regulatory bodies of indirect administration linked to the oil, gas and telecommunications sectors (AR4), research (P3) land regulation and health (S2) are closer to the representative point of the variable, as well as administration organizations directly linked to the core sectors of government (N2, N1) is also characterized by respondents as more autonomous. Among the indirect administration organizations with less autonomy, those belonging to the oil, gas and telecommunications sector (AR2), land transport, waterway and aviation (AT2) and complementary health and sanitary surveillance (AS1) can be listed. Only one organization of direct administration linked to the police sector (F1) is indicated with less autonomy.

As for the weberianess variable, the indirect administration organizations linked to the research sector (P1, P3) stand out as being the closest to the variable vector, followed by direct administration organizations linked to the socio-environmental (MS4) and police (F2) sectors. The less Weberian direct administration organizations are with the socio-environmental ministries (MS5, MS3). In contrast, the indirect administration organizations are linked to the oil, gas and telecommunications (AR2) and land transport, waterway and aviation (AT2) sectors are more away from the vector representing the variable.

Discussion

The literature reviewed indicates that merit-based public bureaucracies, endowed with autonomy and adequate resources and interacting with each other and with society, would be positively associated with effective organizations (ie, that achieve the expected results). However, from the data analysis, our hypothesis test only corroborated the correlation of the bureaucratic autonomy variable to organizational effectiveness. The other variables did not reach statistical significance and thus did not pass the hypothesis test. However, it should be noted that this result does not invalidate the respective dimensions associated with the concept of state capacity, because, as stated by Centeno et al (2017), capacity is a potential that may or may not be used political power.

Concerning autonomy, specifically, the set of indicators that measure this variable is related to the employee's perception of the use of their skills, the encouragement they receive to apply their expertise and involvement in decisions that affect their work routines. Thus, this variable indicates civil servants' degree of discretion in carrying out their duties. This discussion takes us back to Fukuyama (2013), about the importance of the operational autonomy of bureaucrats, i.e., without the administrative micromanagement of political superiors, in the implementation phase of public policies.

In turn, the organizational innovation variable is significantly correlated only to the weberianess variable (or the bureaucracy's level of meritocracy). The beta regression results

indicate that bureaucrats belonging to organizations that recruit and promote their employees based on merit perceive them as more innovative. This corroborates the theoretical expectations presented, such as Suzuki and Demircioglu (2017) argument that a meritocratic recruitment system would bring the most competent and skilled employees to public sector organizations. They, in turn, would apply their knowledge and expertise to the development of new processes and services. However, based on the technique used, it would not be possible to refute the presupposition of the effect of bureaucratic autonomy for the same result. This would require the use of randomized experimental techniques, for example.

Finally, the analysis corroborated the hypothesis that bureaucracies with Weberian attributes are positively and significantly correlated with bodies whose culture is perceived as restricting corrupt practices by civil servants. This result is in line with the arguments of Evans and Rauch (1999) and Dahlström and Lapuente (2017) that the meritocratic selection of bureaucrats can avoid their "political" capture, rent-seeking, and corruption.

About the other objective of the work, to verify the variation of state capacities among organizations of the Brazilian federal administration, it was noticed that if 'weberianess' and 'autonomy' are not the most discriminatory variables, 'resources', 'relationship' and 'coordination' are.

The organizational resources variable positively discriminates regulatory agencies in the oil, gas and telecommunications, land transport, waterway and aviation, complementary health and sanitary surveillance sectors, and ministries of the socio-environmental area, vis-à-vis organizations in the protection sectors of land rights and regulation and health. Likewise, government coordination positively discriminates against core government ministries when contrasted with regulatory agencies and research organizations. This makes sense, as the role of the core government is to coordinate government actions, while regulatory agencies and research bodies act more autonomously. Finally, observing the pattern of discrimination of organizations with the variable relationship with society, the bureaucrats of regulatory agencies perceive themselves as relating more to civil society organizations and private companies, unlike the ministries belonging to the government nucleus. This is not surprising since such relationships are inherent in the regulatory activity itself.

A wide dispersion of public policy sectors was found between the types of organizations and their correspondence with the study's dependent variables. A slight predominance of regulatory agencies was observed with the efficacy variable (figure 1). An explanation for this may lie in the fact that these are specialized bodies that require expertise as they act in the regulation of specific sectors. Organizations in the research sector were closer to the innovation point, and complete dispersion of organizations and sectors near the restriction on corruption variable.

The variation in capacities and performance observed within the Brazilian federal bureaucracy leads us to corroborate the literature's statements about the asymmetries between organizations that inhabit the ecology of the state apparatus. However, the wide range of capabilities and performance observed in this work tends to blur the distinction of organizations belonging to the so-called "islands of excellence" or "pockets of effectiveness" (Geddes 1990; Roll 2014).⁶ Although we have managed to discriminate between two or more organizations. Together with the variables analyzed, the dispersion of capacities and performance observed did not

characterize an identifiable pattern of type or sector of public policy. In other words, based on the data analyzed, no organization could be considered an island of excellence or a pocket of effectiveness. This finding leads us to argue that for the contemporary Brazilian Federal Public Administration, the relationship between organizations, capabilities and performance assumes more complex patterns and forms, going beyond what the current idea of pockets of effectiveness is capable of contemplating.

Conclusion

This article had the double objective of demonstrating the variation of capacities within the Brazilian Federal Public Administration, both at the level of individual organizations and sectors of public policy, as well as verifying theoretical propositions in the literature about the relationship between the characteristics of public bureaucracy and the performance of state action.

Through the primary data analysis, collected via a survey applied to federal civil servants, we indicate that the attributes of the concept of state capacity are perceived differently among organizations in the federal government apparatus. The research findings reinforce the indications that the measurement and analysis of state capacities should focus on the comparative perspective between national states and the internal intra-state or organizational dynamics. In this sense, the article contributes to the literature by adding nuances to the "islands of excellence" approach by verifying that the asymmetry of capabilities within the Brazilian executive branch is more complex than indicated by previous research. In other words, there is not a concentration of capabilities and results in a limited set of organizations, but a dispersed and asymmetric distribution among the various types of organizations and sectors of public policy.

We were able to test, based on empirical evidence, some of the theoretical propositions present in the literature. The findings corroborate several of them, especially regarding the effect of meritocracy and bureaucratic autonomy on public organizations' effectiveness, innovation, and corruption. The research findings indicate that federal public organizations with a more excellent perception of bureaucratic weberianess are correlated with more innovative organizations and organizational cultures that are more restrictive to corruption. Likewise, organizations whose bureaucrats have a greater perception of individual autonomy are correlated with more effective organizations

Among the limitations of the article is that the sample is limited to 36 public organizations and the data refer to a specific moment in time (the year 2018). Longitudinal data would be needed to strengthen the findings. Another limitation is found in using survey data, especially to measure organizational performance. However, the strengths of the research lie in the use of original data for the operationalization of the variables indicated in the literature (the perceptions of bureaucrats themselves about the organizations in which they work), as well as in the measurement of the concept of the State's capacity of execution without falling into circular analyzes or tautological arguments so common to this literature.

As a suggestion for future research, we can indicate the deepening of the analysis for the types of careers (eg typical of the State, "regulocrats etc.) and/or the different functions of bureaucrats (such as formulation, implementation, and evaluation). As the variation of capacities within the federation is still an underexplored subject, we suggest research on this topic, especially

when the public policy environment requires coordination of actions between federated entities.

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Notas

1. Like Fukuyama (2013), we focus the discussion on the executive branch bureaucracy.
2. If the bureaucrat must elevate rule and order to the condition of personal conviction, the politician with a vocation has the duty to fight to transform his intimate convictions into order and rule (Teixeira, 1999). Thus, for Weber, the ethics of conviction as opposed to the ethics of responsibility is what marks the difference between the professions of bureaucrats and politicians in the modern State.
3. For the purpose of this work, we will focus only on public servants of the federal executive power, even though we understand that the Public Administration is formed by the set of organizations instituted to achieve government objectives, such as the provision of public services.
4. $E = \text{quantile}_{(1-\alpha) \times 100\%} \frac{s}{\sqrt{n}} \sqrt{\frac{N-n}{N-1}}$, where E represents the margin of error, N is the population size, and n is the sample size. For a sample size greater than or equal to 30, the $\text{quantile}_{(1-\alpha) \times 100\%}$ it's the equal to $Z_{1-\alpha/2}$: quantile from the normal distribution to the level of $(1 - \alpha) \times 100\%$ reliability; and for a sample smaller than 30, the $\text{quantile}_{(1-\alpha) \times 100\%}$ is given by $T_{1-\alpha/2}$: quantile from the T-distribution of student to the level of $(1 - \alpha) \times 100\%$ of reliability .
5. The scale of the 'resources' index (Table 3) was inverted to maintain the standardization

adopted in this article. The questionnaire applied in full format can be seen in Pereira et al. (2019).

6. For Roll (2014, p. 24), "pockets of effectiveness" are public organizations that are relatively effective in providing public goods and services, despite operating in an environment where effectiveness is not the norm.

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The authors inform that there is no conflict of interest.

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Annex I. Distribution of the required and answered sample according to the defined layers.

Organizational Legal Model	Positions/Careers	Commissioned Position	Answered Sample	Required Sample	% Answered
Direct Administration (Ministry)	Others	Free term position	220	369	59.62%
Direct Administration (Ministry)	Others	Others	187	374	50.00%
Direct Administration (Ministry)	No bond	Others	115	380	30.26%
Direct Administration (Ministry)	Relation with the Federal Public Administration	With function/gratification	293	377	77.72%
Direct Administration (Ministry)	Relation with the Federal Public Administration	Others	160	384	41.67%
Regulatory agency	Others	Free term position	148	242	61.16%
Regulatory agency	Others	Others	63	173	36.42%
Regulatory agency	Relation with the Federal Public Administration	Com função/gratificação	466	332	140.4%
Regulatory agency	Relation with the Federal Public Administration	Others	374	362	103.3%
Autarchy or Foundation	Others	Free term position	302	348	86.78%
Autarchy or Foundation	Others	Others	249	382	65.18%
Autarchy or Foundation	No bond	Others	4	192	2.08%
Autarchy or Foundation	Relation with the Federal Public Administration	With function/gratification	403	373	108.0%
Autarchy or Foundation	Relation with the Federal Public Administration	Others	242	383	63.19%
Total			3.226	4.671	

Source: Pereira et al (2019).

Appendix I. Descriptive Statistics

Variable	Question	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I don't know/I don't want to answer
Innovation	H5	357	763	684	852	198	50
		13%	27%	24%	30%	7%	-
Effectiveness	H2	118	673	691	1101	185	136
		4%	24%	25%	40%	7%	-
Corruption restriction	D1	215	617	659	1025	268	120
		8%	22%	24%	37%	10%	-
Weberianity	B1	240	814	538	1037	252	23
		8%	28%	19%	36%	9%	-
	B2	562	990	597	576	112	67
		20%	35%	21%	20%	4%	-
B5	56	117	0	578	2136	17	
	2%	4%	0%	20%	74%	-	
Autonomy	C1	405	1101	640	612	124	22
		14%	38%	22%	21%	4%	-
	C2	268	640	584	1058	332	22
9%		22%	20%	37%	12%	-	
C5	172	668	739	1122	179	24	
	6%	23%	26%	39%	6%	-	
Resources	E1	650	1102	319	683	121	29
		23%	38%	11%	24%	4%	-
	E2	805	1251	286	443	75	44
28%		44%	10%	15%	3%	-	
E3	663	1159	305	645	103	29	
	23%	40%	11%	22%	4%	-	
Coordination	F1	856	398	356	614	570	110
		31%	14%	13%	22%	20%	-
F2	1159	468	379	503	282	113	
	42%	17%	14%	18%	10%	-	
Relationship	F8	968	279	260	537	746	114
		35%	10%	9%	19%	27%	-
	F10	1624	391	287	304	150	148
59%		14%	10%	11%	5%	-	

Source: Elaborated by the authors.

Apendix II. Confirmatory Factor Analysis Results (AFC)

```
## lavaan 0.6-7 ended normally after 62 iterations
```

```
##
```

```
## Estimator ML
```

```
## Optimization method NLMINB
```

```
## Number of free parameters 49
```

```
##
```

```
## Number of observations 2904
```

```
## Number of missing patterns 80
```

```
##
```

```
## Model Test User Model:
```

```
## Standard Robust
```

```
## Test Statistic 221.061 210.136
```

```
## Degrees of freedom 55 55
```

```
## P-value (Chi-square) 0.000 0.000
```

```
## Scaling correction factor 1.052
```

```
## Yuan-Bentler correction (Mplus variant)
```

```
##
```

```
## Model Test Baseline Model:
```

```
##
```

```
## Test statistic 8443.363 7667.702
```

```
## Degrees of freedom 78 78
```

```
## P-value 0.000 0.000
```

```
## Scaling correction factor 1.101
```

```
##
```

```
## User Model versus Baseline Model:
```

```
##
```

```
## Comparative Fit Index (CFI) 0.980 0.980
```

```
## Tucker-Lewis Index (TLI) 0.972 0.971
```

```
##
```

```
## Robust Comparative Fit Index (CFI) 0.980
```

```
## Robust Tucker-Lewis Index (TLI) 0.972
```

```
##
```

```
## Root Mean Square Error of Approximation:
```

```

##
## RMSEA                0.032    0.031
## 90 Percent confidence interval - lower    0.028    0.027
## 90 Percent confidence interval - upper    0.037    0.036
## P-value RMSEA <= 0.05                1.000    1.000
##
## Robust RMSEA                0.032
## 90 Percent confidence interval - lower    0.027
## 90 Percent confidence interval - upper    0.037
##
## Standardized Root Mean Square Residual:
##
## SRMR                0.028    0.028
##
## Parameter Estimates:
##
## Standard errors                Sandwich
## Information bread                Observed
## Observed information based on    Hessian
##
## Latent Variables:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## weberianity =~
## QB1      1.000                0.743 0.647
## QB2      1.125 0.044 25.580 0.000 0.836 0.737
## QB5      0.177 0.025 7.038 0.000 0.132 0.156
## autonomy =~
## QC1      1.000                0.802 0.734
## QC2      1.164 0.030 38.681 0.000 0.934 0.794
## QC5      0.956 0.028 34.435 0.000 0.767 0.738
## resources =~
## QE1      1.000                0.604 0.505
## QE2      1.252 0.075 16.636 0.000 0.756 0.692
## QE3      1.338 0.082 16.246 0.000 0.808 0.690

```

```

## coordination =~
## QF1      1.000          1.239 0.802
## QF2      0.891 0.035 25.113 0.000 1.103 0.774
## relationships =~
## QF8      1.000          0.701 0.423
## QF10     1.305 0.105 12.403 0.000 0.915 0.720
##
## Covariances:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## weberianity ~~
## autonomy  0.464 0.022 21.566 0.000 0.778 0.778
## resources  0.094 0.016 5.714 0.000 0.209 0.209
## coordination 0.142 0.025 5.703 0.000 0.154 0.154
## relationships 0.072 0.016 4.438 0.000 0.139 0.139
## autonomia ~~
## resources  0.038 0.014 2.681 0.007 0.078 0.078
## coordination 0.300 0.025 12.131 0.000 0.302 0.302
## relationships 0.117 0.017 6.914 0.000 0.207 0.207
## resources ~~
## coordination -0.052 0.020 -2.607 0.009 -0.070 -0.070
## relationships -0.024 0.013 -1.804 0.071 -0.056 -0.056
## coordination  ~~
## relationships 0.564 0.048 11.798 0.000 0.650 0.650
##
## Intercepts:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## .QB1      3.086 0.021 144.371 0.000 3.086 2.687
## .QB2      2.541 0.021 119.593 0.000 2.541 2.240
## .QB5      4.601 0.016 292.263 0.000 4.601 5.438
## .QC1      2.638 0.020 129.637 0.000 2.638 2.413
## .QC2      3.190 0.022 145.845 0.000 3.190 2.712
## .QC5      3.164 0.019 163.475 0.000 3.164 3.041
## .QE1      2.487 0.022 111.553 0.000 2.487 2.080
## .QE2      2.210 0.020 108.104 0.000 2.210 2.022

```

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## .QE3      2.433  0.022 111.452  0.000  2.433  2.078
## .QF1      2.877  0.029  98.962  0.000  2.877  1.864
## .QF2      2.391  0.027  88.827  0.000  2.391  1.677
## .QF8      2.938  0.031  93.775  0.000  2.938  1.772
## .QF10     1.906  0.024  78.599  0.000  1.906  1.500
## weberianity 0.000                0.000  0.000
## autonomy  0.000                0.000  0.000
## resources   0.000                0.000  0.000
## coordination 0.000                0.000  0.000
## relationships 0.000                0.000  0.000
##
## Variances:
##      Estimate Std.Err z-value P(>|z|) Std.lv Std.all
## .QB1      0.767  0.028 26.938  0.000  0.767  0.581
## .QB2      0.588  0.033 17.744  0.000  0.588  0.457
## .QB5      0.698  0.037 18.652  0.000  0.698  0.976
## .QC1      0.551  0.022 24.950  0.000  0.551  0.461
## .QC2      0.511  0.025 20.667  0.000  0.511  0.369
## .QC5      0.493  0.020 24.474  0.000  0.493  0.456
## .QE1      1.065  0.036 29.404  0.000  1.065  0.745
## .QE2      0.623  0.038 16.472  0.000  0.623  0.521
## .QE3      0.718  0.043 16.779  0.000  0.718  0.524
## .QF1      0.848  0.069 12.370  0.000  0.848  0.356
## .QF2      0.816  0.055 14.802  0.000  0.816  0.402
## .QF8      2.255  0.058 39.100  0.000  2.255  0.821
## .QF10     0.777  0.071 10.936  0.000  0.777  0.481
## weberianity 0.552  0.032 17.173  0.000  1.000  1.000
## autonomy  0.644  0.028 22.947  0.000  1.000  1.000
## resources   0.365  0.035 10.514  0.000  1.000  1.000
## coordination 1.535  0.072 21.294  0.000  1.000  1.000
## relationships 0.492  0.054  9.028  0.000  1.000  1.000

```

Apendix III. Variance Inflation Factor (VIF)

Explanatory variable	Dependent variable		
	Innovaton	Efficiency	Restriction on corruption
Weberianity	2,12	2	2,05
Autonomy	2,04	1,97	2
Resources	1,2	1,34	1,19
Coordination	1,21	1,24	1,16
Relationships	1,04	1,03	1,08

Source: Elaborated by the authors.