Media Exposure of Portfolios as a Measure of Relevance*†

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The distribution of ministerial portfolios in the formation of government coalitions in Brazilian presidentialism is a crucial factor in determining the governability of the political system. Objective measurement of the relevance of ministries to political parties offers a means of shedding light on the relations between the executive and legislative branches of Brazil’s government. This research note aims to improve the empirical measurement of the relevance of Federal ministries in negotiations between presidents and political parties by including a fundamental theoretical aspect to political behavior: the media exposure of the various ministries. Given the importance of the media in shaping the political agenda and public opinion, we have expanded the theoretical conceptualization of the means to effect such measurements by adding a construct of ministerial relevance that is exogenous to the government apparatus. We have made empirical use of concepts such as the relative prestige of the various ministries and the degree of public exposure to them by quantifying the frequency of their appearances on the front pages of the three Brazilian newspapers with the largest readerships. Our results demonstrate the empirical utility and theoretical complementarity of the insertion of a variable relating to media exposure into Batista’s ministerial relevance (2017).

Keywords: Presidentialism; ministries; political parties; media; Brazil.

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Measurement of the relevance of ministries during negotiations aimed at forming a governing congressional coalition is key for understanding the relations between the executive and legislative branches of Brazil’s federal government (AMORIM NETO, 2006; BATISTA, 2013; RAILLE et al., 2011). Ministries are not assigned equal values by political parties. To estimate these values, we must measure to what degree each ministry confers on its minister the power to shape public policy, to what degree it is endowed with staff vacancies that can be distributed to allies and to what degree it offers public exposure, as all of these capacities may lead to advanced potential electoral prospects for parties and legislators wishing to occupy its highest office (AMORIM NETO and SAMUELS, 2010). In this connection, an excellent study has been undertaken by Batista (2017). She uses three central elements to determine the relevance of a ministerial portfolio: the gross and net budgets available to each ministry for the development of public policies; the number of so-called commissioned positions (i.e. positions filled at ministerial discretion rather than by civil service examinations) available; and finally, the number of bills sent directly from each ministry to the legislature. Thus, the capacity to project the political relevance of each portfolio is measured by three elements. These Batista (2017) calls ‘budget’, ‘positions’ and ‘legislative initiatives’. This provides us with an excellent parameter endogenous to the government for determining the relevance of ministries to political parties.

The main objective of this research note is to present Batista’s index (2017), plus the level of media exposure of the ministerial portfolios, a theoretical-conceptual dimension exogenous to the government. The central contribution is precisely to fill the conceptual gap presented by Batista (2017) herself in the construction of the index mentioned above: “[...] our measure only takes into account the policy, office, and budget dimensions. Aspects such as prestige are not considered for the moment” (BATISTA, 2017, p. 19). Media exposure of ministries is a way of empirically measuring the degree of public attention paid to the portfolio, including its prestige, and is compatible with Batista’s other variables (2017). The exposure of a given minister or ministry in Brazilian mainstream media is measured to indicate the intensity of the portfolio’s importance in the national political scene.
Where media exposure is positive, this increases awareness of the minister’s image and ideas among the public. Where negative, it attracts the attention of parties and politicians who seek to provide solutions to possible problems. In both cases, greater media exposure means greater importance of the portfolio for the electoral ambitions of politicians, and this allows for a theoretical and conceptual expansion of Batista’s empirical index (2017).

In addition to describing our empirical procedures, we present the results of inserting the media variable into the ministerial importance index for the two terms of President Luís Inácio Lula da Silva (hereinafter ‘Lula’) (2003-2010) and the first term of President Dilma Rousseff (hereinafter ‘Dilma’) (2011-2014), by ranking all ministries according to four variables: the degree of media exposure, positions, budget and legislative initiative. We demonstrate the utility of inserting the media exposure of the ministry into the final index, which contributes to making it more comprehensive from a theoretical-conceptual point of view by adding a concept of ministerial relevance exogenous to the government.

This research note is structured as follows: In the second section, which follows this introduction, we briefly review the literature on the importance of the media for legislators and political parties, highlighting their influence on shaping the political agenda and their theoretical-conceptual relevance. In the third section we describe the new data inserted in the ministerial importance index, notably the degree of media exposure of the ministries, as well as the results of the factor analysis carried out for the composition of the new index with the four variables. We compare the results of the indexes with and without the insertion of the new variable developed in this study and demonstrate the empirical utility of the insertion of the media in a single dimension estimated by the factor analysis. In the fourth (and final) section we conclude the research note.

**The relevance of the media to lawmakers**

An opinion widely expressed in the literature on political communication is that the media play a fundamental role in shaping the political agenda (JONES and BAUMGARTNER, 2005; WALGRAVE and AELST, 2006). Case studies (SEVENANS et al., 2015; SOROKA, 2002), comparative studies (MAURER, 2011; SEVENANS, 2018)
and specific topic studies (LIU et al., 2008) have demonstrated that politicians respond and are sensitive to media priorities. Legislators operate with a significant degree of voter preference uncertainty (BUTLER and NICKERSON, 2011). The media play a paramount role as a source of information for mapping public opinion, thereby connecting voters and elected representatives (BAUM and POTTER, 2008).

The issues that receive the most media attention are likely to have a higher status on the political agenda (SEVENANS, 2018). To use a quantitative parameter, a meta-analysis of 90 empirical studies found an average correlation of \( r = .53 \) between the media agenda and the public agenda (WANTA and GHANEM, 2007). Media coverage influences which issues the public perceives to be relevant and shapes the collective view of how issues should be resolved (IYENGAR and KINDER, 1987). Based on a case study that considered members of the Israeli parliament, Cohen et al. (2008) demonstrated the ‘influence of the presumed influence of the media’, where legislators’ perceptions of the power of the media increase their efforts to appear in media coverage, thus reinforcing the media’s prominence in the political aspirations of legislators. In view of the realization of the importance of the media in the public exposure of legislators, ministerial portfolios that get more coverage in the country’s mainstream media vehicles is of greater interest than others to a party in any horse-trading with the president.

From an empirical point of view, media coverage of a ministry is often used to measure the prestige and reputation of State bureaucracies (CARPENTER, 2001; GILAD et al., 2013; MAOR and SULITZEANU-KENAN, 2015). The prestige of a bureaucracy can be defined as a set of beliefs held by the external public about the exclusive capabilities, roles and obligations of a given ministry (CARPENTER, 2010). In the case analyzed here, the external public is the media, due to their relevance to the political parties and legislators mentioned above. To assess the prestige component of a ministry in isolation, it would be necessary to use sentiment analysis of media content by calculating the frequency of positive and negative words associated with the names of bureaucracies (CARPENTER and KRAUSE, 2012). As we describe below, we analyze media exposure and add the frequencies of mentions of ministries, be they positive, negative or neutral. In this way, the quantification proposed here adds both the prestige of a ministry and the degree to which it
receives public attention, thus capturing a construct exogenous to the state institutional structure. We call this new variable ‘media’. In the following section we present the description of this variable as well as the results of its insertion into the ministerial importance index comprising the variables ‘positions’, ‘budget’ and ‘legislative initiatives’.

Methodology and results

In order to determine the degree of media exposure of ministries, we chose to use the front pages of the three Brazilian print newspapers with the largest readerships, the Folha de São Paulo (hereinafter ‘FSP’), O Estado de São Paulo (hereinafter ‘Estadão’) and O Globo. The front page of a print newspaper highlights the primary content of each daily edition by offering greater public exposure to that content (MEDEIROS et al., 2010). The front page has the advantage of being available online to readers who do not subscribe to the newspaper, in addition to its physical exposure to non-purchasers at points of sale. The front pages of print newspapers also have an important influence on the formation of the most-commented topics on social media (OFFENHUBER and SCHECHTNER, 2013), which increase their dissemination further still. These elements confirm the capacity of front pages to reach a significant number of people, for which reason they are frequently used as markers in media coverage studies (DI TELLA and FRANCESCHELLI, 2011). Sampei and Aoyagi-Usui (2009), in an analysis of the exposure of the topic of global warming in the three main newspapers with Japan-wide circulation, demonstrate that the number of articles on their front pages had a significant impact on the degree to which the Japanese public was concerned about global warming. Thus, the frequency with which ministries appear on the front pages of major newspapers offers an excellent source of data to measure the degree of public exposure of a given portfolio, as it is a variable that can be counted daily in an ongoing, consistent and easily accessible manner. As mentioned earlier, our data cover three presidential terms between 2003 and 2014 and essentially consist of accounting for the absolute frequency with which government ministries appear on the front pages of newspapers. In Graph 01 below, we represent the

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2The automatic data extraction codes are available at: [https://github.com/luishacm/codemidiaimportance/](https://github.com/luishacm/codemidiaimportance/).
standardized values of the averages of the three newspapers (solid points) and their respective standard deviation (vertical bars) by ministry. In Annex, Table 04 (supplementary document), we present descriptive media exposure statistics disaggregated by newspaper and ministry.

**Graph 01. Average and standard deviation of media exposure by ministry**

Source: Elaborated by the authors, based on data from FSP, Estadão and O Globo.

Graph 01 shows that the ministry with the highest degree of exposure in the media is Finance, followed by Education, Justice, Health and Foreign Affairs. As expected, given the centrality of these ministries in the creation of policies and goods of high sensitivity to civil society, their exposure in the media is higher than others, indicating greater relevance. For parties and politicians seeking greater visibility on the national scene, these are the ministries that dominate the public agenda. The ministries that appear least in national media are Sports, Tourism, Social Development, Agrarian Development, Fisheries and Science and Technology, so they attract less interest to politicians interested in the visibility of their portfolios.
As our primary purpose was to add the variable ‘media’ into an index composed of the three original variables, ‘positions’, ‘legislative initiative’ and ‘budget’ (BATISTA, 2017), we proceeded with factor analysis as a method for composing a single index. Thus, with all standardized variables, we estimated a new factor analysis that included the four variables. The estimated factor analysis showed the utility of the statistical model, showing slightly better values than Batista’s original model (2017). The KMO test (Kaiser-Meyer-Olkin) in the original model scored 0.513 and 0.690 in the new index with the variable ‘media’. The Cronbach’s Alpha coefficient also showed an improvement, scoring 0.688 and 0.742 respectively. The Barllets test for sphericity also demonstrates adequate significance in the estimation of factor analysis with media. The test values are available in Annex, Table 05 (supplementary document).

The presentation of the results of the factor analysis follows the same structure and steps performed by Batista (2017) in order to ensure the best comparability of the original results with those including the media exposure of the ministries. Table 01 below shows the ‘communalities’ of the estimation. This indicator returns the proportion of variances associated with the factors estimated in the factor analysis by variable. The closer to ‘one’, the better represented the variables are in the common factorial space. Variables with an extraction indicator greater than 0.5 must be included in the final index.

| Variable         | Original Extraction | With Media Extraction |
|------------------|---------------------|-----------------------|
| Positions        | 1.0                 | 0.829                 |
| Legislative Initiative | 1.0        | 0.649                 |
| Media            | -                   | 1.0                   |
| Budget           | 1.0                 | 0.394                 |

Source: Batista (2017) and FSP, Estadão and O Globo.

As we can see, the media variable has significant relevance in the dimension estimated by the factor analysis, presenting a value of 0.612, slightly below legislative initiative capacity and the availability of commissioned positions in the ministries. As in the original estimate, ‘positions’ and ‘legislative
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initiative’ are relevant variables in the composition of the index, whereas ‘budget’ is not. In fact, with ‘media’ included in the index, the importance of ‘budget’ decreased further still. Nonetheless, we kept it in the aggregate index in view of Batista’s argument (2017, p. 22) that the importance of ‘budget’ lies in its direct connection to the power to spend money in ways that can maximize electoral return, which makes it central in theoretical terms. Table 02 depicts the variances of the four components.

Table 02. Total variance explained

| Component | Initial eigenvalues | Extraction sums of squared loadings |
|-----------|---------------------|------------------------------------|
|           | Total | % Variance | Accumulated % | Total | % Variance | Accumulated % |
| 1         | 2,309 | 57,713     | 57,713        | 2,309 | 57,713     | 57,713        |
| 2         | .885  | 22,033     | 79,71         |       |           |               |
| 3         | .515  | 12,478     | 92,225        |       |           |               |
| 4         | .312  | 7,775      | 100,000       |       |           |               |

Source: Batista (2017) and FSP, Estadão and O Globo.

The values of the four components estimated in the factor analysis are indicated in the component column. The total column returns the eigenvalues. The higher they are, the greater the variance in the estimation. The next columns return the absolute and accumulated percentage of each component in the total variance. Following the parameters established by Batista (2017) for extracting the components in the construction of the index, the eigenvalue must be greater than ‘one’ and the percentage of variance greater than 60. As in the original estimation, which did not include ‘media’, only the first component survived the criterion and made it into the composition of the final index. Unlike our other estimates, the original model reveals a slight improvement in utility with respect to the percentage of variation of the first factor with 62.3% against 57.7% of the new index with ‘media’. Even so, as the first component has a high value, 2.309, and 57.7% is very close to 60%, it is reasonable to consider the utility of the new estimated index.

Table 03 below shows the results in the component matrix. The results are the correlations between the factor and each variable. Again using the same criterion adopted by Batista (2017), results greater than 0.30 are considered the minimum requirement for the variable to be inserted into the final index. All four
variables exceed this minimum requirement, showing high correlations with the factor, indicating that the extracted factor represents the original variables well. In addition, all four variables show positive correlations with the factor by varying in the same direction.

**Table 03. Components matrix**

| Variables       | Component | Original | With Media |
|-----------------|-----------|----------|------------|
| Posts           |           | 0.91     | 0.88       |
| Legislative Initiatives |       | 0.80     | 0.80       |
| Media           |           | -        | 0.78       |
| Budget          |           | 0.62     | 0.51       |

Source: Batista (2017) and Folha de São Paulo, Estadão and O Globo.

The results of the factor analysis with ‘media’ included are satisfactory in the composition of a single index. Graph 02 below shows the final arrangement of Federal ministries according to their relevance in the four dimensions combined.

**Graph 02. Importance index factor analysis using averages, standard deviation (index with ‘budget’ and ‘media’)**

Source: Batista (2017) and FSP, Estadão and O Globo.
The results show the strong relevance of the Ministry of Finance in the composition of the final index and its prominence in relation to the other ministries. The Ministry of Finance handles such matters of great importance to civil society and government as macroeconomic and microeconomic policy, tax and revenue collection, the international representation of the country in financial affairs and specific policies for sectors such as agriculture and energy. Thus, the Ministry of Finance has a transversal role vis-à-vis other ministries and is the most important ministry in respect of national policy. Besides Finance, such ministries as Planning, Health, Justice and Education are also important. The index shows that the ministries with the least relevance and importance in terms of political negotiations are Fisheries, Sports, Tourism and Communications. In fact, the Fisheries, Sports and Tourism Ministries scored close to zero in the importance index. To compare the new index including ‘media’ and the original Batista index (2017) we used Graph 03, shown below, with a comparison of the averages by ministry in both indexes estimated via factor analysis.

**Graph 03. Comparison of indexes by ministry with and without insertion of ‘media’**

Source: Batista (2017) and FSP, Estadão and O Globo.
The first aspect that stands out in Graph 03 is the lower score that the index with ‘media’ gives almost all ministries than in the index without ‘media’. In the ministries of Planning and Welfare, for example, scores with ‘media’ are much lower than scores without ‘media’, which increases the distance of these ministries from the Ministry of Finance in the index with ‘media’. Low scores in the estimate with ‘media' show that the media exposure of these ministries is low, in contrast with potentially high scores for ‘positions’ and ‘budget’. The index with ‘media’ makes a kind of adjustment. Some ministries in the middle range of the graph swapped positions when ‘media’ was inserted, as in the case of Education and Social Security. However, the importance ranking for most ministries changed little from one index to the other. This indicates the high correlation between the media and the other variables directly related to the government. Ministries with larger budgets, positions and legislative activity are also those that appear more in the national media, and that makes it possible to aggregate these variables in a single dimension.

The empirical utility of inserting media exposure in the same dimension composed of variables of different natures allows for theoretical gain in measurement of the importance of ministries. As expected, there are no profound differences between the indexes with and without ‘media’ in Graph 03. The main contribution of the incorporation of the media into the final index of ministerial importance is its conceptual expansion, which adds a theoretically subjective element to the understanding of political behavior. The media exposure of a ministry expresses a component of ministerial importance related to the perception among the political elite of the role of the media in influencing public opinion. The index with ‘media’, in this sense, extrapolates the variables objectively connected to government structure and its relationship with the legislature. The theoretical support for the influence of the media on the political elite, as well as its empirical correlation with the other variables, gives the index with ‘media’ a greater conceptual breadth of ministerial relevance.

The Ministry of Foreign Affairs (‘MRE’), highlighted in red in the graph, is one case where the correlation between variables endogenous to the government and the media is lower. As shown in Graph 03, the value in the index with ‘media’
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exceeds the value of the index without it. The MRE has a limited budget, low investment capacity and few staff positions, which are usually held by the State (i.e. civil-service-examination-selected) bureaucracy and is therefore not very attractive for political parties. However, the MRE is usually described as very prestigious (CHEIBUB, 1989; BURGES and BASTOS, 2017). Its high media exposure (the fifth largest) is an objective indicator of this prestige. As Batista (2017) says: “[...] the Ministry of Foreign Affairs is among the most important ministries, and in our ranking, this ministry is ranked among the least important ones. Is this a major flaw in the measure? It is possible” (BATISTA, 2017, pp. 18-19). Using the framework of Batista’s index (2017) while adding the media exposure of the ministries fills this conceptual gap and proves its empirical utility here, in a single dimension.

Finally, in keeping with Batista’s analysis (2017), we include Graph 04 below with the variability of the index with ‘media’ in ministerial portfolios by presidential term in order to assess the stability of the index over time. Very large variations in the distribution of ‘positions’, ‘budget’, ‘media exposure’ and ‘legislative initiative’ could hinder analyses that use ministerial importance in the study of political bargaining between the executive and the legislative branches. In Graph 04 below, the vertical axis represents the values of the importance index estimated by the factor analysis with the presence of ‘media’. The presidential terms, corresponding to the ministries’ averages, are represented by black circles (Dilma I) and gray circles (Lula I and Lula II).

The most obvious and useful aspect to bear in mind when analyzing of the utility of the aggregate index is that it presents no significant variability between ministries by presidential term. In other words, the measure ‘importance of ministries’ is satisfactorily stable over the years. The Ministries of Finance and Social Security showed the greatest variability, with higher scores in Lula’s first term. The stability of the index over the three presidential terms reveals low sensitivity to external shocks, such as economic crises and corruption scandals. However, in the specific case of the variable ‘media’ it would be extremely relevant to consider the effect of external shocks in the quantification of media exposure of the ministries in future research. Corruption cases, for example, can increase media exposure, affecting the performance of the variable media. In
general, the results described throughout this research note demonstrate the empirical utility and theoretical value of inserting a value corresponding to ‘media exposure of ministry’ in an aggregate index of their relevance. The insertion of ‘media’ in the composition of the final index incorporates a dimension exogenous to the institutional apparatus of the Brazilian State, and this increases its conceptual scope.

Graph 04. Comparison of the index with ‘media’ by President and Ministry

Source: Batista (2017) and FSP, Estadão and O Globo.

Conclusion

Measuring the relevance of ministries to political parties is an empirical element of great value for studies on Brazilian multiparty presidentialism, especially vis-à-vis negotiations between the Presidency and Congress in the search for a legislative majority. The inclusion of media exposure in the composition of the ‘relevance index’ of ministries (BATISTA, 2017) offers a contribution with high theoretical relevance, by incorporating subjective elements such as the prestige and public projection of a given ministry. The media play a central role in determining
the political agenda and public perceptions and are important actors in determining the politicians' prospects of electoral success. Greater media exposure of a ministry, and of the person who heads that ministry, means greater public projection and potentially enhanced electability. This research note has described and tested a method for creating the variable 'media exposure' and added it to Batista’s ministerial relevance index (2017), previously published in this magazine. Our results demonstrate the utility of this variable, thereby contributing to the theoretical improvement of an indicator with high potential for empirical and conceptual contributions to studies on the relations between the executive and legislative branches of Brazil’s government.

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Annex

Tabela 04. Descriptive statistics of the portfolio media exposure by newspaper

| Portfolio             | FOLHA | ESTADO | O GLOBO |
|-----------------------|-------|--------|---------|
|                       | N     | Média  | DP      | Max | Min | N     | Média  | DP      | Max | Min | N     | Média  | DP      | Max | Min |
| Agriculture           | 65    | 05     | 05     | 15   | 0   | 61    | 05     | 04     | 11   | 0   | 53    | 05     | 03     | 12  | 01  |
| Local Affairs         | 25    | 01     | 02     | 06   | 0   | 26    | 02     | 02     | 06   | 0   | 29    | 03     | 02     | 06  | 01  |
| Science               | 17    | 01     | 02     | 06   | 0   | 23    | 02     | 03     | 10   | 0   | 18    | 02     | 02     | 06  | 00  |
| Communications        | 61    | 05     | 04     | 12   | 01  | 56    | 05     | 03     | 10   | 01  | 26    | 03     | 02     | 06  | 01  |
| Culture               | 46    | 04     | 03     | 10   | 01  | 37    | 03     | 02     | 08   | 00  | 68    | 07     | 03     | 14  | 04  |
| Defense               | 118   | 10     | 08     | 26   | 02  | 113   | 09     | 06     | 22   | 03  | 150   | 15     | 11     | 42  | 03  |
| Agrarian Dev.         | 23    | 01     | 02     | 03   | 09   | 14    | 01     | 03     | 08   | 00  | 22    | 02     | 03     | 10  | 00  |
| Social Affairs        | 20    | 02     | 01     | 05   | 01  | 21    | 02     | 02     | 07   | 00  | 13    | 02     | 01     | 04  | 00  |
| Education             | 204   | 17     | 08     | 33   | 07  | 185   | 15     | 08     | 28   | 04  | 212   | 21     | 07     | 33  | 12  |
| Sports                | 31    | 03     | 03     | 13   | 00  | 33    | 03     | 06     | 22   | 00  | 25    | 03     | 02     | 06  | 00  |
| Finance               | 415   | 35     | 20     | 76   | 10  | 544   | 45     | 20     | 07   | 24  | 325   | 33     | 16     | 69  | 12  |
| Industry              | 38    | 03     | 03     | 09   | 00  | 88    | 07     | 08     | 24   | 01  | 25    | 03     | 03     | 09  | 00  |
| Integration           | 29    | 02     | 03     | 08   | 00  | 31    | 03     | 03     | 11   | 00  | 28    | 03     | 03     | 09  | 00  |
| Justice               | 189   | 10     | 09     | 33   | 03  | 194   | 16     | 06     | 24   | 05  | 218   | 22     | 09     | 39  | 11  |
| Environment           | 49    | 04     | 03     | 12   | 00  | 78    | 07     | 07     | 24   | 01  | 71    | 07     | 10     | 29  | 00  |
| Energy                | 54    | 05     | 03     | 11   | 00  | 89    | 07     | 04     | 16   | 02  | 63    | 06     | 05     | 15  | 00  |
| Fishery               | 5     | 01     | 02     | 04   | 00  | 11    | 02     | 04     | 09   | 00  | 02    | 01     | 01     | 01  | 00  |
| Planning              | 86    | 07     | 08     | 29   | 01  | 125   | 10     | 06     | 21   | 02  | 90    | 09     | 04     | 18  | 04  |
| Social Security       | 52    | 04     | 06     | 16   | 00  | 60    | 05     | 07     | 22   | 00  | 66    | 07     | 10     | 33  | 00  |
| Foreign Affairs       | 166   | 14     | 06     | 25   | 08  | 190   | 16     | 05     | 28   | 07  | 112   | 11     | 04     | 20  | 05  |
| Health                | 182   | 15     | 06     | 26   | 07  | 172   | 14     | 07     | 25   | 06  | 200   | 20     | 09     | 32  | 04  |
| Labor                 | 111   | 09     | 05     | 20   | 00  | 101   | 08     | 04     | 18   | 02  | 79    | 08     | 06     | 20  | 02  |
| Transportation        | 37    | 03     | 03     | 09   | 00  | 39    | 03     | 03     | 12   | 00  | 48    | 05     | 06     | 21  | 01  |
| Tourism               | 25    | 02     | 03     | 07   | 00  | 25    | 02     | 03     | 00   | 00  | 39    | 04     | 04     | 12  | 00  |

Source: FSP, Estadão and O Globo.

Tabela 05. Factor analysis fit statistics

| Index       | Cronbach’s Alpha | Kaiser-Meier | Barllets Test of Sphericity |
|-------------|------------------|--------------|----------------------------|
| With media  | .742             | .690         | 316.74***                  |
| Original    | .688             | .514         | 270.45***                  |

Source: Batista(2017), FSP, Estadão and O Globo.