Compensation Structure of the Brazilian Federal Executive's Active Civil Servants

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Abstract

The Brazilian Federal Public Administration is going through a period of fiscal tightening, and as personnel expenses are one of the largest components of expenditure, it is important to assess the composition of this expenditure. To this end, this article analyzes in detail the remuneration structure of the executive branch's careers. The article shows that the majority of federal employees are among the 10% best paid employees in the country, earning a salary premium relative to the private sector and other countries' public servants. Moreover, we have shown that civil servants with equivalent duties have significantly different remuneration, depending on the body of the direct or indirect administration in which they work. In addition, we highlight the procyclicality of the expenditure on executive branch active personnel. That said, an administrative reform agenda is important to rationalize public service careers, bringing compensation to the Brazilian reality and rewarding high-performance employees through medium and long-term goals.

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1 Introduction

1.1 Background

Currently, Brazil is undergoing a process of public reform, with helping the public accounts as one of its objectives. One of these reforms is the administrative reform, which aims to alter the compensation structure of the federal public servants and the structure of the federal government's branches. In this article, I focus on the compensation structure of the federal executive's active civil servants.

Forni & Novta (2014) show that administrative reforms are more effective when they introduce structural change and when they are the product of a dialogue with the society. On the other hand, hiring and salary freezes are less efective over the long haul, as these are palliative measures. In this scenario, this study's goal is the display structural inefficiencies in the compensation of active civil servant in the federal executive branch to support the administrative reform debate.

This study's structure is as follows: Section 1 looks at previous administrative reforms in Brazil and presents the data used in the study, Section 2 explores the current scenario, using aggregate data, and Section 3 analyzes each public career in detail. Finally, Section 4 compares servants' compensation to that of the private workers, public servants in other countries, and among themselves, and analyzes the procyclicality of federal expenditure on personnel.

1.2 History of Brazilian Administrative Reforms

In order to gain understanding about the current compensation scenario in the Brazilian public service, it is important to understand the origins of the current institutions. To this end, the first large administrative reform of the Brazilian public services happened in the late 1930's, during the Vargas dictatorship. According to Lima Junior (1998), the intention was the centralize the administration and increase state intervention. In this reform, the Public Service Administration Department (DASP) was created in order to carry out the proposed measures. According to Martins (1995), a double standard was generated: an efficient high-ranking bureaucracy, with merit-based promotions, with inefficient low-ranking bureaucracy, with political and clientelist hiring procedures, dating back to colonial times. Thus, the national bureaucracy remained with undesired characteristics such as uneven personnel distribution, absenteeism and low productivity.

The low-productivity standard was unaltered until the military dictatorship. In 1967, another large reform was carried out, this time to decentralize the state. Many semi-independent agencies were created to circumvent the state bureaucracy, but the military government lost control of this expansionary process and over 300 loosely supervised agencies were created between 1966 and 1976, increasing the state's presence in the national economy. Among these agencies, some of them became centers of excellence, such as the Applied Economic Research Institute (IPEA) and the Brazilian Central Bank (BACEN).

The 1988 Constitution standardized civil service entrance exams and hiring procedures, an important step towards reducing clientelist practices, but this process succumbed to certain interest groups, providing tenure to civil servant without entrance exam procedures and no performance measures (Palloti & Freire (2015)). Afterwards, in the early 90's the Collor government considerably reduced the number of public servants with his privatization

program. However, the process of reducing the number of civil servants was reversed after 2003, with an increase in the number of servants and a salary increase policy, especially in strategic and politically connected careers, as we will see in Section 3.4. According to Cavalcante & Carvalho (2017), careers in the government's strategic core received a total salary increase of 230% between 2003 and 2009.

1.3 Data

For information on the federal executive branch's civil servants, this study utilizes data from three sources:

- Portal da Transparência (Transparency Portal), with microdata on servant level in May/2019. This database contains 550,000 civil servants, with name, employment status, occupation, agency, ministry, years in public service, compensation and reimburses. Unfortunately, certain servants are not accurately represented in the database, and so it was reduced to approximately 480,000 servants.
- Data from the Personnel Administration Department of the Economy ministry (SGP/ME from now on), for aggregate data on the career level. We explore this data especially in Section 3, which analyzes federal public service compensation tables (groups of careers which have similar payment structure and career progression). This database contains career data that applies to 530,000 servants, with the career's required level of education, number of servants, number of servants at the top (meaning they reached the end of the progression within the career), gross compensation, total career cost and average retirement age.
- Painel Estatístico de Pessoal (PEP from now on) e Boletim Estatístico de Pessoal: these publicly available databases from the SGP/ME contain aggregate data on the federal administration, with information about all 1.2 million active and inactive servants in the Executive branch.

2 Current Scenario

2.1 Number of Civil Servants

Currently, the federal government employs 622,000 active civil servants, split into more than 300 careers and 2200 posts, according to the Painel Estatístico de Pessoal (PEP). Figure 1 indicates a substantial increase in the number of servants since 1999. However, Cavalcante & Carvalho (2017) argue that this increase came after a period of reduction in the number of servants (there were over 700,000 servants in 1989), and the public sector is involved in more activities today. Indeed, according to OECD (2017), in 2014 public employees accounted for 11.9% of total employment, while the average figure for OECD countries was 18%.

Out of these 622,000 servants, 240,000 work in direct administration, 292,000 work in federal autarchies (such as regulatory agencies and the central bank) and 90,000 work in federal foundations (such as research and census agencies).

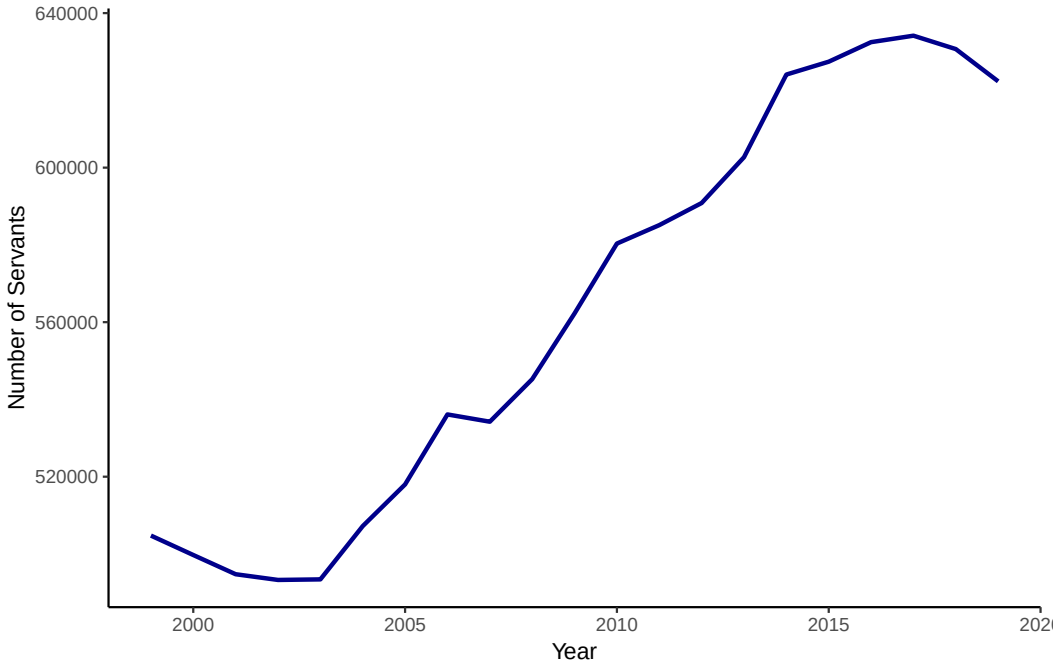

Figure 1: Number of active civil servants in the federal government, since 1999
Source: Boletim Estatístico de Pessoal

According to PEP data (taken in june/2019), if we include dependent state companies the number of servants increases to 705,000, shown as in Table 1. Ceded workers are civil servants who are ceded to another institution within the government to perform in a position of trust. Celetistas are public employees who work under a regular work contract (CLT – Consolidação das Leis de Trabalho). Finally, Commissioned workers are those nominated to the job by public authorities.

Table 1: Number of servants by work regime

Servant Type	**Quantity**
Effective Active Servants	482,358
State Company Employees	78,964
Temporary	76,863
Ceded	52,178
Celetistas	9,355
Commissioned	5,061

Source: Painel Estatístico de Pessoal

As for level of schooling,Cavalcante & Carvalho (2017) show that, in the 1995-2014 period, there was a change on the servant profile, with a reduction in the proportion of intermediate-level employees (those with a high-school diploma) and an increase in the proportion of college level employees (those with a college diploma), in order to induce higher productivity

in the Brazilian bureaucracy. According to Palloti & Freire (2015), auxiliary-level posts (for those without a high-school diploma) were progressively substituted by outsourced workers.

As indicated in Table 2, PEP indicates that 59% of permanent active servants posts are college level, 38% are intermediate-level and 3% are auxiliary-level. However, 81% of servants possess a college diploma and only 16% are intermediary-level, indicating that thousands of servants performing intermediate-level roles but actually possess college diplomas. This probably indicates that many of these servants are over-qualified.

Table 2: Percentage of jobs and servants by level of schooling

Level	**Job Schooling(%)**	**Servant Schooling(%)**
Auxiliary Level	2.94	3.53
Intermediate Level	37.51	15.66
College Level	59.55	80.80

Source: Painel Estatístico de Pessoal

2.2 Servant Compensation

Figure 2 displays the distribution of servants' compensation. For auxiliary and intermediate-level roles, compensation is concentrated around R$4,500 and R$7,500 (monthly). This is above the average Brazilian workers' compensation, which is around R$1,500 according to the 2017 PNAD Contínua. For college level workers, there is a large concentration above R$7,500, and 88,000 servants (16.7% of the total) receive over R$18,000.

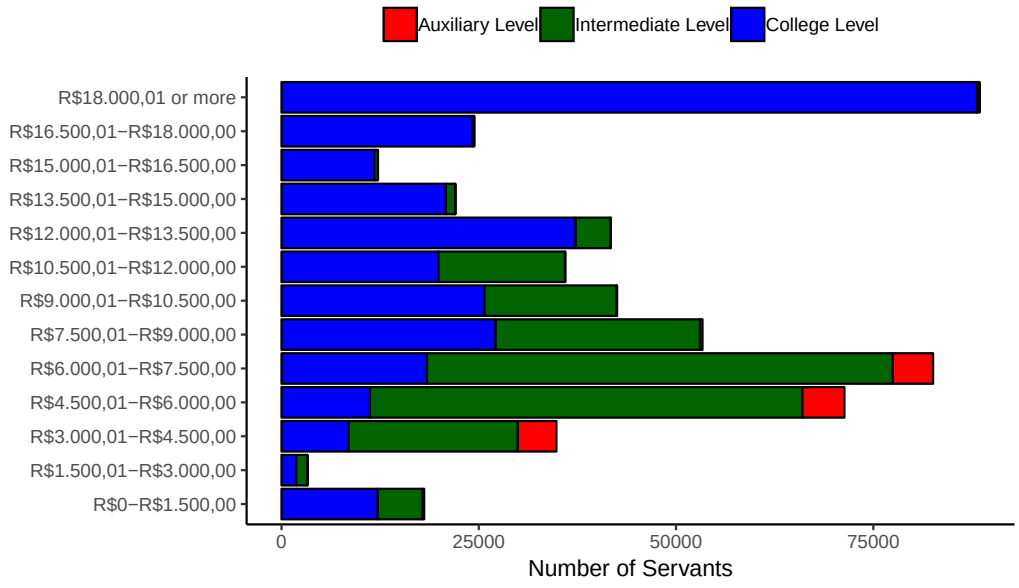

Figure 2: Servant compensation distribution

Source: SGP/ME

Using gross compensation data from Portal da Transparência and average compensation for employed persons from IBGE (2020), we can classify servants' compensation relative to that of the rest of the employed population. As IBGE data only displays average compensation in each bracket, the classification assigns each servant to the bracket whose average is closest to the servant's compensation. In Figure 3, we can see that almost every servant is in the best compensated quintile, including auxiliary-level servants, which are concentrated in the 30%-5% richest range. 72% of the servants are in the richest decile among occupied workers.

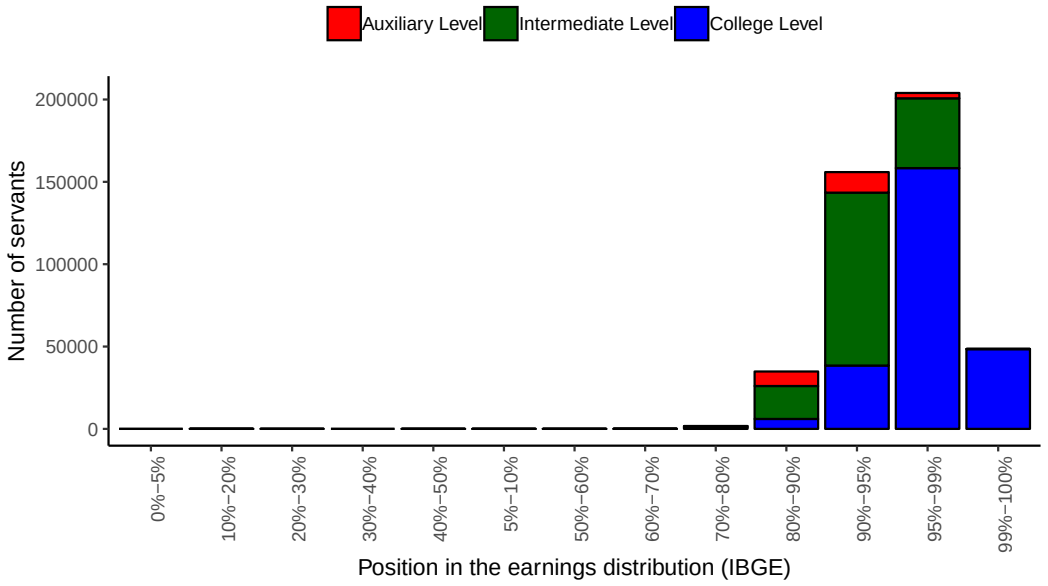

Figure 3: Approximation of servants' compensation distribution among employed people
Source: Author's elaboration using Portal da Transparência data *Servants' compensation contain indemnities

3 Compensation Table Analysis

In this section, we take a detailed look onto executive branch careers, indicating which careers lead in a series of measures. A compensation table is a group of posts which receive equivalent wages.

3.1 Largest compensation tables

Using SGP/ME data, Table 3 displays the 20 largest compensation tables in number of servants. Intermediary-level education technician is the largest compensation table, with 86,000 servants, followed by college professors (78,000) and other professors (44,000).

Table 3: 20 largest compensation tables

Career	**Quantity (thousands)**
Education Technician - Intermediate Level	86
College Professor (exclusive)	78
Basic/Technical School Professor (exclusive)	44
Social Security (exclusive)	41
Education Technician - College Level	40
General Plan Careers - Intermediate Level	20
Social Security Technician - Intermediate Level	18
College Professor (40hr/week)	10
Federal Highway Patrol	10
Tax Auditor	9
College Professor (20hrs/week)	7
Tax Analyst	6
Federal Police Agent	6
Economy Ministry - Intermediate Level	6
General Plan Careers - College Level	6
Social Security - College Level	5
Endemic Combat - Auxiliary Level	5
Social Security Analyst	4
Social Security Physician (20hrs/week)	4
Basic/Technical School Professor (40hrs/week)	4

Source: SGP/ME

3.2 Best compensated tables

In Table 4, we see that central bank attorneys are the best compensated employees in the federal government, earning R$500,000 per year. Finance department attorneys and tax auditors also earn above R$400,000.

Table 4: 20 best compensated tables

Career	**Compensation (R$)**
Central Bank Attorney	499,005
Central Bank Analyst	484,157
National Treasury Office Attorney	465,399
Tax Auditor	427,501
Tax Auditor (labor inspector)	423,268
Federal Police Chief	417,416
Forensics Expert	411,799
State Attorney	409,008
Diplomat	396719
CVM Inspector	381,805
DNIT Physician (40hrs/week)	377,040
Planning Technician	368,983
State Attorney's Office Careers	363,958
IPEA Technician - College Level	363,767
CVM Analyst	360,774
SUSEP Analyst	357,549
Forensics Physician Supervisor (20hrs/week)	355,148
Federal Attorney - College Level	353,608
Public Policy Specialist	351,389
Foreign Commerce Analyst	340,496

Source: SGP/ME

The best compensated careers are the ones in the Central Bank Career Plan, followed by judiciary careers in the executive branch (such as state attorneys) and Careers in the Internal Revenue Service. Altogether, the 10 best compensated career posess 22,000 servants and cost over 10 billion reais yearly, approximately 12% of what is spent among the 534,000 federal civil servants.

3.3 Compensation tables with largest pay increases

Over the last 15 years, there was a 53% pay increase in the compensation of federal servants, according to SGP/ME data. However, some compensation tables received pay increases of over 200%. The World Bank, in the "Um Ajuste Justo" report, shows that the increase in federal costs in personnel were due to pay increases, not the increase in the number of servants. In the 1999-2015 period, the cost by servant increased by 7% yearly, while the number of servants increased by 2% yearly. In Table 5, we see the 20 compensation tables with largest pay increases since 2008.

Table 5: 20 compensation tables with largest pay increases since 2008

Career	**Pay Increase (%)**
DNIT - Special Positions	311%
IBGE - Intermediate Level	278%
Federal Institutes (IFES) - Education Administration	262%
FIOCRUZ - Doctorate Level	250%
Civilian in Military Organizations - Physician	244%
DNIT - Agent	240%
Regulatory Agencies - College Level	237%
FNDE - Doctorate Level	229%
IBGE - Doctorate Level	228%
PREVIC - College Level	227%
DNIT - College Level	227%
SUFRAMA- College Level	226%
Military Technology Technician	219%
MAPA - Lab Assistant	216%
Federal Institutes - Physician	212%
Regulatory Agencies - Intermediate Level	211%
PREVIC - Intermediate Level	201%
Social Security- Agent or Technician	198%
Chancellery Assistant	197%
FIOCRUZ - Intermediate Level	188%

Source: SGP/ME

Special posts in the DNIT (Transportation Infrastructure National Department) received the largest pay increases (311%), followed by intermediate-level IBGE (the national census institution) jobs (278%). In this graph, we see some institutions that appear more than once, such as the DNIT (3x) and the IBGE (2x). This might indicate that institutions give out generous pay increases to a number of compensation tables at once.

3.4 Posts with earliest retirement ages

Another interesting analysis is the one concerning posts with the earliest retirement ages, as indicated in Table 6. Among posts with more than 100 retirees, CVM (Securities and Exchange Comission) executive agents retire earliest, on average (51 years old). Among posts with more than 1000 retirees, basic education professor in the ex-territories (52 years old) and federal highway patrol officers (53 years old) retire earliest.

Table 6: 20 posts with earliest retirement ages

Career	**Average Retirement Age**
CVM Executive Agent	51
Federal Police Registrar	51
Ex-Territories High School Professor (40hrs/week)	52
Ex-Territories High School Professor (exclusive)	52
Military Technology Assistant	53
Federal Highway Patrol	53
Ibama, ICMBio e MMA - Intermediate Level	53
IPEA - Technical Assistant	53
Social Security - College Level	53
Federal Forensics Expert	54
Planning and Budget Analyst	54
Fingerprint Analyst - Federal Police	54
Federal Police Chief	54
Federal Police Agent	54
Social Security Technician	54
Ex-Territories High School Professor (20hrs/week)	54
Planning and Budget Technician	54
Social Security - Intermediate Level	54
Social Security - Intermediate Level	54
FNDE - College Level	54

Source: SGP/ME

3.5 Retirement ages and top positions

Another point to be considered is reaching the peak of a career. Over the last few years, there were changes in the career structures, so that in many careers a servant would reach the peak of his/her career earlier. This is an important point, since, on average, being at the top of a career represents having 49% larger compensation, according to SGP/E data. Besides, the servant may not have other sources of motivation to keep performing at a high-level, once he/she is at the top of the career. This problem may become more intense with the Pension Reform (approved in 2019), since servants will retire later, which means they will be more years at the top.

On average, according to SGP/ME and the 2017 Boletim Estatístico de Pessoal, federal servants, on average, enter public service at 33.7 years of age and retire at 56.6 years. College level servants enter public service at 35.2 years of age and retire at 56.8 years, while intermediate-level servants enter at 30.6 years and retire at 56.1 years, and auxiliary-level

servants enter public service at 34.5 years of age and retire at 59.6 years.

For us to understand how early servants get to the top of a career, Figure 4 analyzes some careers which have not been changed over the last 20 years, and that have a significant number of servants. We see that, for these careers, servants usually get to the top when they are between 40 and 55 years old, a relatively low number if we take into consideration the new minimum retirement age of 65, given the Pension reform.

Federal Police servants achieve top positions the fastest (41 years old for agents and 42 years old for chief officers), going through only four pay levels. Thus, Federal Police careers consist essentially of 10 years serving to achieve a top position, 10 years in a top position, and then retirement. It is easy to see that this is not a sustainable nor responsible use of public funds. Another interesting fact is that 76% of Federal Police agents and 80% of Federal Police chief officers are in top positions.

However, few pay levels does not necessarily mean a fast track to the top. A diplomat goes through only six levels but achieves top positions in the career only at 61, on average. We also see that basic education professors spend a very small period in top positions, when compared to other careers.

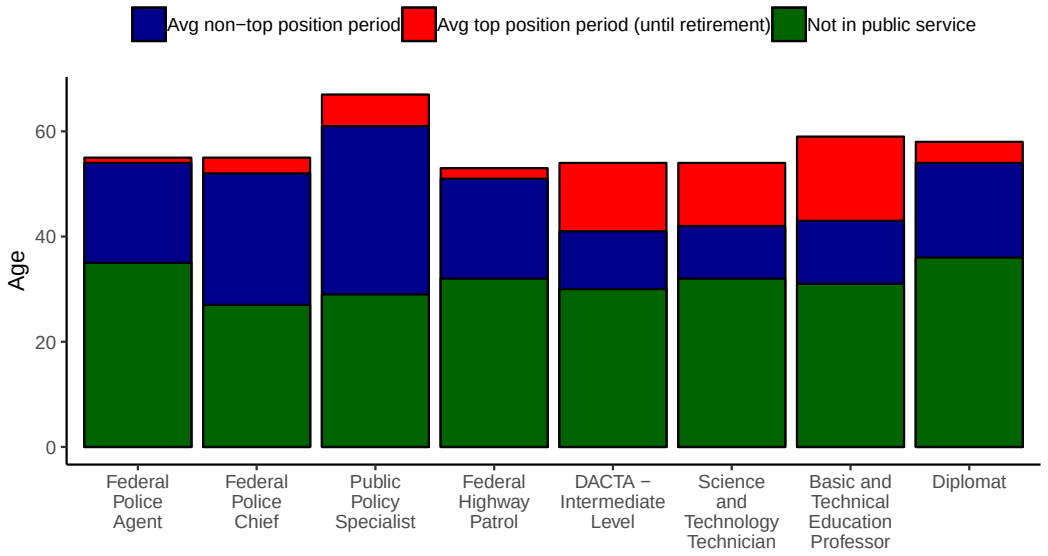

Figure 4: Average servant period in non-top and top positions, for selected careers
Source: SGP/ME

SGP/ME data shows that 175,000 servants are in top positions, out of the 530,000 servants in the database (32.8%). When we restrict our data to servants that cost the federation more than R$300,000 yearly (27,000 servants), 19,000 are in top positions (71%). So, the best compensated careers also arrive faster at the top. It is possible that these careers are

more politically powerful, which translates into more generous compensation and progression rules.

4 Data Analysis

4.1 Comparison with the private sector

As indicated in Table 7, average active civil servant compensation is larger than the average compensation of private sector workers. In auxiliary level roles, servants usually earn 3x more than the private sector worker. In college level roles, this difference is proportionally smaller, but still relevant. This corroborates in part the conclusion in Braga et al. (2009) that servants earn more than private sector workers, and that this difference becomes smaller is schooling level increases. World Bank (2017) indicates that Brazil has one of the largest public sector salary premiums in the world, especially in the federal government - with a premium of 67%, controlling for other variables such as occupation.

Table 7: Average compensation by schooling level

Level	**Median servant compensation (R$)**	**Median private sector worker compensation (R$)**
Auxiliary Level	5301.36	1256.97
Intermediate Level	6238.51	1813.99
College Level	12917.71	4773.00

Source: Portal da Transparência and PNAD Contínua

Figure 5 below displays a comparison of servant compensation with the minimum and maximum pay received by similar workers in the private sector, for public careers in which there is a similar role in the private sector. We see that there is a large difference in all of these examples, which partially indicate a public sector salary premium.

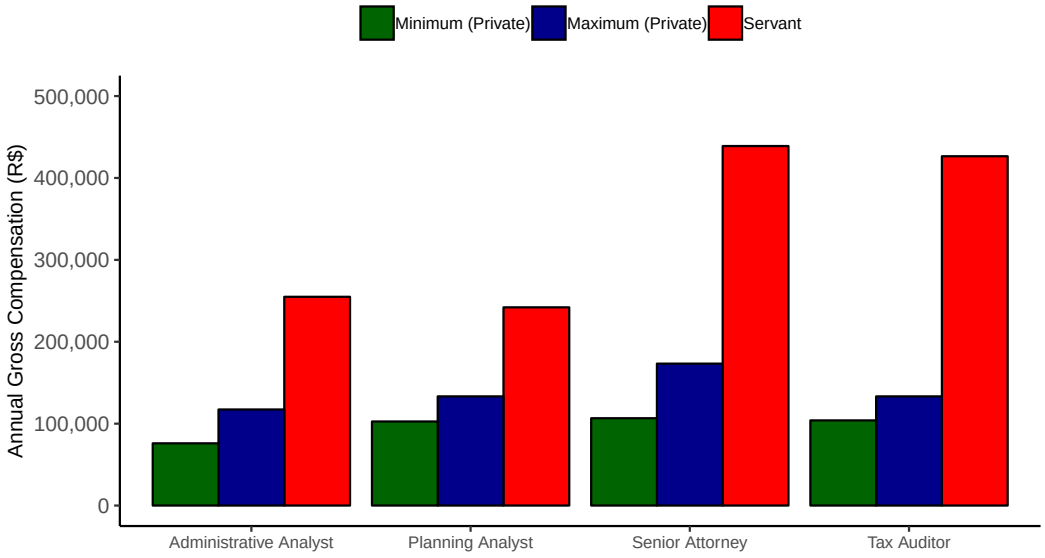

Figure 5: Average yearly compensation comparison between workers and servants (2018)
Source: Author's elaboration using SGP/ME data and Robert Half's Salary Guide
*Monthly private sector salary multiplied by 13.33 to annualize, given 13^{th} salary and vacation pay

Figure 6 displays public sector and private sector compensation over the last 15 years. During this period, both public and private sector employees earned a 44% real increase in compensation. As was said before, this increase in personnel expenditure is significant and may hinder the ability of the federal government to invest. Moreover, Góes & Karpowicz (2017) argue that this compensation increase may have reduced the pace of inequality reduction in Brazil.

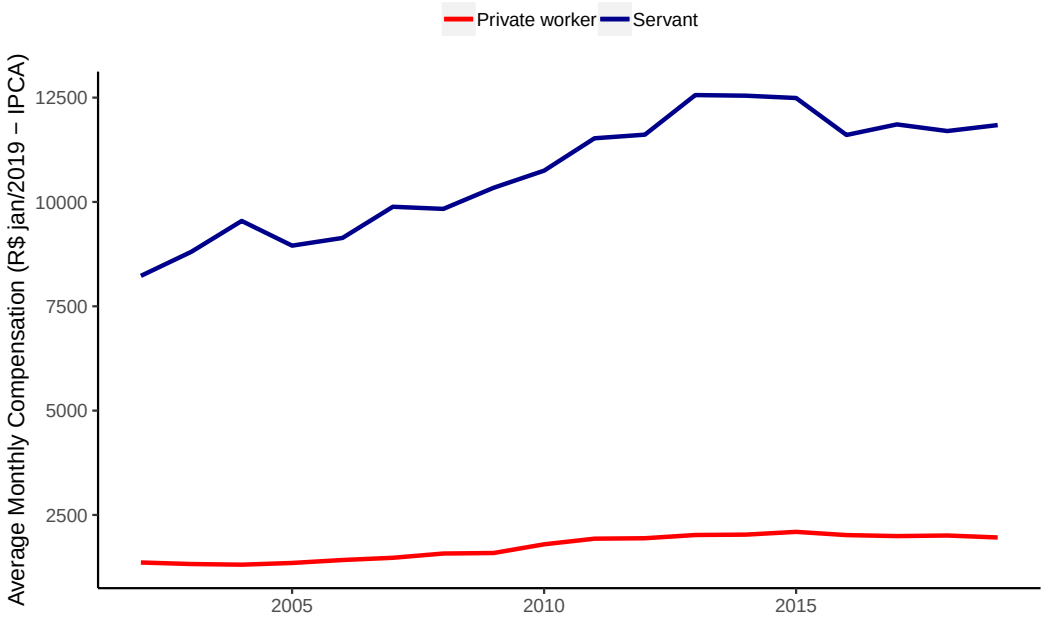

Figure 6: Average real public and private sector compensation
Source: Author's elaboration using SGP/ME data and PNAD Contínua

4.2 Comparison with other countries

Brazil does not employ a large share of public workers, when compared to other countries. In Figure 7 (in blue), we can compare public-employed worker share in 2013, which is the last year with international data on the subject. In Brazil, only 12.1% of workers are employed by public agencies, which is lower than the OECD average of 21.3%, according to OCDE (2015).

However, Brazil has comparatively large spending on personnel. Total public spending on personnel was 13% of GDP in 2016 and, according to International Monetary Fund (2016), Brazil spends considerably more than rich countries. Figure 7 also shows the comparison of spending on personnel (in red), indicating that Brazil is one of the countries with largest spending on personnel with a relatively low number of public employees.

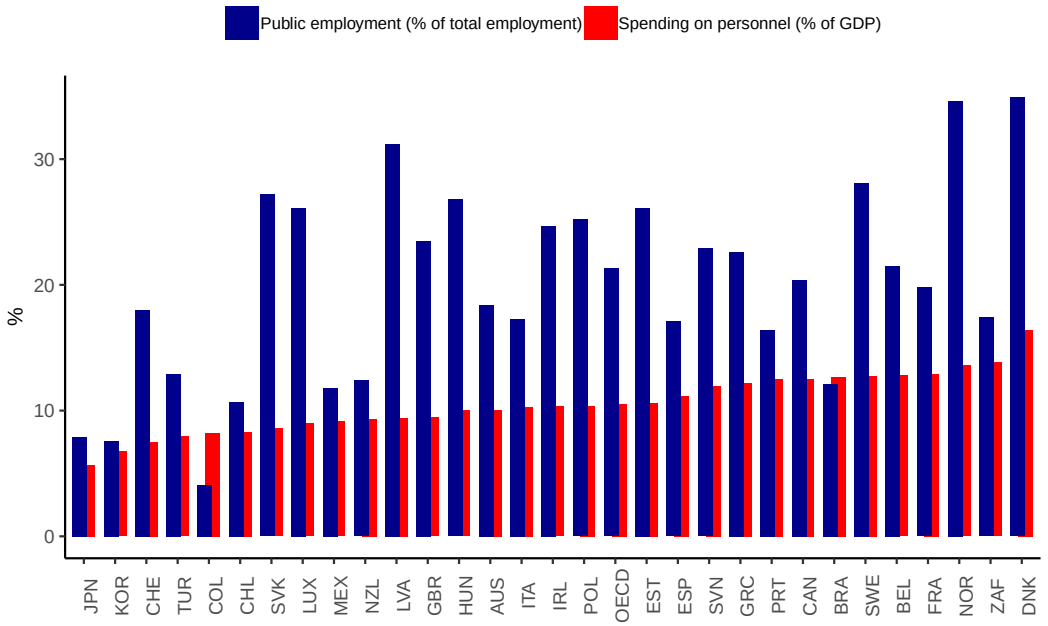

Figure 7: International comparison on public employee share and total spending on personnel (2013)
Source: Author's elaboration with OECD and IMF data

Some public activities cannot be compared to the private sector (such as policing). Thus, it is interesting to compare some careers' pay to similar careers in other countries. In order to produce this comparison, we will use the United States (as the most competitive economy in the world, according to the World Economic Forum's Competitivity Index) and Chile (as one of the richest countries in Latin America), as well as the OECD average (when available).

The selected careers are state attorney, tax auditor, university professor and Federal Police agent, since those are large careers that earn high compensation in the Brazilian federal public service, according to data from the SGP/ME. Moreover, we have considered gross compensation, according to guidelines in IBGE (2018). This means that, embedded in the compensation, there are also pension plan contributions, attorney's fees, indemnities and other types of monetary assistance. All numbers have been converted to BRL using Purchase Power Parity and converted to 2019 reais by the IPCA.

In Figure 8, we see that Brazilian public servants earn higher compensation than their American, Chilean and OECD counterparts. The starkest difference is in the compensation of tax auditors, which earn over BRL400,000 yearly, while other public tax auditors earn less than half this amount.

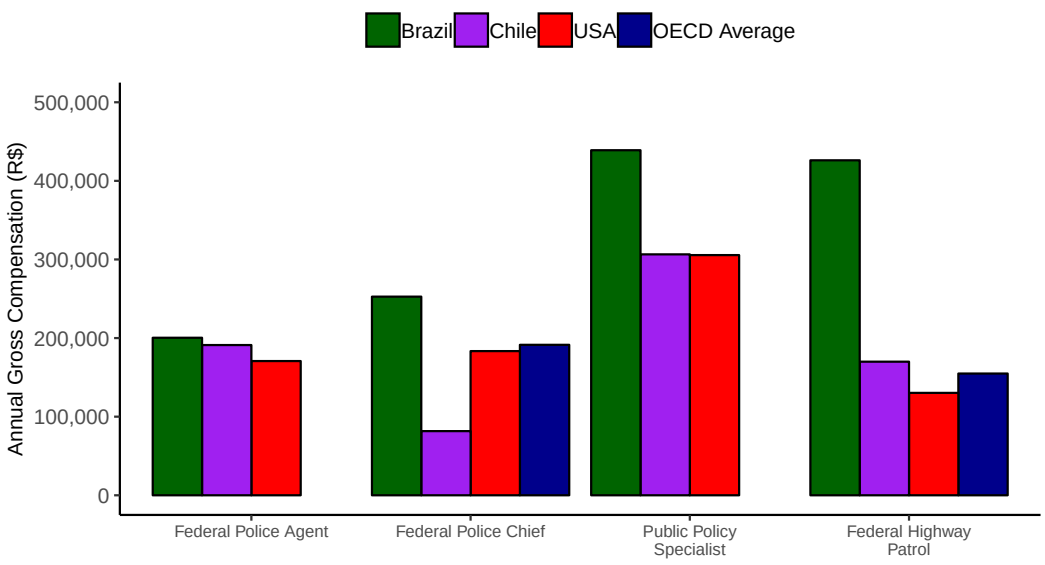

Figure 8: International comparison on the average yearly public servant compensation (R$ 2019 – IPCA)
Source: Author's elaboration with data from SGP/ME (Brazil), Gobierno Transparente (Chile), Bureau of Labor Statistics (USA), OECD.Stat (OECD). Salaries were converted to 2019 BRL using PPP and the IPCA inflation measure.

4.3 Ministry Comparison

Below, we follow with an analysis comparing compensation between ministries. In Figures 9, 10 and 11, we compare driver, administrative agent and doorman compensation, respectively, filtering for ministries that employ more than 20 servants in the same career. Ideally, servant who perform similar activities should be compensated similarly.

However, we see that there is variation in compensation, with the Infrastructure Ministry and the Energy and Mines Ministry usually paying higher salary. For drivers, the average is R$5,500 and the Infrastructure Ministry pays almost R$9,000 to its drivers, on average.

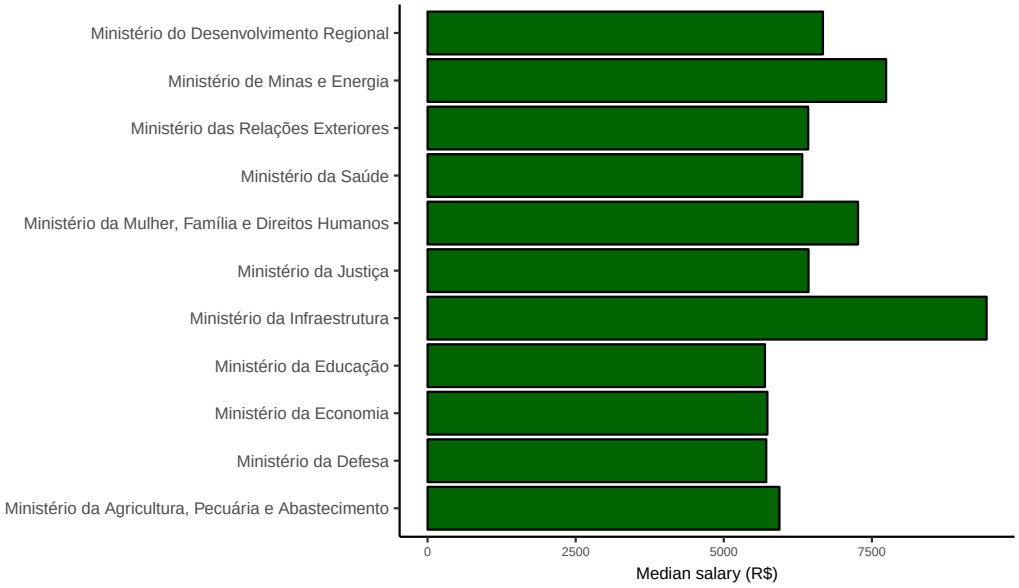

Figure 9: Median driver salary, by ministry
Source: Author's elaboration using Portal da Transparência data

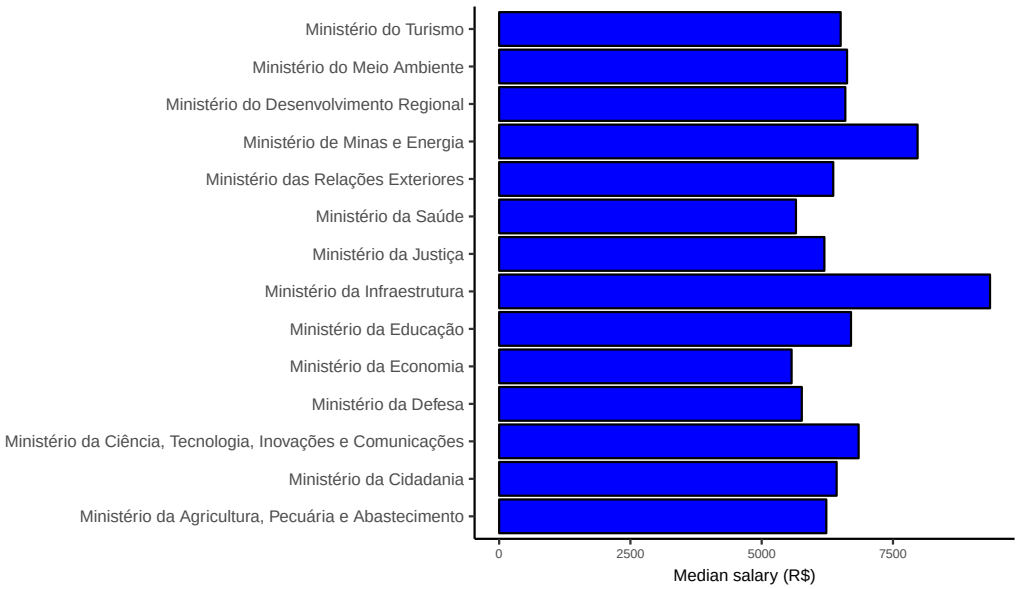

Figure 10: Median administrative agent salary, by ministry
Source: Author's elaboration using Portal da Transparência data

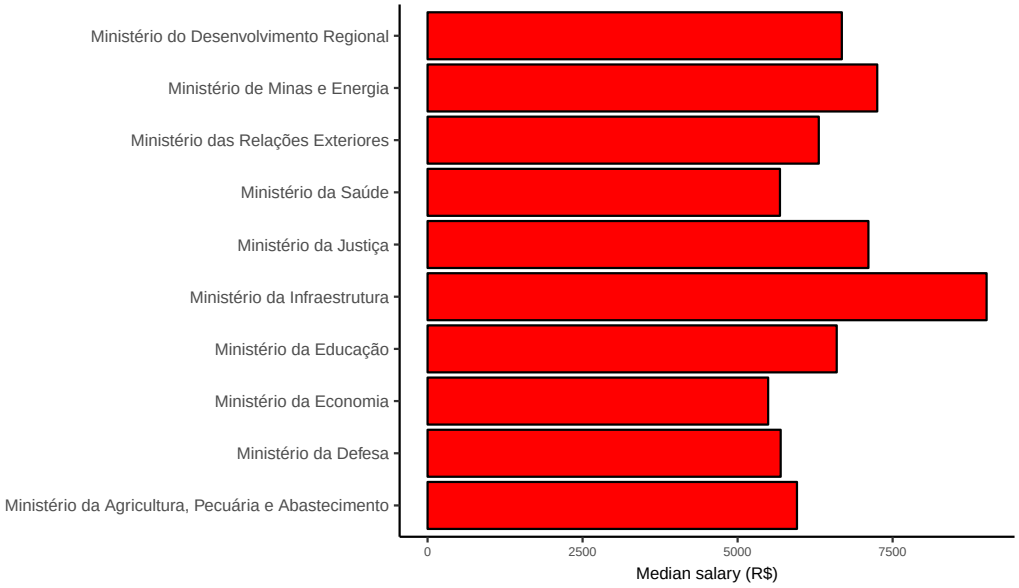

Figure 11: Median doorman agent salary, by ministry
Source: Author's elaboration using Portal da Transparência data

Below, we calculate a measure of ministry pay premium. Karpowicz & Soto (2018) performed a similar analysis, which is complemented below using current data and the new ministry composition (altered in 2019). We run a regression of the logarithm of gross servant compensation on ministry, controlled by career, state and tenure (in years). The removed variable (to avoid multicollinearity) is the Regional Development ministry, and so the salary premium is relative to this ministry. Equation (1) below summarizes the regression:

$$log(Y_i) = MIN_{1i}\beta_1 + ... + MIN_{ni}\beta_n + T_i\delta + UF_{1i}\alpha_1 + ... + UF_{ki}\alpha_k + Z_{1i}\gamma_1 + ... + Z_{mi}\gamma_m + \epsilon_i \quad (1)$$

Y_i is servant i's compensation, MIN_{Ai} is a dummy variable representing whether servant i works in this ministry, T_i is servant i's tenure, UF_{Bi} is a dummy variable representing the state in which servant i works and Z_{Ci} is a career dummy variable.

Analyzing regression results (indicated in detail in Appendix A), we see that compensation may vary significantly depending on ministry. For example, working in the Infrastructure Ministry or the Woman, Family and Human Rights Ministry may represent in a 20% higher compensation, relative to working in the Regional Development Ministry. This scenario hinders any development in trying to rationalize and standardize the Brazilian public service and contributes to the current state of confusion among posts in the federal government.

Figure 12 summarizes an approximation of the pay premium by ministry, for a servant that has just arrived in public service. We see that, relative to the Regional Development ministry, some ministries pay a premium larger than 10%, while the Environment Ministry pays the

lowest salaries (over 10% less than the Regional Development Ministry). As mentioned in section 2.3, the pay premium in the Infrastructure Ministry may be related to pay increases for DNIT servants in the 2003-2018 period.

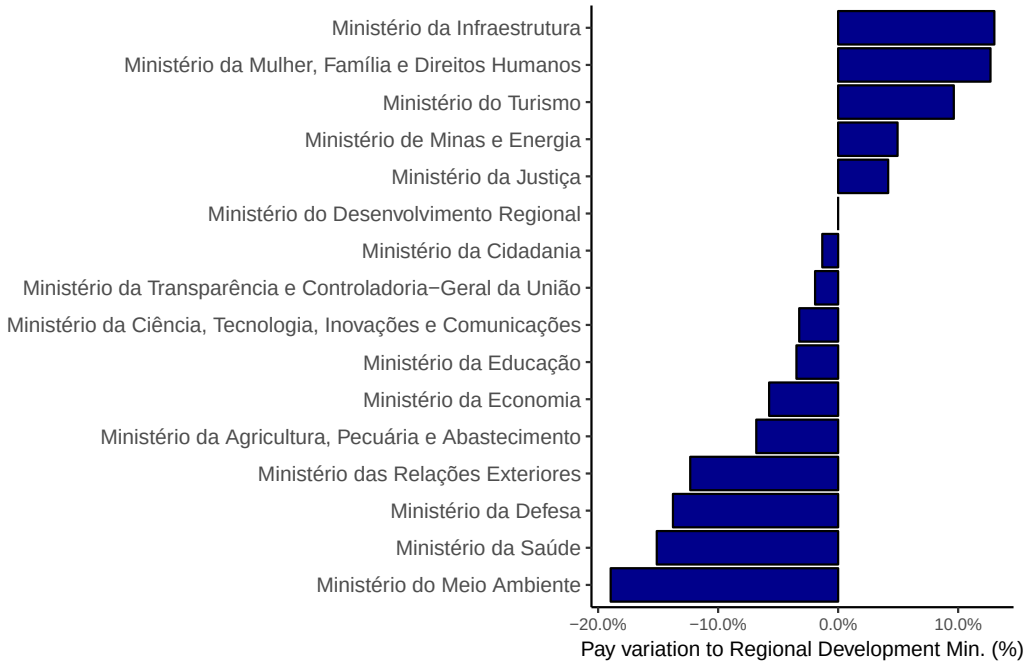

Figure 12: Ministry pay premium approximation (relative to Regional Development Ministry)
Source: Author's elaboration using Portal da Transparência data

4.4 Indirect Administration

Another interesting point is about indirect administration, which encapsulates foundations, autarchies, federal universities and federal education institutes. As discussed by Martins (1995), the indirect administration has had, over time, a different administrative process relative to the direct administration, with contrasting objectives and methods. Martins (1995) indicates an explosion in the number of foundations, autarchies and public companies in the 1966-1976 period, with the creation of approximately 340 such institutions. Therefore, in the context of discussions towards administrative reform, it is important to evaluate the structure and the difference in compensation between direct and indirect administration.

So, we run a regression similar to the one specified in Equation (1), but adding a dummy for whether servant i works in indirect administration.

Table 8: Regression coefficients of the logarithm of servant compensation on indirect administration

	log(Gross Compensation)
Indirect Administration	0.093***
	(0.002)
Tenure	0.013***
	(0.000)
Ministry Controls	Yes
Career Controls	Yes
State Controls	Yes
Observations	492,006
Adjusted R^2	0.816
Notes:	***Significant at the 1 percent level.
	**Significant at the 5 percent level.
	*Significant at the 10 percent level.

As we see above in Table 8, we see that working in indirect administration represents a 9% pay premium, approximately. We can compare compensation for some careers in order to have a more concrete example of the results above. Figure 13 compares compensation of drivers, doormen and administrative agents – median compensation on the left and average compensation on the right. We see that median compensation is slightly larger in the direct administration, but the opposite is true for average compensation. This probably indicates that there are some servants in the indirect administration that earn much larger than average compensation. Indeed, the largest 30 driver salaries are from servants in the indirect administration (regulatory agencies, in fact), with compensation between R$10,000-R$13,000.

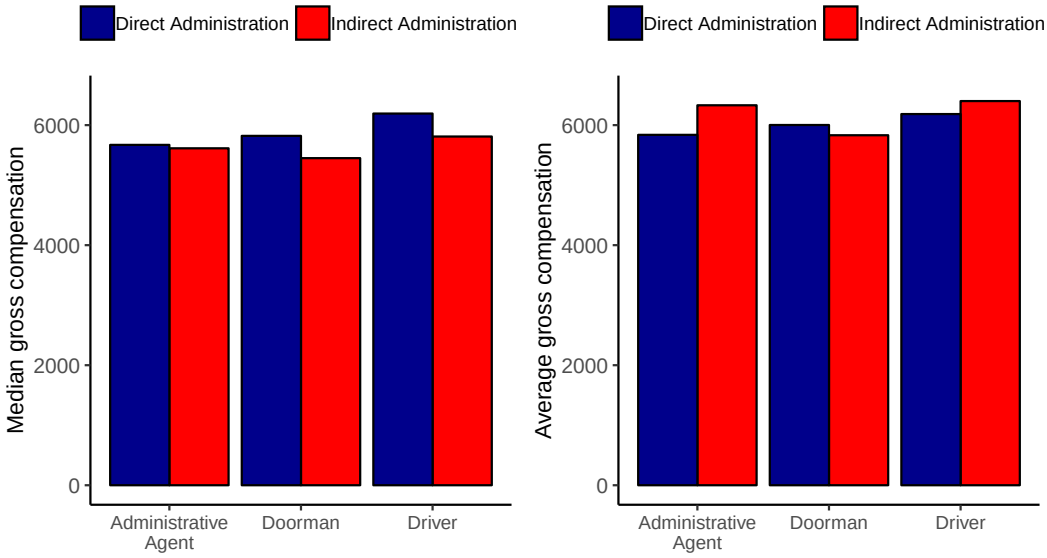

Figure 13: Compensation comparison between direct and indirect administration, for selected careers
Source: Author's elaboration using Portal da Transparência data

Table 9 shows the 10 indirect administration agencies with largest median compensation. IPEA (the federal economic research institution) and BACEN (the central bank) lead the way, followed by regulatory agencies. This is potentially explained by the larger share of servants with graduate degrees in IPEA and BACEN.

Table 9: 10 indirect administration agencies with largest median compensation

Agency	**Median monthly compensation (R$)**
Banco Central do Brasil	27,827
Instituto de Pesquisa Econômica Aplicada	27,827
Superintendência de Seguros Privados	25,467
Comissão de Valores Mobiliários	24,983
Agência Nacional de Águas	20,223
Agência Nacional de Saúde Suplementar	19,989
Agência Nacional de Energia Elétrica	19,666
Agência Nacional do Petróleo, Gás Natural e B	19,622
Agência Nacional de Telecomunicações	19,028
Agência Nacional de Aviação Civil	18,583

Source: Author's elaboration using Portal da Transparência data

In order to have a more detailed look onto these agencies, we can divide the indirect administration into agency types. Figure 14 displays the distribution of compensation of administrative agents by agency type. We see that the largest salaries are paid in regulatory

agencies, most of them above R$10,000 monthly. In this histogram, federal universities and federal education institutes are not depicted, since they do not possess administrative agents.

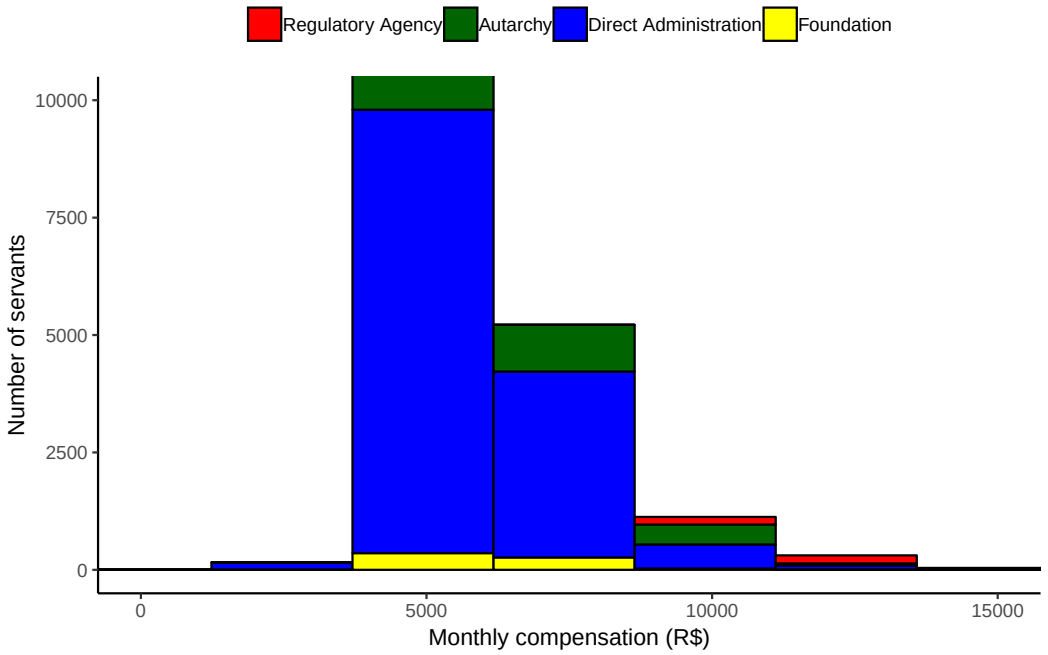

Figure 14: Administrative agent compensation distribution, by agency type
Source: Author's elaboration using Portal da Transparência data

In order to gain understanding on the size of the effect for different agencies, we ran a regression similar to the ones above, but dividing indirect administration onto regulatory agency, autarchy, foundation, federal education institute and federal universities. So, we created a dummy for each variable, omitting the direct administration dummy, so that effects are relative to the direct administration. In Table 10 we see that the pay premium in regulatory is very large (over 50%), while other agencies have a pay premium between 5 and 15 percent. All coefficients are significant at the 1% level.

Table 10: Regression coefficients on the logarithm of servant compensation, by agency type

	log(Gross Compensation)
Regulatory Agency	0.540***
	(0.006)
Autarchy	0.068***
	(0.002)
Public Foundation	0.059***
	(0.004)
Federal Institute	0.069***
	(0.007)
Federal University	0.071***
	(0.007)
Tenure	0.013***
	(0.000)
Ministry Controls	Yes
Career Controls	Yes
State Controls	Yes
Observations	492,006
Adjusted R^2	0.818
Notes:	***Significant at the 1 percent level.
	**Significant at the 5 percent level.
	*Significant at the 10 percent level.

So, there is a significant and sizeable difference. Carvalho (2011) comments that such differences in compensation exist, favoring the federal government's core: State legal defense (attorneys), tributary activities (tax auditors) and the Federal Police, as well as regulatory agencies. Moreover, some careers and agencies are politically powerful and are able to efficiently bring their demands to the federal government.

Carvalho (2011) also argues that there exists an "overflow effect", in which pay increases to key posts in an agency lead to pay increases across the board in that agency, which helps us understand the source of these pay disparities for servants in similar positions. This observation also matches what is found in section 3.3, in which we see that the largest pay increases are concentrated in some indirect administration agencies. Finally, this occurs not only within the executive branch, but between branches. Legislative branch servants earn much higher compensation than their executive branch counterparts, but this analysis is outside this article's scope.

4.5 Procyclicality

A final important point to be analyzed is the procyclicality of spending in active civil personnel. Procyclicality in public spending was initially focused on Latin American governments, in Gavin & Perotti (1997), where the authors conclude that these governments tend to overspend during economic expansions and cut costs during recessions, thus exhibiting procyclical behavior.

There are two possible explanations to this phenomenon. Gavin & Perotti (1997) indicate that a possibility is that Latin American governments, as they are less stable than that of developed countries, are less capable to borrow money during recessions, and is forced to cut costs. This explanation is named borrowing constraint. Another possibility, expressed by Alesina et al. (2008), is that the population does not trust corrupt democratic governments, and thus demands that revenue generated in favorable economic periods is spent as fast as possible, in order to avoid that this revenue is appropriated by political agents. This way, the government is less capable to invest during a recession and is forced to cut costs.

Given this discussion, we will try to analyze personnel spending procyclicality since 1996. Figure 15 displays real spending on personnel growth and the Brazilian GDP gap.

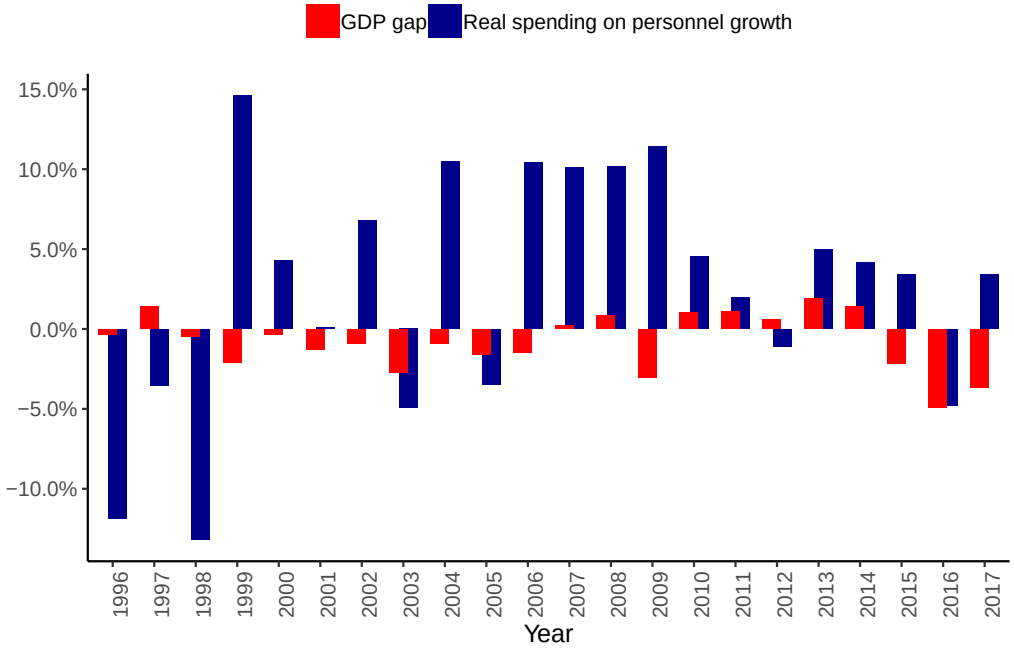

Figure 15: Real spending on personnel growth and GDP gap since 1996
Source: Boletim Estatístico de Pessoal and Carta de Conjuntura do IPEA

Below, we try to analytically measure procyclicality using a method developed by de Gavin & Perotti (1997), Alesina et al. (2008), Mitchell et al. (2019) and others. We run a regression of real spending on personnel growth (W_t) on:

- GDP gap (GDPGAP_t)
- Previous year's real spending on personnel growth (W_{t-1})
- Net barter terms of trade gap, using World Bank data ($TOTGAP_t$)
- Previous year's tax to GDP ratio ($TaxToGDP_{t-1}$)

Equation (2) below specifies the regression:

$$W_t = GDPGAP_t\beta_1 + W_{t-1}\beta_2 + TOTGAP_t\beta_3 + TaxToGDP_{t-1}\beta_4 + \epsilon_t \quad (2)$$

The coefficient we are interested in is β_1. It serves as a procyclicality measure since, if it is positive, it indicates that spending on personnel increases in economic expansions and falls during recessions, thus accentuating the economic cycle. In this regression, we only use data starting in 1995, since before then expenditure was very volatile and heavily guided by inflation – note that the early 90's was a period of hyperinflation in Brazil, which was solved by the Plano Real in 1994.

Table 11 presents the results of the regression. The coefficient on GDPGAP_t is indeed positive, which is an indication of procyclical behavior. Obviously, we are restricted to a very small sample size, and thus it is not possible to accurately assess coefficient significance.

Table 11: Spending on personnel regression coefficients (1997-2017)

	Personnel Spending Growth
GDPGAP_t	1.262^{*}
	(0.731)
W_{t-1}	-0.512^{**}
	(0.255)
TOTGAP	-0.948^{**}
	(0.439)
TaxToGDP_{t-1}	2.843^{***}
	(0.936)
Constant	-0.356^{**}
	(0.139)
Observations	21
Adjusted R^2	0.351
Notes:	***Significant at the 1 percent level.
	**Significant at the 5 percent level.
	*Significant at the 10 percent level.

A question that comes up is whether procyclicality is driven during economic expansions or recessions. So, we divide the GDPGAP_t variable onto two variables: GAPBOOM_t, when the GDP gap is positive and GAPBUST_t, when the GDP gap is negative. If either of the coefficients are positive, that is an indication of procyclicality in spending.

In Table 12, we see that the GAPBUST coefficient is positive, indicating that a 1% GDP recession is associated with a 1.39% decrease on personnel spending, indicating procyclicality. GAPBOOM's coefficient is also positive but smaller, indicating that a 1% GDP expansion is related with a 0.88% increase on personnel spending. Both coefficients are not significant as the robust standard errors are large – remember that there are very few data points available.

Table 12: Spending on personnel regression coefficients (1997-2017)

	Personnel Spending Growth
W_{t-1}	-0.514^{**}
	(0.259)
TOTGAP	-0.943^{**}
	(0.456)
$TaxToGDP_{t-1}$	2.836^{***}
	(0.985)
GAPBOOM	0.881
	(2.176)
GAPBUST	1.390
	(1.182)
Constant	-0.352^{**}
	(0.158)
Observations	21
Adjusted R^2	0.309
Notes:	***Significant at the 1 percent level.
	**Significant at the 5 percent level.
	*Significant at the 10 percent level.

Given this experiment, there is indication that procyclicality is present both during recessions and expansions but possibly larger during recessions, which might corroborate both the borrowing constraint and the mistrustful population theories. Of course, it is important to stress that there is a small number of observations and that the results are not statistically significant, given large standard errors.

5 Conclusion

During a period of pressured public finances, it is important to review the Brazilian federal government's priorities, which currently spends a lot on personnel and barely invests. Given that servants of all schooling levels earn a salary premium relative to the private sector and other countries, it is a priority to review servant career structures, bringing servant pay closer to the country's reality and rationalizing career progression, with a lower proportion of servants in top positions.

Moreover, it is necessary to organize compensation between agencies. We have seen that compensation varies considerably between ministries and between direct and indirect administration. This hinders an attempt to organize the federal government and contributes to a low productivity status quo in the federal government. Finally, it is important to avoid procyclical policies to attenuate the impact of future recessions.

Finally, further research in this area but focused on other government branches and state governments may indicate other possible ways to improve public governance and contribute to a more efficient Brazilian State.

References

Alesina, A., Campante, F., & Tabellini, G. (2008). Why is fiscal policy often procyclical? *Journal of the European Economic Association*, *6*, 1006–1036.

Alesina, A., & Tabellini, G. (2005). Why is fiscal policy ofter procyclical? *NBER Working Paper*.

Braga, B., Firpo, S., & Gonzaga, G. (2009). Escolaridade e diferencial de rendimentos entre o setor privado e o setor público no brasil. *Pesquisa E Planejamento Econômico*, *39*, 431–464.

Bureau of Labor Statistics. (2018a). *Occupational outlook handbook - lawyers*. https://www.bls.gov/ooh/legal/lawyers.htm#tab-5

Bureau of Labor Statistics. (2018b). *Occupational outlook handbook - police and detectives*. https://www.bls.gov/ooh/protective-service/police-and-detectives.htm

Bureau of Labor Statistics. (2018c). *Occupational outlook handbook - postsecondary teachers*. https://www.bls.gov/ooh/education-training-and-library/postsecondary-teachers.htm#tab-5

Bureau of Labor Statistics. (2018d). *Occupational outlook handbook - tax examiners and collectors, and revenue agents*. https://www.bls.gov/ooh/business-and-financial/tax-examiners-and-collectors-and-revenue-agents.htm#tab-5

Carvalho, E. (2011). Salários e política de vencimentos no poder executivo federal na primeira década de 2000. In *Burocracia e ocupação no setor público brasileiro* (pp. 133–180). Instituto de Pesquisa Econômica Aplicada.

Cavalcante, P., & Carvalho, P. (2017). Profissionalização da burocracia federal brasileira (1995-2014): Avanços e dilemas. *Revista de Administração Pública*, *51*, 1–26.

Forni, L., & Novta, N. (2014). Public employment and compensation reform during times of fiscal consolidation. *IMF Working Paper*.

Gavin, M., & Perotti, R. (1997). Fiscal policy in latin america. *NBER Macroeconomics Annual 1997*, *12*, 11–72.

Gobierno de Chile - Consejo de Defensa del Estado. (n.d.). *Dotación de planta - diciembre 2017*. Retrieved July 31, 2019, from http://www.cde.cl/transparencia/2017/per_planta_diciembre.html

Gobierno de Chile - Policia de Investigaciones. (n.d.). *Escala de remuneraciones*. Retrieved July 31, 2019, from http://gobiernotransparente.investigaciones.cl/transparencia/2015/remuneraciones/planta/1_planta_de_oficiales/of_policiales/per_remuneraciones.html

Gobierno de Chile - Servicio de Impuestos Internos. (n.d.). *Dotación de planta - marzo 2019*. Retrieved July 31, 2019, from http://www.sii.cl/transparencia/2019/per_planta_mar.html

Gobierno de Chile - Universidad de Chile. (n.d.). *Dotación de planta - junio 2019*. Retrieved July 31, 2019, from http://web.uchile.cl/transparencia/plantajun2019ab.html

Góes, C., & Karpowicz, I. (2017). Inequality in brazil: A regional perspective. *IMF Working Paper*.

IBGE. (2018). *Pesquisa nacional por amostra de domicílios contínua notas técnicas versão 1.5*.

IBGE. (2020). *Rendimento de todas as fontes : 2019*.

International Monetary Fund. (2016). *Government finance statistics*. https://data.imf.org/GFS

Karpowicz, I., & Soto, M. (2018). Rightsizing brazil's public-sector wage bill. *IMF Working Paper*.

Martins, L. (1995). Reforma da administração pública e cultura política no brasil: Uma visão geral. *Cadernos Da ENAP*, *8*, 9–39.

Mitchell, W., James, R., & Wickham, A. M. (2019). Government wage bill management and civil service reform in the eastern caribbean currency union. *IMF Working Paper*.

OCDE. (2015). *Government at a glance 2015* (O. Publishing, Ed.). https://doi.org/10.1787/gov_glance-2015-en

Palloti, P., & Freire, A. (2015). *Perfil, composição e remuneração dos servidores públicos federais: Trajetória recente e tendências observadas*.

6 Appendix A: Ministry Regression Coefficients

Table 13: Regression coefficients on the logarithm of servant compensation, by ministry

	log(Gross Compensation)	
	(1)	(2)
Ministério da Agricultura, Pecuária e Abastecimento	−0.071***	0.099***
	(0.006)	(0.010)
Ministério da Cidadania	−0.013	−0.074***
	(0.009)	(0.012)
Ministério da Ciência, Tecnologia, Inovações e Comunicações	−0.033***	0.368***
	(0.006)	(0.010)
Ministério da Defesa	−0.148***	−0.217***
	(0.005)	(0.010)
Ministério da Economia	−0.059***	0.329***
	(0.005)	(0.009)
Ministério da Educação	−0.035***	0.028***
	(0.005)	(0.009)
Ministério da Infraestrutura	0.122***	0.341***
	(0.007)	(0.011)
Ministério da Justiça	0.041***	0.452***
	(0.008)	(0.010)
Ministério da Mulher, Família e Direitos Humanos	0.120***	−0.112***
	(0.010)	(0.011)
Ministério da Saúde	−0.164***	−0.247***
	(0.005)	(0.009)
Ministério da Transparência e Controladoria-Geral da União	−0.019***	0.982***
	(0.006)	(0.011)
Ministério das Relações Exteriores	−0.132***	0.368***
	(0.012)	(0.021)
Ministério de Minas e Energia	0.048***	0.432***
	(0.009)	(0.013)
Ministério do Meio Ambiente	−0.210***	0.240***
	(0.009)	(0.011)
Ministério do Turismo	0.092***	−0.177***
	(0.021)	(0.027)
Tenure	0.014***	0.002***
	(0.000)	(0.000)
Career Controls	Yes	No
State Controls	Yes	Yes
Observations	484,953	484,953
Adjusted R^2	0.808	0.160