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Consistency in the declaration of assets of candidates in the Brazilian elections: fiction or reality?

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Candidates data in the Brazilian elections of 2010, 2012 and 2014 were compared with information regarding the population in general. A total of 486,832 applications were analyzed. The candidates presented higher age and level of schooling than the Brazilian population in general. As previous research positively correlates age and level of schooling with assets, it can be assumed that the candidates would have greater assets, on average, than the general population. The study showed that candidates had more residencies and vehicles than the general population. However, the percentage of candidates who had bank assets was very low compared to the population. The results point out that a portion of the candidates' assets is not correctly declared, which creates a serious problem in the principal-agent relationship.

Keywords: elections; candidates; assets; transparency; TSE.

CONSISTÊNCIA NA DECLARAÇÃO DE BENS DOS CANDIDATOS NAS ELEIÇÕES BRASILEIRAS: FICÇÃO OU REALIDADE?

Neste artigo, os dados dos candidatos nas eleições brasileiras de 2010, 2012 e 2014 foram comparados com informações referentes à população brasileira. Ao todo, foram analisadas 486.832 candidaturas. Os candidatos apresentam maior idade e escolaridade do que a população em geral. Como pesquisas anteriores correlacionam positivamente idade e escolaridade com patrimônio, pode-se supor que os candidatos devem ter um patrimônio médio superior ao da população em geral. De fato, os candidatos tinham mais moradias e veículos do que a população em geral. Entretanto, a porcentagem de candidatos que apresentaram ativos bancários era muito baixa em comparação com a população em geral. Os resultados apontam que parte da declaração de bens dos candidatos não vem sendo preenchida corretamente, o que gera sério problema na relação principal-agente.

Palavras-chave: eleições; candidatos; bens; transparência; Tribunal Superior Eleitoral.

Consistencia en la declaración de bienes de los candidatos en las elecciones brasileñas: ¿ficción o realidad?

En este artículo, se compararon los datos de los candidatos en las elecciones brasileñas de 2010, 2012 y 2014 con informaciones referentes a la población en general. En total, se analizaron 486.832 candidaturas. Los candidatos presentan mayor edad y escolaridad que la población brasileña en general. Como las investigaciones anteriores correlacionan positivamente la edad y escolaridad con el patrimonio, se puede suponer que los candidatos deberían tener un patrimonio medio superior al de la población. De hecho, los candidatos tenían más inmuebles y vehículos que la población en general. Sin embargo, el porcentaje de candidatos que presentaron activos bancarios era muy bajo en comparación con la población en general. Los resultados indican que una parte de la declaración de bienes de los candidatos no está siendo correctamente declarada, lo que genera un problema serio en la relación principal-agente.

Palabras chave: elecciones; candidatos; bienes; transparência; TSE.

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1. INTRODUCTION

According to Campbell and Cowley (2014), in party-centered elections, there is little interest in researching the impact of candidate characteristics. However, Pereira and Rennó (2001) and Nicolau (2002), argue that in the plurality voting system in elections for executive positions, in the open list system, and in proportional representation for legislative position tend to focus the electoral process, in Brazil, on the candidate, not the party. In the work of Paiva and Tarouco (2011), more than half (52.4%) of the respondents declared that they did not like any party. In Nicolau's research (2006), 92% stated that when choosing their vote, the candidate was more important than the party. In the Brazilian electoral system, there is the possibility of voting for the party, but only few voters make this choice. According to Nicolau (2002, 2006), the proportion of voting for the political parties in 1986, 1990, 1994, 1998 and 2002 had been respectively 14%, 18%, 8%, 14% and 10%.

In order to find out if there was variation with time in the proportion of voting directly for the party, and if this type of vote continues to be the option of few voters, data from the Superior Electoral Court (TSE) was gathered and the percentage of these votes calculated in relation to the total votes. The percentage for the 2010, 2012, 2014 and 2016 elections was 9.19%, 7.65%, 8.02% and 6.25%, respectively. That is, it remains a low percentage, even lower than it was in the previous years.

In view of the relevance attributed to the candidate, it is important that the voter has at their disposal the maximum information available on each of the candidates participating in the election.

In order for a person to be a candidate, they must submit a series of information to the Regional Electoral Court (TRE), completed in the CANDex System and signed by the candidate in the document printed via the system. This requirement is provided by Law 9504 from 30 September 1997, art. 11, § 1, IV. The TSE compiles all statements from the candidates and makes them available on its website. Thus, a series of data on each of the candidates is publicly available: personal information, campaign receipts and expenses, criminal declarations and the declaration of assets.

The assets owned by the candidates have been the object of research, some of them focused on analyzing only elected candidates (Felisbino, 2010; F. Rodrigues, 2006; L. M. Rodrigues, 2002, 2009) and others comparing differences in characteristics between elected and non-elected candidates (Braga, Veiga, & Miríade, 2009; Pereira & Rennó, 2001; Perissionotto & Miríade, 2009; B. F. Silva & B. T. Silva, 2015).

All these works assume that the data provided by the candidates (elected or not) are reflecting reality. However, F. Rodrigues (2006) argues that there may be a high degree of evasion of asset information among Brazilian politicians. The ideal would be to compare what was declared to the Electoral Court with what was declared to the Internal Revenue Service, but the revenue data is confidential.

In view of this situation, the following question was elaborated: Are the asset data declared by the candidates consistent in comparison to information of the general population?

This article is organized in five sections including this introduction. The second section presents the theoretical framework. The third shows the assumptions made and the methodology adopted. The next section presents the results and the fifth and final part discusses the findings and conclusion.

2. THEORETICAL FRAMEWORK

2.1 PRINCIPAL-AGENT MODEL APPLIED IN THE RELATIONSHIP BETWEEN RULERS AND RULED

According to Waterman and Meier (1998), principal-agent models are derived from diverse disciplines such as law, finance, accounting, economics, and have become the basis for studies related to bureaucracy and elected politicians. Andersen, Henriksen and Spjelkavik (2008) add that the principal-agent theory was based on contract theory and developed as an alternative extension of transaction cost theory, with the purpose of explaining how contracts are developed in situations of information asymmetry. Such relationships are characterized by a contract where the principal contracts an agent to perform a service in favor of the principal and in which it involves the delegation of decision authority to the agent.

In democratic regimes, the relation between rulers and ruled can be seen from the point of view of a relation between principal and agent. Several authors have suggested a shift in the principal-agent model to a structure where voters are the principal, government is the agent, and democracy is the contract between parties (Charron, 2013; Dasgupta & Williams, 2002; Kaskarelis, 2010; Kolstad & Wiig, 2009).

According to Charron (2013), agents seek to remain in power, while voters want some degree of competence and integrity from their representatives. For Gersbach and Liessem (2008), elections are the way in which voters control inappropriate political behavior, since the possibility of re-election induces the self-interest of politicians to act on behalf of the voters' interests.

According to Andersen et al. (2008), a fundamental aspect of this theory is that the principal and the agent have different accesses to information (i.e., information asymmetry), where the principal knows less than the agent about the tasks executed. The author claims that for the principal to minimize the asymmetry of information it is necessary to incur agency costs. These costs are related to control mechanisms and incentive systems to prevent opportunistic behavior.

According to Dasgupta and Williams (2002), a flourishing literature using techniques based on the principal-agent theory has emerged to research the accountability of the elected agents in the presence of information asymmetries. According to Kolstad and Wiig (2009), if the government does not behave according to the terms placed by voters it can, in principle, be exchanged through an election. But for this to work, voters must be informed of the rulers' actions.

Kanagaretnam, Mestelman, Nainar e Shehata (2014) conducted a lab experiment with undergraduates to test the influence of transparency (complete versus incomplete information) and the power of the principal to penalize the agent in trust. The result was that when the principal has the power to punish agents who do not act the way the principal believes to be the best, confidence increases. And when the principal has complete information about the situation (more transparency), the confidence also increases.

Thus, in order for voters to punish inappropriate political behavior, information must be provided transparently by the government or obtained through the existence of a free press.

2.1.1 TRANSPARENT INFORMATION SUPPLIED BY GOVERNMENT

According to Dasgupta and Williams (2002), the degree of accountability of the government to voters is mainly determined by the amount of information that is transmitted between the parties. For Adsera, Boix and Payne (2003), a well-informed constituent matters more than the level of economic development to ensure good governance. Similarly, Toka (2008) found a relationship between a well-informed constituent and the production of greater social welfare. However, this effect only took place after multiple elections.

According to Kolstad and Wiig (2009), the lack of transparency: makes corruption less risky and more attractive; makes it difficult to use incentives to make public officials act in a transparent way; makes it difficult to select the most honest and efficient people to hold positions in the public sector; makes cooperation more difficult and opportunistic attitudes more likely; can undermine social standards and reduce confidence. Brautigam (1992) shows that in Europe the development of the private sector, a free press, and civil groups led to a gradual discontinuity of behaviors now considered corrupt but once considered normal. Hiebert (2005) adds that in the eighteenth and nineteenth centuries the triumph of democracy and parliamentary systems was possible because citizens had enough information to be considered an informed constituency.

For Brautigam (1992), an open and transparent system is that with low levels of government controls on the flow of ideas and information, it has a large amount of information, accessible through publications and other public records, and confidential ratings are strictly limited. Access to information, freedom of expression, and transparent channels are key to enabling citizens to discover and publish irregularities.

According to Kolstad and Wiig (2009), transparency first has an impact on the detection of corruption (probability of being caught). When information is sparse, it is difficult to reveal whether a bureaucrat is corrupt or not. Second, transparency may also have indirect impacts on other factors that explain corruption. It may, for example, have an indirect impact on law enforcement. In non-transparent conditions it is more difficult to produce evidence and the corrupt are able to pay to avoid punishment. In general, lack of information may make it more difficult to implement appropriate anti-corruption policies.

2.1.2 PRESS FREEDOM

Free press can help to disclose information involving the agent (rulers) to the principal (ruled). However, information vehicles may collude in favor or disadvantage of certain candidates, revealing or failing to disclose information to the population. This means that free press is a necessary condition, but it is not sufficient. The work of Costa-Pérez, Solé-Ollé and Sorribas-Navarro (2012) studied the effect of information availability on scandals in the Spanish municipal elections. The database included press coverage information on the occurrence of each scandal and on the legal outcome of each case. The results show that corrupt politicians were punished, receiving fewer votes. Punishment was higher in cases where press coverage had been higher. Information provided by the press on the outcome of each case helped voters distinguish between allegations of consistent and unfounded corruption. According to Ferraz and Finan (2008), in municipalities with a local radio station, the

effect of publicizing the existence (non-existence) of corruption in the chances of re-election was more negative (positive) than in cities that had no radio station.

According to Schleiter and Voznaya (2014), if information is insufficient, the constituency may have difficulty distinguishing corrupt politicians from non-corrupt ones. For Charron (2013), it is assumed (on average) that, if exposed, a corrupt politician has a smaller chance of winning an election than a politician who is perceived as being honest. According to Adsera et al. (2003), the degree of information that citizens have, whether through the media, their personal network of acquaintances, or their own experiences, inhibits the opportunities that politicians have to engage in corruption and mismanagement.

The study by Kalenborn and Lessman (2014) examined the combined effect of democracy and free press on corruption. The results showed that the existence of democratic elections only works to reduce corruption if there is a degree of free press and vice versa. Democratic reforms are most effective if they are accompanied by institutional reforms that increase the monitoring of politicians. Without free press, voters do not have quality information about corrupt activities by politicians and bureaucrats, so that the effect of democratic elections becomes questionable.

2.1.3 INFORMATION PROCESSING: THE IMPORTANCE OF EDUCATION

According to Kolstad and Wiig (2009), several studies argue that transparency is a necessary but not a sufficient condition for reducing corruption. In addition to accessing information, it is necessary to empower people to be able to process the information and thus be able to act accordingly. For Strayhorn, Carrubba and Giles (2016), if the principal had no costs associated with acquiring and processing information, they would have all the information to properly make judgments. But because the principal has limitations, the judgment is compromised.

As for Brautigam (1992), many aspects of openness and transparency can be handled as capacity problems rather than a conscious decision to restrict access. For example, features to compile statistics may be missing, and auditors may not be available. According to Kolstad and Wiig (2009), education is a key condition for enabling the population, or groups of stakeholders, to process information. There is evidence that the effect of transparency on corruption is conditional on education and that the effect of the free press on corruption depends on the level of education. Many factors can affect transparency. Information can be contained by: secrecy, opacity, misinformation, skewed information, incomplete information, inaccessible information, unequal access to information, excessive information and irrelevant information.

2.2 INCOME AND ASSETS

Income is related to the revenues obtained and when deducting from them the expenses in a certain period the result may be positive or negative. A high income is no guarantee of a positive outcome, since the expenses may be higher. Likewise, a low income can end up in a positive result, as long as the income is higher than the expenses.

The assets are the accumulated results of previous periods. Current income and assets are not always directly related. A person may currently have a high income but have few assest because of past

debts. In the same way, a person may have a current low income, but have a many assets, stemming from previous positive results.

2.2.1 FACTORS INFLUENCING INCOME AND ASSETS

Several research have been carried out analyzing the influence of factors on income and assets. Of these factors, two will be addressed: age and schooling.

The research by Vazzana and Bachmann (1995), Barbezat and Donihue (1998) and A. M. Takahashi e S. Takahashi (2011) observed that salaries grew with age. Skalli (2007) and Huggett, Ventura and Yaron (2006) also found this increase in income in general. However, they noticed that it happened non-linearly, reaching a peak before retirement. According to Friedline and Song (2013), the early years of adulthood are characterized as a period in which the individual has few assets. Accumulating assets demands time. The surveys by Zagorsky (2005) and Grinstein-Weiss, Yeo, Zhan e Charles (2008) have shown that accumulating assets increases with age. The work of Cho (2010) also found a positive relation between age and assets. However, this relationship was not linear and the assets reached a peak in the age group between 55 and 64 years.

Income growth due to schooling has also been confirmed through research conducted in several countries. Among them there are Geweke and Keane (2000) in the United States, Skalli (2007) in France, Budría and Moro-Egido (2008) in Spain, Larson and Morris (2008) in Canada, Ning (2010) in China, Oostendorp and Doan (2013) in Vietnam, Lavrinovica and Lavrinenko (2013) in Latvia, Dorsett, Lui and Weale (2014) in the UK and Mohapatra and Luckert (2014) in India. In the study by Martins and Pereira (2004), the association between income and schooling is proven in 16 countries. Having higher income and schooling can result in an increase in assets. Pawasutipaisit and Townsend (2011) observed that the growth rate of liquid assets was correlated with schooling. The research by Hartog and Oosterbeek (1998), Lahey and Kim (2001), Grinstein-Weiss et al. (2008) and Wai and Lincoln (2016) showed an increase of assets with higher schooling level.

2.2.2 PERSONAL ASSETS

In the research on personal assets, one of the focuses has been to analyze the types of items that can be considered assets. In the study by Ozawa and Lee (2006), the three groups of assets that are mentioned the most were: vehicles (85.5% of the respondents); residencies (65.6% of respondents) and banking assets (90.5% of respondents). In the work of Grinstein-Weiss et al. (2008) the three groups of assets most present were: vehicles (67.9% of the respondents); residencies (65.3% of respondents) and banking assets (58.8% of respondents). In the study by Cho (2010), 58.1% of the respondents had their own residency.

In several studies, the item that represented the highest value in relation to total asset was the residency where the individual lived, reaching about 30% of total assets in the study of Ozawa and Lee (2006), 46% in Grinstein-Weiss and collaborators (2008) and 61% in Cho (2010). In the study by Wolff (2007), the value of residency was 30.1%, 30.2% and 28.2% of total assets in the years 1983, 1989 and 2001, respectively.

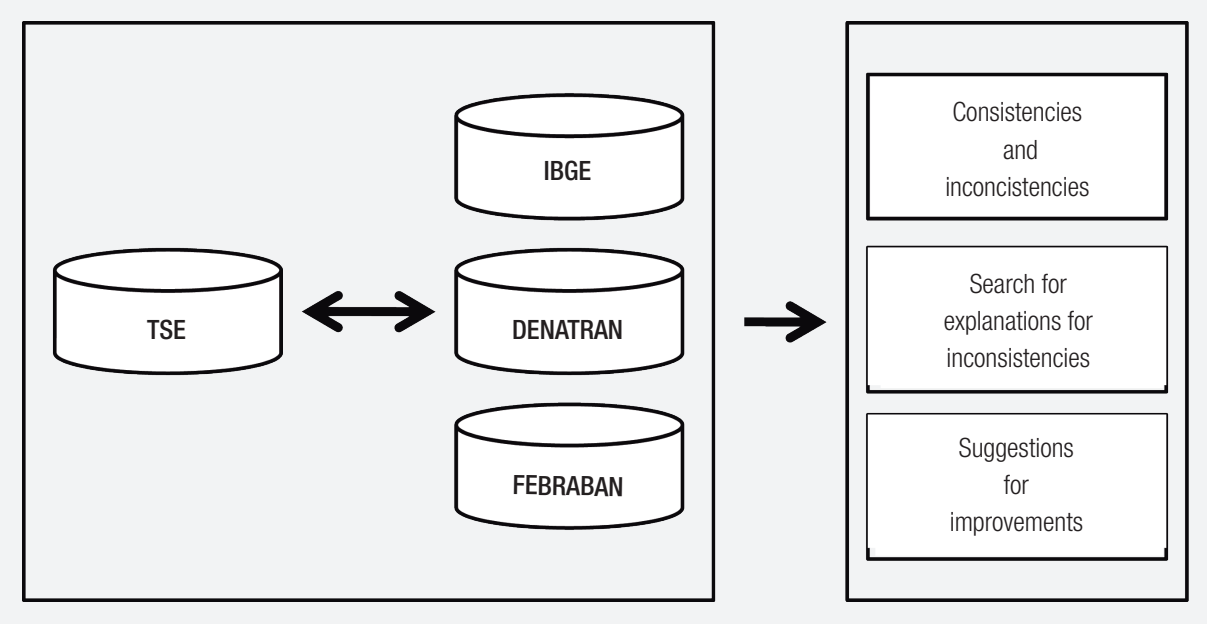
In the study by Wolff (2007), banking assets corresponded to 21.6%; 20.9%; 11.1% of total assets in the years 1983, 1989 and 2001, respectively.

3. METHODOLOGY

This is an empirical research adopting the hypothetical-deductive method by formulating hypotheses to be tested. It is a quantitative research and uses secondary data obtained from publicly available databases. For statistical tests SPSS version 23 was used.

Figure 1 shows a schematic view of the work. The data on assets declared by candidates to TSE are compared with data from several Brazilian institutions (IBGE, DENATRAN and FEBRABAN). Comparisons with hypotheses tests must result in consistencies and inconsistencies. If inconsistencies are found, possible explanations and suggestions for improvements are developed.

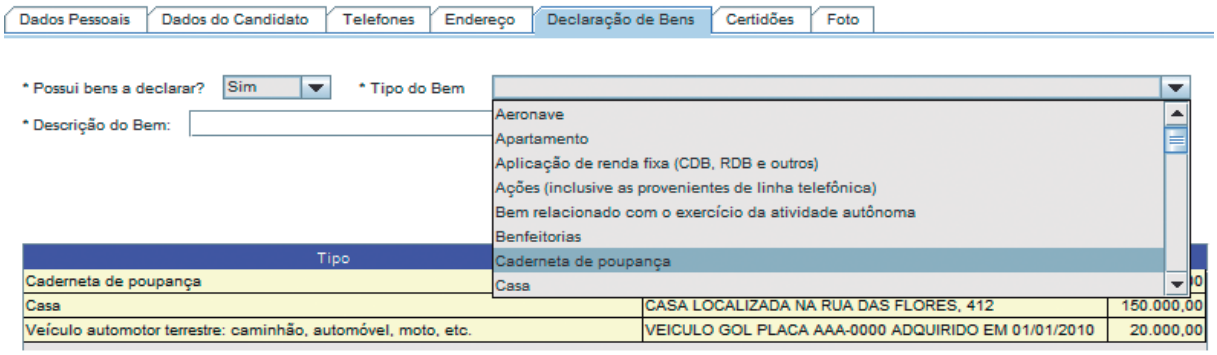
FIGURE 1 SCHEMATIC VIEW OF WORK



Source: Elaborated by the authors.

In order to participate in an election, it is necessary to present to the Regional Electoral Court (TRE) a series of information, including the updated declaration of assets, completed in the CANDex System and signed by the candidate in the document printed via the system. Figure 2, shows the screen of the CANDex System where the information about the candidate's assets is declared. Each asset must be defined by type, description, and value. The types of assets available are the same as those indicated in the Individual Income Tax Return system.

FIGURE 2 SCREENSHOT OF THE SYSTEM CANDEX



Source: System CANDex.

The TSE (2014) makes available on its website the personal data and respective assets of each candidate. The information can be accessed for each candidate individually or downloaded in an open file. There are 50 types of assets available for declaration in the CANDex System. For our analysis, we grouped the types available in categories of assets. Box 1 shows the categories of assets used and the assets that make up each group.

BOX 1 CATEGORIES OF ASSETS

Categories of assets	Assets included in the category
Residencies	1, 11, 12, 13 (containing the word "*casa*" (house))
Vehicles	21.
Bank	41, 45, 46, 47, 49, 51, 52, 53, 54, 59, 61, 62, 69, 71, 72, 73, 74, 79
Other properties	2, 3, 13 (not containing the word "*casa*"(house)), 14, 15, 16, 17, 18, 19
Stocks and shares	31, 32, 39
Other personal property	22, 23, 24, 25, 26, 29
Cash – Brazilian currency	63
Cash – foreign currency	64
Other assets	91, 92, 93, 94, 95, 96, 97, 99

Source: Elaborated by the authors.

Of the listed categories, the data for Residencies, Vehicles and Bank are those analyzed here. The data presented by the candidates are compared with data from the general population. The selection of these categories is because they are the type of assets that appeared most frequently in the studies of Ozawa and Lee (2006), Grinstein-Weiss et al. (2008) and Cho (2010).

The research collected data from the Brazilian Institute of Geography and Statistics (IBGE, 2014) regarding the total population, age, schooling and number of residencies. The system to obtain this information was the IBGE's Automatic Recovery System (Sidra), and also the web portal Estados@.

The National Traffic Department (DENATRAN) (Ministério das Cidades, 2014) was the source used to collect information on the size of the fleet of vehicles.

The information on the social security number of the Individual Taxpayer Registry (CPF) with a record of relationship in a financial institution was collected with the Brazilian Federation of Banks (Febraban, 2014).

3.1 HYPOTHESES

The data on the age and schooling level of the candidates and the general population will be compared. The assumption is that the candidates should have more (or less) assets in relation to that presented by the general population. This is due to the fact that previous research correlates age and schooling with assets. More specifically, if the candidates have a higher (lower) age and schooling level than the general population, it can be assumed that they must present more (inferior) assets than the general population. For the population data of age and schooling the research took as reference the 2010 IBGE Census.

In this way it is possible to apply hypotheses tests about certain categories of assets and verify if the assets presented by the candidates are compatible with the expected asset in comparison to the general population. The categories chosen for analysis were residencies, vehicles and the percentage of people with active bank accounts.

For data on the population and existing residencies, the 2010 IBGE Census was used, and for the fleet of vehicles the information collected with DENATRAN in December of the year prior to the election was considered. For example, for the 2012 elections, data from DENATRAN for December 2011 was considered. For the number of people with active bank accounts, the study used data from FEBRABAN 2010. Assuming that having an active bank account, implies in the existence of financial assets.

Therefore, if the candidates present higher (lower) age and schooling level than the general population, the following hypotheses are considered:

H1a (H1b): The average number of residencies presented by the candidates is equal to or greater (less) than that presented by the general population.
H2a (H2b): The average number of vehicles presented by the candidates is equal to or greater (less) than that presented by the general population.
H3a (H3b): The percentage of people with assets in the bank among the candidates is equal to or greater (less) than the percentage of people with this kind of assets among the general population.

The hypotheses are tested using the two-tailed t test.

4. RESULTS

The research analyzed data for the 2010, 2012 and 2014 elections. The 2010 and 2014 were national and state elections and the 2012 were municipal elections. All the candidates granted with the status "accepted" or "accepted with appeal" by the electoral courts were considered for the study. There were some duplicate candidates, especially those who had disputed the second round. These duplications

were eliminated using as key the number of the candidates' voting document. A total of 486,832 candidates were analyzed.

As explained in the methodology, the assets were grouped into categories and the data analyzed refers to Residencies, Vehicles and Bank. Of the total assets declared by the candidates, the selected categories correspond to 57.79%, 64.85% and 61.04% of the assets in the 2010, 2012 and 2014 elections respectively. Of the total value of assets declared, the categories selected correspond to 39.01%, 53.08% and 35.15% in the 2010, 2012 and 2014 elections respectively.

4.1 COMPARISON OF CHARACTERISTICS BETWEEN CANDIDATES AND THE GENERAL POPULATION

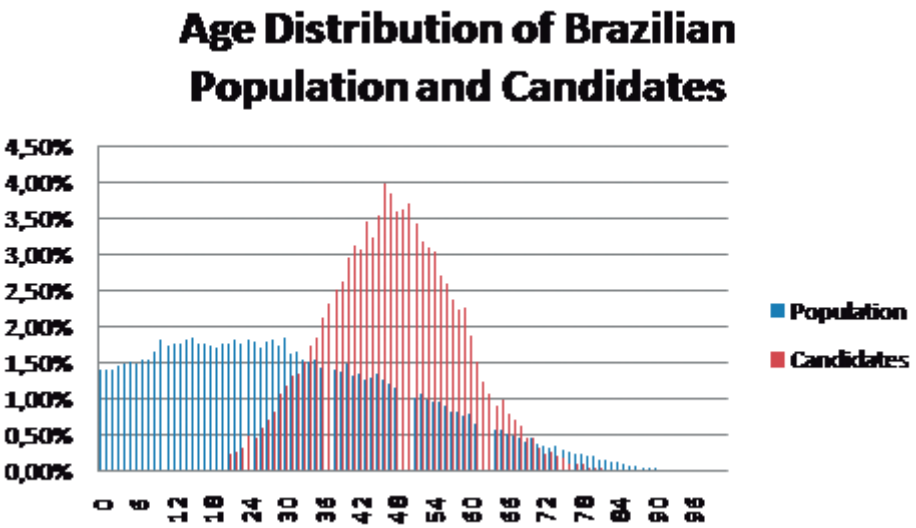
What is the expectation considering candidates' assets? Do candidates possess more assets then the general population? Or less? Studies show that the amount of assets increases with the increase of age and schooling. In order to identify this pattern, we compared the information about age and schooling of candidates and the general population, shown below.

4.1.1 AGE

The age of the candidates is compared with the age distribution of the Brazilian population, according to the IBGE Census in 2010. In that Census, the average age of the population was 31.6 years. In all elections, the average age of the candidates was higher than the population average.

Figure 3 shows the age distribution of the Brazilian population and the candidates in the 2010 elections. The candidates have a mean age greater (47.3 years) than the general population, with the t statistic value of 196.868 (p = 0.000), statistically significant at the 1% level.

FIGURE 3 AGE DISTRIBUTION OF POPULATION AND CANDIDATES – ELECTIONS 2010



Source: Elaborated by the authors.

For the elections of 2012 and 2014 the same situation was found. In 2012, the candidates have a mean age (44.3 years) which is higher than the general population, with the t-value of 753.416 (p = 0.000) statistically significant at the 1% level. Similarly, in 2014, the candidates have a mean age (46.9 years) higher than the general population, with the t statistic value of 211.064 (p = 0.000), statistically significant at the 1% level.

Thus, by looking at only the age, one can expect that the candidates have more assets than the average in the general population.

4.1.2 SCHOOLING

The 2010 IBGE Census presents the number of people over 25 years old per schooling level. To be able to make a proper comparison between candidates and the general population, we consider only candidates who are 25 years of age or older. The percentage of candidates 25 years of age or older was greater than 95% for all elections.

Table 1 shows the distribution of the population (based on the 2010 IBGE Census) and the candidates per schooling level for each of the elections analyzed. Candidates have a higher proportion of higher schooling levels compared to the general population for all elections. It can also be observed that the percentage of candidates with complete higher education is higher in national and state elections in relation to municipal elections.

TABLE 1 DISTRIBUTION OF POPULATION AND CANDIDATES – SCHOOLING LEVEL

Schooling level	Population 2010 (%)	Election 2010 (%)	Election 2012 (%)	Election 2014 (%)
Not Identified	0.27%	0.00%	0.00%	0.00%
No education and incomplete primary education	49.25%	3.94%	20.62%	4.32%
Complete primary education and incomplete secondary education	14.65%	10.64%	19.28%	10.31%
Complete secondary education and incomplete higher education	24.56%	36.75%	39.27%	38.54%
Complete higher education	11.27%	48.67%	20.83%	46.83%

Source: Elaborated by the authors.

Several studies relate asset and schooling (Hartog & Oosterbeek, 1998; Lahey & Kim, 2001; Grinstein-Weiss et al., 2008). Therefore, observing only schooling level, it is expected that candidates have more assets than the average of the population.

4.2 COMPARISON BETWEEN ASSETS OF CANDIDATES AND OF THE GENERAL POPULATION

As observed above, candidates have a higher average age and have a higher schooling level than the average population. For this reason, the hypotheses **H1a**, **H2a** and **H3a** will be used. To test these hypotheses, information on residencies, vehicles and assets in banks are required.

This article uses the **Ha** hypotheses, i.e., the candidates have more assets than the general population. It is noteworthy that the research uses these hypotheses because the candidates presented higher schooling level and age than the population. Otherwise, the **Hb** hypotheses would be preferred.

Data on the population such as having residencies and vehicles can be obtained in Brazil distributed both nationally and by state. The proportion of clients with assets in banks is available only at the national level. According to data from FEBRABAN, at the end of 2010, there were 115,273,414 CPFs with active accounts in financial institutions in Brazil, which is 60.43% of the population.

For all the elections and considering the level of 1% of significance, the **H1a** and **H2a** were confirmed, but the **H3a** was rejected.

For 2010, **H1a** was nationally confirmed, with the t-statistic value of 37.267 (p = 0.000), statistically significant at the 1% level. **H1a** was also confirmed at a level of 1% in all states. **H2a** was confirmed nationally, with the t-statistic value of 49.676 (p = 0.000), statistically significant at the 1% level. **H2a** was also confirmed at the 1% level in all Brazilian states. The percentage of candidates who had some kind of asset in financial institutions (checking account, savings, funds, etc.) was of 22.61% of the candidates, which is a lower percentage than that one found for the general population. **H3a** was rejected nationally, with the t-statistic value of -122.842 (p = 0.000), statistically significant at the 1% level.

For 2012, **H1a** was confirmed nationally, with the t statistic value of 60.741 (p = 0.000), statistically significant at the 1% level. **H1a** was also confirmed at the 1% level in all states, except for the states of Alagoas, Espírito Santo, Pernambuco, Rio de Janeiro e Paraíba. **H2a** was confirmed nationally, with the t statistic value of 167.602 (p = 0.000), statistically significant at the 1% level. **H2a** was also confirmed at the 1% level in all states. The number of candidates who had some kind of asset in financial institutions was of only 5.28% of the candidates. **H3a** was rejected nationally, with the t-value of -1,198.618 (p = 0.000), statistically significant at the 1% level.

For the year 2014, **H1a** was confirmed nationally, with the t statistic value of 29.831 (p = 0.000), statistically significant at the 1% level. **H1a** was also confirmed at the 1% level in all states, except for Alagoas and Rio de Janeiro. **H2a** was confirmed nationally, with the t-statistic of 32.890 (p = 0.000), statistically significant at the 1% level. **H2a** was also confirmed at the 1% level in all states. The number of candidates who had some kind of good in financial institutions was only 20.50% of the candidates. **H3a** was rejected nationally, with the t-value of -154.780 (p = 0.000), statistically significant at the 1% level.

As discussed above, due to the age and schooling characteristics, the candidates were expected to have more assets than the population. In this way, the fact that the candidates have more residencies and vehicles than the population makes perfect sense.

However, the index of people with assets in banks presented by the candidates is so low that it can lead to the questioning about the veracity of the patrimonial information provided by the candidates.

4.3 DISCUSSION OF RESULTS

Data of all the candidates of the 2010, 2012 and 2014 elections were analyzed, totaling 486,832 candidates. The analysis showed that the candidates present greater age and schooling than the Brazilian population in general. As these two factors are positively associated with assets, it is possible to assume that the candidates should have more assets than the population as a whole. In fact, it was found that the candidates had more residencies and vehicles than the general population. However, the percentage of candidates who had bank assets was very low compared to the general population. Only 22.61% and 20.50% of candidates had any assets in banks in the state and national elections of 2010 and 2014, respectively. In the municipal elections of 2012 the percentage was even lower. Only 5.28% of the candidates had any assets in bank.

Based on the findings, what can be concluded about the hypotheses? Are they consistent and reflect reality? Are they fictional? The results indicate that the answer is: neither. Part of the data seems consistent (residencies and vehicles) and another part appears inconsistent (assets in bank). This may indicate that candidates are not being transparent with their constituents.

5. CONCLUSIONS

This section presents the main findings, possible explanations for them and proposals to improve the research on the theme, as well as perspectives for future studies.

5.1 MAIN FINDINGS

Previous research addressing the declaration of assets of candidates have assumed that the information provided by the candidates is true. This study questions this assumption when comparing the data of the candidates with the data of the general population. The scope was greater than previous research, both when considering all candidates, and when analyzing data from all the elections available to date.

The analysis showed that the candidates present higher age and schooling level than the Brazilian population in general. As these two factors are positively associated with assets, it is possible to assume that the applicants would have more assets than the population as a whole. In fact, it was found that the candidates had more residencies and vehicles than the general population. However, the percentage of candidates who had bank assets was very low compared to the general population.

5.2 POSSIBLE EXPLANATIONS

Based on the findings, what can be concluded about the hypotheses? Are they consistent and reflect reality? Are they fictional? The results indicate that the answer is: neither. Part of the data seems consistent (residencies and vehicles) and another part appears inconsistent (assets in bank). This may indicate that candidates are not being transparent with their constituents.

It is possible to observe a difference between the analyzed assets regarding the possibility of verification. Residencies and vehicles can be proven (at least partially) by voters or by the free press. The press can find out where the candidate lives and what vehicle they use. When not declaring the property, the candidate can be questioned about the ownership, whether they are rented or provided by third parties. Bank assets are confidential and cannot be physically verified.

Some possible explanations for this incongruence will be discussed below.

Although it is unlikely, a first explanation would be that all the data presented is the truth. If this is the case, there would be a large number of candidates living on the fringes of the banking sector. This could be of some concern, as elected candidates will deal with various issues in their mandates, including matters related to the financial sector (loans, interest, etc.).

The second explanation is the possibility that candidates have not completed the declaration correctly, involuntarily providing untrue information. If such error is possible, it would be necessary to understand the motives and incentives that could lead to such errors. If a fill-in error was actually made, it could not be random. It would be a systematic error executed by several candidates simultaneously. And why? In general, several possibilities could be put on the table, and some kind of reasoning is necessary to understand what causes many to make the same kind of mistake.

It is easier to observe a candidate making the mistake of not declaring an asset, than the mistake of declaring an asset they do not own. Forgetting to declare does not require the candidate's effort, whereas declaring an asset that they do not have means that the candidate accessed the CANDex system, chose the category of the asset, its value and description.

Regarding possible caveats in the declaration, an explanation would be that many candidates think that it is enough to declare only items of greater value, such as real estate and vehicles. In this way, they could actually have some banking assets, but for lack of knowledge, they believe that declaring this is not required. In addition, they may not consider that a checking account or savings account is part of their assets. Another possibility is that many candidates are exempt from income tax, and therefore, believe that they do not need to declare assets. These possibilities could be explanations for the large number of candidates who report not having assets and for those who report having no bank assets.

The third explanation is that the candidate knows that they are leaving out of the declaration a certain asset, because of laziness. Depending on the item, the chances of being discovered is small, and even if discovered, they simply claim that they forgot to declare. Thus, the candidate could be sending signals that they do not consider information transparency such an important principle. In addition, the candidate would be demonstrating some negligence with the disclosure of their assets, which would be providing incomplete information for their constituents.

Finally, there is the possibility of filling in the declaration incorrectly in order to get some kind of advantage. If deciding to provide misleading information, the candidate would not have to lie about all items. On the contrary, the most effective way to avoid being discovered, would be to be trustworthy in most items and to put fake data only on the items where they can gain advantages. An example would be to omit (add) assets in order to disguise their wealth and appear to be less (more) rich, which may be more attractive to their constituency. This type of behavior has several objections,

since candidates who have submitted true declarations are no longer be elected, since a portion of the voters was deceived by the false declaration.

5.2.1 DISCUSSION

Which of these explanations would be the most plausible? In a universe of more than 400 thousand candidates analyzed in this study, it is possible that we have a little of each of these explanations, among others, representing the diversity of candidates. Either way, incomplete or false information leads to a serious problem in the principal-agent relationship, with the principal receiving information from the agent that does not perfectly reflect reality.

With regard to filling errors, this type of mistake could be reduced by providing more financial and accounting training to the general population. As for the other possibilities, one way to encourage the correct completion of the declaration is greater control of the candidates by the constituents and the free press, as well as considering the application of fines. This could indeed discourage incorrect filling.

The assets in the banks could be more detailed. Currently, the candidate needs to inform that they have a certain amount of money in a checking account, but they do not need to say in which bank. CANDex could have another field for the candidate to provide a list of the banks they use. This could also alert to potential conflicts of interest.

5.3 RELEVANCE OF THE THEME

The information in the CANDEX System is included by the political party, which reports specificities of the candidate's assets. The inconsistencies of this information or even information that is not reliable may show that the declarations presented do not adequately represent the true assets of the candidate. Thus, the lack of consistency can show, among other things, that politicians are not sharing true information. This may represent a breach of trust the voters have in the candidate. That is, a failure in the principal-agent relationship. In view of the relevance assigned to the candidate, it is important that the voter has at their disposal the maximum information available on each of the candidates participating in the election.

In this sense, in a country where the level of corruption and voter mistrust is high when compared to other countries, information provided by the candidates themselves can define or corroborate the choice of each citizen. It is also worth mentioning that all the candidates' declarations are made available on the TSE website, easily accessible online, and consequently can be checked by any citizen, press or even adversary candidates in a public auditing and governance process. Finally, this study found no similar work or substantive literature on the subject.

5.4 LIMITATIONS AND PERSPECTIVES FOR FUTURE STUDIES

Among the limitation of this study there is the fact that only a few types of asset were analyzed. In-depth analysis of all assets could reveal new results and perspectives. Another limitation stems from the particularities of the available population databases. For example, some comparisons were only possible based on the 2010 Census.

The availability of data from candidates has given the media and the general public the ability to verify and explore this information. The candidate may deceive some people, but will face the vigilance of many. With the possibilities offered by the internet, nothing prevents a citizen from observing and reporting irregularities. The ordinary citizen can visit the TSE website and view the data related to a certain candidate, however, the publicized information does not provide parameters to establish comparison. This work thus provides new possibilities, as the overall analysis of the candidates in comparison to the general population can provide new perspectives.

Experimental quantitative research could be used to analyze the effect of candidates' characteristics on constituents, to see how the declaration of assets could influence the voter's decision. Finally, qualitative research could be performed to understand points that cannot be clearly observed by quantitative research. Interviews with candidates can reveal the reasons that lead them to declare or not declare certain assets.

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