

# Compensation structure of the Federal Executive's active civil servants in Brazil

Enzo Bastos Profili <sup>1</sup>

<sup>1</sup> Northwestern University, Evanston / IL – United States

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 its composition. This article analyzes in detail the remuneration structure of executive branch careers. The article shows that most 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 show 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. An administrative reform agenda is important to rationalize public service careers, provide remuneration in line with the Brazilian reality, and reward high-performance employees through medium and long-term goals.

**Keywords:** compensation; public servant; wage premium.

## Estrutura remuneratória dos servidores ativos civis do Executivo federal

A administração pública federal passa por um momento de aperto fiscal, e, como o gasto com pessoal é um dos maiores componentes da despesa, mostra-se importante avaliar sua composição. Para isso, este artigo analisa detalhadamente a estrutura remuneratória das carreiras do Executivo federal civil. O texto mostra que a maioria dos servidores federais civis está entre os 10% mais bem remunerados do país, recebendo, em certos casos, um prêmio salarial com relação à esfera privada. Analisamos também que servidores com as mesmas atribuições têm remuneração significativamente diferente, dependendo do órgão da administração direta ou da entidade da administração indireta em que trabalham. Além disso, evidenciamos a prociclicidade da despesa com pessoal ativo do Executivo, possivelmente liderada em tempos de recessão. Dito isso, uma agenda de reforma administrativa é importante para racionalizar as carreiras do serviço público, trazendo a remuneração à realidade brasileira e premiando servidores de alto desempenho por meio de metas de médio e longo prazos.

**Palavras-chave:** remuneração; servidor público federal; prêmio salarial.

## Estructura de remuneración de los funcionarios civiles del Ejecutivo federal en Brasil

La Administración Pública Federal está atravesando un momento de ajuste fiscal y, como los gastos de personal son uno de los componentes más importantes del gasto público, es importante evaluar su composición. Para ello, este artículo analiza en detalle la estructura de remuneración de las carreras del Ejecutivo federal. El artículo muestra que la mayoría de los funcionarios federales se encuentra dentro del 10% mejor remunerado del país, percibiendo en ciertos casos una prima salarial, como en la esfera privada y otros países. También inferimos que los funcionarios públicos con las mismas atribuciones tienen una remuneración significativamente diferente, dependiendo del cuerpo de la administración directa o indirecta en la que trabajan. Además, evidenciamos la prociclicidad del gasto en personal activo del Ejecutivo federal. Dicho esto, es importante una agenda de reforma administrativa para racionalizar las carreras del servicio público, traer la remuneración a la realidad brasileña y recompensar a los funcionarios de alto rendimiento a través de metas a mediano y largo plazo.

**Palabras clave:** remuneración; servidor público federal; premio salarial.

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## 1. INTRODUCTION

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 active civil servants working in the Executive branch of the Brazilian government.

Forni and 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 effective over the long haul, as these are palliative measures.

In this scenario, this study's goal is to display structural inefficiencies in the compensation of active civil servant in the federal executive branch to support the administrative reform debate. It is important to note that this study focuses on civil servants in the federal government's Executive branch, which correspond to approximately 5% of the total number of public servants in Brazil. In Section 2, I develop a documentation of the current scenario, with aggregate data and then by career. In Section 3, I proceed with a more detailed analysis on servant compensation, with a comparison with the private sector, among servants and among different entities in the federal Executive branch. In Section 4, I analyze the procyclicality of expenditure on personnel.

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

- 1) Portal da Transparência (Transparency Portal), with microdata on servant level in May/2019. This database contains 550 thousand 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 445 thousand servants.
- 2) Data from the Secretaria de Gestão e Desempenho de Pessoal (SGP/ME), for aggregate data on career level. We explore this data especially in Section 2, 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 thousand 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. With this data, I can add the occupation's level of schooling to the Transparency Portal's dataset.
- 3) Painel Estatístico de Pessoal 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

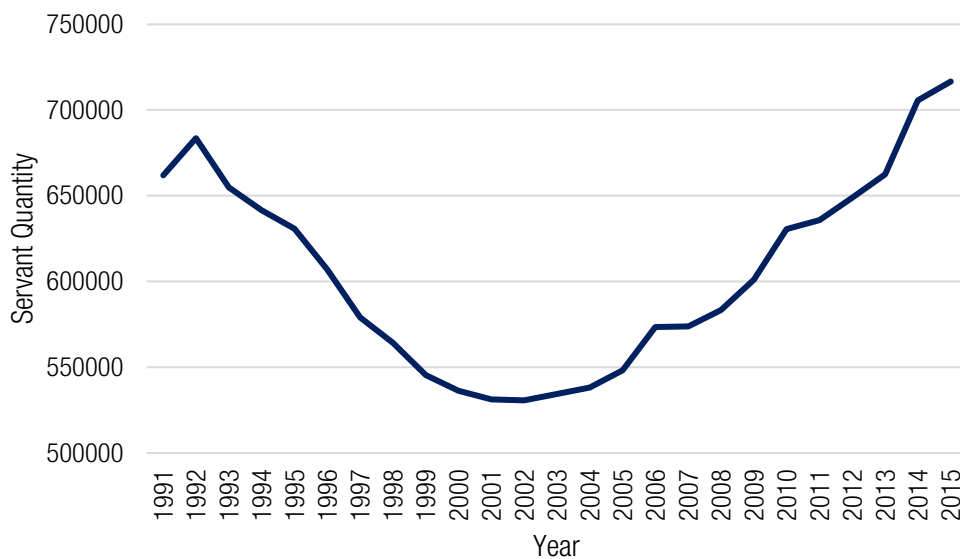
### 2.1 Number of Servants

In this section, I analyze aggregate data and career-level data for 2019. Currently, the federal government employs 622 thousand active civil servants, split into more than 300 careers and 2200 posts, according to the Painel Estatístico de Pessoal (PEP). Graph 1 displays the trends in the number of civil servants in the 1991-2015 period, in which there is consistent reporting by the Boletim Estatístico de Pessoal (BEP). We note a decrease in the number of servants in the nineties, initiated by Fernando Collor de Mello's presidency, through his privatization programs.

In the 2000's, the trend was reversed, and by 2015 the number of servants was considerably higher than in 1991. Cardoso and Nogueira (2017) argue that such an increase in the number of servants was a result of outsourced worker substitution, often irregularly hired, by permanent servants. Moreover, Cavalcante and Carvalho (2017) argue that this increase came after a period of reduction in the number of servants (there were over 700 thousand 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 graph for OECD countries was 18%.

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

**GRAPH 1** NUMBER OF ACTIVE CIVIL SERVANTS IN THE EXECUTIVE BRANCH OF THE FEDERAL GOVERNMENT IN THE 1991-2015 PERIOD



Source: Boletim Estatístico de Pessoal (2017).

According to PEP data from June/2019, if we include public companies, the number of servants increase to 705 thousand, split as in Table 1.

**TABLE 1** SERVANT QUANTITIES BY CONTRACT TYPE

Type of Servant	Quantity
Active Servants	482.358
State company employees	78.964
Temporary workers	76.863
Ceded workers	52.178
Celetistas	9.355
Commissioned workers	5.061

Source: Painel Estatístico de Pessoal.

As for level of schooling, Cavalcante and Carvalho (2017) show that, in the 1995-2014 period, there was a change on the servant profile, with a reduction in the proportion of high-school level employees and an increase in the proportion of college level employees, in order to induce higher productivity in the Brazilian bureaucracy. According to Palloti and Freire (2015), auxiliary level posts (which do not require high-school diplomas) were progressively substituted by outsourced workers.

As indicated in Table 2, PEP indicates that 59% of permanent active servant posts are college level, 38% are high school level and 3% are auxiliary level. However, 81% of servants possess a college diploma and only 16% possess a high school diploma but not a college diploma, indicating that there are thousands of servants performing high school level roles but actually possess college diplomas. This indicates that there might be an issue of over-qualification in Brazilian public service, which is discussed in a number of articles.

Francisco (2015) investigates potential conflicts created by over-qualification of licensed practical nurses in the public health system, and interviewed servants indicated that their college diplomas did not bring the expected recognition, and that this reduced their productivity. Gonçalves (2017) also analyzed this topic and argues that over-qualification is not necessarily an issue, but requires constant management.

**TABLE 2** POST AND SERVANT SCHOOLING QUALIFICATION

Level	Post level of schooling (%)	Servant level of schooling (%)
No High School	2.94	3.53
High School	37.51	15.66
College	59.55	80.80

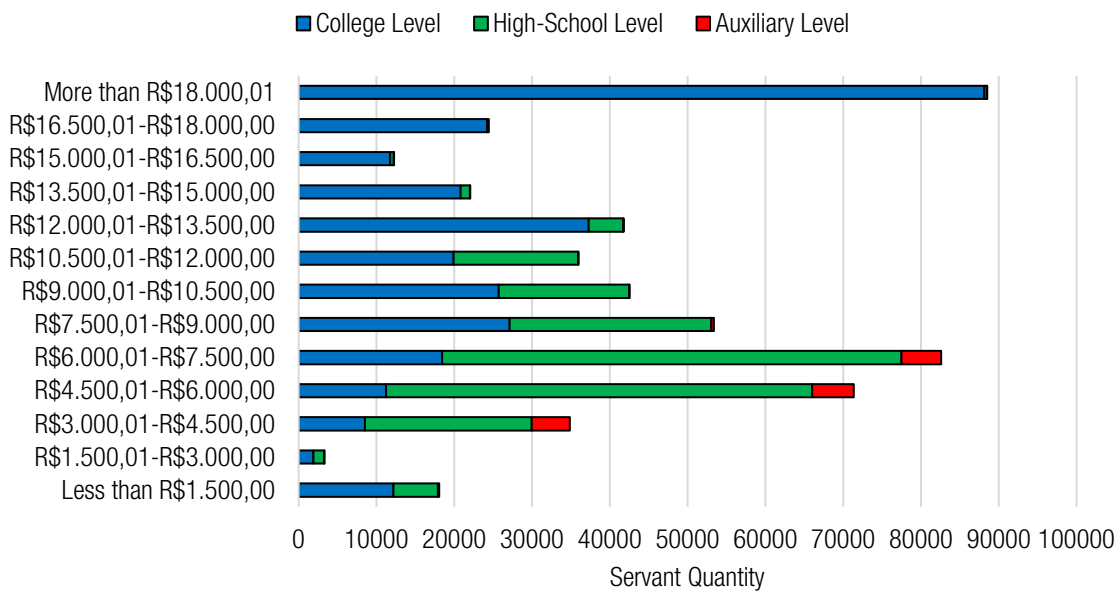
Source: Painel Estatístico de Pessoal.

## 2.2 Servant Compensation

Graph 2 displays the distribution of servants' compensation. For auxiliary and high school 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. It is important to note that there is variation in occupations, which is analyzed in detail in Section 3.1.

For college level workers, there is a large concentration above R\$ 7,500, and 88 thousand servants (16.7% of the total) receive over R\$ 18,000. In this dataset, there were 530 thousand workers: 480 thousand active servants and 50 thousand ceded workers.

**GRAPH 2** SERVANT INCOME DISTRIBUTION, DIVIDED BY SCHOOLING



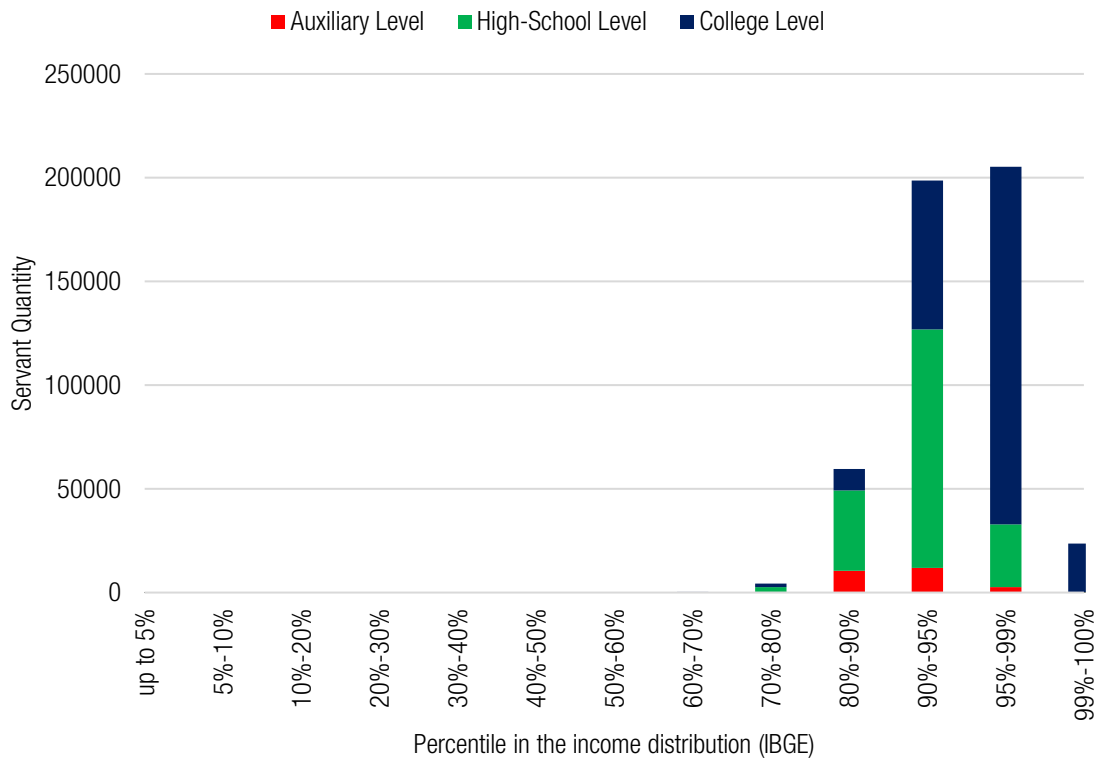
Source: Elaborated by the authors with SGP/ME data.

Using net compensation data from Portal da Transparência (2019) - income tax and social security contribution deducted from gross salary plus indemnities - and average compensation for employed persons from IBGE (Instituto Brasileiro de Geografia e Estatística [IBGE], 2019), converted from may/2019 reais using the *Índice Nacional de Preços ao Consumidor Amplo* (IPCA), we can classify servants' compensation relative to that of the rest of the population. As IBGE data only displays average compensation in each decile, the classification assigns each servant in the decile whose average is closest to the servant's compensation.

Graph 3 displays the distribution of servants over income ranges, and we can see that almost every servant is in the best compensated quintile, with variation based on schooling level.

Auxiliary and high-school level servants are concentrated between the top 20% and the top 10%, while college level workers are concentrated in the top 5%. Therefore, some of the distortions and inequities can be addressed by a more progressive taxation scheme, currently in discussion in the Brazilian congress.

**GRAPH 3** APPROXIMATE DISTRIBUTION OF SERVANTS ON THE NATIONAL INCOME DISTRIBUTION



\*Servants' compensation contains indemnities.

\*\* Servants assigned to the closest average compensation range.

Source: Elaborated by the authors using Portal da Transparência data and IBGE (2019).

### 2.3 Largest Compensation Tables

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

**TABLE 3** 20 LARGEST COMPENSATION TABLES

Compensation Table	Quantity (thousand)
High-school level education technician	86
College professor	78
Elementary/Technical school professor	44
College Level – social security and health	41
College level education technician	40
High-school level - <i>Plano geral de cargo do Poder Executivo</i> (PGPE)	20
High-school level -Social security technician	18
College professor – 40h/week	10
Federal Highway Policeman	10
Tax Auditor - <i>Receita Federal do Brasil</i> (RFB)	9
College professor – 20h/week	7
Tax Analyst - <i>Receita Federal do Brasil</i> (RFB)	6
Federal Police agent	6
High-school level - <i>Ministério da Fazenda</i>	6
College level - PGPE	6
College Level – social security and health	5
Auxiliary level – endemic control	5
Social Security analyst	4
Social Security Physician – 20h/week	4
Elementary/Technical school professor – 40h/week	4

Source: SGP/ME.

## 2.4 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

Compensation Table	Yearly Compensation (R\$)
Central Bank attorney	499,005
Central Bank analyst	484,157
National Treasury attorney	465,399
Tax auditor – RFB	427,501
Labour inspector	423,268
Federal Police chief	417,416
Forensics expert	411,799
Federal attorney	409,008
Diplomat	396,719
Inspector – <i>Comissão de Valores Mobiliários (CVM)</i>	381,805
Physician - <i>Departamento Nacional de Infraestrutura de Transportes (DNIT) – 40h</i>	377,040
Planning technician	368,983
Supplementary positions (in extinction) – Attorney General's Office (AGU)	363,958
College Level technician – Instituto de Pesquisa Econômica Aplicada (Ipea)	363,767
Analyst - CVM	360,774
Analyst - <i>Superintendência de Seguros Privados (Susep)</i>	357,549
Physician forensics supervisor– 20h/week	355,148
College level – Federal attorney	353,608
<i>Especialista em políticas públicas e gestão (EPPGG)</i>	351,389
Foreign Trade 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 federal attorneys) and careers in the tax collection agency (RFB). Altogether, the 10 best compensated career possess 22 thousand servants and cost over 10 billion reais yearly, approximately 12% of what is spent among the 534 thousand federal civil servants.



## 2.5 Compensation tables with largest pay increases

Over the last 15 years (in the 2004-2019 period), 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 since 1999 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

Compensation Table	Pay increase (%)
Special Posts – DNIT	311%
High-school level - <i>Instituto Brasileiro de Geografia e Estatística</i> (IBGE)	278%
Administrative education technician – Federal Education Institutes (IFs)	262%
Doctorate level - <i>Fundação Oswaldo Cruz</i> (Fiocruz)	250%
Civilian in military organizations - physician	244%
Agent - DNIT	240%
College level – regulatory agencies	237%
Doctorate level - <i>Fundo Nacional de Desenvolvimento da Educação</i> (FNDE)	229%
Doctorate level - IBGE	228%
College Level - <i>Superintendência Nacional de Previdência Complementar</i> (PREVIC)	227%
College level - DNIT	227%
College level - <i>Superintendência da Zona Franca de Manaus</i> (Suframa)	226%
Military technology technician	219%
Laboratory assistant - <i>Ministério da Agricultura, Pecuária e Abastecimento</i> (Mapa)	216%
Physician - IFs	212%
High-school level – regulatory agencies	211%
High-school level – PREVIC	201%
Technician or agente – Social Security	198%
Chancellery assistant	197%
High-school level – Fiocruz	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.

## 2.6 Retirement ages and “Career Peaks”

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/ME 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. Klein and Mascarenhas (2016) analyze the career of public policy specialists (EPPGG) and suggest that the propensity to leave the career may be associated to the expectation of pay increases in the future. 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.

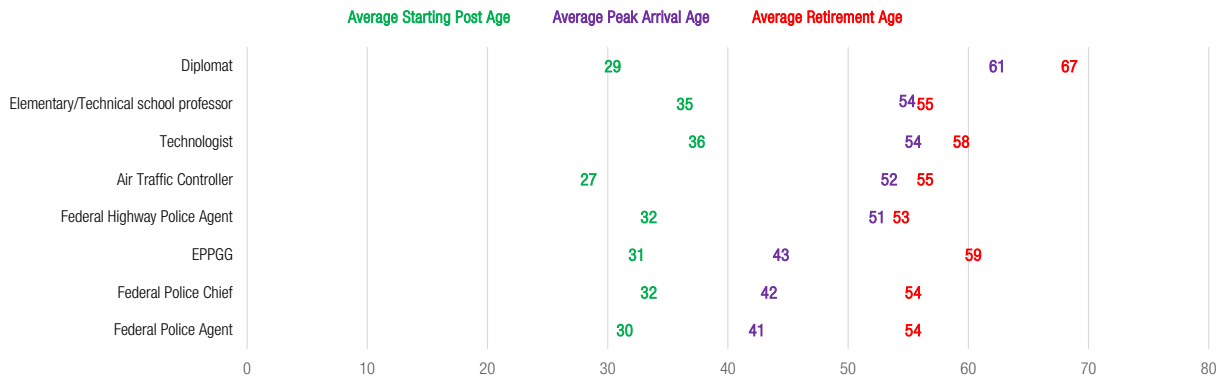
On average, according to SGP/ME and the 2017 Boletim Estatístico de Pessoal, federal servants, on average, enter public service at 33.7 years of age and retire at 56.6 years. College level servants enter public service at 35.2 years of age and retire at 56.8 years, while high-school level servants enter 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 1 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. This means that the servant will be at the top of the career for most of his/her career, 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 with integral, career-peak pay. 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.

**FIGURE 1 AVERAGE SERVANT AGE FOR DIFFERENT PROFESSIONAL MILESTONES**



Source: SGP/ME.

SGP/ME data shows that 175 thousand servants are in top positions, out of the 530 thousand servants in the database (32.8%). When we restrict our data to servants that cost<sup>1</sup> 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.

### 3. DATA ANALYSIS

#### 3.1 Private Sector Comparison

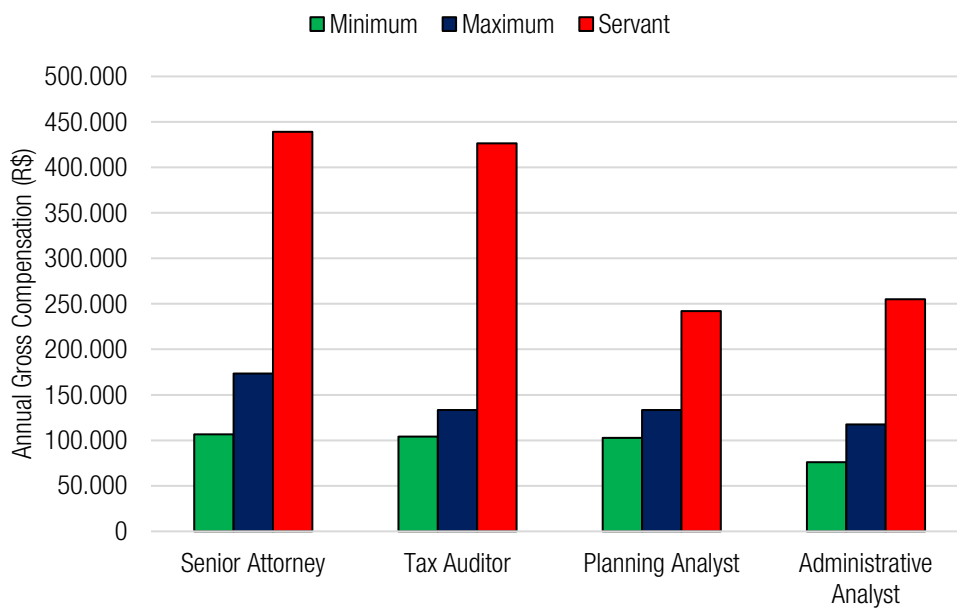
Over the last few years, an extensive literature on public-private federal pay premium was developed. Braga, Firpo and Gonzaga (2009) indicate that servant compensation is higher than worker compensation, but this advantage becomes less intense as schooling increases. Tenoury and Menezes-Filho (2017) indicate that the federal pay premium increased from 28% in 1999 to 93% in 2015, and this pay premium increases associated to a period of hiring increases in the 2000's. This article also indicates that the pay premium is mostly explained by the compensation of higher schooling servants.

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%. Finally, Carvalho (2020) indicates that a relevant portion of the public pay premium – encapsulating not only the federal government but states and municipalities – is concentrated in some occupations, such as judicial, administration and technology/communication careers. That said, we analyze some specific careers below, initially related to law and administration.

<sup>1</sup> Includes every possible expense and benefit, as well as gross compensation.

Graph 4 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. Data for federal servants was provided by the SGP/ME, and by the Robert Half 2019 salary guide for private sector workers. We see that there is a large difference in all of these examples, which partially indicate a public sector salary premium.

**GRAPH 4 AVERAGE YEARLY COMPENSATION COMPARISON BETWEEN WORKERS AND SERVANTS (2018)**



\* Senior attorney: large-size company senior attorney vs. Federal attorney.

\*\* Tax auditor: large-size company fiscal analyst vs. RFB tax auditor.

\*\*\* Analista de planejamento: analista de planejamento/controladoria sênior de empresa de grande porte versus analista de planejamento.

\*\*\*\* Administrative analyst: large-size company business partner vs. Regulatory agency administrative analyst.

\*\*\*\*\* Monthly private sector pay multiplied by 13,33 to annualize it, given 13th salary and vacation pay.

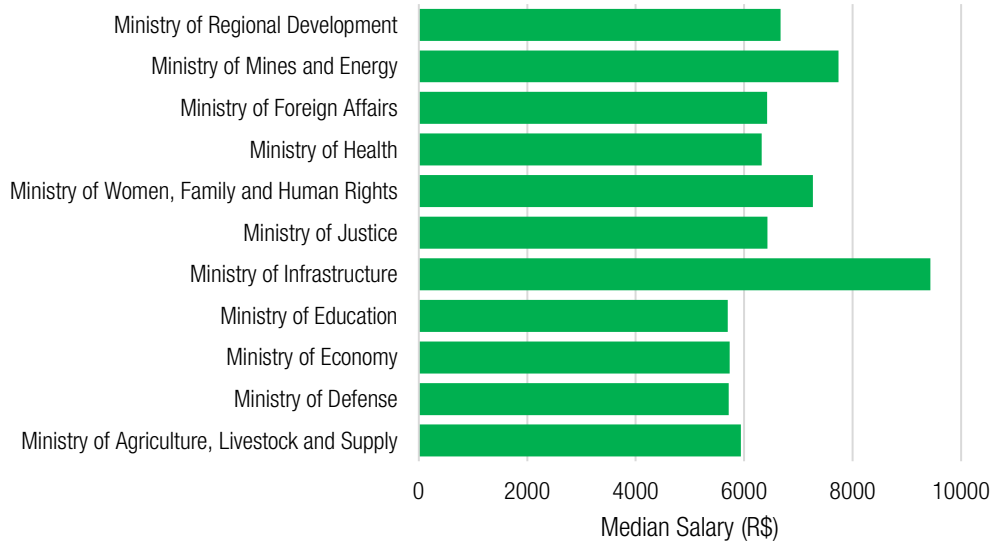
**Source:** Elaborated by the authors using SGP/ME data and Robert Half's Salary Guide.

### 3.2 Ministry Comparison

Below, I follow with an analysis comparing the compensation of difference public service careers and the median compensation received by ministry. I compare the compensation of drivers (Graph 5), administrative agents (Graph 6) and doormen (Graph 7), filtering for ministries that employ more than 20 servants in the same career. Ideally, servants who perform similar activities should be compensated similarly.

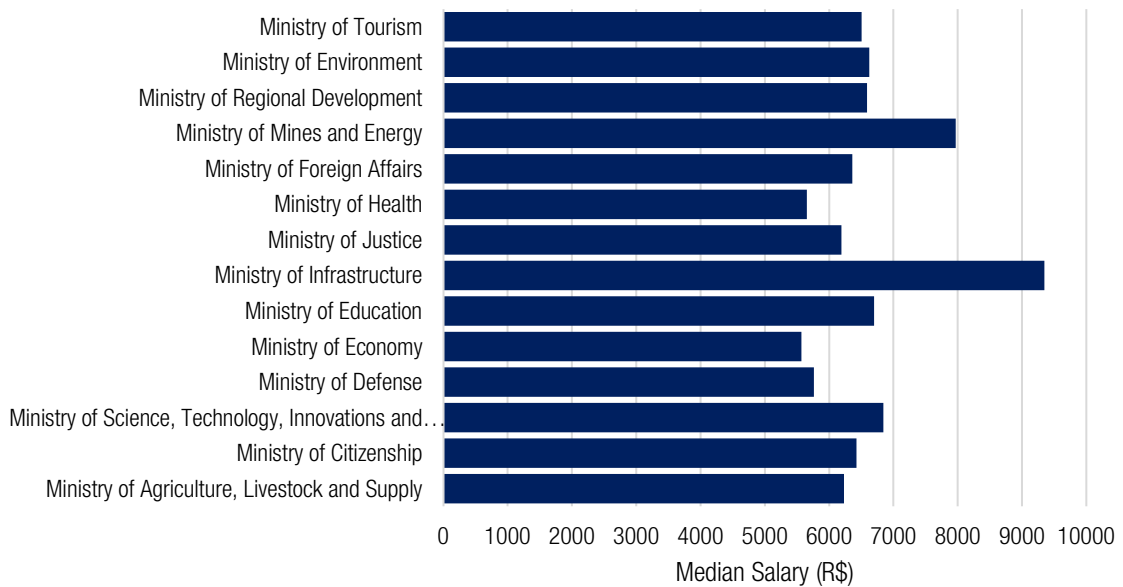
However, we see that there is variation in compensation, with the Infrastructure Ministry and the Energy and Mines Ministry usually paying higher salary. For drivers, the average is R\$ 5,500 and the Infrastructure Ministry pays almost R\$ 9,000 to its drivers, on average.

**GRAPH 5** MEDIAN DRIVER SALARY, BY MINISTRY



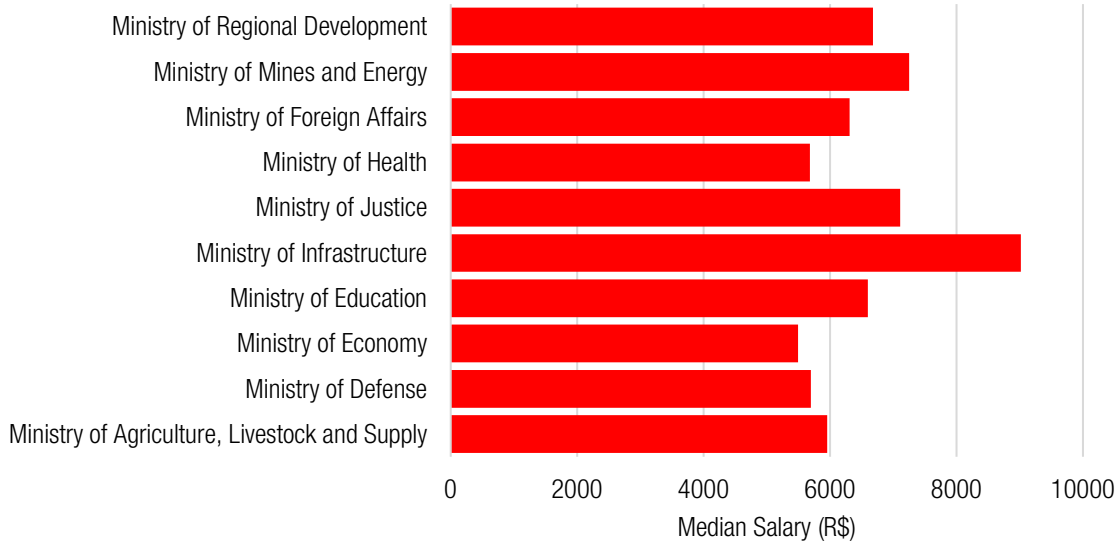
Source: Elaborated by the authors using Portal da Transparência data.

**GRAPH 6** MEDIAN ADMINISTRATIVE AGENT SALARY, BY MINISTRY



Source: Elaborated by the authors using Portal da Transparência data.

**GRAPH 7 MEDIAN DOORMAN SALARY, BY MINISTRY**



**Source:** Elaborated by the authors using Portal da Transparência data.

Below, we calculate a measure of ministry pay premium. Karpowicz and Soto (2018) performed a similar analysis, which is complemented below using current data and the new ministry composition (altered in 2019). I run a regression of the logarithm of gross servant compensation on ministry, controlled by post, state and tenure (in years). It is important to note that, by post, I mean occupation and not a public sector career. For example, a driver in the Health Ministry is in a different career than a driver of a regulatory agency, even though they perform the same role. The removed variable (to avoid multicollinearity) is the Regional Development ministry, and so the salary premium is relative to this ministry. The equation below summarizes the regression:

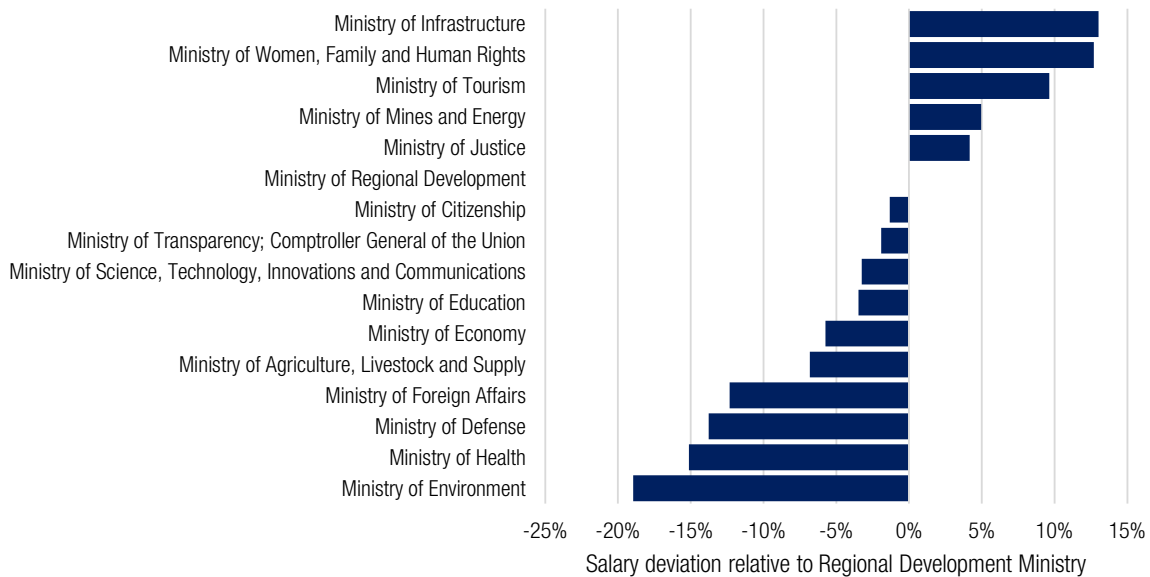
$$\log(Y_i) = MIN_{1i}\beta_1 + \dots + MIN_{ni}\beta_n + T_i\delta + UF_{1i}\alpha_1 + \dots + UF_{ki}\alpha_k + Z_{1i}\gamma_1 + \dots + Z_{mi}\gamma_m + \epsilon_i,$$

in which  $Y_i$  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 servant  $i$ 's state and  $Z_{Ci}$  is a career dummy variable.

Analyzing regression results (indicated in detail in Appendix A), we see that the coefficients are mostly significant at the 1% level. This means 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 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.

Graph 8 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 2.5, the pay premium in the Infrastructure Ministry may be related to pay increases for DNIT servants in the 2003-2018 period.

**GRAPH 8** MINISTRY PAY PREMIUM APPROXIMATION (RELATIVE TO REGIONAL DEVELOPMENT MINISTRY)



Source: Elaborated by the authors using Portal da Transparência data.

### 3.3 Indirect Administration

Another interesting point is about indirect administration, which encapsulates foundations and autarchies. 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) also 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, I run a regression similar to the one specified in Equation 1 but adding a dummy for whether a servant works in indirect administration. I also control for ministry, state, post and tenure, as in

the last section. As seen in Table 6 below, working in the indirect administration represents a 9% pay premium, approximately. The coefficient is statistically significant at the 1% level.

**TABLE 6 REGRESSION COEFFICIENTS ON THE LOGARITHM OF SERVANT COMPENSATION**

	log (gross compensation)
Indirect Administration	0.094*** (0.002)
Tenure	0.014*** (0.000)
Ministry Controls	Yes
Post Controls	Yes
State Controls	Yes
Observations	445,249
Adjusted R <sup>2</sup>	0.804

**Notes:**

\*\*\* Significant at the 1% level.

\*\* Significant at the 5% level.

\* Significant at the 10% level.

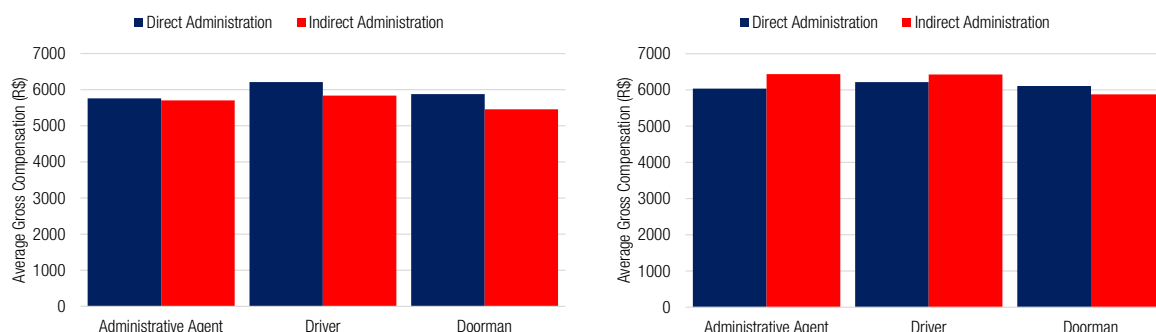
**Source:** Elaborated by the authors using Portal da Transparência data.

We can compare compensation for some careers in order to have a more concrete example of the results above. Graph 9 compares compensation of drivers, doormen and administrative agents in the direct and indirect administrations – 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 more than the average compensation. Indeed, the largest 30 driver salaries are from servants in the indirect administration (regulatory agencies, mostly), with compensation between R\$ 10,000-R\$ 13,000.



**GRAPH 9 COMPARISON OF COMPENSATION BETWEEN DIRECT AND INDIRECT ADMINISTRATION**



Source: Elaborated by the authors using Portal da Transparência data.

Table 7 shows the 10 indirect administration entities with largest median compensation – only entities with more than 30 registered workers in the Portal da Transparência are considered. Ipea (the federal economic research institution) and Bacen (the central bank) lead the way, followed by the Superintendência de Seguros Privados (Susep), the Comissão de Valores Mobiliados (CVM) and regulatory agencies, all of them with an average around R\$ 20,000 or more monthly. Some of this is potentially explained by the larger share of servants with graduate degrees in Ipea and Bacen.

**TABLE 7 10 INDIRECT ADMINISTRATION AGENCIES WITH LARGEST MEDIAN MONTHLY COMPENSATION**

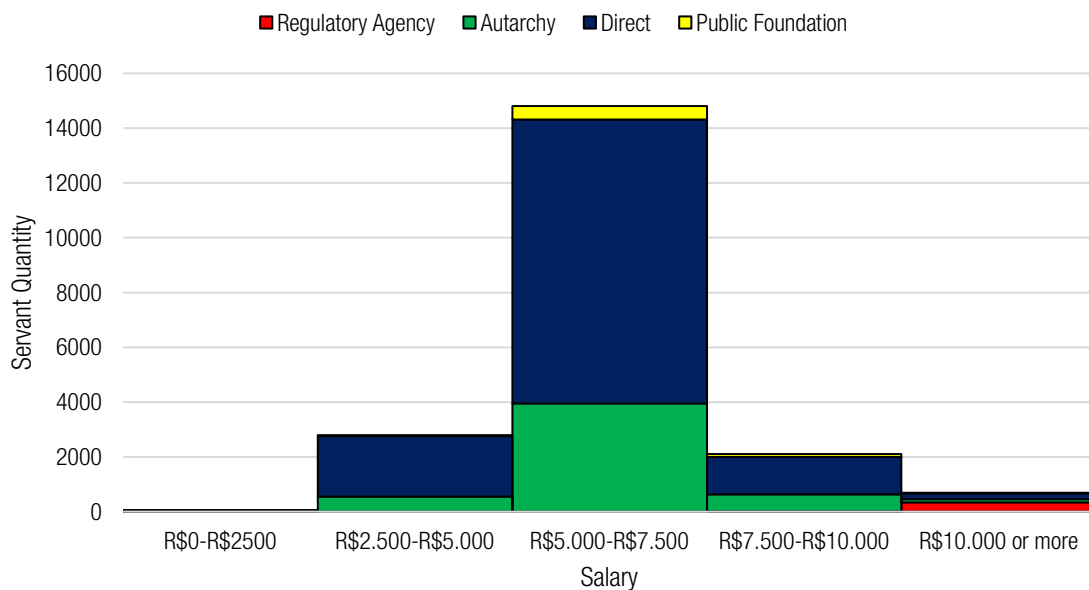
Entity	Median monthly compensation (R\$)
Banco Central do Brasil	27,827
Instituto de Pesquisa Econômica Aplicada	27,827
Superintendência de Seguros Privados	25,363
Comissão de Valores Mobiliários	24,997
Agência Nacional de Águas	20,078
Agência Nacional de Saúde Suplementar	19,574
Agência Nacional do Petróleo, Gás Natural e Biocombustíveis	18,906
Agência Nacional de Energia Elétrica	18,708
Agência Nacional de Telecomunicações	18,583
Agência Nacional de Aviação Civil	18,214

Source: Elaborated by the authors using Portal da Transparência data.

In order to have a more detailed look onto these entities, we can divide the indirect administration into entity types. In this article, I utilize the denominations “autarchies”, “public foundations”, “regulatory agencies”, “federal institutes” and “federal universities”. We should note that regulatory agencies, federal education institutes and federal universities are special regime autarchies, as explained in Carvalho (2015, p. 498) e expressed in laws such as Lei nº 5.540/1968 – for universities and education institutes – or Lei nº 9.427/1996 – for the National Electric Energy Agency (Aneel). Thus, I analyze these entity groups separately. Finally, there are other special regime autarchies, such as the Central Bank. However, we only analyze entity groups separately, in order to have a more streamlined analysis.

Graph 10 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 (in this denomination).

**GRAPH 10 ADMINISTRATIVE AGENT COMPENSATION DISTRIBUTION, BY AGENCY TYPE**



**Source:** Elaborated by the authors using Portal da Transparência data.

In order to gain understanding on the size of the effect for different agencies, I run a regression similar to the ones above, but dividing indirect administration onto regulatory agency, autarchy, foundation, federal education institute and federal university. So, I created a dummy for each variable, omitting the direct administration dummy, so that effects are relative to the direct administration. In Table 8 we see that the pay premium in regulatory is very large, while other agencies have a pay premium between 5 and 15 percent, relative to the direct administration. All coefficients are significant at the 1% level.

**TABLE 8** REGRESSION COEFFICIENTS ON THE LOGARITHM OF SERVANT COMPENSATION, BY AGENCY TYPE

	log (gross compensation)
Regulatory Agency	0.540*** (0.006)
Autarchy	0.068*** (0.003)
Public Foundation	0.054*** (0.004)
Federal Institute	0.088*** (0.008)
Federal University	0.094*** (0.008)
Tenure	0.014*** (0.000)
Ministry Controls	Yes
Post Controls	Yes
State Controls	Yes
Observations	445,249
Adjusted R <sup>2</sup>	0.806

Source: Elaborated by the authors using Portal da Transparência data.

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 2.5, 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.

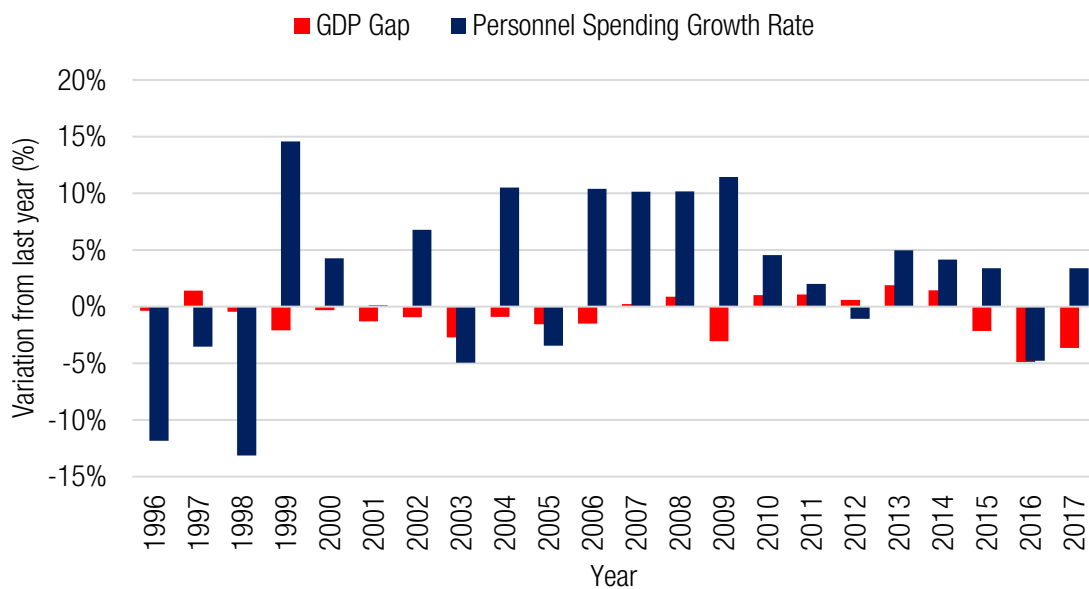
#### 4. PROCYCLICALITY

A final important point to be analyzed is the procyclicality of spending in active civil personnel in the federal Executive branch. Procyclicality in public spending was initially focused on Latin American governments, in Gavin and 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 and 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 are forced to cut costs. This explanation is named borrowing constraint. Another possibility, expressed by Alesina, Campante and Tabellini (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 revenue appropriation 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 analyze personnel spending procyclicality since 1996 and try to provide explanations to this phenomenon. Graph 11 displays real spending on personnel growth and the Brazilian GDP gap. The GDP gap measurement utilized is from Ipea, as indicated in the Cartas de Conjuntura.

**GRAPH 11 REAL SPENDING ON PERSONNEL GROWTH AND GDP GAP SINCE 1996**



Source: Elaborated by the authors using the Boletim Estatístico de Pessoal and Ipea's Carta de Conjuntura.

Below, we try to analytically measure procyclicality using a method developed by de Gavin and Perotti (1997), Alesina et al. (2008), Mitchell, James and Wickham (2019) and others. We run a regression of real spending on personnel growth ( $W_t$ ) on GDP gap ( $GDPGAP_t$ ), the previous year's real spending on personnel growth ( $W_{t-1}$ ), terms of trade gap, using World Bank data ( $TOTGAP_t$ ) and the previous year's tax to GDP ratio using World Bank and IBGE data ( $TaxToGDP_{t-1}$ ):

$$W_t = GDPGAP_t\beta_1 + W_{t-1}\beta_2 + TOTGAP_t\beta_3 + TaxToGDP_{t-1}\beta_4 + \epsilon_t.$$

The coefficient we are interested in is  $\beta_1$ . 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.

Data from real spending on personnel growth comes from the Boletim Estatístico de Pessoal and is adjusted by the IPCA. In this regression, we only use data starting in 1995, since before then real expenditures were 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. Moreover, since 1995 the data in the Boletim Estatístico de Pessoal is more complete and allows for a more detailed analysis. Thus, only after 1995 is there more continuity and predictability in compensation policies.

Table 9 presents the results of the regression. The coefficient on GDPGAP 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 9 SPENDING ON PERSONNEL GROWTH RATE REGRESSION COEFFICIENTS (1997-2017)**

	Growth Rate
GDPGAP	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 <sup>2</sup>	0.351

Source: Elaborated by the authors.

A question that may arise is about inflation, whose increase erodes real expenditures on personnel, and not the recession itself. In Latin America, inflation tends to be higher during recessions, opposite to what is seen in developed countries. Indeed, we see this in Brazil in 1997, as the correlation between GDPGAP and inflation is -0.09. Adding inflation as an additional control in the regression, the coefficient was close to zero and did not affect results.

To make this analysis more meaningful, we can divide. So, we divide the GDPGAP variable onto two variables: , when the GDP gap is positive and , when the GDP gap is negative. If either of the coefficients are positive, that is an indication of procyclicality in spending, since expenditures increase during economic expansions (positive GAPBOOM coefficient) and decrease during recessions (negative GAPBOOM coefficient).

In Table 10, 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 10 SPENDING ON PERSONNEL GROWTH RATE REGRESSION COEFFICIENTS (1997-2017)**

	Growth Rate
$W_{t-1}$	-0.514** (0.259)
TOTGAP	-0.943** (0.456)
TaxToGDP <sub>t-1</sub>	2.836*** (0.985)
GAPBOOM	0.881 (2.176)
GAPBUST	1.390 (1.182)
Constant	-0.352** (0.158)
Observations	21
Adjusted R <sup>2</sup>	0.309

Source: Elaborated by the authors.

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 in Brazil, it is important to review the Brazilian federal government's priorities, which currently finds itself with a constrained budget, with little space for investments. Given that servants of all schooling levels earn a salary premium relative to the private sector – especially for college-level servants, as documented in Tenoury and Menezes-Filho (2017) –, 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. Though this article does not focus on this topic, it is also important to review career incentives within public service. For example, education careers reform can reduce teacher absenteeism and bring more efficiency to public schools, as indicated by Banco Mundial (2017).

Moreover, it is necessary to organize compensation between entities. 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, as indicated in Banco Mundial (2017), which cites that Brazil can save up to 0.3% of GDP in healthcare, 0.5% in post-secondary education and 1% in middle-school and high-school, while maintaining the same service level. Finally, it is important to avoid procyclical policies to attenuate the impact of future recessions.

In the short term, salary freezes can be considered in cases in which distortion are starker. However, this is a palliative solution, as discussed in the introduction, since the institutions that allowed such distortion in the first place would not be altered. Moreover, more progressive tax policies can solve part of the problem, given that most civil servants in the federal Executive branch are in the richest quantile and the Brazilian tax system is notoriously regressive, as discussed in Gomes (2015).

Finally, further research in this area but focused on the Legislative and Judiciary branches can indicate potential improvements in public governance and contribute to a more efficient Brazilian State. For example, as indicated in Guedes and Lopez (2019), median compensation in the Judiciary increased faster than median compensation in the Executive and Legislative in the 1986-2017 period - a deeper analysis on this topic would be valuable. Furthermore, an investigation on military personnel (active and inactive) spending would be important to correct distortions, as would be research on states in states and municipalities, even if it is known that the public pay premium is lower in states and, specially, municipalities, as indicated in Góes and Karpowicz (2017).



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## Enzo Bastos Profili



<https://orcid.org/0000-0001-6209-5920>

B.S. in Economics at Northwestern University. E-mail: [enzoprofili2021@u.northwestern.edu](mailto:enzoprofili2021@u.northwestern.edu)

APPENDIX

Ministry regression coefficients

**TABLE 11** REGRESSION COEFFICIENTS ON SERVANT GROSS COMPENSATION WITH AND WITHOUT POST CONTROLS

	log (gross compensation)	
	(1)	(2)
Ministry of Agriculture, Livestock and Supply	-0.055*** (0.006)	0.129*** (0.011)
Ministry of Citizenship	-0.042*** (0.011)	-0.075*** (0.013)
Ministry of Science, Technology, Innovations and Communications	-0.035*** (0.006)	0.381*** (0.011)
Ministry of Defense	-0.138*** (0.005)	-0.195*** (0.010)
Ministry of Economy	-0.059*** (0.005)	0.351*** (0.010)
Ministry of Education	-0.029*** (0.005)	0.058*** (0.010)
Ministry of Infrastructure	0.141*** (0.008)	0.347*** (0.011)
Ministry of Justice	0.045*** (0.009)	0.498*** (0.010)
Ministry of Women, Family and Human Rights	0.141*** (0.011)	-0.081*** (0.012)
Ministry of Health	-0.154*** (0.005)	-0.202*** (0.010)
Ministry of Transparency; Comptroller General of the Union	-0.016** (0.007)	1.008*** (0.012)
Ministry of Foreign Affairs	-0.146*** (0.012)	0.342*** (0.023)
Ministry of Mines and Energy	0.067*** (0.011)	0.439*** (0.014)

Continue

	log (gross compensation)	
	(1)	(2)
Ministry of Environment	-0.195*** (0.009)	0.258*** (0.011)
Ministry of Tourism	0.067** (0.026)	-0.176*** (0.033)
Tenure	0.014*** (0.000)	0.003*** (0.000)
Post Controls	Yes	No
State Controls	Yes	Yes
Observations	439,375	439,375
Adjusted R <sup>2</sup>	0.796	0.155

**Source:** Elaborated by the authors.