

Determinants of salary inequality between Minas Gerais government careers

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This research investigates the determinants of salary differences among Minas Gerais government careers using a linear regression model. Explanatory variables were raised from different theoretical approaches to determine the salaries: human capital theory, market segmentation theory, discrimination theory, and sociology of professions, in addition to considering the specificities of the public sector. The choice of the Brazilian state of Minas Gerais is justified by its relevance in the country and the fiscal crisis experienced in recent years. The hypothesis is that salary differences in the public sector not only express education and work experience, but also typical distortions of socioeconomic and political-bureaucratic structures. The results corroborate the hypothesis and suggest that the relative salary structure in the public sector constitutes a concrete manifestation of the differences in political resources available to careers, the social prestige of professions, and structural aspects of gender inequality.

Keywords: salary inequality; public sector; remuneration policy; careers.

Determinantes da desigualdade salarial entre as carreiras do governo de Minas Gerais

Este artigo analisa os determinantes do diferencial de remuneração entre as carreiras do Poder Executivo do estado de Minas Gerais, utilizando um modelo de regressão linear cujas variáveis explicativas foram elaboradas com base em diferentes abordagens teóricas acerca da determinação dos salários: teoria do capital humano, teoria da segmentação dos mercados, teoria da discriminação e sociologia das profissões, além de considerar as especificidades do setor público. A escolha da unidade federativa se justifica pela relevância no cenário nacional e pela difícil situação fiscal vivenciada nos últimos anos. A investigação é guiada pela hipótese de que as diferenças salariais no setor público refletem não só a qualificação e a experiência no trabalho, mas também reproduzem distorções típicas das estruturas socioeconômicas e político-burocráticas. Os resultados corroboram a hipótese adotada e sugerem que a estrutura relativa de salários no setor público constitui uma manifestação concreta das diferenças de recursos políticos disponíveis às carreiras, do prestígio social das profissões e de aspectos estruturais da desigualdade de gênero.

Palavras-chave: desigualdade salarial; setor público; política de remuneração; carreiras.

Determinantes de la desigualdad salarial entre las carreras del Gobierno de Minas Gerais

Este artículo investiga los determinantes del diferencial de remuneración entre las carreras del Poder Ejecutivo del estado de Minas Gerais, utilizando un modelo de regresión lineal cuyas variables explicativas fueron planteadas a partir de diferentes enfoques teóricos de la determinación de los salarios: teoría del capital humano, teoría de la segmentación del mercado, teoría de la discriminación y sociología de las profesiones, además de considerar las especificidades del sector público. La elección de la unidad federativa se justifica por su relevancia en el escenario nacional y por la difícil situación fiscal observada en los últimos años. La hipótesis que guía la investigación es que las diferencias salariales en el sector público reflejan no solo la calificación y la experiencia laboral, sino que también reproducen distorsiones propias de las estructuras socioeconómicas y político-burocráticas. Los resultados corroboran la hipótesis adoptada y sugieren que la estructura salarial relativa en el sector público constituye una manifestación concreta de las diferencias en los recursos políticos disponibles para las carreras, el prestigio social de las profesiones y los aspectos estructurales de la desigualdad de género.

Palabras clave: desigualdad salarial; sector público; política de remuneraciones; carreras.

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1. INTRODUCTION

The recent fiscal crisis in Brazil has brought the topic of remuneration in the public sector to the center of the national political debate. Two measures stand out among the current efforts to contain public spending, the Constitutional Amendment 95/2018 establishing a public spending ceiling and the Social Security Reform. In addition, more recently, Constitutional Amendment 109/2021 established the conditions to veto adjustment of public servants' salaries. In this context, arguments criticizing public servants' high salaries without considering the heterogeneity of the professional categories in public service are frequent in the media and in public debate.

Despite the current debate, studies analyzing the pay gap in the public sector are scarce in recent academic literature (Ventura & Cavalieri, 2021), and most of them focus on distortions between salaries in the public and private sectors (Marconi, 2001; Souza & Medeiros, 2013; Vaz & Hoffmann, 2007). Furthermore, although municipal and state governments are responsible for more than 90% of public employment in Brazil (Instituto de Pesquisa Econômica Aplicada [Ipea], 2018), few empirical analyses seek to understand salary inequality in subnational governments.

This study investigates the determinants of salary inequality in the executive branch of the Brazilian state of Minas Gerais. Among Brazil's 26 states and the federal district, the government of Minas Gerais is the second largest, both in the number of employees and in the budget (Ipea, 2018). We chose this state because it follows a pattern observed in state governments throughout the country in recent years, where the growth in expenditure on active employees is explained by increases in salaries over the hiring of new public servants (Santos, Cavalcante, Martins, Lacerda & Schettini, 2016). Also, in 2020 the government of Minas Gerais recorded the second-highest percentage of expenditure on personnel in relation to net current revenue (Secretaria do Tesouro Nacional, 2021), with amounts that exceed the maximum limit established in the national Fiscal Responsibility Law.

This article was further motivated by the relevant impact that the distribution of public servants' income has on the economic inequality of society as a whole. Several studies point out that the income of government employees went against the trend of falling inequality observed in Brazil during the 2000s. This phenomenon occurred thanks to the growth in the participation of the public servants' income in society's total income and the intensification of the internal concentration of these incomes (Daré, 2011; Hoffmann, 2013; Souza, Bessa, Margonato & Ferreira, 2017).

The hypothesis guiding this research is that differences in pay in the public sector not only express the qualification and experience of public servants, but also the political resources mobilized by the professional categories in the state and reproduce structural aspects of Brazilian social inequality. We used a quantitative analysis of the relationship between career remuneration and its main determinants, based on a theoretical review regarding salary determination in the economy and considering the specificities of the public sector. The effect of each selected variable was estimated through a linear regression model using the method of ordinary least squares.

This article is divided into five sections, including this introduction. The next section presents the literature review of studies on salary determination, highlighting specificities of public service in Brazil. This is followed by an analysis of the evolution of the income distribution within the executive branch of the state of Minas Gerais. The third section presents the methodology for data collection

and details the regression model used, followed by the fourth section interpreting the results. The fifth and final section presents the conclusion.

2. DETERMINANTS OF SALARY FOR PUBLIC SERVICE CAREERS

Salary differences occur for many reasons. They may be explained by factors such as the workers' individual characteristics, the nature of the position, the employees' bargaining power, or the historical process of social stratification. Another explanation for salary differences in the economy is the worker's personal productivity level, influenced by innate characteristics and elements developed throughout life, such as training, experience, and formal education. When assuming that higher levels of education increase productivity, a positive correlation between salaries and the worker's education is expected. This relationship constitutes one of the best-established empirical patterns in the literature on labor economics and education (Fernandes, 2002).

However, there is no consensus when it comes to explaining this correlation. One of the most widespread explanatory hypotheses is the human capital theory. The concept of human capital can be understood as the stock of skills and knowledge that individuals acquire and generate increases in future income. According to this approach, there are two basic types of human capital: general, acquired through formal education; and specific, acquired in the labor market itself. The theory adopts the hypothesis that investment in education and training increases workers' productivity, leading to higher salaries (Woodhall, 1987).

Critics of human capital theory argue that the correlation between education and income can be explained for other reasons. The screening hypothesis is an explanation that stands out. It states that formal education fundamentally fulfills the role of certifying or filtering individuals who present characteristics valued by employers – such as respect for hierarchy and compliance with norms. Another, more sociological, current argues that education suggests to employers the worker's position of class and social status, as more qualified workers are more likely to be individuals from a higher class or social status. For Collins (1971), the discourse of meritocracy where more qualified individuals are more productive and also receive higher remuneration is, in part, the result of an ideological instrumentalization of high-status groups as a strategy for distinction and social ascension in relation to subordinate groups.

However, a significant part of salary inequality cannot be explained only by differences in education, experience, or other attributes generally associated with the individuals' productivity. Thus, several authors discuss salary inequality with greater emphasis on institutional, political, and cultural determinants.

One of these approaches is the market segmentation theory, which is based on the idea that there are different labor markets governed by different operating rules regarding forms of hiring, remuneration, and promotion. Some of them have good working conditions, high salaries, career advancement systems, and stability. Others are characterized by informality, low remuneration, instability, and the absence of career progression systems. Scholars of the segmentation theory explain that the differences among the labor markets occur because of the workers' bargaining power and laws that regulate the labor market, which generates sectors more or less protected by these laws (Fernandes, 2002; Marconi, 2001).

The sociology of professions is another approach that contributed to the debate. According to Santos (2011), the Weberian line of sociology of professions brings together authors whose common theme is the power of professional groups. For the authors, professions are established as units that simultaneously integrate and exclude, fulfilling the double function of gathering professional groups and establishing competition with other groups. The power of professions lies in giving meaning to those who belong to the professional group and establishing the domination of one group over others and society (Santos, 2011, p. 31).

Professionalization is a strategy of the fight for remuneration, power, and prestige, with a consolidation process that imposes the domination of certain professional groups over others and inaugurates a new form of structural inequality. This strategy is developed in the economic sphere (seeking protection and legal monopoly) and in the socio-symbolic field (promoting the profession's social status). Thus, an important element of the professions' power resides in producing a cognitive and technical base, allied to the creation of barriers to entry into the labor market. Successful professional groups can dictate the rules of the social game, controlling access to professions through claims of expertise, i.e., the cognitive and technical base created and controlled by these groups (Larson, 1977, as cited in Santos, 2011).

Coelho (1999) analyzes three occupations that, historically in Brazil, reinforced their status and power in relation to other professions: medical, law, and engineering. According to the author, academic credentialism validated by the state apparatus was one of the main instruments to guarantee the status of these occupations, which have privileges reflected in the remuneration of careers in the public service. For Bonelli (2003), careers linked to law should be highlighted, either because of their affinity with the state apparatus, the degree of differentiation within the same professional area, or because the professionalization competes with other processes. According to the author, the conformation of legal careers in Brazil varies and is stratified according to how they combine professionalism with bureaucratization, with different levels of autonomy and interdependence concerning politics, the market, and authorities in the professional field. Thus, while Supreme Court judges have the status of ministers and deal more directly with politics, attorneys have been gaining professional status since Brazil's 1988 Constitution, while chief police officers remain at the lowest level of autonomy and professionalization ever and continue to be exposed to removals and transfers.

Finally, social discrimination is another relevant source of salary differentiation. The sexual division of labor, racism, and other types of social prejudice are examples of structural factors of discrimination mixed with other determinants of inequality in the labor market. According to Marconi (2001), there is a persistence of adverse conditions of insertion and permanence in the labor market for groups historically marginalized in the social structure, which can be verified even when the income estimate is controlled by other characteristics such as education, age, and occupation.

Among the theories mentioned, the market segmentation theory has important elements for understanding the dynamics of determining salaries in the public sector since the sector can be analyzed as a distinct block, governed by its own rules. First, the state differs from most private-sector employers because the pursuit of profit is not an essential objective of government units. Therefore, the attempt to explain government salaries through economic models is inadequate since these models are based on profit maximization.

Furthermore, the Brazilian public service presents particular rules and principles in a configuration essentially related to the historical process of consolidation of the state's bureaucratic administrative apparatus. According to Pacheco (2010), Brazil was the first Latin American country to start the constitution of permanent state agencies based on the Weberian bureaucratic model.¹ In the 1930s, the Brazilian government proposed the adoption of competitive hiring processes through exams, began the offer of tenured positions, and organized the careers² establishing rules to structure the public service.

Historically the formation of the Brazilian public bureaucracy is directed toward dualism that combined nuclei of qualified bureaucracy with broad sectors of low qualifications, vulnerable to clientelism and patronage practices (Abrucio & Loureiro, 2018; Cavalcante & Carvalho, 2017). On the other hand, bureaucracy professionalization has been developing since the 1988 Constitution showing improvements in qualification, remuneration, greater participation of public servants in appointed positions, and better gender balance (Cavalcante & Carvalho, 2017). After the 1988 Constitution, competitive hiring through exams was effectively institutionalized in the public bureaucracy. Although there are different models of entry and permanence in the public service (personnel hired based on the rules applied to the private sector, mass recruitment strategies, and temporary contracts), the statutory regime of public servants corresponds to 87.6% of the government employment (Ipea, 2018). These employees express the most typical characteristics of public service in Brazil. They are subjected to an exclusive legal framework that follows the constitutional principles of "isonomy" and "impersonality," according to which all people must be governed indistinctly by the same rules (Pacheco, 2010).

As a result, there is little flexibility to assign different remuneration according to the performance of each employee. The criteria for salary progressions are formally defined and automatically apply to all government employees in a given career, generally associated with the level of education and length of service (Pacheco, 2010). According to Marconi (2001), the salary structure in government has many distortions and little rationality. This is caused by factors such as the automatic repositioning of employees, the incorporation of earnings (obtained via court decisions), and other gains made possible by different interpretations of the law. These distortions are often possible because of the juridical tangle of personnel legislation in the public sector.

The strengthening and autonomy of certain careers may represent a problem when analyzed from the perspective of the growing corporatism, judicial activism, and judicialization of politics. In various spheres, these processes have exposed the problem of political control over the bureaucracy (Olivieri, 2011) and the capture of the state by the interests of bureaucrats, often expressed in disproportionate remuneration gains.

¹ The classical Weberian typology defines bureaucracy as an ideal type of organization based on the rationality of processes and legitimized by previously established legal norms. Among the characteristics of the bureaucratic model, the hierarchy of authority and the constitution of a body of specialized employees stand out. The employees' selection, remuneration, and promotion are defined by formal and impersonal criteria that, at least in theory, should reflect technical competence and the principle of meritocracy.

² According to Modesto (2016, our translation), a career in public service can be defined as "a hierarchical unit of related public positions," structured in ascending levels and degrees of responsibility and remuneration. Thus, career positions differ from isolated positions, as careers are hierarchically organized into levels of progression and functional promotion, while isolated positions do not entail the public servant's progressive path.

Abrucio, Pedroti and Pó (2010) state that most of the legislation implemented in the public service after the 1988 Constitution increased state corporatism. The legislation, for example, allowed government employees in many careers to earn bonuses and benefits that may be incorporated into the remuneration depending “more on each sector’s political strength than on merit observed through performance evaluation” (Abrucio et al., 2010, p. 58, our translation). When analyzing the period from 1995 to 2014, Cavalcante and Carvalho (2017) highlighted that the process of salary adjustment in the Brazilian federal government’s careers took place in an unequal way, resulting in a deepening of the inequality in remuneration between different positions and careers.

Therefore, a study to comprehend the pay gap in the public sector must analyze the careers’ resources regarding access to and exercising power. According to Gouvêa (1994, p. 31, our translation), such resources come from the “capacity to act in defining the rules of the institutional game and in defining policies,” which vary according to the historical moment and relationships within the state. Such capacity is related to the technical qualification and information that bureaucrats hold about the state and to the status, forms of political organization, and the links established with the central power. Since these power resources are accessed and mobilized in different ways by different bureaucratic segments, each one has a greater or lesser capacity to influence political decisions that meet the group’s demands. Therefore, differences in power among segments of the state bureaucracy form stratifications in the state’s administrative structure, and salary variations can be interpreted, even partially, as a manifestation of these stratifications.

Marconi (2010) points out three political reasons that can influence the determination of salaries in the public service: the number of employees in the career, the nature of the activity performed, and the degree of access to decision-making power. Thus, it is expected that the careers with the more significant part of the government employees, the careers closer to the core of the government, and those that perform essential and exclusive activities of the state will have more power and capacity to influence decisions to benefit employees.

As for size, although larger groups have greater potential to pressure government officials politically, it is necessary to consider that salary increases have a greater financial impact on government accounts. Thus, the availability of fiscal resources can restrict the granting of benefits for careers with a higher number of employees. Furthermore, the ability to exert political pressure depends not only on size but also on the degree of cohesion and union activity.

Regarding the careers related to essential and exclusive activities, their power is related to the state’s dependence on the functions they perform and their monopolistic nature (since they have no correspondence in the private sector). According to Bresser-Pereira (1998), exclusive activities are those that only the state can carry out, such as defining laws, imposing justice, maintaining order, policing, defending the country, representing it abroad, collecting taxes, regulating economic activities, and enforcing the law. Alongside the state’s essential functions, Fernandes and Palotti (2019) identify a trend toward the diversification of the federal bureaucracy, with the creation of new careers dedicated to emerging roles, which resulted in an unequal and asymmetrical development between new and traditional careers.

The access of specific careers to decision-making instances at the center of the government is, in turn, a political resource expressed, in general, in high-level positions in the executive branch. Specialists

in public policies and federal government management seek to reconcile career professionalization with participation in positions of power as mutually reinforcing strategies (Monteiro, 2013). The ability of a career to influence government decisions can also occur through political representation within the legislative branch. Thanks to the fragmentation of the Brazilian party system and the need to build a majority base of support in the legislative bodies, high-ranking positions in the state bureaucracy are often subject to bargaining among political parties to establish the arrangement that became known as a coalition government (Abrucio & Loureiro, 2018). Hypothetically, there may also be a more direct influence exerted by party affiliates in defining the decision-making bureaucracy units. However, Lopez and Silva (2019) show that, at the federal level, affiliates' participation corresponds to a minority, even in the highest political-administrative positions. Thus, although there are connections between party-political actors that influence the appointment to high-level positions, they are probably mediated by other relational aspects and by extra-party factors of influence, positioning, and prestige internal to the state apparatus.

Finally, the role of government officials in granting salary adjustments cannot be ignored. If, on the one hand, careers have resources capable of influencing government decisions, on the other hand, political leaders in power have different ideologies and objectives, which, depending on the management model adopted and the agendas considered as priorities, will influence the granting of salary adjustments and the very definition of which are the strategic careers to access the central power (Pacheco, 2010).

Box 1 below summarizes the main theoretical currents covered in this section. They explain the salary differences in the economy and in the Brazilian public sector.

BOX 1 THEORETICAL SYNTHESIS

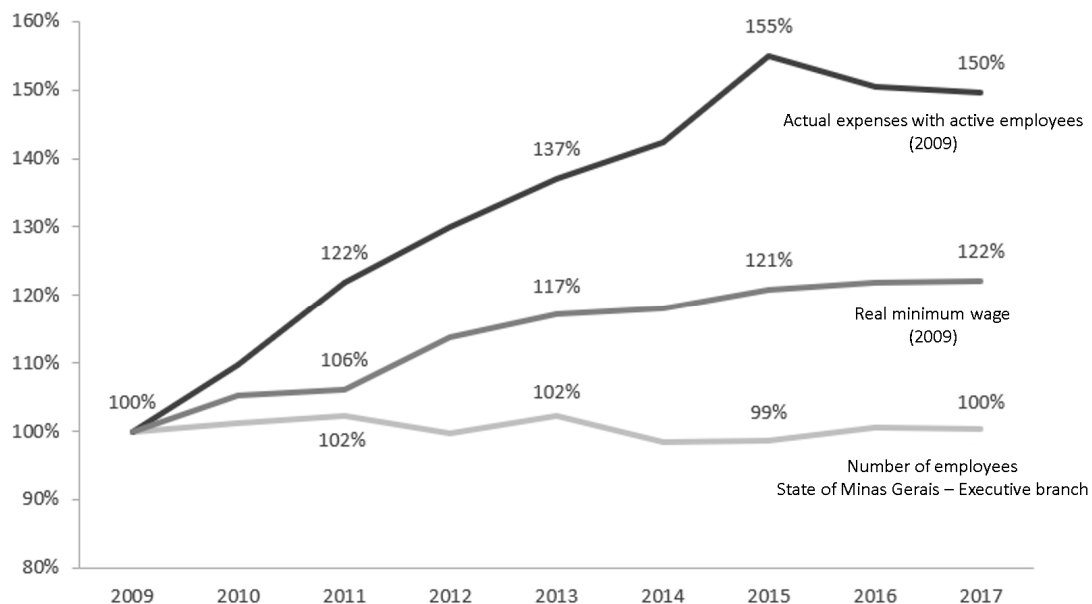
Theory/Approach	Synthesis
Human capital theory	Through formal education and professional training, individuals gain knowledge and skills, leading to productivity and salary increase.
Market segmentation theory	There are different labor markets with different operating rules. Labor legislation, the unions' organization, the workers' bargaining power, and the environment where salary negotiations occur are factors that influence salary determination.
Discrimination theory	Cultural and structural factors of social discrimination, such as the sexual division of labor, racism, and other types of social prejudice, explain the persistence of adverse salary conditions for historically marginalized social groups.
Sociology of professions	Different professions dispute remuneration, power, and social prestige, with their own strategy, more or less successfully. This phenomenon leads to structural inequality among professional groups.
Specificities of the public sector	Differences in power among the different careers in public services form stratifications in the state administrative structure, which are reflected in salary differences. Among the political factors that can influence the remuneration of careers, the nature of the activity performed, the proximity to decision-making power, and the number of employees in a career are highlighted.

Source: Elaborated by the authors.

2.1 The Brazilian State of Minas Gerais as an Empirical Locus: Remuneration Disparities in the Executive Branch

Although the number of active employees in the executive branch of the state of Minas Gerais remained relatively constant in the period from 2009 to 2017, expenses on active employees showed an actual per capita increase of around 50%, much higher than the minimum wage growth in the same period, as shown in Graph 1.

GRAPH 1 VARIATION OF EXPENSES WITH ACTIVE EMPLOYEES AT THE EXECUTIVE BRANCH OF MINAS GERAIS



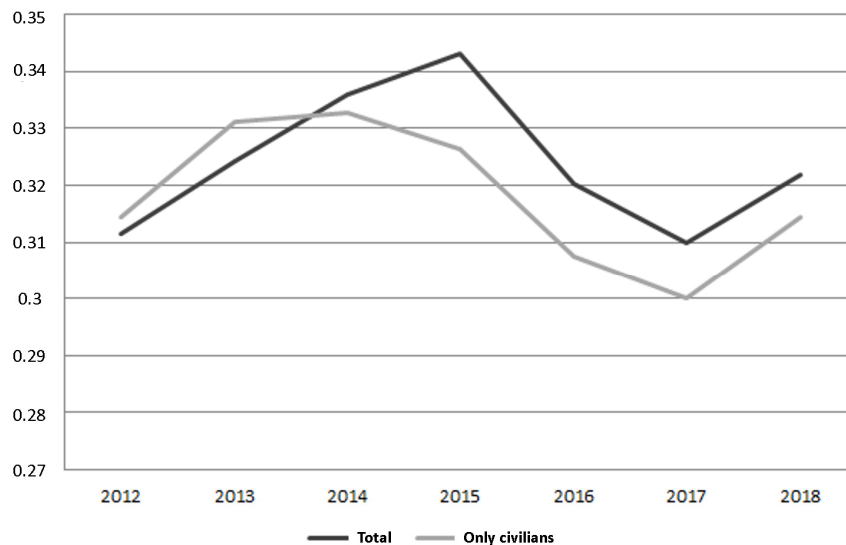
Deflation index: IPCA, year: 2009.

Source: Elaborated by the authors based on data from Portal da Transparência (MG) and Ipea (2018).

Graph 2 shows the Gini index calculated for two distinct groups: the total state employees and, later, only the civilian employees (excluding military personnel) to analyze the trajectory of income inequality in the state government.³ Note that the total Gini index increased from 2012 to 2015 but decreased in the two subsequent years, showing a new increase in the last year of the period analyzed. The comparison between the two lines shows that the index calculated only for civilians was higher than the index encompassing civilians and military personnel, but this pattern was inverted from 2014 onwards.

³ The Gini index is widely used to measure inequality in income distribution. It varies between 0 and 1, where the extremes represent complete income equality and absolute inequality (concentration of income in the hands of just one individual). The closer to 1, the greater the inequality. The Gini index was calculated using the basic gross remuneration of the government employees, deducting the discounts made to meet the constitutional payment ceiling and adding sporadic compensations.

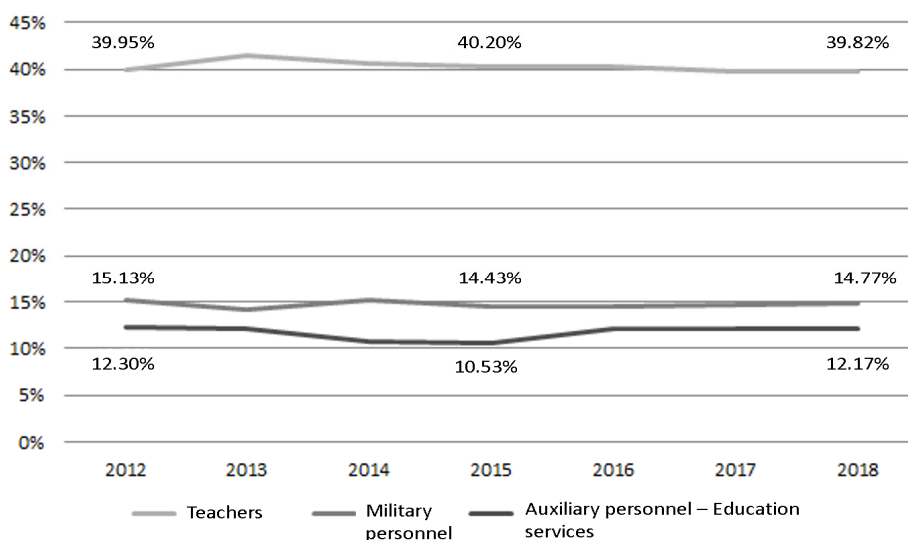
GRAPH 2 EVOLUTION OF GINI INDEX OF REMUNERATIONS – EXECUTIVE BRANCH OF MINAS GERAIS



Source: Elaborated by the authors based on data from Portal da Transparência (MG).

The Gini index variations must be interpreted considering the influence of the careers with the largest employers in the government. Although the state executive branch has more than 140 careers, three have more than 65% of the employees: basic education teachers, military personnel (in Brazil, states are responsible for expenses with military police and the military fire department), and auxiliary personnel working in basic education services. They represent respectively about 40%, 15%, and 12% of state government’s employees. Graph 3 shows no substantial changes in these careers during the period analyzed.

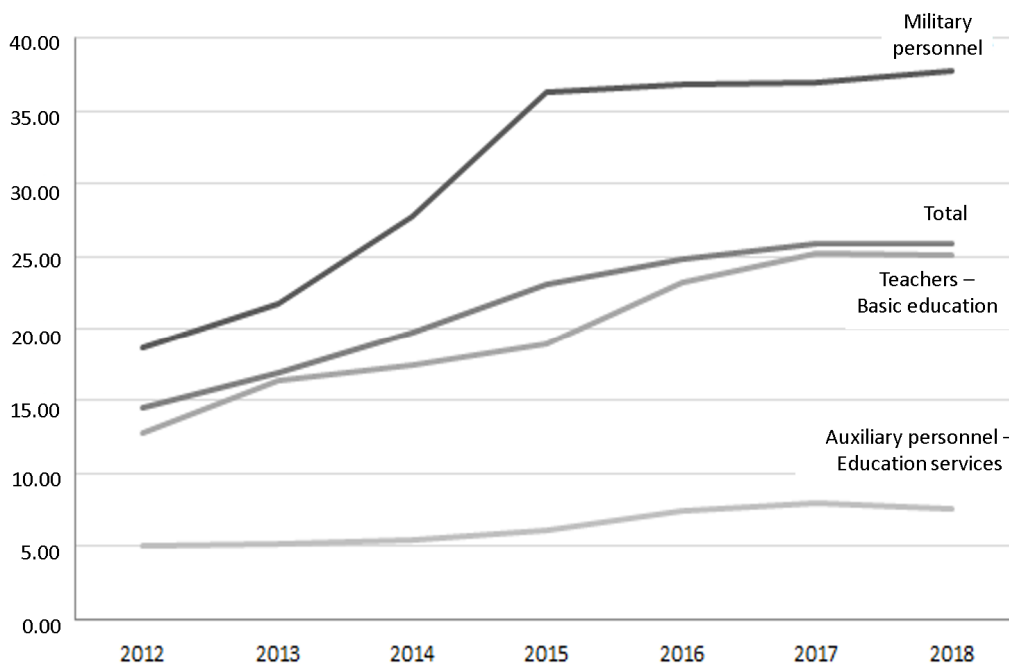
GRAPH 3 PERCENTAGE OF EMPLOYEES IN CAREERS WITH THE LARGEST EMPLOYMENT IN THE EXECUTIVE BRANCH OF MINAS GERAIS (IN RELATION TO TOTAL EMPLOYEES)



Source: Elaborated by the authors based on data from Portal da Transparência (MG).

As for remuneration, substantial changes from 2011 help explain the variations in the Gini index. First, State Law 19576 established progressive salary adjustments for military personnel annually staggered until 2015, representing a total nominal increase of 100.73% in the basic remuneration of this category. Graph 4 shows that these adjustments substantially increased the distance between the average remuneration of the military and the average remuneration of civilian employees. Concerning teachers and auxiliary personnel working in basic education, the pay gap in relation to the total average remuneration grew from 2013 to 2015. However, the salaries increased again due to Laws 21710/2015 and 22062/2016 providing pay raises for education professionals.

GRAPH 4 AVERAGE HOURLY REMUNERATION OF CAREERS WITH THE LARGEST EMPLOYMENT IN THE EXECUTIVE BRANCH OF MINAS GERAIS



Source: Elaborated by the authors based on data from Portal da Transparência (MG).

Therefore, the Gini index increased from 2012 to 2015 when the military personnel obtained salary adjustment and dropped in the subsequent years when education professionals obtained a pay raise. However, a more detailed analysis of the pay gap between careers should consider differences in education, length of service, and other salary determinants in the public sector, which will be addressed in the following sections.

3. MATERIALS AND METHOD

A multiple linear regression model was proposed to investigate the relationship between career remuneration and its determinants. The model used the ordinary least squares method to estimate the net effect of the explanatory variables. This is a cross-sectional analysis with information referring to September 2018 – the most recent period with complete data at the time of the research. Also, September is a typical month in the school calendar, not affected by the period of school vacation, where some teachers with specific fixed-term contracts are dismissed.

There is a vast literature on wage determination using the Mincer earnings function, in which labor earnings are explained by education, experience, and other specific individual characteristics such as gender and race. Regarding the function, the studies usually adopt a model in which income is transformed into its natural logarithm, which can be expressed by the following equation: $\ln w = \beta_0 + \beta_1 educ + \beta_2 exp + \beta_3 X + \mu$.

In the equation above, w refers to the worker's income, $educ$ refers to years of education, exp refers to the worker's age or years of work experience, X is a generic term used to represent some specific characteristic of the worker (gender or race, for example), and μ is the random error expression.

Unlike Mincer's function, the model used in this article is not intended to investigate individual differences but rather the inequalities among the careers in the Brazilian state of Minas Gerais, which leads to a change in the unit of analysis, replacing individuals with careers.

The sample selected considered only careers with at least ten employees, considering that the smaller the number of employees in a career, the greater the probability of an isolated observation influencing the calculation of aggregate measures. Therefore, from the total of 146 careers in the state, 17 were excluded. Also, the Integrated Personnel Administration System (Sisap-MG) does not have data on the education and length of service of the military personnel since their payment is processed by the human resources sector of the military institution. Thus, the model worked with data from 126 careers.

The selection of variables considered the dimensions observed in the literature and the availability of data in the state's transparency platform *Portal da Transparência* and in the system Sisap-MG. The specificities of the public sector were obtained by expanding the Mincer earnings function, including new variables related to the careers' political resources: the number of employees, the number of high-level appointed positions, and a categorical variable to highlight careers that perform essential activities for the functioning of the state apparatus.

High-level positions were identified by analyzing the legislation and organizational charts of state agencies and entities, assigning different weights according to where the positions fell in the institutional hierarchy. Top management positions were counted with a weight of 1, and intermediate management positions (hierarchical level of superintendence or similar) with a weight of $\frac{1}{3}$. Although high-level appointed positions directly increase the remuneration of individuals, the endogenous impact of this variable on average career remuneration is low, considering that the number of appointed positions is small in relation to the total number of public servants in each career.⁴ Therefore, in addition to the direct effect that high-level positions have on remuneration, the operationalization of

⁴ In only one of 126 careers of the sample, the remuneration for top-management positions directly impacted more than 10% of that career's average remuneration.

this variable measures the proximity of careers with the core decision-making power and the ability to influence political decisions that may benefit them.

As for the essential and exclusive careers in the state’s executive branch, we worked with finance, civil police, and state attorney general, which carry out, respectively, tax collection, police, and legal activities.

In addition to the variables related to the careers’ political resources, the function included a categorical variable to operationalize the dimension of social prestige of professions linked to traditional higher education programs. Most high-level careers in the government of Minas Gerais are not exclusively linked to a specific degree except those in medical studies and law (and one specific career linked to the public administration program at the state foundation – Fundação João Pinheiro). Therefore, we obtained this dimension of analysis examining the law and medical careers, following Campos (1999).

Finally, social discrimination was assessed with a variable that measures composition by gender. Sisap-MG does not offer data related to social markers such as the public servants’ race, so these dimensions were not included in the analysis.

Box 2 summarizes the relationship between theories, explanatory dimensions, selected variables, and their respective data sources.

BOX 2 THEORETICAL AND METHODOLOGICAL SYNTHESIS OF THE OPERATIONALIZATION OF EXPLANATORY VARIABLES

Theory	Relevant dimensions	Variables of analysis	Source of data
Human capital theory	Education	Average educational level	Sisap-MG
	Experience	Average years of work experience	Sisap-MG
Market segmentation theory (specificities of the public sector)	Power to exert political pressure due to the high number of employees in the career	Number of employees	Portal da Transparência
	Proximity with decision-making instances	Number of high-level appointed positions	Portal da Transparência
Discrimination theory	Bargain power and monopoly of essential/exclusive careers	Careers that perform essential/exclusive activities (binary variable)	Elaborated by the authors
	Gender discrimination	Percentage of women	Sisap-MG
Sociology of professions	Social prestige	Link with higher-education degrees in law and medical studies (binary variable)	Elaborated by the authors

Source: Elaborated by the authors.

When specifying the model, the impact of education on career remuneration was subdivided into two effects. The first refers to the differences in the education requirement for entry into the career, and the second refers to the incremental differences due to improvements in education in relation to the minimum level. This subdivision is justified because, along with the differences in remuneration among careers requiring different qualification levels, higher levels of education are associated with promotions and other remuneration benefits. Thus, categorical variables were created to classify careers according to the minimum level required for entry. Also, a continuous variable was applied, which measured the difference between the average educational level of the careers and the minimum level required.⁵ Box 3 shows the categorization of careers according to the minimum educational requirements and the values assumed by the binary variables.

BOX 3 CATEGORIZATION OF CAREERS ACCORDING TO THE LEVEL OF EDUCATION REQUIREMENT

Level of education required	Values attributed to categorical variables
Primary education	“basic” = 1 “superior” = 0 “prestige” = 0
Secondary education	“basic” = 0 “superior” = 0 “prestige” = 0
Higher education (degrees in any area except law and medical degrees)	“basic” = 0 “superior” = 1 “prestige” = 0
Higher education (law and medical degrees)	“basic” = 0 “superior” = 0 “prestige” = 1

Source: Elaborated by the authors.

Based on the selected variables, the regression model was specified following the usual log-linear format:

$$\ln \text{hour_sal} = \beta_0 + \beta_1 \text{basic} + \beta_2 \text{superior} + \beta_3 \text{prestige} + \beta_4 \text{inc_edu} + \beta_5 \text{time_serv} + \beta_6 \% \text{women} + \beta_7 \text{high_level} + \beta_8 \ln \text{size} + \beta_9 \text{essential} + \mu$$

⁵ The level of education index of the careers was calculated based on the weighted average of the employees’ level of education, which may vary from 0 to 7 in the following categories: (0) for “less than four years of primary school”; (1) for “completed four years of primary school”; (2) for “completed primary school”; (3) “completed secondary school”; (4) “completed higher education”; (5) for “Master degree”; (6) “Doctoral degree”; (7) for “doctoral degree and completed a postdoctoral fellowship.”

In the formula above, “*hour_sal*” refers to the average career salary per hour of work; “*basic*” is the category of basic education-level careers; “*superior*” is the category of higher education careers, except for those linked to degree programs in law and medical studies; “*prestige*” is the category of careers linked to degree programs in law and medical studies; “*inc_edu*” refers to increases in the level of education in relation to the level required for careers; “*time_serv*” is the average time in public service; “*%_women*” is the percentage of women among the professionals in the career; “*high_level*” is the number of high-level appointed positions; “*size*” is the number of employees in the career; “*essential*” refers to state careers that perform essential and exclusive activities; and μ is the random error term.

Finally, the careers’ average remuneration was calculated by consulting the state’s transparency platform *Portal da Transparência*. We considered the remuneration corresponding to the position assigned, specific roles performed, and compensation for working in an appointed position. The calculation considered the discounts in salaries made to meet the constitutional payment ceiling and added sporadic compensations and bonuses. We considered “other earnings” as gratuities, refunds, overtime, and other variable payments. As these compensations fluctuate over time, the annual averages received in 2018 were calculated for each career, reducing the impact of these variations. This average was incorporated into the remuneration installments, which, in turn, kept the month of September 2018 as a reference.

4. RESULTS

The results obtained from the regression analysis and the tests to verify whether there was violation of the model’s basic assumptions are in the Appendix. In summary, the tests did not identify any serious problem related to assumption violation, so the obtained results are reliable.

The analysis of the results, presented in Box 4 of the Appendix, reveals that all the estimated coefficients have isolated statistically significant effects at the level of at least 5% significance. Therefore, it is possible to say that the variables included in the model are relevant to explain the differences in average remuneration. Furthermore, the results found are in line with the arguments raised in the theoretical review, and the theoretical hypotheses were not refuted by the signs – positive or negative – of the estimated coefficients. The R^2 of 0.8309 indicates that the model was able to explain 83.09% of the variation in the average remuneration of the careers.

The results confirm a positive relationship between formal education and workers’ remuneration regarding the minimum educational requirements. Maintaining the other factors, secondary-level careers receive, on average, 41.83% more than primary-level careers and 105.79% less than higher education careers, with the exception of those linked to medical and law programs.

In cases where the higher education requirement is linked to law and medical studies, the net effect on the average remuneration is greater. Controlling the effect of other factors, law and medical careers have an average remuneration 312.18% higher than secondary-level careers and 100.29% higher than those with higher education (any other degree). This result reinforces the arguments raised by scholars of the sociology of professions, who discuss the social prestige and domination strategies of certain professional groups in society.⁶

⁶ There is a possible limitation in the interpretation of the result for the case of careers that are linked to law degree programs. All of them were classified as essential careers, which can generate a multicollinearity problem, even though the model tests did not detect multicollinearity issues among the explanatory variables.

The effect of education on remuneration is not only expressed in the minimum requirements but also in the increases in the level of education, which lead to automatic salary increase and other earnings. According to the results predicted by the model, if all public servants in a given career present an increment in their level of education, it is expected that the average remuneration for that career will increase by 42.42%, keeping the other factors constant.

As discussed earlier, there is an important theoretical debate between human capital theory and other theoretical approaches regarding the mechanisms that link education to economic remuneration. Although the explanations have different foundations, they contribute, to some extent, to understanding the fact that education is an important determinant of salary differences for both the private and public sectors.

The length of service is also a factor related to the human capital theory. In the public sector, length of service is a basic criterion for salary progression and is associated with incorporating additional criteria (such as bonuses incorporated into the salary every five years). The regression estimate indicates that the average remuneration of a career increases by 3.18% for each additional year in the average length of service of employees in that career – when keeping the other factors constant.

However, the pay gap in public sector careers is also influenced by other political and social dimensions. As for social discrimination, the model estimated the effect of gender on career remuneration. The result predicts a reduction of 0.35% in the average remuneration of careers for the 1% increase in the percentage when women occupy the position.

The explanation for this negative relationship finds support in the argument that the sexual division of labor in a patriarchal society assigns women the responsibility of activities related to care and domestic tasks, less valued by the labor market, while men mostly carry out the more prestigious activities. This division shapes social relations and the horizon of expectations of men and women and generates inequalities related to the possibilities of reconciling professional and domestic life, as well as family duties. Specifically regarding the public sector, it is necessary to consider that the most valued positions are more competitive and require more time for studies and preparation. If women spend, on average, more hours on housework and care than men, the availability of time and competitive conditions to enter the highest paid careers are unequal. In addition, even after joining the public sector, the double burden can affect the time available to female employees to acquire extra qualifications, which hinders career development. Finally, gender discrimination can also operate in the unequal distribution of appointed positions and functions that pay bonuses, which is observed by the fact that men hold most high-level positions.

All the variables analyzed so far – level of education, social prestige of medical and law degree programs, length of service, and percentage of women – represent dimensions of analysis that are not exclusive to the public sector. The results also reveal that the careers' political resources are important factors to explain the salary differences in the public sector.

As already discussed, careers that perform exclusive and essential activities to the operation of the state apparatus are an important political resource since the state is vitally dependent on the roles performed. Furthermore, these careers are unmatched in the private sector, which gives them monopoly power. They presented, on average, a remuneration 48.82% higher than others when keeping the other variables constant. This figure reveals that careers in the departments of

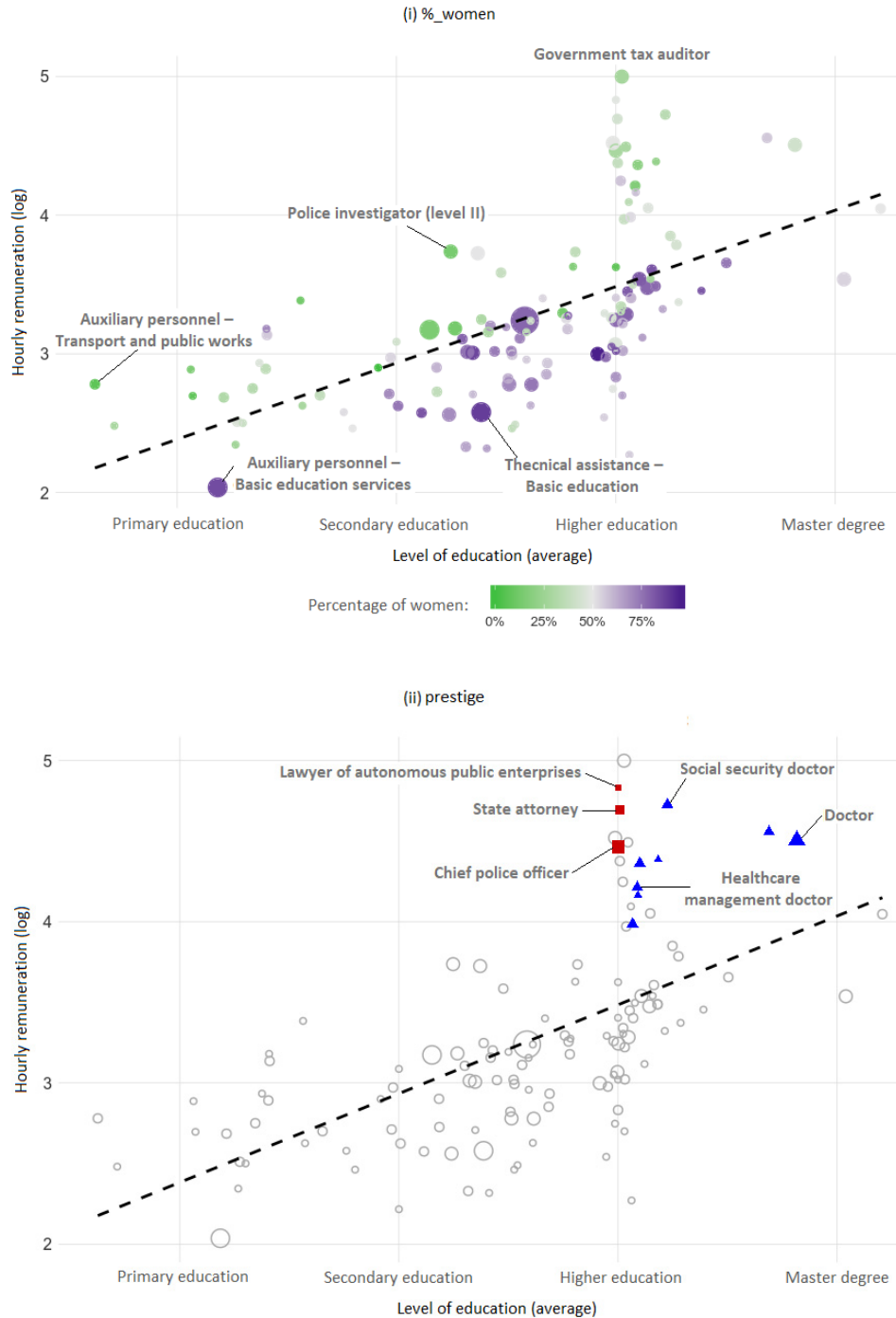
finance, civil police, and the state's attorney general receive substantially higher remuneration, even when compared to others with the same level of education, average length of service, and gender.

In addition to the nature of the activity performed, access to decision-making instances of power is another political resource of careers. The impact of this feature on remuneration can happen in two different ways. First, careers closer to such instances have a greater capacity to influence political decisions to privilege employees, such as the approval of specific laws granting remuneration benefits. On the other hand, the occupation of high-level appointed positions directly increases the remuneration of public servants. The coefficient value predicts that the average remuneration will increase by 2.31% for each additional high-level appointed position, keeping constant the values of the other factors. This effect is, on average, about five times greater than the direct remuneration earned due to occupying an appointed position. This finding reinforces the argument that access to high-level positions generates not only a direct remuneration gain for the government employees who were assigned to such positions, but also expresses access to power, which translates into remuneration benefits in favor of careers closer to decision-making instances.

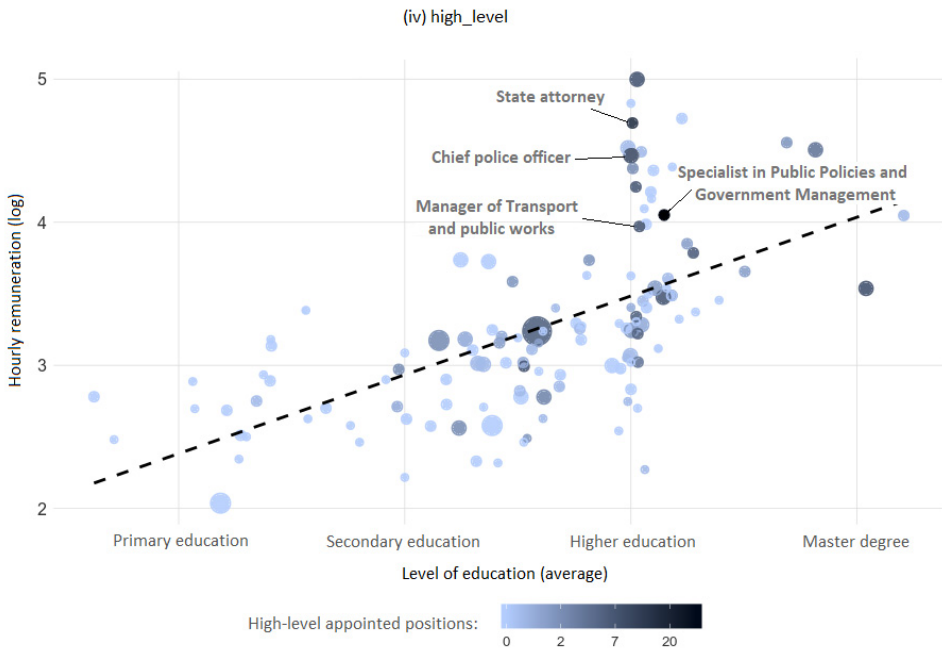
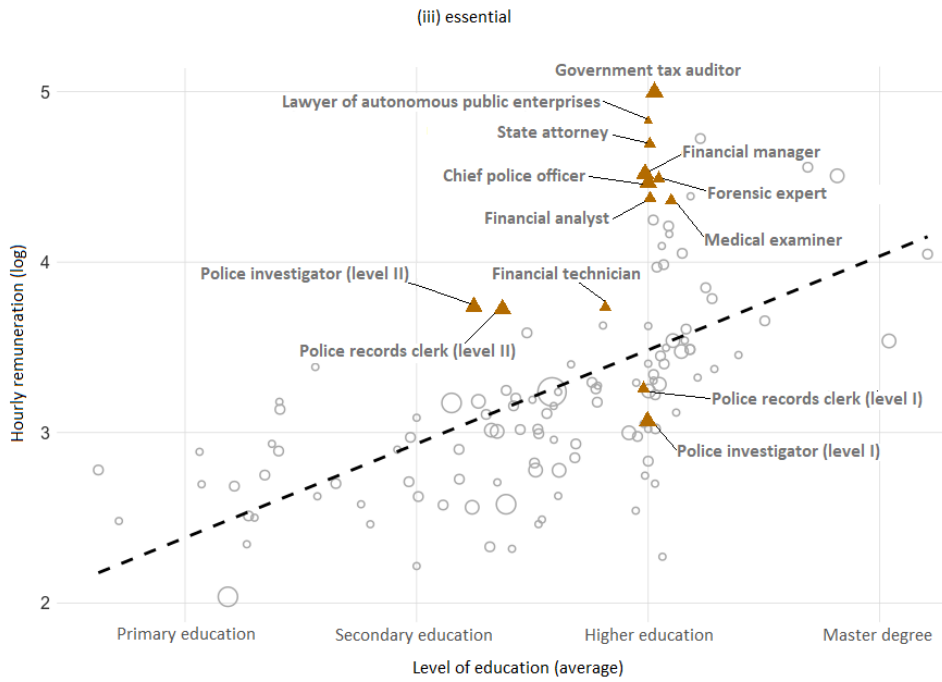
Another political resource mentioned by Marconi (2010) is the number of employees in a career (size). The model estimates a growth of 0.04% in average remuneration for a marginal increase of 1% in the number of employees, keeping the other factors constant. Assuming that two careers differ only by size, one of which has 200 employees and the other 2,000, the model predicts that the average remuneration of the most numerous career would be 10.31% higher than that of the smallest. This finding corroborates the idea that careers with more employees are more equipped to exert political pressure and obtain benefits.

The results reinforce the argument that salary disparities in the public service are determined not only by differences in qualifications and professional experience but also reproduce inequalities that characterize Brazilian society. Furthermore, the relative structure of salaries in the public sector is different from that of the private sector and is influenced by the political resources accessed by segments of the bureaucratic apparatus. The graphs below illustrate the correlations between the variables of interest and the average remuneration, controlled by the level of education. Each point represents a state career, the size of the points reflects the number of public servants, and the trend line represents the expected correlation between average education and the average salary for the careers. Unlike the multiple linear regression model, such graphs do not allow capturing the simultaneous effect of all explanatory variables but allow better descriptive visualization of the sample used in the research.

GRAPH 5 VARIABLES OF INTEREST AND CAREERS' AVERAGE REMUNERATION, CONTROLLED BY THE LEVEL OF EDUCATION



Continue



Source: Elaborated by the authors.

5. CONCLUSION

This study explored the determinants of differences in remuneration among careers in the executive branch of the Brazilian state of Minas Gerais. Different theoretical approaches for salary determination were considered, in addition to the specificities of the public sector. The analysis suggested that political factors are critical to understand the public sector's salary structure, as bureaucratic groups have different capacities to influence government decisions, depending on the political resources they can access. The hypothesis guiding the research assumed that salary differences in the public sector reflect not only the qualification and professional experience but also reproduce other aspects of social inequality and constitute a concrete manifestation of the state bureaucracy's stratification process. The salary differences are determined, although not exclusively, by the political resources that the multiple categories of the bureaucratic apparatus can mobilize.

Linear regression analysis was performed to estimate the net effect of the main determinants of average career remuneration. In addition to the control variables (level of education and length of service), the following explanatory variables were included in the model: percentage of women in the career, link to traditional higher education programs, number of high-level appointed positions, nature of the activity performed, and number of employees per career. The results corroborated the hypothesis, as the variables of interest were statistically significant to explain the differences in remuneration between careers.

The study's limitations include the unavailability of data on military personnel's education level in the government's system Sisap-MG and the absence of data on social markers such as race. The research analyzes a specific point in time and, therefore, does not show variations over a period. Future studies could compare salary structures in different economic contexts and government mandates since the granting of salary adjustments can reveal the priorities of political leaders, who, depending on the political and economic context, have greater or lesser autonomy regarding the remuneration policy. Different governments may choose to value some careers considered strategic or certain areas of public policy over others. In addition, the remuneration policy may have different objectives, such as attracting and retaining qualified labor and stimulating productivity, with a greater or lesser focus on the issue of equity, contributing to correct or reproduce inequalities and historical privileges that mark the constitution of Brazilian society. Finally, it is crucial to understand the historical processes of formation and differentiation of state institutions and the relationship between bureaucrats and decision-makers. Comprehending these phenomena includes being aware of interaction mechanisms, political strategies, the institutional environment around bargains, and the relationship of bureaucracy with political parties and other groups of interest.

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APPENDIX

Results and tests of the model

BOX 4 RESULTS OF REGRESSION

Variables	Coefficients	P-Value
“basic”	-0.5418	3.32e-10 (***)
“superior”	0.7217	<2e-16 (***)
“prestige”	1.4163	<2e-16 (***)
“inc_edu”	0.3536	1.12e-05 (***)
“time_serv”	0.0313	3.64e-13 (***)
“%_women”	-0.0035	0.01268 (*)
“high_level”	0.0228	0.00293 (**)
“ln_size”	0.0426	0.00654 (**)
“essential”	0.3976	2.80e-05 (***)
(Intercept)	2.2151	<2e-16 (***)

R² = 0.8309

Adjusted R² = 0.8177

F Test = 62.8, p-value < 2.2e-16(***)

Significance levels: (*) p<0.05; (**) p < 0.01; (***) p < 0.01

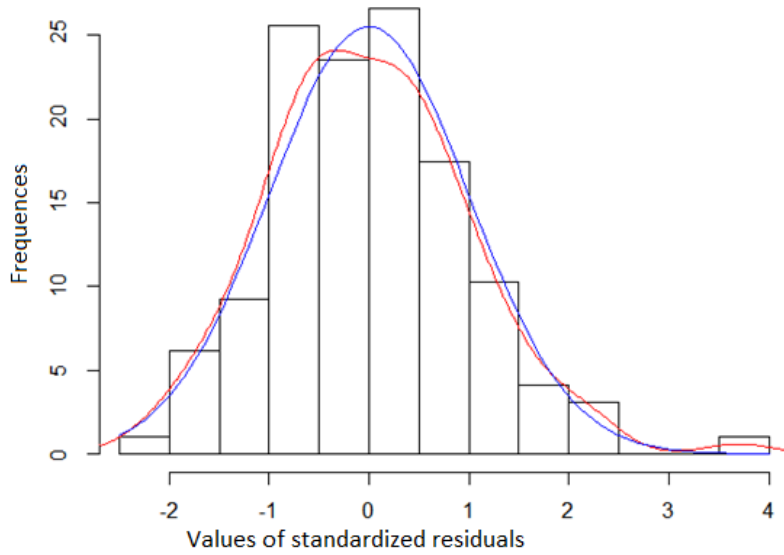
Source: Elaborated by the authors.

BOX 5 SYNTHESIS OF TESTS FOR VIOLATION OF MODEL'S ASSUMPTIONS

Assumptions	Tests	Results	Interpretation
Residuals are normally distributed	Shapiro-Wilk	p-value = 0.2245	If p-value > 0.05, assumption non violated
There is no multicollinearity in regression	VIF	Lower VIF: 1.1327 (“high_level”) Higher VIF: 2.0525 (“time_serv”)	If VIF < 10, assumption non violated
There is no heteroscedasticity	Breusch-Pagan	p-value = 0.4684	If p-value > 0.05, assumption non violated
There is no autocorrelation in residuals	Durbin-Watson	2.0666	With 126 observations and 9 regressors, the assumption is not violated if the result is between 1.86435 and 2.13565
Correct model specification	Reset	p-value = 0.0933	If p-value > 0.05, assumption non violated

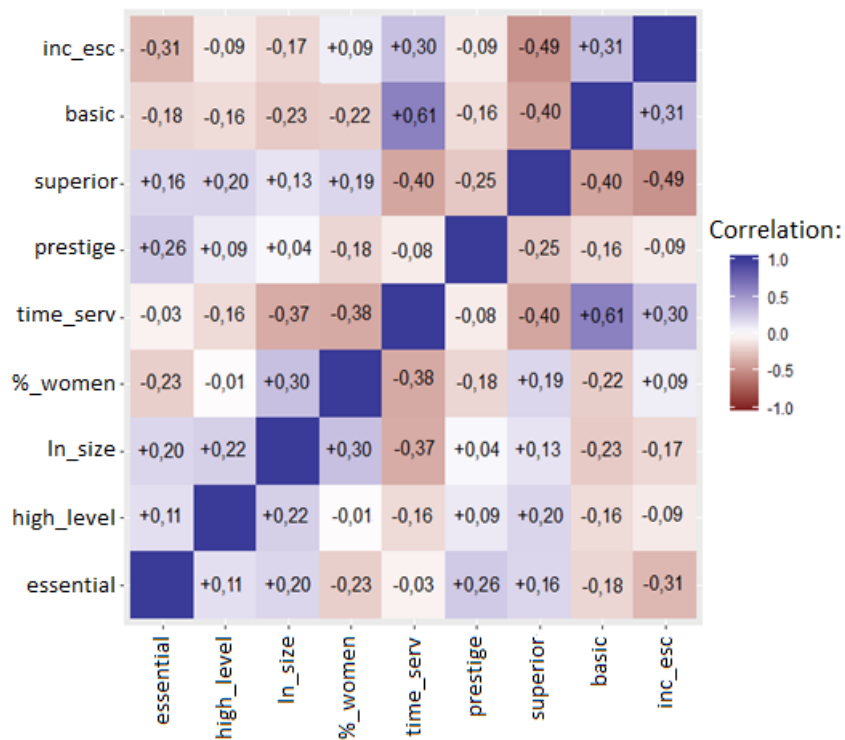
Source: Elaborated by the authors.

GRAPH 6 HISTOGRAM OF STANDARDIZED RESIDUAL DISTRIBUTION



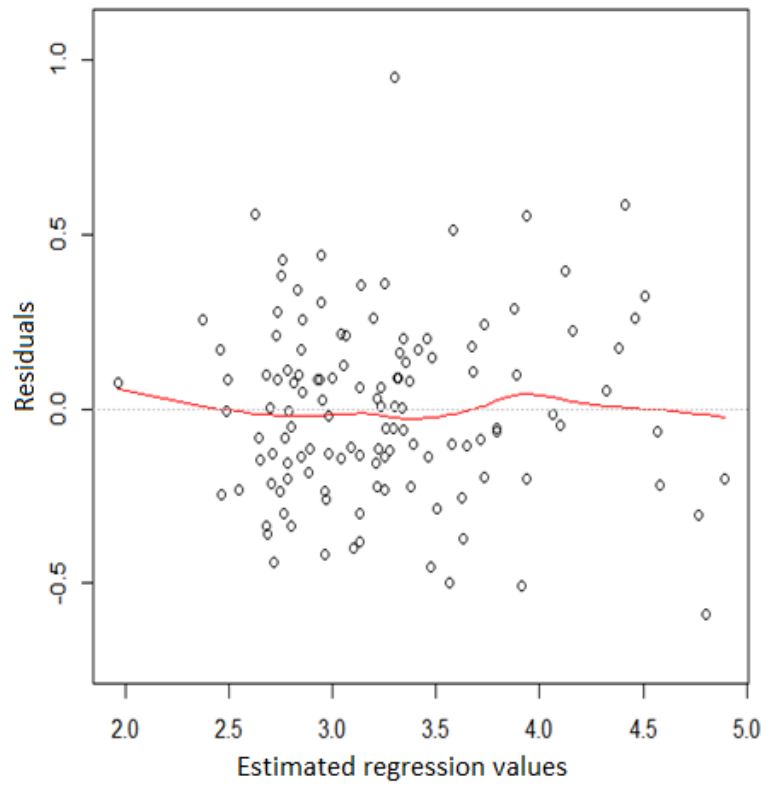
Source: Elaborated by the authors.

FIGURE 1 MATRIX OF CORRELATIONS OF EXPLANATORY VARIABLES



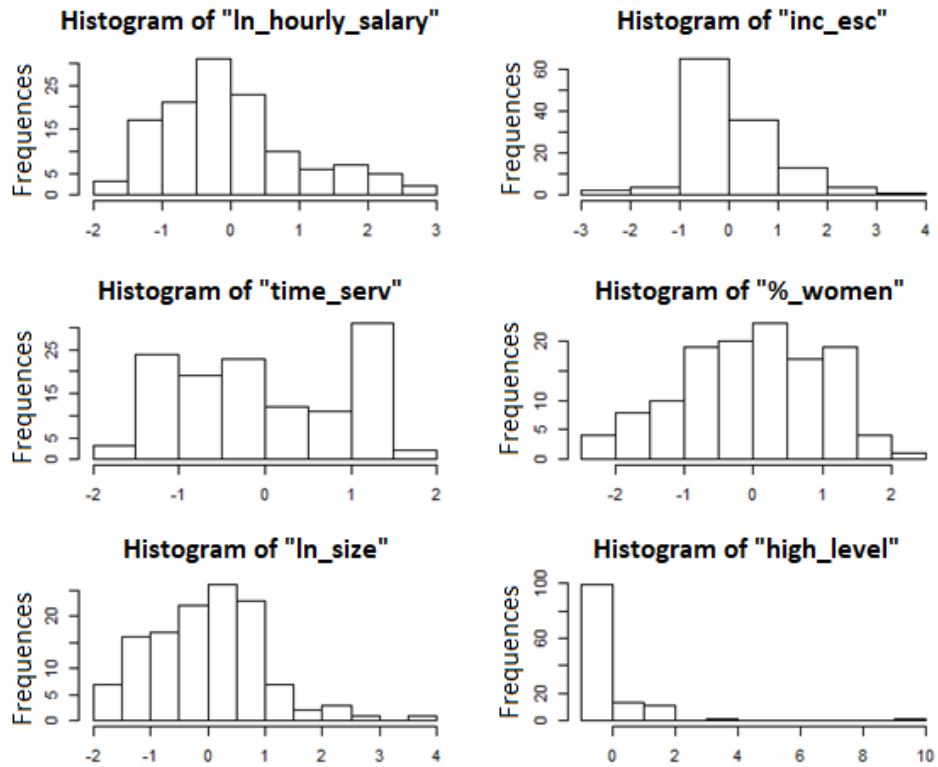
Source: Elaborated by the authors.

FIGURE 2 DIAGRAM OF DISPERSION OF STANDARDIZED RESIDUALS IN RELATION TO VALUES ESTIMATED BY THE MODEL



Source: Elaborated by the authors.

GRAPH 7 HISTOGRAMS OF THE DISTRIBUTION OF QUANTITATIVE VARIABLES



Source: Elaborated by the authors.