BRAZILIAN STATES' ECONOMIC FREEDOM INDEX: APPLYING FRASER'S METHODOLOGY FOR 2003-2016 DATA[149]

Vladimir Fernandes Maciel[150]

Ulisses Monteiro Ruiz de Gamboa[151]

Julian Alexienco Portillo[152]

Mariangela Ghizellini[153]

JEL CLASSIFICATION: D78, H7, J45, J5, P47

ABSTRACT: The purpose of the paper is to apply Fraser's methodology from the *Economic Freedom of North America* report to Brazilian data. government size, tax and labor market indicators vary among subnational entities. Following Friedrich A. Hayek's tribute on the occasion the 70th birthday of Ludwig von Mises, the importance of an index for Brazilian States is to bring principles of liberalism—based on clear evidence—to public figures (Hayek 2012), particularly in a country dominated by interventionist ideas since the 1930s. Besides the academic challenge of obtaining and processing data in the same manner as the *Economic Freedom of North America*, the current turning point in politics and economics in Brazil demands this kind of applied research. The results suggest that the Brazilian states' freedom scores are getting worse in

[150] Vladimir Fernandes Maciel (vladimir.maciel@mackenzie.br) is Head of the Mackenzie Center for Economic Freedom at Mackenzie Presbyterian University, Brazil.
[151] Ulisses Monteiro Ruiz de Gamboa is a researcher and professor at Mackenzie Center for Economic Freedom.
[152] Julian Alexienco Portillo is a M.A. student in Economics and Markets and Research Assistant at the Mackenzie Center for Economic Freedom.
[153] Mariangela Ghizellini is a M.A. student in Economics and Markets and Research Assistant at the Mackenzie Center for Economic Freedom.

recent years (2012–16), following the same trend as that of the national index. We argue for the idea that the increasing government interventions at the federal level have spread out to states and municipalities and have had the effect of institutionalizing and justifying decreases in freedom and greater influence of public entities on citizens' everyday life. The final remarks point out improvement in institutional measures for the index, as an ongoing project as Milton Friedman stated on his foreword to *Economic Freedom of the World: 1975–1995:* to "bring the indexes of economic freedom up to date and to incorporate the additional understanding that will be generated."

INTRODUCTION

Brazil is the largest economy in South America and the second largest economy in all the Americas (measured by GDP). However, its position on Fraser's Economic Freedom Index is 137 (Gwartney, Lawson, and Hall 2017) with a 5.75 absolute score.

The purpose of this paper is to apply Fraser's methodology from *Economic Freedom of North America* (Karabegovic, McMahon, and Samida 2002; hereafter EFNA) to Brazilian data. Government size, tax and labor market indicators vary among the subnational entities. Following Friedrich A. Hayek's tribute to the 70th birthday of Ludwig von Mises, the importance of an index for Brazilian States is to bring principles of liberalism—based on clear evidence—to public men (Hayek 2012), particularly in a country dominated by interventionist ideas since the 1930s.

Although there are state level sustainability indexes, there has not been not any index or any objective information to discuss and compare the economic freedom level of Brazilian states, which are heterogeneous. Besides the academic challenge of obtaining and processing data in the same manner as the Economic Freedom of North America, the current turning point in politics and economics in Brazil demands this kind of applied research.

The so-called "Brazilian State Level Economic Freedom Index" (BSLEF) is a synthetic indicator that measures the extent to which the policies of the Brazilian states are able to support economic freedom, that is, the ability of individuals to act in the economic sphere without undue restraint.

In order to present BSLEF, we organized this paper in the following sections. Section 2 briefly discusses the literature on state level economic freedom. Section 3 describes the

methodology applied to Brazilian data. Section 4 presents the results of BSLEF and its evolution over the period 2003–16. Section 5 contains the final comments, remarks and suggestions for future directions of research.

1. LITERATURE REVIEW

The calculation of an index for states and provinces is an attempt to explore institutional differences in countries which have some degree of independence among their jurisdictions. Capital accumulation, technology, labor productivity and even demographics can be affected by institutions, as pointed out by Acemoglu and Robinson (2013). Thus, local institutional frameworks can drive different social and economic outcomes inside the country.

The first work about state level economic freedom was the index developed in 2002 by the Fraser Institute for the states and the provinces of United States of America and Canada, respectively (Karabegović; McMahon, and Samida 2002). Since its original publication, several studies have been attempting to evaluate the index and "good outcomes," such as economic growth. More precisely, there are evidences that the index is positively related to "good outcomes" and negatively related to "bad outcomes" (Hall, Stansel, and Tarabar 2015).

The subnational economic freedom index is calculated by adapting some components from the *Economic Freedom of the World* (Gwartney, Lawson, and Hall 2017; hereafter EFW) for state level/provincial data. The components have been extracted from "Size of Government" (Area 1) and "Regulation" (Area 5). Therefore, there are three areas in areas in the state/provincial index: "Government Spending" (Area 1), "Taxation" (Area 2) and "Freedom of Labor Market"—i.e. "Regulation"—(Area 3). (Stansel, Torra, and Mcmahon 2016)

Some evidences are particularly important for the work we are doing in Brazil. Compton et al. (2011) uses GMM methodology for a panel dataset, exploring both aggregated and disaggregated EFNA. They found that changes in economic freedom are positively associated to changes in growth—even considering differences in educational level and demographics.

Bennet (2016) explored 50 U.S. states and 10 Canadian provinces from 1980 to 2010. The results obtained show that subnational economic freedom is associated with higher levels of income per capita and lower rates of unemployment.

Also, Bennet (2016) found that subnational economic freedom is associated with higher income inequality across states and provinces of U.S and Canada. Nevertheless, the

higher income inequality that arises due to economic freedom is associated with higher levels of economic growth fostered by a freer institutional environment—as shown by Bjørnskov (2016) and Wiseman (2016).

Income, employment and growth are consequences of human action, particularly entrepreneurship, as Mises (1966) explains. Empirical research shows there is a positive relationship between economic freedom and entrepreneurial activities. Sobel (2008) uses EFNA as a proxy for "institutional quality" for a cross-section of U.S. states. He found that a freer environment (e.g. 'good institutional quality') is strongly associated with net entrepreneurial activity, such as venture capital investments and patents.

These results are very important for Brazil, where the economy has been struggling since 2014 and has been engaged in debate concerning market oriented economic reforms towards growth, employment and development.

2. METHODOLOGY

Based on Stansel, Torra, and Mcmahon (2016), the overall summary index BSLEF is calculated by an equally weighted sum of three areas.

$$BSLEF = \frac{1}{3}.A_1 + \frac{1}{3}.A_2 + \frac{1}{3}.A_3$$

where A_1 is "government spending," A_2 is "taxes" and A_3 is "regulation" (freedom of the labor market). Each component in Area 1, Area 2 and Area 3 is normalized through the years[154] according to:

$$C_i = \frac{(V_{max}-V_i)}{(V_{max}-V_{min})}.10$$

Many components are calculated as a percentage of subnational income. For example, 1A is general consumption expenditure as percentage of income. The source for income data is National Survey from Home Sampling (e.g., PNAD), which is an annual household

---

[154] For A_1 and A_2 components V_{max} is computed using the lower maximum value of the mean plus 1.5 standard deviations. For A_3 components, V_{max} and V_{min} are the maximum and the minimum from the data for whole period (2003–16)

survey (except for census years, such as 2000 or 2010) that covers every state in Brazil. "Household income" is obtained similar to Canada and Mexico cases in EFNA[155].

Annualized income = 12 x Monthly declared income

2.1. Government Spending

In order to measure the degree of economic freedom of the Brazilian states (Area 1 of the BSLEF), based on the proportion of their expenditures in relation to annualized income, the data source was the Brazilian Treasury.

Following the methodology developed in Stansel, Torra, and McMahon (2016), we added public expenditures within the territory of each of the 26 Brazilian states (25 federal units plus the capital Brasília, considered the Federal District), which includes both those carried out by the governments such as those carried out by municipalities.

Thus, we will calculate three components, as detailed below: General Government Consumption Expenditure as a percentage of income (1A), Transfers and Subsidies as a percentage of income (1B), and Insurance and Retirement Payments as a percentage of Income (1C).

Since the objective of the present work is to make a comparison of the degree of economic freedom between the Brazilian states, the component Public Companies and Investment (1D), defined for all-government index only, was not calculated.

3.1.a. *Component 1A: General Consumption Expenditures by Government as a Percentage of Income*

In order to measure the proportion of the General Consumption Expenditures by Government as a percentage of annualized income, government subsidies and transfers were subtracted from total current public expenditures, in addition to the payment of interest on public debt. Table 1 presents the calculation of the government's general consumption expenditure, according to the general methodology proposed in Stansel, Torra, and Mcmahon (2016):

---

[155] For 2010 we calculated income in the same fashion, but data are from the census.

Table 1

General Consumption Expenditures by Government

Total Current Government Spending

(-) Subsidies and Government Transfers (Persons)

(-) Subsidies and Government Transfers (Firms)

(-) Subsidies and Government Transfers (Other Governments Levels)

(-) Interest Payment

General Consumption Expenditures by Government

In the Brazilian case, however, since state governments spend a significant part of their budget on transfers and subsidies, not only for families, firms and other government entities, but also for multi-governmental institutions, public consortiums, foreign institutions and military service, the resulting expression is considerably more comprehensive. Thus, Table 2 presents this expression, which we applied to obtain the General Consumption Expenditures by Government, using fiscal data of each state (General Consumption Expenditures by Government I – GCEG I).

Table 2

General Consumption Expenditures by Government (States)

Total Current Government Spending

(-) Transfers to Federal Government

(-) Transfers to Other States

(-) Transfers to Municipalities

(-) Transfers to Multigovernmental Institutions

(-) Transfers to Public Consortiums

(-) Transfers to For-Profit Organizations

(-) Transfers to Private Non-Profit Organizations

(-) Student Financial Support

(-) Government Support for Research

(-) Grants

(-) Food Assistance

(-) Other Personal Financial Assistance

(-) Transportation Assistance Grants

(-) Foreign Transfers

(-) Military Financial Assistance

(-) Interest Payment

General Consumption Expenditures by Government I (GCEG I)

For municipalities located inside the geographical area of each Brazilian state, there is also a set of transfers and subsidies, almost as large as the previous case, which must be subtracted from current expenditure, together with interest payments, in order to reach their general consumption expenditure made in the corresponding state geographical area. Table 3 shows the methodology used to obtain this part of the component (General Consumption Expenditure II – GCEG II):

Table 3

General Consumption Expenditures by Government (Sum of Municipalities)

Total Current Government Spending

(-) Transfers to Federal Government

   (-) Transfers to States

(-) Transfers to Other Municipalities

   (-) Transfers to Public Consortiums

(-) Transfers to Private Non-Profit Organizations

   (-) Student Financial Support

   (-) Food Assistance

   (-) Other Personal Financial Assistances

   (-) Foreign Transfers

   (-) Interest Payment

      General Consumption Expenditures by Government II (GCEG II)

For each Brazilian State, component 1A value is obtained from the sum of GCE I with GCE II divided by the annualized income, as previously defined.

3.1.b. *Component 1B: Transfers and Subsidies as a Percentage of Income*

To calculate the component 1B value, all the previous transfers and subsidies for each of the states (Transfers and Subsidies I – TS I) and for the sum of the municipalities located in their respective geographical regions (Transfers and Subsidies II – TS II) have been added together. Tables 4 and 5 show the items included in this calculation.

Table 4

Transfers and Subsidies (States)

(+) Transfers to Federal Government

(+) Transfers to Other States

(+) Transfers to Municipalities

(+) Transfers to Multigovernmental Institutions

(+) Transfers to Public Consortiums

(+) Transfers to For-Profit Organizations

(+) Transfers to Private Non-Profit Organizations

(+) Student Financial Support

(+) Government Support for Research

(+) Grants

(+) Food Assistance

(+) Other Personal Financial Assistances

(+) Transportation Assistance Grants

(+) Foreign Transfers

(+) Military Financial Assistance

_____

Transfers and Subsidies I (TS I)

Table 5

Transfers and Subsidies (Sum of Municipalities)

(+) Transfers to Federal Government

(+) Transfers to States

(+) Transfers to Other Municipalities

(+) Transfers to Public Consortiums

(+) Transfers to Private Non-Profit Organizations

(+) Student Financial Support

(+) Food Assistance

(+) Other Personal Financial Assistances

(+) Foreign Transfers

Transfers and Subsidies II (TS II)

In the same way, for each Brazilian state, the value of the component 1B will be calculated from the sum of TS I with TS II divided by the annualized income.

3.1.c. *Component 1C: Insurance and Retirement Payments as a Percentage of Income*

To obtain the component 1C value we added the public expenses related to employment insurance, pensions, other retirement payments and welfare payments for civilian and military servants. In Brazil, social security expenditures include both welfare and assistance payments. Tables 6 and 7 present the methodology used to determine the total expenses with employment insurance and pensions for the states (IRP I) and for the sum of the municipalities located in their respective geographical area (IRP II).

Table 6

Employment Insurance and Pensions (States)

(+) Employment Insurance

(+) Retirement Payments (Civil Servants)

(+) Retirement Payments (Military Servants)

(+) Other Retirement Payments (Civil Servants)

(+) Other Retirement Payments (Military Servants)

(+) Pensions

(+) Other Welfare Payments (Civil Servants)

(+) Other Welfare Payments (Military Servants)

Insurance and Retirement Payments I (IRP I)

Table 7

Employment Insurance and Pensions (Sum of Municipalities)

(+) Employment Insurance

(+) Retirement Payments (Civil Servants)

(+) Retirement Payments (Military Servants)

(+) Other Welfare Payments (Civil Servants)

(+) Other Welfare Payments (Military Servants)

Insurance and Retirement Payments II (IRP II)

Source: own table.

For each Brazilian state, component 1C value is obtained from the sum of IRP I with IRP II divided by the annualized income.

2.2. Taxation

Brazil has 25 states plus the Federal District—26 total—and 5571 municipalities in 2015. The Brazilian structure of fiscal federalism originates in the 1988 Federal Constitution. Only the federal government taxes income, and the top marginal income tax rate is the same for all citizens, e.g. 27.5 percent.

Despite being a federative republic, the aforementioned Constitution raised the degree of concentration of total tax receipts in the Federal Government, despite the massive transfers that it must carry out for states and municipalities. On the other hand, the same Constitution decentralized spending on health, safety and education, leaving states and municipalities with the responsibility to provide these services. This concentration of revenues at the federal level, together with the dispersion of expenses, generates the so-called flypaper effect.

In addition, the Brazilian tax system is very complex and bureaucratic, imposing high and varying tax burden on its citizens and enterprises. The Brazilian Federal Government collects an income tax, a manufactured good sale tax, a rural property tax, and social contributions; while states collect a value added tax, a vehicle property tax and an inheritance tax. Finally, the municipalities collect an urban property tax, a service sales tax and a real estate transaction tax.

Due to this tax structure, the following components will be calculated for Area 2 of the BSLEF: Income and payroll tax revenue as a percentage of income (2A), property tax and other taxes as a percentage of income (2C) and sales tax revenue as the percentage of income (2D), thus excluding the top marginal income tax rate and the income threshold (2Bi), defined at federal level. The data source was, once again, the Brazilian Secretary of Treasury.
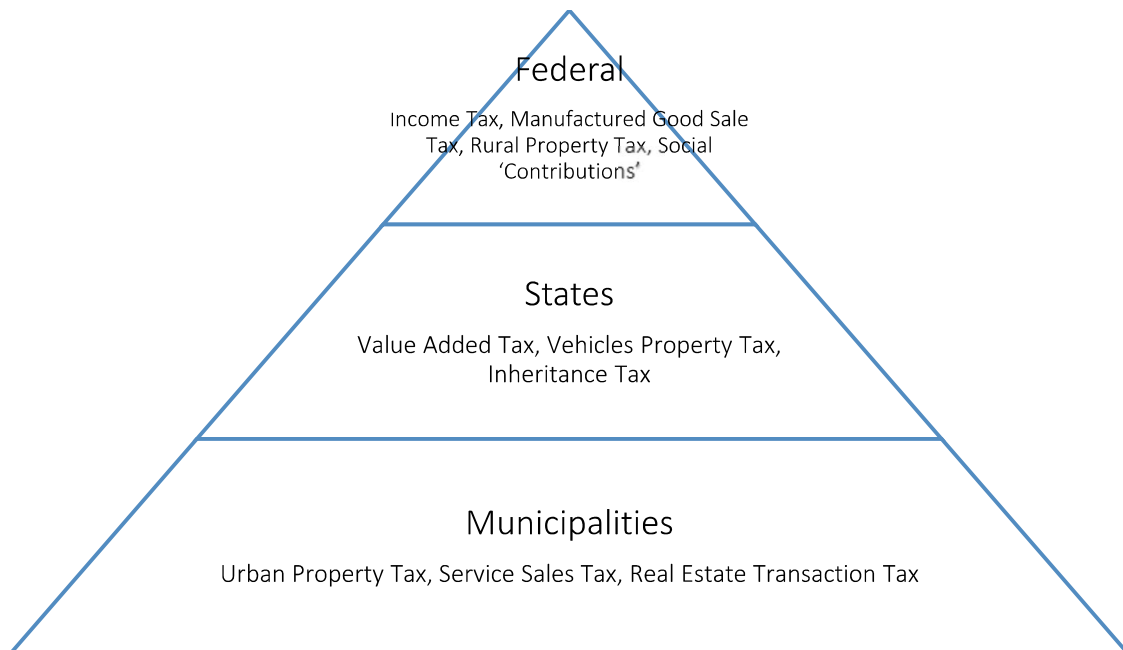
Figure 1 – Brazilian tax structure

3.2.a. *Component 2A: Income and Payroll Tax Revenue as a Percentage of Income*

Regarding component 2A, although the payroll tax is federal, there are retentions of its revenues at state and municipality levels, which need to be incorporated as taxation according to the geographical area of Brazilian states. The same is true for the capital tax and the tax on foreign remittances. Table 8 shows the taxes considered in the calculation of Income and Payroll Tax Revenue (IPTR), both for the Brazilian states and for the sum of municipalities:

Table 8

Income and Payroll Tax Revenue (States and Sum of Municipalities)

(+) Payroll Tax (Retentions)
(+) Capital Tax (Retentions)

(+) Tax on Foreign Remittance (Retentions)

(+) Tax on Other Earnings

Income and Payroll Tax Revenue (IPTR)

Source: own table.

Thus, component 2A value is obtained, for each Brazilian state, dividing IPTR by annualized income.

3.2.b. *Component 2C: Property Tax and Other Taxes as a Percentage of Income*

With regard to component 2C, the taxes considered are vehicle property taxes and inheritance taxes, collected by the states, and, at the municipal level, the property transfer tax and the urban transfer tax. Table 9 shows the taxes considered in the calculation of Property Tax and Other Taxes (PTOT).

Table 9

Property Tax and Other Taxes (States and Sum of Municipalities)

(+) Vehicle Property Tax (States)

(+) Inheritance Tax (States)

(+) Property Transfer Tax (Municipalities)

(+) Urban Property Tax (Municipalities)

Property Tax and Other Taxes (PTOT)

For each Brazilian state, to determine 2C component value, we divided PTOT by the respective annualized income.

3.2.c. *Component 2D: Sales Tax Revenue as a Percentage of Income*

Finally, the sales tax revenue (STR) is determined, from the Brazilian states' point of view, by the VAT on manufactured goods, electricity and telecommunications, and from the municipalities perspective, by VAT on services (See Table 10).

Table 10

Sales Tax Revenue (States and Sum of Municipalities)

(+) VAT on Manufactured Goods, Electricity and Telecommunications (States)
(+) VAT on Services (Municipalities)
Sales Tax Revenue (STR)

To determine the 2D component value for each Brazilian State, we divided PTOT by the respective annualized income.

2.3. Labor Market Freedom

The data sources for "Labor Market Freedom" are obtained from the States' Secretary of Labor, National Secretary of Labor and PNAD.

3.3.a. *Component 3Ai: Minimum Wage Legislation*

The institution of a minimum wage by the States is ensured by the complementary Law 103/2000. Thus, the States have the jurisdiction to legislate within their geographical limits, and the resident population must follow the regional minimum wage (exceptions are made to retirees and pensioners of the Federal Social Security System or those who follow federal law). The subnational minimum wage cannot be below the national minimum wage.

For each state, we compute the minimum wage multiplied by 12 as a percentage of per-capita annual income (from PNAD). States that have their own minimum wage are from the southern and southeastern regions (the richest regions in Brazil): Paraná, Rio de Janeiro, Rio Grande do Sul, Santa Catarina and São Paulo.

3.3.b. *Component 3Aii: Government Employment as a Percentage of Total State Employment*

Government employment includes public servants as well as those employed by government business enterprises. Military employment is excluded, following Stansel, Torra and Mcmahon (2016). Total State employment is obtained from PNAD, and it comprises formal and informal jobs.

3.3.c. *Component 3Aiii: Union Density*

The "Union Density" component measures the relationship between unionization and public policy, other than the level of government employment. We calculated the union score by regressing the unionization rate on government employment for each given year, following Stansel, Torra and Mcmahon (2016):

$$Unionization_i = \alpha + \beta.Government\_Employment + e_i$$

'Unionization' is the number of unionized workers as a percentage of total employment and 'Government Employment' is the component 3aii.

3. RESULTS

Figure 2 shows the summary index calculated for 2016 data—the latest available. The states with the highest level of economic freedom are located in the South, Southeast and Midwest regions of the country. With the exception of Minas Gerais, the states with the lowest level of economic freedom are located in the North and Middle West regions of Brazil (Figure 3).
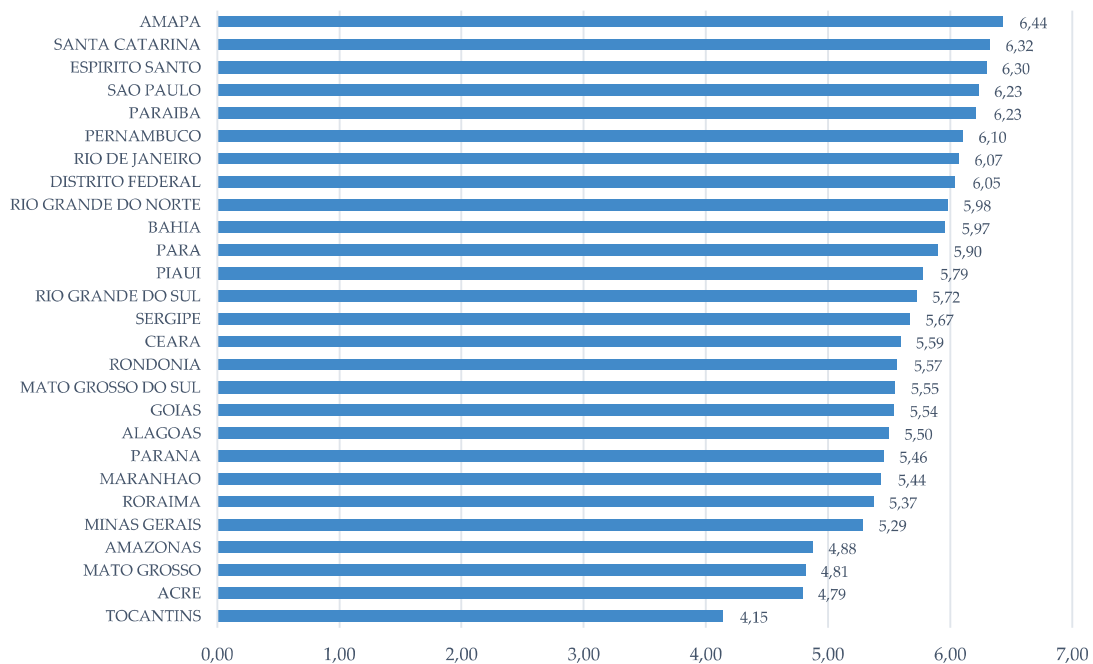

Figure 2 – Economic freedom scores for Brazilian States (2016)

Source: Appendix

In terms of absolute value, the range of the overall scores for 2016 does not vary much—the lowest is 4.15 and the highest is 6.44. On the other hand, ranking positions have changed significantly over time. If one compares Figures 3 and 4, she sees the difference across the quintiles between 2003 and 2016.
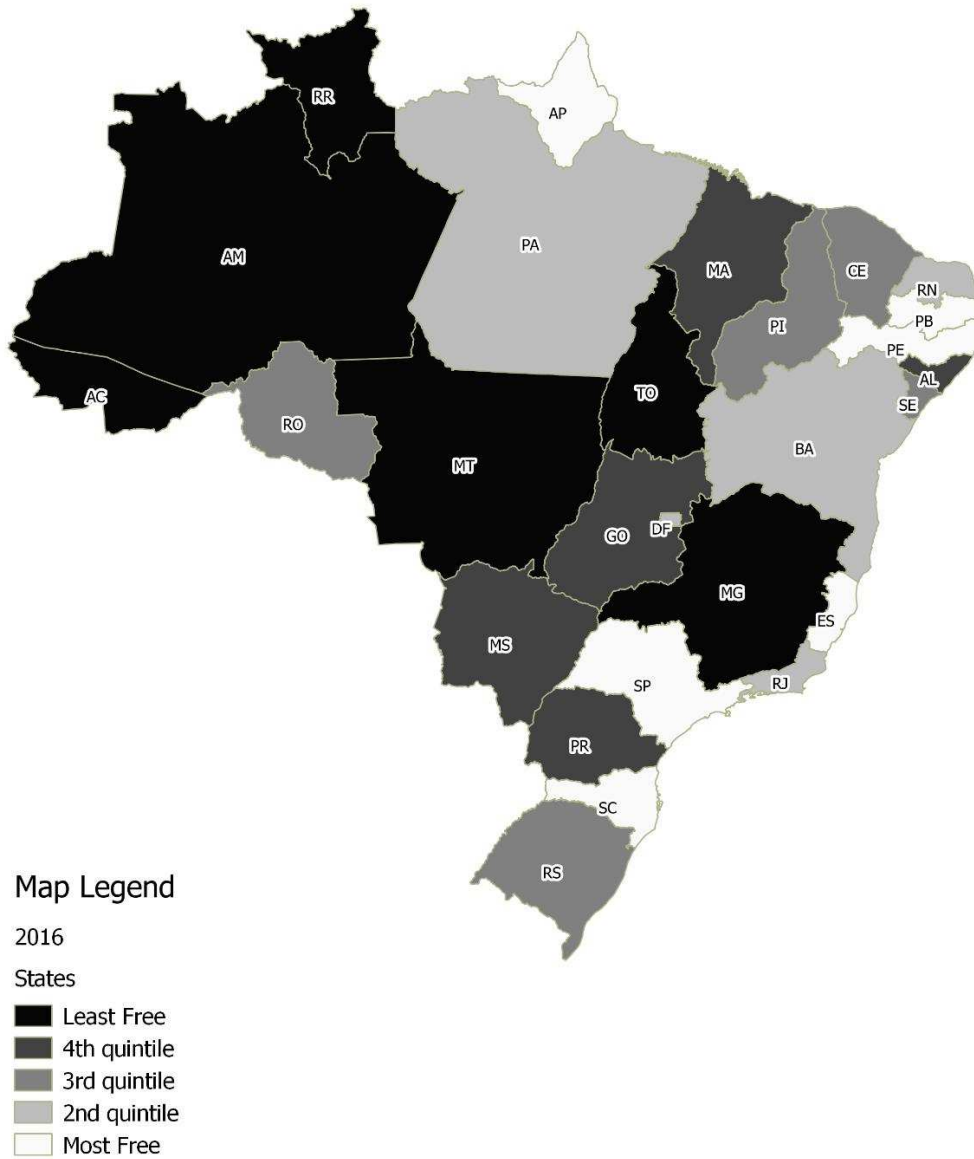
Figure 3 – Economic freedom for Brazilian States (2016)
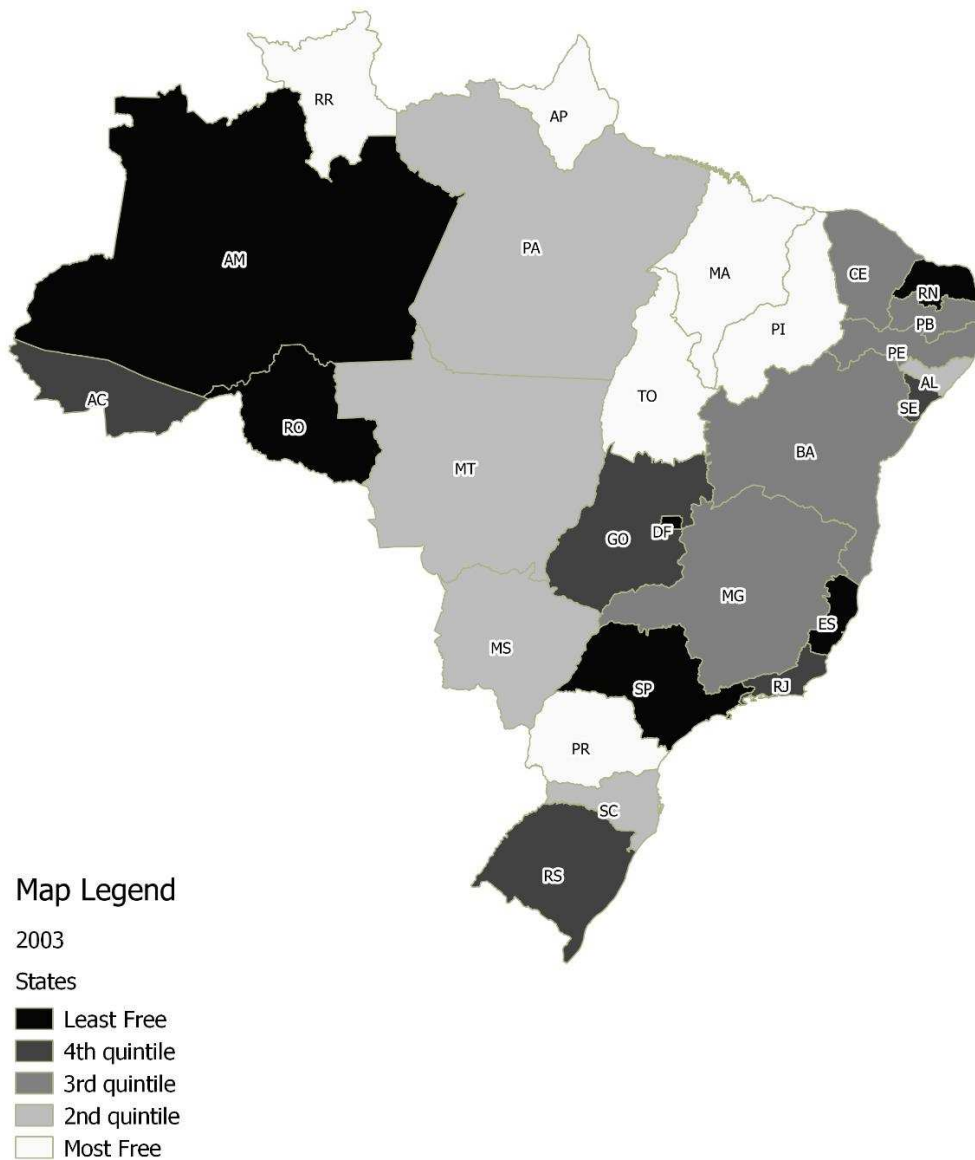
Source: Appendix

Figure 4 – Economic freedom for Brazilian States (2003)

Source: Appendix

Changes in ranking over time can be understood by Figure 5. In order to get easiness, we aggregated score data by the averages of geographic regions. Also, we plotted Brazil's score in EFW. It can be noted that the scores followed relatively the same pattern from 2003 till 2009. As the score decreases for Brazil as a whole, the subnational's scores strongly decrease. Moreover, the regions change their relative positions. It seems that there is a degree of covariation between national and regional scores. On average, subnational economic freedom got worse as national economic freedom decreases, as we might expect.
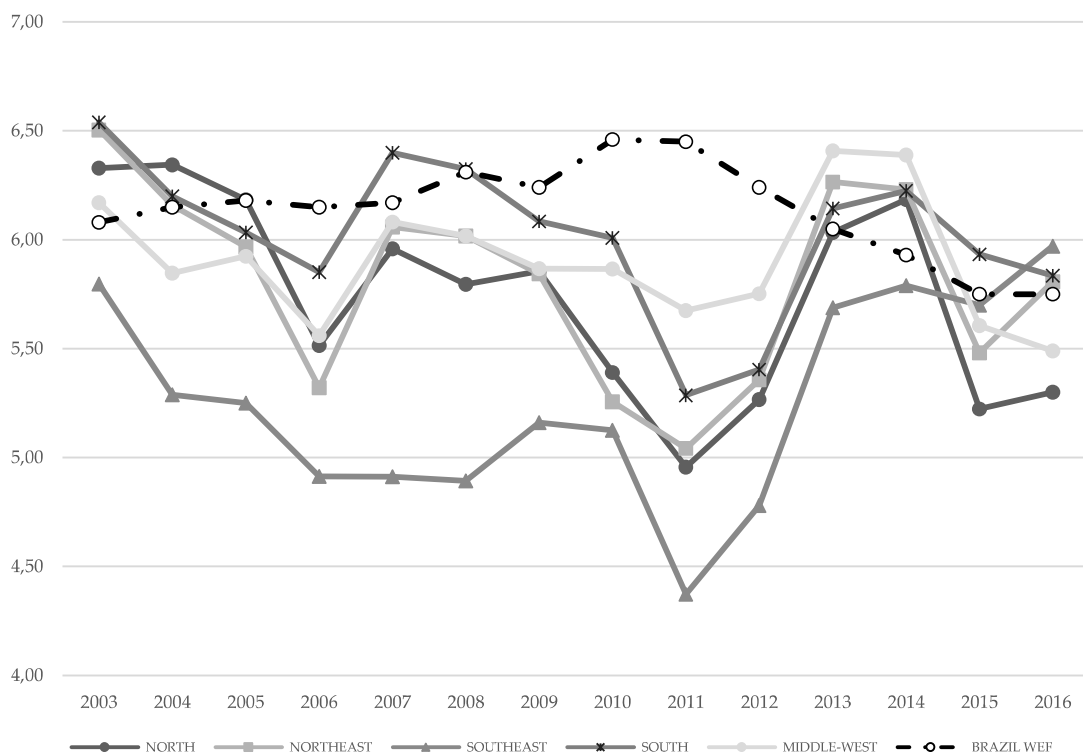

Figure 5 – State Level Economic Freedom 2003-2016: Brazilian Region's Average

Source: Appendix and EFW

There are some hints about the sources of the decline in subnational economic freedom over the period 2003–16. The scores have fallen at different rates. Minimum wage

legislation, property taxes (and other taxes) and union density are the three major sources of decreasing subnational economic freedom in Brazil.

Table 11

Scores variation in 2003-2016

Area	Components	Score Variation (2003-2016)
Government Spending	General Consumption	--11.5%
	Transfers and Subsidies	21.0%
	Insurances and Retirement Payments	-5.5%
Taxation	Income and Payroll Tax Revenue	-6.9%
	Property Tax and Others Taxes	-25.8%
	Sales Tax Revenue	4.3%
Labor Market Freedom	Minimum Wage Legislation	-70.2%
	Government Employment	-6.6%
	Union Density	-12.4%

Source: Appendix

Another finding that is consistent with literature is the relationship between GDP per capita and economic freedom. Figure 6 shows that states with more economic freedom are more prosperous than states with less economic freedom. It can be noticed that we added an additional bar—named "without Federal District' (e.g. 'w/o FD'). The Federal District was artificially created and instituted in 1961 to be the headquarters of Federal Government. It comprises executive, legislative, and judiciary powers and their associated bureaucracies. Its economic freedom is usually low and therefore distorts the analysis.
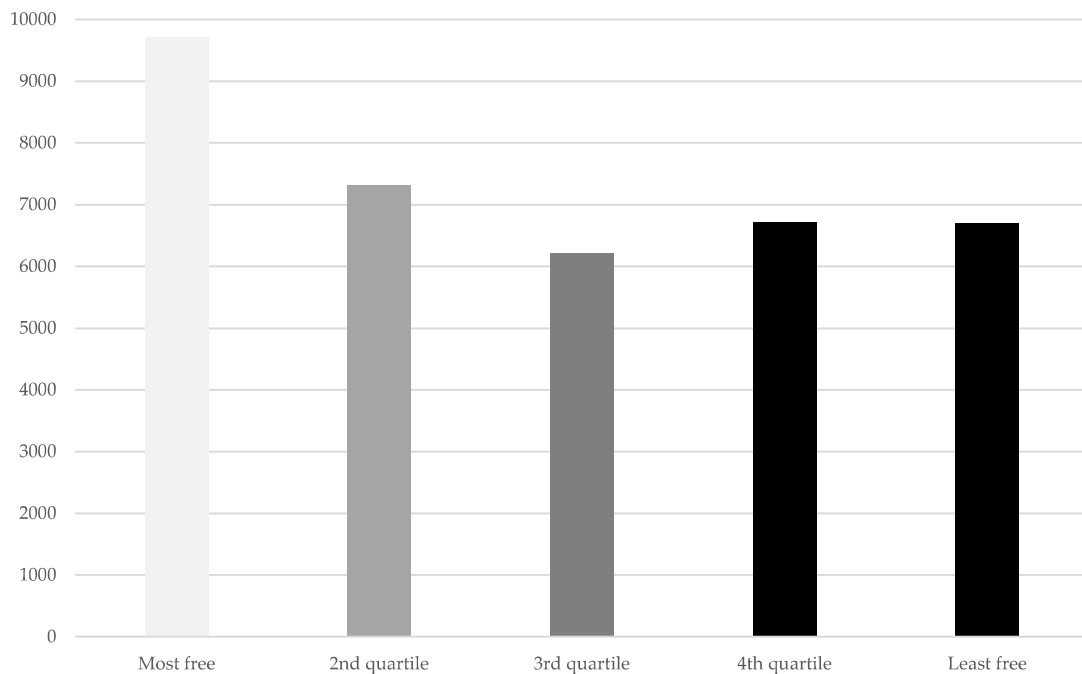
Figure 6 – State Level Economic Freedom 2016 and GDP per-capita (US$)

There is also an important additional outcome for the labor market. Usually some critics of economic freedom are concerned with 'vulnerability of employees' and the 'loss of rights' related to the flexibility of labor laws. The outcome contradicts these statements. Figure 7 depicts informal employment as a percentage of total employment.
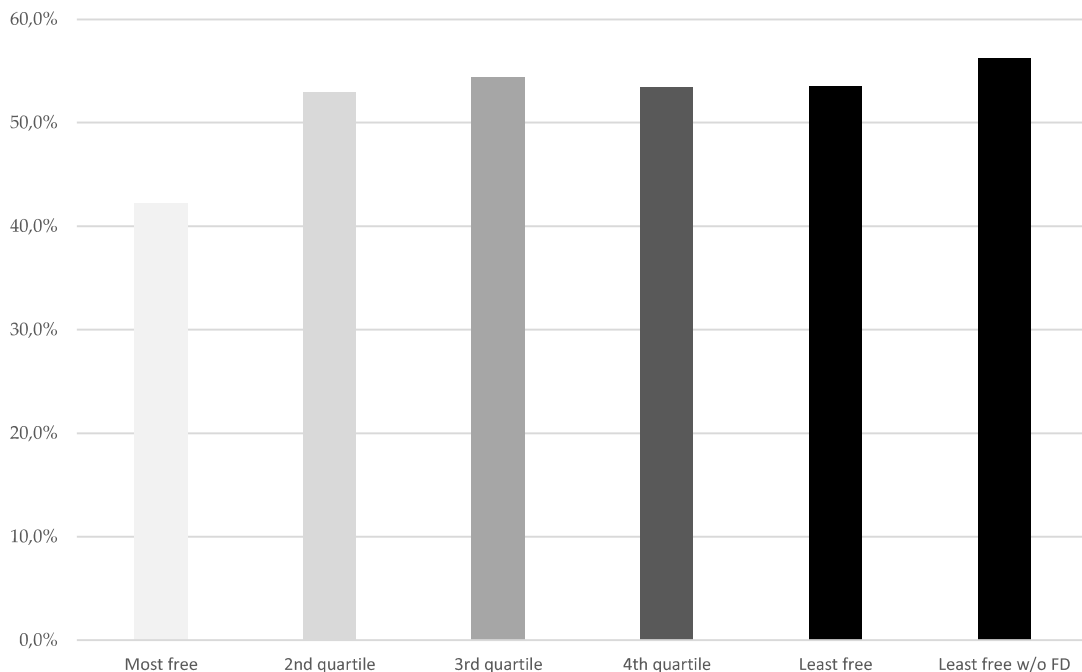
Figure 7 – State Level Economic Freedom 2016 and the percentage of informal jobs

As it can be seen, informal jobs are higher in less free states, especially if we exclude the Federal District among the group because of its distortion. Therefore, economic freedom is associated with more jobs that are formal.

4. FINAL REMARKS

The paper shows that it is feasible and possible to apply the methodology of EFNA to create a subnational economic freedom index for Brazil: BSLEF Additionally, BSLEF enlightens the discussion of economic freedom and market-oriented reforms in Brazil. The results indicate that the Brazilian states' freedom scores are getting worse in recent years (2012–16), following the same trend as that of the national index. We argue for the idea that the increasing government interventions at the federal level have spread to states and municipalities and have been used to institutionalize and to justify decreases in freedom and greater influence of public entities on citizens' everyday life.

Following the literature, BSLEF is consistent with evidence from North America. Brazilian states that have more economic freedom are more prosperous (e.g. enjoy higher GDP per capita). In addition, we found that the percentage of formal employment is higher in states with higher level of economic freedom.

Once we have a consistent measure of subnational economic freedom there are several new studies and researches that can be done in order to better explore outcomes and different institutional settlements for Brazil—similar to what EFNA has been inducing.

New improvements have now been planned. We would like to increase the information about the business environment for each state. This demands a qualitative research with businesspersons or trade associations among the different states—at least their capital cities. It would be an effort to calculate some other components for Area 3 ("Regulation") other than "labor market freedom." The improvement on institutional measures for the index as an ongoing project, follows Milton Friedman's statement in his foreword to *Economic Freedom of the World: 1975–1995*—to "bring the indexes of economic freedom up to date and to incorporate the additional understanding that will be generated."

REFERENCES

Acemoglu, K. Daron, and Robinson, James A. 2013. Why Nations Fail: The Origins of Power, Prosperity, and Poverty. Crown Books.

Bennet, Daniel L. 2016. "Subnational Economic Freedom and Performance in the United States and Canada." *Cato Journal* 36: 165.

Bjørnskov, Christian. 2017. "Growth, Inequality, and Economic Freedom: Evidence from the US States." *Contemporary Economic Policy* 35, no. 3: 518–531.

Compton, Ryan A., Daniel C. Giedman, and Gary A. Hoover. 2011. "Panel Evidence on Economic Freedom and Growth in the United States," *European Journal of Political Economy* 27, no. 3: 423–35.

Gwartney, James, Robert Lawson, and Joshua Hall. 2017. *Economic Freedom of the World: 2017 Annual Report*. Vancouver: Fraser Institute.

Hall, Joshua, Dean Stansel, and Danko Tarabar. 2015. *Economic Freedom Studies at the State Level: A Survey (No. 15-07)*. Department of Economics, West Virginia University.

Hayek, Friedrich A. von. 2012. "The Transmission of the Ideals of Economic Freedom." *Econ Journal Watch* 9, no. 2: 163.

Karabegović, Amela, Fred McMahon, and Dexter Samida. 2002. *Economic Freedom of North America*. Vancouver: Fraser Institute.

Stansel, Dean, José Torra, and Fred McMahon. 2016. *Economic Freedom of North America 2016*. Vancouver: Fraser Institute.

Sobel, Russell S. 2008. "Testing Baumol: Institutional Quality and the Productivity of Entrepreneurship." *Journal of Business Venturing* 23, no. 6: 641–55.

Mises, Ludwig von. [1949] 1998. *Human Action: A Treatise on Economics*. Scholar's Edition. Auburn, Ala.: Mises Institute.

Wiseman, Travis. 2017. "Economic Freedom and Growth in US State-Level Market Incomes at the Top and Bottom." *Contemporary Economic Policy* 35, no. 1: 93–112.

Appendix

ID	STATE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
12	ACRE	5,84	6,05	5,98	5,52	6,13	5,74	6,29	4,74	4,05	5,01	5,59	5,65	4,29	4,79
27	ALAGOAS	6,46	6,00	6,15	5,58	6,72	6,37	5,74	5,81	5,38	5,20	6,55	6,55	5,68	5,50
16	AMAPA	7,60	6,75	7,31	6,09	6,29	5,85	5,77	6,64	5,63	6,09	6,89	7,38	6,03	6,44
13	AMAZONAS	4,70	4,70	4,84	4,31	4,52	4,22	4,74	4,01	3,50	3,51	4,81	4,90	4,34	4,88
29	BAHIA	6,24	5,73	5,71	5,21	5,91	5,90	5,95	5,47	4,89	5,31	6,34	6,38	5,68	5,97
23	CEARA	6,16	5,73	5,76	5,14	5,81	5,70	5,60	4,84	4,86	5,05	5,88	5,98	5,30	5,59
53	DISTRITO FEDERAL	5,57	5,43	5,41	5,68	5,86	5,71	5,56	6,12	5,66	5,62	6,00	5,76	5,80	6,05
32	ESPIRITO SANTO	5,46	4,91	4,38	3,97	3,91	4,42	4,76	4,67	4,08	4,91	5,86	6,08	5,55	6,30
52	GOIAS	6,08	5,93	6,07	5,16	6,13	6,00	5,79	5,58	5,52	5,67	6,32	6,32	5,81	5,54
21	MARANHAO	7,12	6,86	6,26	6,07	6,34	6,14	6,10	5,06	4,75	4,98	6,37	6,20	5,74	5,44
51	MATO GROSSO	6,52	6,46	6,16	5,57	5,73	6,71	6,27	6,10	5,70	5,69	6,71	6,76	5,30	4,81
50	MATO GROSSO DO SUL	6,52	5,57	6,04	5,83	6,61	5,64	5,86	5,67	5,81	6,03	6,61	6,72	5,52	5,55
31	MINAS GERAIS	6,11	5,76	5,68	5,24	5,63	5,54	5,86	5,38	4,73	5,23	5,93	5,94	6,02	5,29
15	PARA	6,43	7,28	7,03	6,33	6,85	6,57	6,32	5,74	5,78	5,79	6,36	6,29	5,62	5,90
25	PARAIBA	6,35	6,11	5,95	4,80	5,78	5,96	5,85	4,93	5,07	5,42	6,27	6,29	5,91	6,23
41	PARANA	7,16	6,97	6,66	6,17	6,76	6,61	6,34	6,54	5,54	5,51	6,34	6,35	5,90	5,46
26	PERNAMBUCO	6,30	6,18	5,87	6,06	6,10	6,08	5,92	6,23	4,87	5,34	5,81	6,26	5,28	6,10
22	PIAUI	8,02	7,36	7,17	6,03	7,28	7,17	6,87	5,81	5,80	6,45	7,14	6,84	5,48	5,79
33	RIO DE JANEIRO	5,94	5,46	5,66	5,66	5,26	5,10	5,44	5,37	4,43	4,52	5,80	5,91	5,95	6,07

24	RIO GRANDE DO NORTE	5,82	5,72	5,52	4,39	5,23	5,69	5,24	4,97	4,84	5,42	5,73	5,83	5,26	5,98
43	RIO GRANDE DO SUL	5,93	5,73	5,57	5,00	5,69	5,75	5,49	5,44	4,72	5,02	5,71	5,81	5,32	5,72
11	RONDONIA	4,81	5,73	5,48	4,35	5,07	4,98	5,20	4,70	4,04	4,50	5,57	5,45	5,66	5,57
14	RORAIMA	7,36	6,89	5,85	5,92	6,36	6,63	6,05	5,69	6,05	5,85	6,34	6,89	5,49	5,37
42	SANTA CATARINA	6,53	5,90	5,87	6,39	6,75	6,62	6,42	6,05	5,60	5,68	6,38	6,51	6,58	6,32
35	SAO PAULO	5,68	5,02	5,29	4,79	4,85	4,53	4,58	5,07	4,25	4,46	5,16	5,23	5,28	6,23
28	SERGIPE	6,07	5,72	5,32	4,61	5,33	5,14	5,33	4,20	4,91	5,03	6,29	5,75	4,99	5,67
17	TOCANTINS	7,56	7,00	6,80	6,06	6,50	6,60	6,62	6,21	5,64	6,11	6,67	6,72	5,12	4,15