Regulatory Governance: Political Interference and Institutional Resilience in Brazil

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Resumo
Neste trabalho calculamos um índice de governança regulatória para uma amostra de agências reguladoras brasileiras federais, estaduais e municipais. O índice usa dados de um questionário respondido pelas próprias agências e replica um exercício semelhante que realizamos em 2005 quando o sistema regulatório brasileiro ainda estava em sua fase inicial. O novo índice permite uma comparação da evolução governança regulatória no Brasil nos últimos 12 anos. Os dados também são usados para realizar uma comparação com um índice de governança regulatória calculado pela OCDE para uma série de países, incluindo o Brasil. Os resultados mostram que apesar do período entre realizações do índice ter sido turbulento no setor regulatório no Brasil, os níveis de governança regulatória pouco se alteraram, indicando uma resiliência da governança contra interferência pelo governo. Os fatores que explicam esta resiliência estão ligados à dotação institucional mais ampla do país.

Palavras chave: governança regulatória, regulação, interferência política, instituições, Brasil.
JEL: L51, D02, P16
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Abstract
In this paper we calculate a regulatory governance index for a sample of Brazilian federal, state and municipal regulatory agencies. The index uses data from a questionnaire answered by the agencies themselves and replicates a similar exercise we performed in 2005 when the Brazilian regulatory system was still in its initial phase. The new index allows a comparison of the evolution of regulatory governance in Brazil in the last 12 years. The data are also used to make a comparison with a regulatory governance index calculated by the OECD for a number of countries, including Brazil. The results show that although the period between indices was turbulent in the regulatory sector in Brazil, levels of regulatory governance have barely changed, indicating a resilience of governance against government interference. The factors explaining the resilience of regulatory governance in Brazil lie in its broader institutional endowment, which moderates the effects of government interference.

Key words: regulatory governance, regulation, political interference, institutions, Brazil.
JEL: L51, D02, P16

1. Introduction

Brazil's regulatory system is still fairly young. The first regulatory agencies were created in the late 1990s as the country initiated a transition from publicly owned to privately owned public utilities. Authors (2006) created the Regulatory Governance Index (RGI), which classified six federal and 15 state infrastructure regulatory agencies as to the overall quality of their regulatory governance. This index focused on the 'inputs' for regulation of infrastructure industries, and not the performance of the agencies or the regulated sector. Those inputs are related to the *de jure* and *de facto* design, rules, constraints and capabilities of the agencies, and focus specifically on autonomy (political and financial), procedures for decision-making, 'tools and instruments' (including personnel), and accountability. The results portrayed a reasonably good state of regulatory governance on average, yet with higher rankings for federal over state agencies, and with plenty of room for improvement along several margins across agencies.

The 2005 survey that provided the data for the RGI captured the agencies at a relatively early stage of their lives. Most had been created five or less years earlier and were still on the steep part of the learning curve. Many of the agencies had been created in a similar mold and had yet to go through a process of trial and error in their specific environments that would eventually lead to divergent designs and characteristics.

In 2003 there was a replacement of Fernando Henrique Cardoso's administration, that had been the driving force behind the process of privatization and the creation of the regulatory system, by Luiz Inácio Lula da Silva's administration, which was distrustful of agencies. The new president claimed that regulators were too independent and, above all, insensitive to social demands.

The resulting tension put the regulatory system through a series of stress tests and experiences that have had an impact on the state of regulatory governance in Brazil (Mueller and Oliveira, 2009). This is particularly important in the Brazilian institutional environment because the executive holds several constitutional, budgetary and agenda-setting powers, which grant the president the means to interfere with the regulatory agencies. It is therefore useful to re-assess the RGI with current data to see what has changed in the more than 10 years since the original index was calculated.

A change in political regime due the alternation of power can be a revealing test for effective regulatory governance when the incoming government seeks to make radical changes in the agencies' structure, process and policies. Not every attempt to make such changes are undesirable or illegitimate. There are situations in which political interference can redress important problems that where not being addressed in the previous situation, such as when the regulation of electricity in Brazil was taken over by an Executive-appointed committee, sidelining the effective regulatory agency. In that case, markets and society saw the interference as necessary and legitimate given the state of emergency. Another perspective in which political interference can be understood as legitimate is when a new democratically elected regime steers the regulatory sectors' policies in a new direction through the established instruments sanctioned by the country's regulatory governance, such as appointing new directors to the agencies at the legally predetermined time and following due process. The changes imposed in this fashion are, in a sense, electorally sanctioned, but are nevertheless constrained by the prevailing rule of law.

Not all forms of political interference are benign, however. When they break the formal and informal rules and contracts under which the sectors previously operated, they can create uncertainty and instability that can lead to foregone investment and poor performance. Many of the attempted interventions in the regulatory system by the Luiz Inácio Lula administration upon

coming to power in 2003 were clear ruptures of established order. The new president reacted very strongly, for example, against the decision of the Telecommunication agency (ANATEL) to raise cell phone tariffs, stating publicly that having been elected by voters he should have the power to decide on tariffs.[1] After failing to reduce tariffs through direct negotiations with the telecom companies, the government pressured ANATEL to take unilateral action. The regulatory agency resisted the political pressure and upheld the new tariffs as established in the concession contracts.[2]

After refusing to comply with the government's demand to review the tariffs, the government tried to directly interfere in the agency's governing body.[3] The government pressured the head of ANATEL, Luiz Schymura, who had been appointed by the former president, to resign before the end of his tenure. For several months Schymura refused to step down, resisting several forms extra-official pressure imposed by the government. Eventually, however, in the agency became unbearable and he resigned in early 2004, about one year before the end of his tenure.

Lula further realized that the government's hands were institutionally tied by regulatory rules and he proposed a new set of regulatory laws that would redesign the system strongly reducing the level of regulatory autonomy. A bill was drafted, put up to consultation and sent to Congress. The most controversial issues proposed by the government was to transfer from the regulatory agencies to the ministries of the power of concession and the creation a management contract that would establish goals and punishments for the agencies when those goals were not met. The main concern was that those reforms would significantly reduce agency autonomy and weaken governance. Section 5 presents further evidence about political interferences on regulators.

The main objective of this study is to analyze potential changes in regulatory governance in Brazil over time and relative to comparable countries, based on data collected through a new round of the original survey on a current sample of regulatory agencies. In the intervening decade between surveys there have been both reasons to believe that governance may have improved and that it may have gotten worse. On the one hand, this period has seen much learning by doing and correction of past mistakes. On the other hand, there have been several events where agency autonomy has been put under stress through attempts at governmental interference. As the RGI index is composed of four different dimensions that cover a variety of aspects that contribute to governance, including autonomy (political and financial) and decision-making tools, both positive and negative elements are quantified, and it is not obvious *ex-ante* what will be the net effect of the changes experienced in the past ten years.

The main result we have found is that regulatory governance has not changed very much from 2005 to 2016. The average RGI across agencies is not statistically different in both periods. This is true for the overall index and for the four dimensions that compose the RGI (autonomy, decision making processes, decision tools, and accountability). It remains true when we calculate a different version of the index that uses only survey questions that refer to *de facto* rather than *de jure* aspects of the agencies' governance. Even when we limit the analysis to the *de facto* index of only the federal agencies, we do not find a statistically significant change in any of the dimensions. The average index (which varies from 0 to 1, increasing in the quality of governance) increases slightly for all of the dimensions, except for 'autonomy' where it falls from 0.42 to 0.40. Nevertheless, the difference is not statistically significant in any of these cases.

This result is surprising as the last ten years have been an eventful period in the country's regulatory system. A series of events and practices suggest that the regulatory agencies have had their autonomy tested, as governments have tried to directly manage or indirectly influence regulatory policies and outcomes, for example through the budgetary process or through the procedure of directors' appointment. During most of this period the Worker's Party (PT), that has

often been suspicious of regulatory agency autonomy, held the government. Several direct interventions by the government in agencies' procedures and decisions have raised concerns that the business environment in many important areas may have significantly deteriorated and could adversely affect investment levels and consequently economic activity. Reports in the media and by academic studies have chronicled the tension. Given this picture, how can one understand the lack of change in the RGI? A first factor to note is that when the 2005 index was made, the confrontation between government and regulatory agencies was already under way for at least two years. The first presidential term of President Lula began in January 2003, and already in the first months several policies to change the nature of the agencies were initiated, including an attempt to unilaterally change the inflation index in several concession contracts, the attempt to fire the head of the Telecom regulator, and the proposition of a new law to regulate regulatory agencies, as described above (Mueller and Oliveira, 2009). All three of these initiatives and others that followed raised tensions and concerns over the future of regulatory governance in Brazil. It is thus safe to presume that when the first survey was undertaken, in 2005, the respondents' revealed perceptions reflected this climate. Having failed in most of its attempts to weaken the agencies' independence, the Lula administrations eventually established a better working relationship with the agencies, for instance, by appointing new board directors aligned with the former president. However, the Dilma Rousseff's administrations brought about a new wave of tensions and interventions, bringing back the uncertainty and poor investment climate. For instance, Rousseff issued two decrees authorizing the minister of transportation to appoint and/or dismiss temporary (interim) board member of ANTT (land transport agency) and ANTAQ (waterway transportation agency) without prior consultation or authorization of the Senate. The timing is such that when the new round of the survey was produced, in 2016, the perception of respondents was likely very similar to those ten years earlier.

A second factor that can help to account for the lack of change in the RGI across periods, despite the evidence of governmental abuse in the media and in academic reports, is the fact most cases in which autonomy was challenged or violated, were met by opposing forces and checks in the other direction. The media, in particular, has been extremely vigilant and active in denouncing opportunistic behavior by the government in the regulatory domain. Similarly, the staff in several agencies has resisted such attempts. Brazil's highly independent judiciary has also played a role as a safeguard against potential violations of established rules. Together these checks and balances offer a formidable opposition to governmental abuse. This does not mean that these forces can impede every attempt of external actors to impose their preferences on regulatory agencies and their decisions, but their existence can contribute to a perception by survey respondents that captures not only the attempts against better governance, but also the reasons that make that governance more resilient.

In addition to analyzing the evolution of regulatory governance over time, this paper compares both instances of the RGI (2005 and 2016) to similar indicators created by the OECD. The OECD has long pursued the recognition and promotion of sound regulatory judgment through studies, data collection and indicators. These recommendations have motivated the 2013 update of the OECD's product market regulation (PMR) database, which covers all OECD countries plus some non-OECD countries, including Brazil (Arndt at al. 2015). In this paper we are particularly interested in the indicator created in Koske, Naru, Beiter, and Wanner (2016), which focuses specifically on governance. This indicator covers several of the same network infrastructure agencies; electricity, gas, telecommunications, rail, airports and ports.[4] We refer to this indicator, hereafter, as the 'OECD index'.

The interest in this paper is in the comparison of how Brazilian regulatory governance has changed from 2005 to 2016 using two instances of the same survey. In addition, we use the OECD data to create an RGI index. This is done by finding questions in the OECD survey that are comparable to those in the RGI methodology and using the answers of those questions for Brazil to create an indicator with the RGI methodology. This produces an index for five Brazilian infrastructure regulatory agencies that can be compared to the respective indices from RGI (2005) and RGI (2016) to see if the use of different data sources affects the results. Although the surveys are comparable, they do have some differences. The OECD survey for example is essentially *de jure*, as the questions "do not capture cases were regulators conform to established practices but are not legally bound to do so through a formal or codified requirement." The RGI survey, on the other hand, includes several questions that refer to *de facto* situations that express how regulatory governance takes place in practice.

Finally, we use the data from both of the RGI surveys (2005 and 2016) to create indicators using the OECD methodology. These indicators can be compared to the official OECD indicator for Brazil to see if under this methodology the two data sets produce different results. The indicators can also be compared to those of all OECD countries as well as a group of non-OECD countries, which are included by Koske et al. (2016).

2. Regulatory Governance: Political Interference and Institutional Resilience

Regulatory decisions often have redistributive consequences. Potential winners and losers of those decisions, which can be public authorities, the private sector and end-users, thus have incentives to pressure regulators for policies and outcomes. Independence involves rules of governance that allow the agency, as a referee among these stakeholders, to be objective, impartial, consistent and free from conflict of interest (OECD, 2016b). This insulation from undue pressure is achieved through elements such as secure tenure, legal means to enforce decisions, financial autonomy and appeals to an independent judiciary (Authors., 2006). Achieving the right level and right kind of independence, without weakening accountability, is a balancing act that engenders tradeoffs and is one of the greatest challenges of establishing appropriate regulatory governance (OECD, 2017).

Political interference is a very broad term covering a wide range of practices in many different forms of the relationship between politicians and bureaucrats. Usually political processes compel politicians to seek short-term gains, as they are subject to voters' and interest groups' demands. Effective infrastructure provision, in contrast, requires long-term planning, which makes infrastructure particularly vulnerable to political opportunism. Rouban (2003) outlines the politicization of regulatory agencies as the appointments, retention, promotion, or dismissal of regulators based on political criteria rather than merit. Party politicization is usually associated with the appointment of co-partisans to the board of directors of regulatory agencies by government politicians and/or the removal of directors appointed by the previous administration.

Ennser-Jedenastik (2015), for instance, argues that while granting formal independence to an agency may erect some institutional barriers to political interference, it also generates a strong incentive to appoint ideologically likeminded individuals to the agency leadership. By analyzing about 700 top-level appointments to over 100 regulators in 16 West European countries between 1996 and 2013 the author shows that individuals with ties to a government party are much more likely to be appointed as formal agency independence increases. In line with Maggetti (2007), who claims that the link between formal and actual independence is rather indirect, Ennser-Jedenastik argues "higher levels of legal independence are thus associated with greater party politicization—

a finding that casts doubt on the effectiveness of formal independence as a tool to reduce political influence in regulatory agencies."

The recent downward trend in infrastructure investments in developing and transition economies has been associated, at least in part, with the poor regulatory governance in those sectors (Henisz and Zelner 2002; Henisz 2001; Pargal 2003; Stern and Cubbin 2003). In countries with weak checks and balances, there are few constraints to the power of the executive. Weak political institutions may lead politicians to engage in corruption or influence regulatory agencies in order to benefit state-owned firms (Bortolotti et al., 2013). Furthermore, market-friendly legislation and well-designed contracts may be innocuous if regulators are poorly equipped or face the wrong incentives for appropriate enforcement. And privatization—as basic asset transfer—may generate very little welfare improvement if not combined with a robust legal framework, appropriate contracts, and good regulatory governance, broadly understood as the conditions for the enforcement of laws and contracts by regulators.

To attract private investment, both federal and state-level administrations in Brazil delegated regulatory authority to relatively independent institutions. Federal and state-level regulators were created almost at the same time and with very similar designs. The outcomes, however, were diverse. Prado (2012) and Pó and Abrucio (2006) partly explain this phenomenon through the history of previous sectorial bureaucracy. Mueller and Pereira (2002) also analyzed the institutional design of the five first national regulatory agencies focusing on the role of credibility. They claim that the trade-off between credibility and control was key for understanding the specific regulatory institutions that were chosen. They show that the agencies created to regulate the newly privatized markets presented higher levels of political and financial autonomy as a credible commitment against governmental interference.

For the purposes of the present study, it is worth noting that investments in infrastructure industries have large sunk costs and a high degree of asset specificity. That is, their assets cannot be easily transferred to other lines of business. Important economies of scale are an issue, and a high political content exists because infrastructure investments involve large numbers of consumers, stakeholders, and voters. Because investments are sunk and politically sensitive, politicians may see a chance to act opportunistically by requiring new targets or by imposing extra costs on regulated firms after investments are made.

Governments, thus, must solve the problem of credibly committing to secure property rights over time, and one solution to this dilemma involves delegating authority to independent regulators. By delegating powers to independent regulatory agencies, the executive assures private investors that it will not be able to arbitrarily intervene in the market and expropriate rents after investments are sunk (administratively expropriating investors after privatization through lower tariffs).

Delegation is, therefore, a solution for an inter-temporal problem: by relinquishing some control, political actors can minimize the risk of expropriation (regulatory risk) and its effects on cost and availability of private capital. Stability of rules and credibility are key ingredients of this environment. The degree of delegation reflects the degree to which the executive, the legislature, or both seek to bind their hands in order to acquire credibility (Levy and Spiller 1996; Spiller and Tiller 1997; Gilardi, 2005a and 2005b; Majone, 1996 and 2000; Vogt and Salberger 2002; Wonka and Rittberger, 2010).

One of the key aspects of the democratic process, however, is the alternation of power, which allows the replacement of old political elites for new ones, usually with different ideological preferences and political platforms. Regulators appointed by the previous administration function

as institutional safeguard against abrupt and unexpected changes, as the new political elites try to implement a distinct regulatory policy. Many regulatory rules, such as staggered appointments of directors, have the purpose of smoothing out the change brought on by a new regime over a longer period so as to provide stability and reduce uncertainty. The new administration, therefore, may face a tradeoff between interfering in the regulatory process and respecting regulatory autonomy. Under such potential political conflicts between regulators and new elected politicians regulatory governance may suffer.

How do regulatory agencies maintain their autonomy in spite of potential interference that they may experience from new administrations? Where does regulatory continuity come from?

"An institution," March and Olsen tell us, "is a relatively enduring collection of rules and organized practices, embedded in structures of meaning and resources that are relatively invariant in the face of turnover of individuals and relatively resilient to the idiosyncratic preferences and expectations of individuals and changing external" (March and Olsen 1989, 1995).

That is, past institutions give rise to self-reinforcing dynamics that push the regulatory organizations highly resilient historical tracks even in contexts of political interferences. The reasons for this resilience are multiple. Duffield (2006), discussing the resilience of international organizations, lists four complementary reasons: first, uncertainty about whether the institution will be required in the future; second, institutions embody sunk costs and are thus usually easier to maintain than to construct anew; third, existing institution's ''assets'' can be adapted for new purposes; and a fourth reason is what March and Olson (1998) term the ''competency trap:'' actors will tend to buy into a particular institution by virtue of developing familiarity with the rules and capabilities for using them.

Whatever the reasons, as March and Olson observe, ''institutions are relatively robust against environmental change or deliberate reform (…) the character of current institutions depends not only on current conditions but also on the historical path of institutional development'' (1998, 959).

Another relevant aspect is that the degree of political and financial autonomy of regulators cannot be understood in isolation from the other institutional features of a country. Levy and Spiller (1996), for instance, argue that good economic performance can be achieved only when regulatory governance and incentives are compatible with the institutional endowment of a country.

The first characteristic that distinguishes Brazil from most of other countries is that the executive branch instead of Congress initiates and coordinates Brazilian regulatory system. This is because the executive is the agenda-setter, due to its control of several constitutional and budgetary powers. In the Brazilian case a key question is whether it is possible to avoid potential executive action that would put in risk the regulated sector's rights and investments.

In an environment like this, dominated by the executive, legislators have also delegated substantial powers to "non political" organizations such as the Judiciary, Public Prosecutors, Audit Courts, media etc. These institutions have acted as check to the executive's, in the sense of increasing sharply the costs (political or not) of any discretionary action. Brazil has a very sophisticated web of independent accountability institutions capable of constraining this powerful executive. The regulatory system, therefore, may work as a complementary accountability organization if the president tries to jeopardize investors. To sum up, it may not be a surprise to observe a great degree of institutional resilience from independent regulators despite attempts by the executive to interfere and downplay the independent role of regulatory agencies.

3. Measuring Regulatory Governance in Brazil

3.1. *Methodology for creating the RGI*

The data to create the index were collected through a survey answered by a sample of 16 regulatory agencies in Brazil in 2016. Six of the agencies are federal, 8 are state level agencies and 2 are municipal regulators. Table 1 list the sample and indicates which sectors each agency supervises.

[Table 1 about here]

The survey was applied during the months of June to October of 2016 through an online platform where the invited agencies could enter their data and respond to a list of 83 different questions divided into four categories: (i) autonomy; (ii) decision making; (iii) decision tools; and (iv) control and accountability.[5] The questionnaire for the survey was practically identical to that applied by Authors (2006), in order to allow comparability of the results and give a picture of the evolution of regulatory governance in Brazil.[6] Figure 1 presents examples of survey questions from each sub-dimension. Most of the questions have a series of predetermined answers from which the respondent can choose one alternative. A few questions ask for numerical values. All possible answers have a predetermined number of points, which accrue to the agency's index if that answer is chosen. The points are such that each question varies from zero to one. We set the points for each answer based on the theory of regulatory governance, so as to reward 'good' governance features and penalize 'bad' features. The score for each dimension was simply the average of all the questions in that section, with equal weights. The general index aggregates the four sub-indices by a weighted average with equal weights (0.25) for each dimension. Finally, the index for each agency was rescaled to allow greater comparability across agencies.[7]

[Figure 1about here]

3.2. *The Results for the Regulatory Governance Index for 2016*

Table 2 displays the results of the RGI of 2016 for the 16 federal, state and municipal regulatory agencies. The four sub-dimensions that compose the index are also shown. As was the case in 2005, we found that the federal agencies had better governance than the subnational agencies, with the exception of the federal water regulator (ANA). The best-ranked agency overall was the federal electricity regulator, which scored significantly above all other agencies.

[Table 2 about here]

Figure 2 shows the RGI-2016 in a graph, which also indicates the mean value together with plus and minus one standard deviation. As in the case of 2005 there was relatively little variation across agencies, with only one agency above the one-standard deviation above the mean and three agencies below the one-standard deviation below.

[Figure 2 about here]

The index was created by giving each agency points for features that indicate good governance. Yet because there is some subjectivity over how the points are awarded, it is preferable to interpret the index for a given agency relative to other agencies, instead of as an absolute value. In this sense the results of the final index indicate that overall the level of governance in Brazilian regulatory agencies is between medium and high, but with much room for improvement.

The results across the individual dimensions of the index show that on average the dimension which most penalizes the final index is that of control and accountability, which measures governance features that impose on the agencies checks and constraints from other actors and stakeholder, such as consumers, regulated entities and other government sectors. In general, federal agencies have clear governance rules in this regard that, for example, require the use of

public hearing prior to important decisions. This is less common, however, at the state and municipal level.

The dimension with the highest average overall is that of decision making, which captures the quality of governance features that determine the process through which decisions are made; that is, who initiates a proposal, who has voice, who can veto, and the path and venues which the decision must navigate. Here there is no distinction between federal and sub-federal agencies. Although ANEEL, the federal electricity agency, scored the highest, most other federal agencies were in the middle of the field.

In many occasions the independence of the agencies was tested through attempts by the Lula and Rousseff governments to pressure the agencies through the appointment, oversight and budgetary processes. The results for the 'Autonomy' sub-index confirm these accounts. Most of the federal agencies score low on this dimension and the highest scoring federal agency is ANCINE. In the dimension of 'Decision tools,' on the other hand, the federal agencies do relatively well. These results confirm one of the general conclusions of this paper that regulatory governance in Brazil has improved or stabilized in terms of the more technical and bureaucratic aspects, but has done less well in areas that have political dimensions.

3.3 The de facto RGI

Criticism is sometimes aimed at indices such as ours, which are based on information about how a public organization operates, regarding the difference between what the law establishes that the organization should do and what it actually does. That is, respondents often give answers in the survey that reflect what the organization should do *de jure*, but which might often not coincide with what it does in practice. There is concern that *de jure* independence may not imply *de facto* independence. Maggetti (2007), for instance, in an in-depth study of 16 regulatory agencies finds that the link between formal and actual independence is often weak. Formal independence is neither a necessary nor a sufficient condition for *de facto* independence.

In order to test whether our results suffer from these distortions we calculated a different version of our index which uses only questions in the survey that clearly refer to *de facto* issues. Whereas the full RGI index contains information from 83 questions, the *de facto* index contains 28. Both indices are shown in Figure 3. In general, the results are very close, indicating that the *de jure* questions do not distort the index significantly. The correlation between both indices is 0.73. There are a few cases, however, where there is a noticeable gap between each version of the index. When the full RGI is above the *de facto* RGI, as in the case of ANTT (federal land transport) this indicates that the governance on paper is better than that which actually materializes in practice. On the other hand, when the *de facto* RGI is above the full index, such as in the case for ARSAL (the public service regulator for the state of Alagoas) and ANEEL (federal electricity) this implies that practice is better than paper. This is the case for only these two agencies in our sample, whereas the opposite effect holds for 10 agencies (other four cases are statistically the same in both versions).

[Figure 3 about here]

3.4. The evolution of regulatory governance in Brazil from 2005 to 2016

Much has changed in Brazil and in its regulated public utility sectors in the more than 10 years between 2005 and 2016. During that period Brazil has undergone some boom years, periods of high foreign direct investment, then a prolonged economic depression, political crises, an impeachment and much else. In 2005 the country's experience with regulatory agencies was still in its initial stages. Since then more agencies have been created and there has been significant

learning by doing with several organizational and personnel improvements. There has also been much tension between the agencies, the government and other stakeholders.

Not all agencies that were included in 2005 are included in 2016, and vice-versa, but there is sufficient overlap, especially among the federal agencies to allow for a direct comparison. The two rounds of the index are shown together in Figure 4.

[Figure 4 about here]

The graph shows that there is no clear distinction between the RGI of 2005 and 2016. There are agencies with high and low values in each of the years. This is confirmed by taking the average and standard deviation of the index in both periods: 2005 mean = 0.5723 and standard deviation = 0.088, and 2016 mean = 0.5784 and standard deviation = 0.075. The means are statistically equal, so that on average there has been no change in the index over time. It may be that the overall average might be masking changes in the separate dimensions, which might cancel out. In order to investigate this possibility, we performed difference in means tests on the four dimensions in 2005 and 2016. The comparison shows that none of means of the individual dimensions are statistically different. This seems to indicate that regulatory governance in Brazil is remarkably stable over time. There remains the possibility that for individual agencies there might have been changes over time that are not captured in the aggregated statistics. Yet the pairwise comparison of the 2005 and 2016 indices for those agencies that took part in both surveys reveals that most agencies have relatively stable scores, though there are relatively large reductions in governance for ANATEL (federal telecom) and for AGERBA (public utilities in Bahia). ANATEL had been the highest scoring agency in 2005 and went through some attrition with the federal government during this period. On the other hand, ARTESP (transport in São Paulo) shows a relative improvement over time.

Another concern is that the stability of the index could be a statistical artifact due to the small sample sizes, which produce high standard errors. Ideally, we would address this issue by increasing the sample size. Since we are not able to do this, an alternative is a test that responds the questionnaire randomly for 16 hypothetical agencies and then calculates the RGI for this pseudo-sample. We can then do this 1000 times to get an average sample average that can then be compared to the original (actual) sample average. If these are both statistically equal, then the stability from 2005 to 2016 will likely have been an artifact of the small sample size.[8] The result of this test rejects that the averages are equal, so that we can have some confidence that the stability result is not driven by the large standard errors.

4. Benchmarking the RGI against other Regulatory Governance Indices

4.1. Calculating the RGI for Brazilian regulatory agencies with OECD-2013

In this section we use the same RGI methodology of the previous section to calculate a regulatory governance index using the OECD data used in Koske et al. (2016), which calculates an index to measure governance of network infrastructure agencies in the OECD. We do this by matching as many questions as possible from both data sets.[9] It covers only federal agencies, as state agencies did not enter the OECD study. For this indicator the values vary from 0 (less effective governance) to 1.0 (most effective governance). Note that the OECD data is for 2013 and the RGI data is for 2005 and 2016.

Overall the results, shown in Figure 5, reveal a relatively similar ranking, perhaps with the exception of the Electricity regulator (ANEEL), which exhibits a considerably higher value with the OECD data than it does with the RGI data. The most important point is that the results show that the data sets are comparable despite their different nature. If the OECD index were

systematically different than the RGI indices this could raise concerns about the methodologies or interpretation of either approaches.

[Figure 5 about here]

4.2 Calculating the OECD index using RGI 2005/2016 data

In this section we use our data for 2005 and 2016 to replicate the index created by Koske et al. (2016) to measure regulatory governance in OECD countries with data from 2013 Product Market Regulation (PMR) Indicators and based on the OECD Best Practice Principles. We expanded the results that they report by adding some non-OECD countries for which there were data in their database, including Brazil.[10] In addition, we used data for Brazil from 2005 and 2016 to create an additional indicator for Brazil, shown as BRA-RGI (Regulatory Governance Index) in order to see how different sources of data compare within the same methodology. This comparison indicator was created by finding questions in the RGI survey of Brazilian regulatory agencies that captured approximately the same information as the Koske et al. (2016) survey. Thus, there are three indicators for Brazil in each of the figures. The Brazil indicator uses the Koske et al. (2013) data from 2013 (same as all other countries), but the Brazil-RGI indictor uses data from 2005 or 2016.

The Koske et al. (2016) indicator varies from 0 (the most effective governance structure) to 6 (the least effective governance structure). Figure 6 shows the aggregate OECD index for all countries. The sub-dimensions of regulatory governance in this study were derived from seven principles for the governance of regulators put forth by the OECD Best Practice Principles for the Governance of Regulators (OECD, 2014). These seven principles are: (i) role clarity; (ii) preventing undue influence and promoting trust; (iii) decision-making and governing body structure for independent regulators; (iv) accountability and transparency; (v) engagement; (vi) funding; (vii) performance evaluation.

The most noteworthy result from the perspective of this paper is that Brazil is the lowest (most effective governance) overall according to all three Brazil indicators. If it were only the two BRA-RGI indicators that were low, then one might suspect that the result is driven by data incompatibility. But the fact that both data sets give proximate values suggest the comparison is valid. Both the 2005 index for Brazil created with OECD data and the 2016 index created with RGI data give very similar results, though the breakdown across dimensions is somewhat different. The 2016 RGI index improves on the 2005 RGI index, especially in the area of accountability.

A second noteworthy result is that Chile is classified by the indicator as the least effective governance, which stands out because the Chilean regulatory system is renowned as one of the best in the world. In another publication entirely dedicated to Chilean regulatory policy, the OECD praises "governments capacity to ensure high-quality regulation," though it does note areas that need improvement (OECD, 2016a). Koske et al. (2016) do not comment on why Chile was so badly ranked. Possibly this is due to the fact that the indicator only captures *de jure* aspects and often *de facto* realities can show a very different picture.

[Figures 6]

The results for the RGI 2005 and 2016 once again show that there is significant stability in regulatory governance in Brazil. In the overall index and also in the independence and scope of action sub-dimensions both RGI indices have very similar values. Only for accountability was there a significant improvement from 2005 to 2016 (which is due mostly to the Port and Rail sectors).

Another remarkable result is Brazil's placement towards the top of the range in most tables. One would typically expect a developing country such as Brazil, which rarely ranks well in issues

related to governance and institutions, to be lower down in the tables when compared to OECD countries. Part of this anomaly might be due to the distinct nature of the data, as discussed above. But note that in most of the graphs the two RGI indices are usually quite close to the OECD Brazil index, where the data source and methodology match the other countries in the graphs ensuring their comparability. That is, even in the OECD study Brazil was well placed in the regulatory governance ranking.

5. Concluding Remarks

As Brazil strives to recover from the effects of a prolonged global financial crisis coupled with internal political turmoil that together have resulted in a fall of more than 7% of GDP per capita in 2015 and 2016, there has been renewed interest in the state of regulatory governance, given the need to attract domestic and foreign investment as a means to reestablish economic activity. There is a general misperception that regulatory governance has deteriorated in the past decade, in particular during the period when the Workers' Party was in power, given their traditional suspicion towards the combination of privatization and regulation as well as many government attempts of political interferences. We described and analyzed several events involving regulatory agencies' relationship with the government during this period that indicate that these perceptions could be well founded. Nevertheless, it may be that regulatory governance in Brazil may be sufficiently strong to counteract and possibly attenuate many of the pernicious effects of these attacks on the autonomy and the proper functioning of the regulatory agencies. It is possible that the structure and process of the agencies was able to deal with these events in such a way that would reassure investors that the system contains satisfactory safeguards against undue political interference.

Because these issues can be hard to settle by simply examining these events, it can be useful to try to measure directly the state and evolution of regulatory governance. This was done in 2005 (Authors 2006) by creating an index of regulatory governance for Brazilian agencies. Here we repeated the exercise with a new survey ten years later, which allows us to analyze how the index has changed in the period that was practically all under the PT administration and which also included the global financial crisis and the subsequent political turmoil. If the first round of the index captured the infancy of regulation in Brazil, this second round is the adolescence, where the basic structures and processes are already in place but where there is still much learning taking place.

Our results are very much in line with Wood's (2017) empirical assessment of the effects of the cost-benefits requirements, showing that they have been ineffective mechanisms of political control of regulators by public officials. In the case of Brazilian regulators, however, the government tried to interfere not through cost-benefit procedures, but rather through systematic impoundments of agencies' budget, partisan composition of the agencies, and strategic use their vacancies. The main result that emerged from the exercise of comparing the 2005 and the 2016 rounds of the RGI was that on average the quality of regulatory governance had not changed significantly, in spite of government's interference. This result is consistent with the idea of resilience and preservation of bureaucratic political power.

Although the sample of agencies is not exactly the same, the questionnaire and the methodology to build the index were identical, and the results were very robust in indicating that the average level of the index had not changed. This is not a statistical artifact, as the index is additive and does not pull towards any common value. Rather it is a reflection of the answers given by the people who work in the agencies to the varied questions that make up the survey. In a sense it is even natural that the measured level of governance should be rather stable, as many of the

items that make up the governance are determined in the agencies' founding laws and mandates, which typically do not change over time. Nevertheless, our survey is careful to elicit information on not only the *de jure* aspects of the agencies' governance, but also on the *de facto* aspects, which reflect how things actually work. We calculated a separate version of our index that includes only *de facto* questions in order to test whether this distinction is significant. Although the full index and the *de facto* version are not identical, their correlation is relatively high at 0.73 and their means are not statistically different. Nevertheless, as we showed in Figure 7, for individual agencies the difference can be quite large. If we look only at the federal agencies, where issue of government interference appears to have been more salient, then we do find some evidence of a deterioration of governance from 2005 to 2016. Whereas the dimensions of decision-making, decision tools and accountability improved marginally over the decade, the dimension of autonomy shows a slight fall in governance.

Since the first regulatory agencies were created in Brazil they have been through a series of shocks and turbulent economic and political events. It is not easy to decide whether this tumultuous history is a sign of weakness, that should warrant suspicion, or whether it points to a process of learning and maturing that has strengthened the regulatory process' ability to improve and adapt to new situations. Our results suggest that regulatory governance in Brazil is surprisingly resilient and stable. This result is corroborated by the benchmarking of our index against a regulatory governance index created by the OECD to measure governance in a very different sample of rich countries. Surprisingly, this other index classifies regulatory governance in Brazil as amongst the strongest of the sample. This is true whether we use the OECD data with their own index methodology, our data with their index, or their data with our index (although the nature of the data are different for we use a survey and include *de facto* aspects and they examine legislation and focus on *de jure* aspects). What this suggests is that when we see political and institutional conflicts and tension flare up in regulatory issues in Brazil, we shouldn't immediately jump to the conclusion that governance is hopelessly out of control. Rather we should investigate in what ways the governance mechanisms reacted to the crisis and how well they managed the conflicts. While the events might be a sign of regulatory weakness, they can just as well signal a process of learning and maturing that is leading to a stronger and more effective regulatory state.

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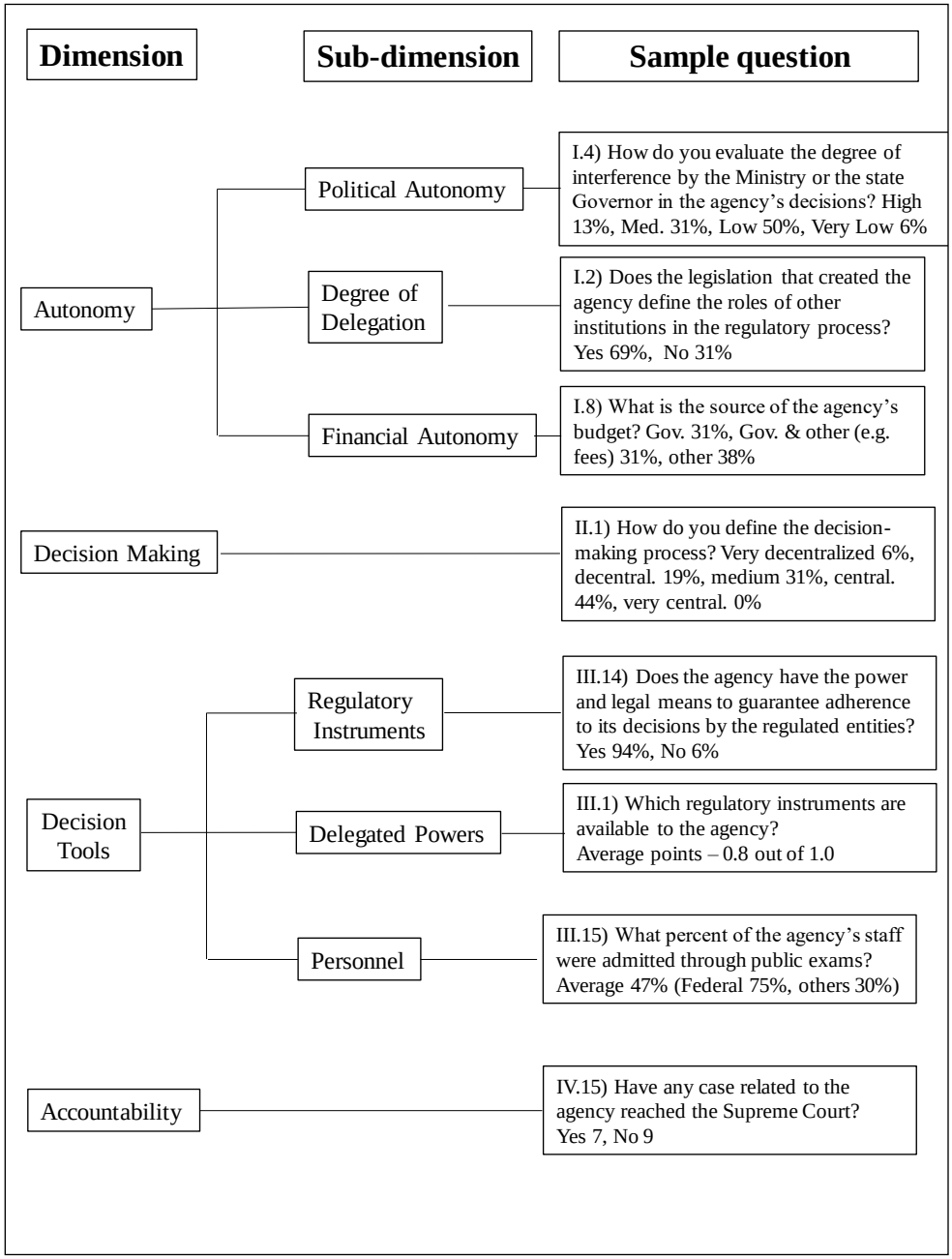
Figures and Tables

Table 1 – Regulatory Agencies in the 2016 RGI

Number	Name	Type / Location	Sectors
1	ANEEL – Agência Nacional de Energia Elétrica	Federal	E
2	ANA – Agência Nacional de Águas	Federal	W
3	ANTAQ – Agência Nacional de Transportes Aquaviários	Federal	Ports
4	ANTT – Agência Nacional de Transportes Terrestres	Federal	Tr
5	ANATEL – Agência Nacional de Telecomunicações	Federal	Com
6	ANCINE – Agência Nacional do Cinema	Federal	Cinema
7	ARSAE - Agencia Reguladora de Serviços de Abastecimento de Agua e de Esgotamento Sanitário do Estado de Minas Gerais	Minas Gerais (State)	W S
8	AGERBA – Agência Estadual de Regulação de Serviços Públicos de Energia, Transportes e Comunicações	Bahia (State)	E Tr Com
9	ARGESA – Agência Reguladora de Saneamento Básico do Estado da Bahia	BA	W S
10	ARSAM – Agência Reguladora de Serviços Públicos do Amazonas	Amazon (State)	S G Tr
11	AGERGS - Agência Estadual de Regulação dos Serviços Públicos Delegados do Rio Grande do Sul	Rio Grande do Sul (State)	Tr S E
12	AGEAC – Agência Reguladora dos Serviços Públicos do Estado do Acre	Acre (State)	E Tr S
13	ARTESP – Agência de Transporte do Estado de São Paulo	São Paulo	Tr
14	ARSAL – Agência Reguladora de Serviços Públicos do Estado de Alagoas	Alagoas (State)	Tr G E S
15	AGR – Agência Reguladora de Saneamento de Tubarão	Santa Catarina – Tubarão (Municipal)	W S
16	ARES-PCJ – Agência Reguladora PCJ (Bacia dos rios Piracicaba, Capivari, e Jundiaí)	São Paulo – Americana (Muni)	W S

Sectors: Com – Communications; E – Electricity; G – Gas; S – Sewage; Tr – Transport; W – Water.

Figure 1: Autonomy: descriptive results of selected questions



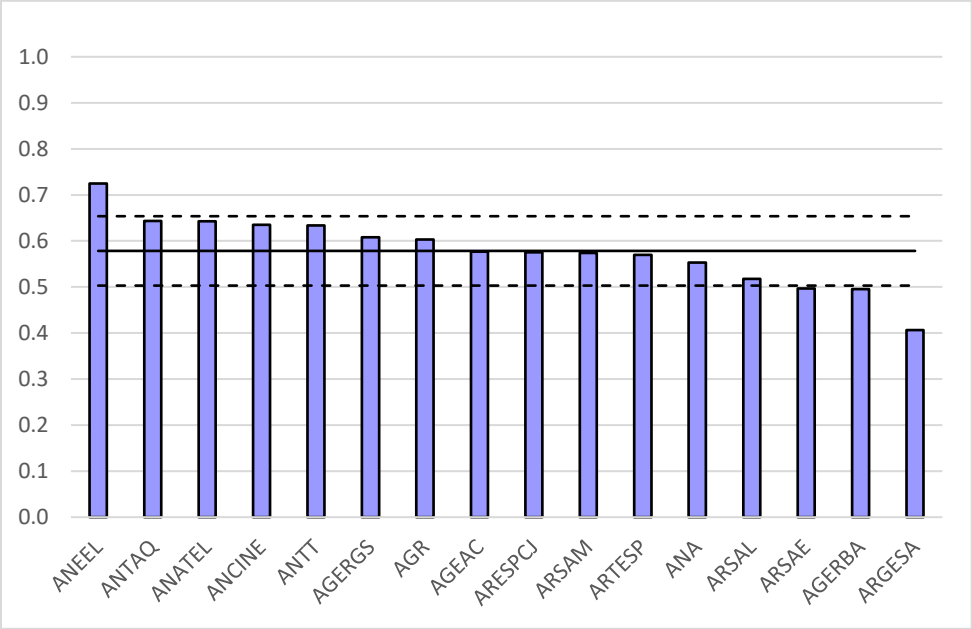
Source: The complete survey is available upon request.

Table 2 – Results for the 2016 RGI

Agency	Sector	Autonomy	Decision Making	Decision Tools	Account-Ability	RGI - 2016
			Federal			
ANEEL	E	0.6446	0.8701	0.7116	0.6716	0.7244
ANTAQ	WTr	0.5979	0.6379	0.7138	0.6232	0.6432
ANATEL	Tel	0.5065	0.5743	0.8467	0.6428	0.6426
ANCINE	C	0.6767	0.5384	0.6695	0.6552	0.6350
ANTT	GTr	0.5536	0.6200	0.7270	0.6349	0.6339
ANA	W	0.5617	0.6510	0.5306	0.4679	0.5528
			State/Muni.			
AGERGS	Tr S E	0.7274	0.7140	0.5719	0.4188	0.6080
AGR	W, S	0.7161	0.4971	0.7033	0.4956	0.6030
AGEAC	E, Tr, S	0.6604	0.8271	0.3466	0.4714	0.5764
ARESPCJ	W, S	0.7102	0.4628	0.7221	0.4057	0.5752
ARSAM	S, G, Tr	0.4476	0.8521	0.5178	0.4793	0.5742
ARTESP	Tr	0.4137	0.5754	0.6245	0.6659	0.5699
ARSAL	Tr, G, E, S	0.6061	0.6026	0.2414	0.6197	0.5174
ARSAE	W, S	0.4952	0.4993	0.5524	0.4394	0.4966
AGERBA	E, Tr, Com	0.3888	0.4966	0.5606	0.5354	0.4953
ARGESA	W, S	0.3933	0.2508	0.4254	0.5550	0.4061
Mean		0.5687	0.6043	0.5916	0.5489	0.5784
Stand. Dev.		0.117	0.160	0.157	0.095	0.075

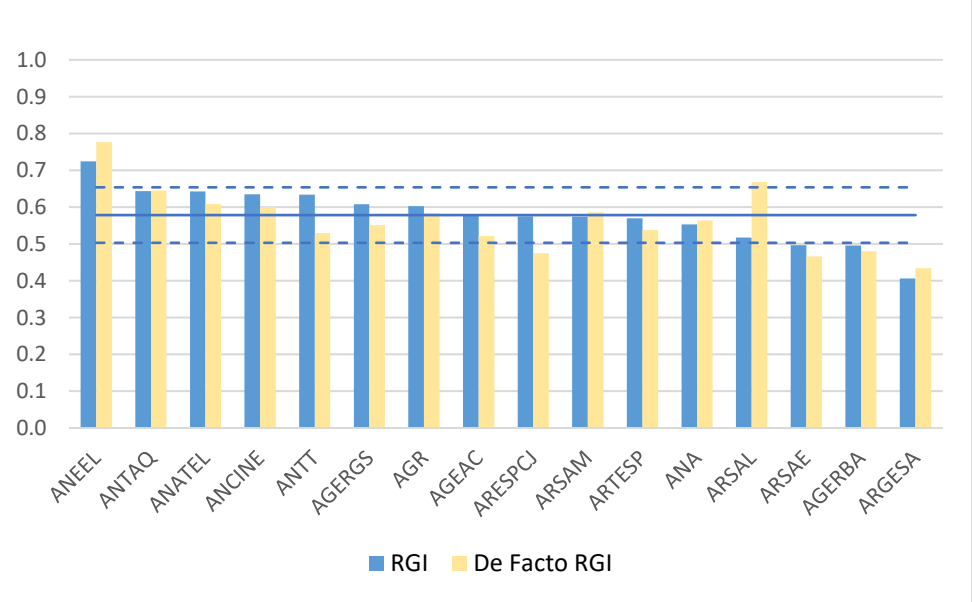
Note: E = electricity, C – cinema/movies, G = natural gas, GTr = ground transportation, I = irrigation, P = petroleum, R = railroads, S = sewerage, Tel = telecommunications, Tr = general transportation, W = water, and WTr = water transportation. *Source:* Authors' calculations.

Figure 2 – The Regulatory Governance Index 2016 (avg. = 0.578)



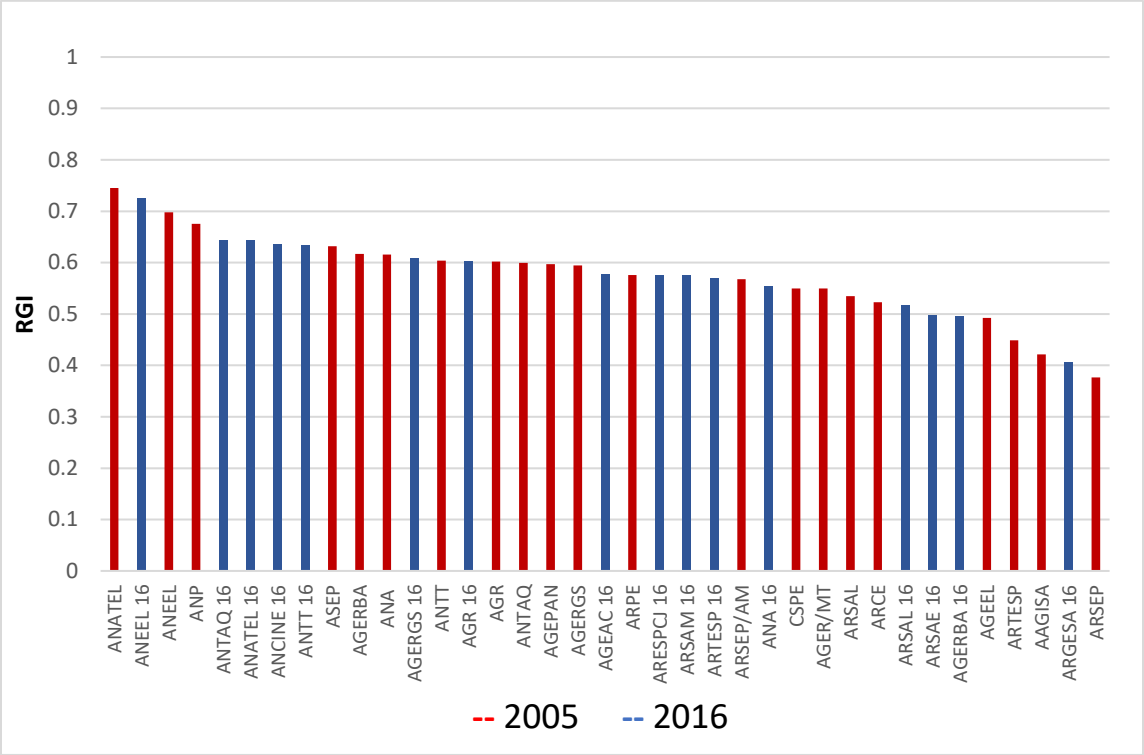
Calculated by the authors

Figure 3 – The RGI versus the 'de facto' RGI for 2016



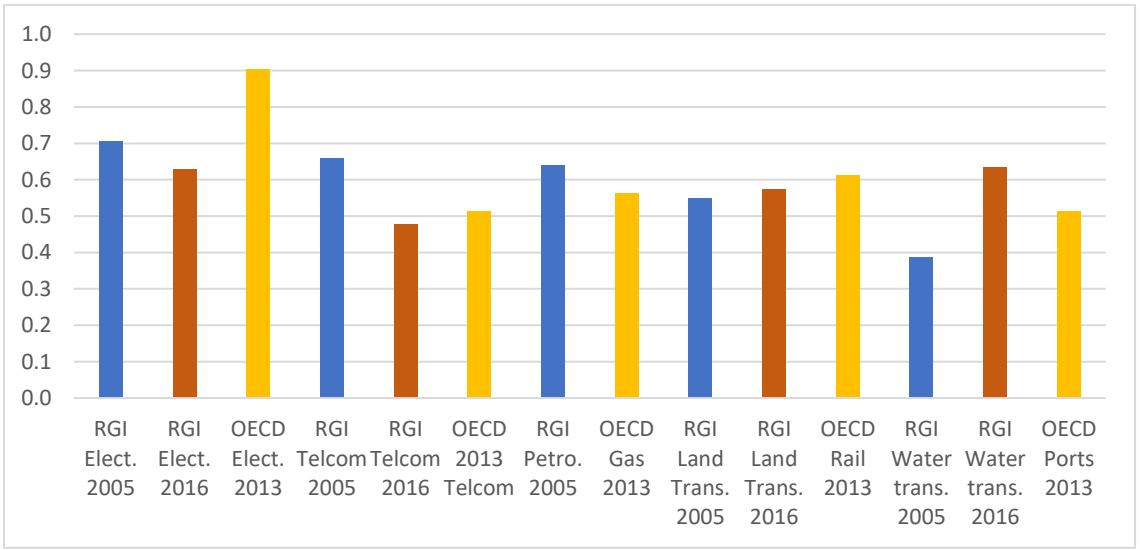
Calculated by the authors

Figure 4 – Comparison between RGI 2005 and RGI 2016



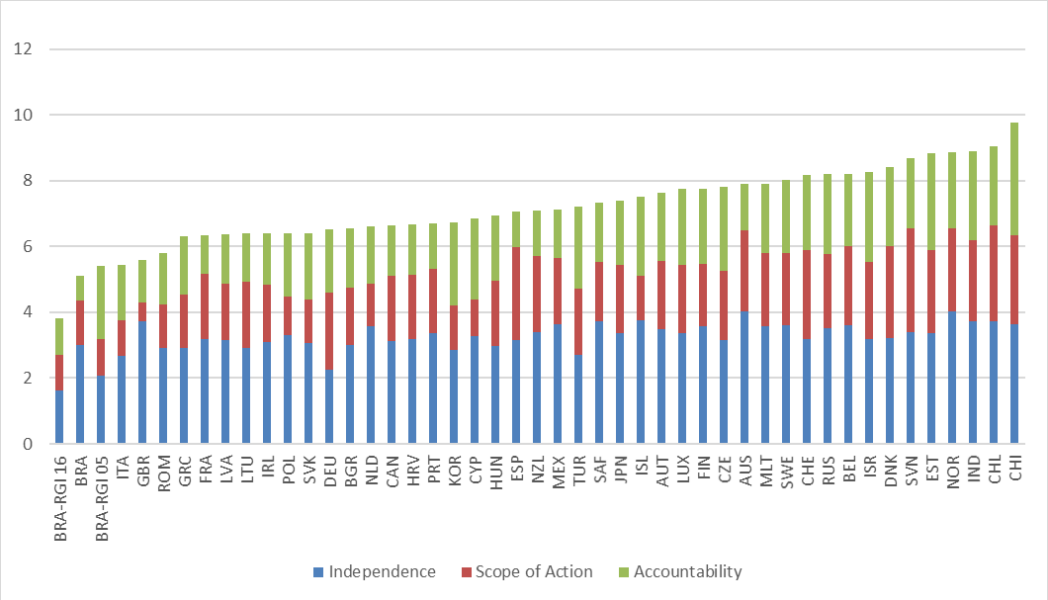
Calculated by the authors

Figure 5 – Comparing OECD data and RGI data through RGI methodology



Calculated by the authors.

Figure 6 – The OECD Governance Indicator including Brazil



Lower values indicate more effective governance. Source: Calculated by the authors using data from Koske et al. (2016), Authors (2006) and from our own 2016 survey. The Airport regulator for Brazil did not exist in 2005 and was not included in the 2016 RGI survey. The mean value for other Brazilian regulators was used in its place in 2005 and 2016. The Petroleum regulator for Brazil (ANP) was not in the 2016 survey and was replace in that year with the mean of the other sectors.

Endnotes

[1] http://jornalnacional.globo.com/Telejornais/JN/0,,MUL546522-10406,00-LULA+QUER+MUDAR+O+PAPEL+DAS+AGENCIAS+REGULADORAS.html

[2] Few months later, the tariffs of electricity were also raised by the corresponding regulatory agency, ANNEL, following the concession contract signed during the prior administration.

[3] https://www1.folha.uol.com.br/fsp/dinheiro/fi0601200413.htm

[4] The RGI in 2005 did not cover airports, as the agency had not yet been created. Also, ports and rails were part of land transport and water transport agencies, respectively.

[5] We were assisted in approaching the individual agencies by the Brazilian Regulatory Agency Association (ABAR) that vouched for our project and encouraged them to answer the survey. In addition, we contacted the agencies directly several times. Nevertheless only 16 full responses were received, which is not an ideal sample size. It also means that the two samples do not contain the same agencies, though there is some overlap, especially of federal agencies. This is partly due to the fact that the World Bank, that financed the project, had a tight deadline for the final report so we could not wait for more respondents to come through.

[6] The questionnaire is available in the online appendix for this paper. Although the questionnaires are essentially the same, an important difference is that the first survey was applied directly by the authors in face-to-face interviews, while the second was implemented through an online survey platform.

[7] The following formula was used: $\overline{I}_{ij} = \overline{I}_j + \frac{(I_{ij} - \overline{I}_j)}{SD_j}$ (1)

where $\overline{I}_{ij}$ = rescaled index of agency *i* in dimension *j*; $\overline{I}_j$ = the average value of dimension *j*; I_{ij} = the un-rescaled value of agency *i* in dimension *j*; and SD_j = standard deviation of dimension *j*.

[8] We thank an anonymous referee for this suggestion.

[9] The matched questions are available upon request.

[10] The PMR database contains data from some non-OECD countries, but the governance index was not reported for these in Koske et al. (2016).