<u>GENDER INEQUALITY</u> <u>IN</u> BRAZILIAN STATES

Luísa Cardoso Guedes de Souza CEDEPLAR - UFMG

ABSTRACT

This study estimates the magnitude of inequality between men and women in each Brazilian state. To this purpose, the National Index of Gender Inequality (INDG) was developed based on the Global Gender Gap Index, which is formulated by the World Economic Forum. The INDG consists of four dimensions – employment, education, politics and health – and was drawn from the collection of online government data and microdata from the National Household Sample Survey (PNAD) of 2009 by the Brazilian Institute of Geography and Statistics (IBGE).

The INDG results are heterogeneous among Brazilian states, mainly in relation to economic activity and political representation. In general, Northern and Northeastern states showed higher scores than Mid-Southern ones, indicating that income does not seem to linearly determine gender inequality and that it is therefore not possible to conceptualize women's status as a direct result of economic development.

Keywords: gender, inequality index, development, Brazil.

INTRODUCTION

Social roles and cultural values traditionally associated with men and women are still incorporated into legal, economic and political structures. Policies that determine the access to and the control of resources in society often reproduce and legitimize the systematics of gender inequality.

To produce a multidimensional measure showing how unequal is the situation between women and men has been an initiative undertaken by international organizations for twenty years now and it is already of great importance to the debate on gender equality worldwide. However, Brazilian agencies do not provide these indicators at a national level and the Brazilian academic production in the area is focused on the development of a human development index and not specifically that of a gender inequality index¹.

The purpose of this study, then, is to calculate and to compare gender inequality among the federal unities of Brazil, in the same way the Global Gender Gap Index (GGI) calculates and compares gender inequality among countries. To this purpose, the National Index of Gender Inequality (INDG) is elaborated. Like the GGI, it is composed of four dimensions, concerning economic, political, educational and health factors, measuring inequality through fourteen variables.

To sum up, this paper is structured as follows: the first section addresses the measurement of gender inequality, emphasizing the existing international indexes. The second section discusses specifically one index, the Global Gender Gap Index (GGI) developed by the World Economic Forum, in addition to analyzing the performance of the Brazilian GGI over time. The third section presents the National Index of Gender Inequality (INDG) and examines its results. The final section draws the concluding remarks.

¹ See SOARES (2010).

1. MEASURING GENDER INEQUALITY

Gender is a social construct, constantly shaped and reconstituted, and it is not a substitute word for the term women. Gender is a relational category referring to assumptions that build social differences between women and men. Gender is then the social meaning given to sex differences among individuals.

According to Scott (1986), the essence of the definition of gender is the connection between two propositions: gender is a constitutive element of social relationships and it is rooted in power relations. Gender is the social organization of sexual difference: it does not reflect the primary biological reality, but it builds the sense of that reality.

Similarly, for Foucault (1988), gender elaborates the definition of identities that include men and women in power schemes within social relations. Unequal social relations, in all instances, express strength struggles that represent the exercise of power.

Power has been concentrated in the public sphere, dominated mostly by men, building the social status of women and men in binary terms. Thus, the distinctions between masculinity and femininity structure gender inequality, given the different cultural practices and values associated and imposed to men and women.

Despite the advances already made in the pursuit of gender equality, the results are unsatisfactory (Benería, 2003). In this sense, to develop indicators that reflect the social need for equality builds broader social cognitive frameworks, which are fundamental to move the theoretical debate forward (Gadrey & Jany-Catrice, 2005).

Being able to quantify the situation of women in relation to men's moves the discussion on gender equality from a passionate approach to objective argumentation, because, in general, what is measured and documented is more easily modified and monitored.

Moreover, according to Gadrey & Jany-Catrice (2005), the legitimacy of an indicator is constructed whilst the conventions of its evaluation. Hence, one can say that inequality indexes depict a social dynamic that is concerned with creating egalitarian structures.

Moser (2007) discusses the different types of measurement approaches. On one hand, the quantitative approach allows for objective and verifiable results, making

comparisons possible. Quantitative data is usually obtained from the census, household surveys or administrative records. The data is often interpreted using formal methods such as statistical tests or it is analyzed using descriptive statistics and statistical inference.

Nonetheless, purely quantitative measures are imperfect indicators of social well-being and human development. They do not fully assess some subjective aspects of reality, but are important for comparative analysis (Benería, 2003).

On the other hand, the qualitative approach tries to capture subjective aspects of reality such as perceptions and experiences. Data collection may be done by interviews or discussion groups and can also occur through opinion questionnaires. However, because of its intrinsic subjectivity and because of the different possibilities of interpretation, qualitative indicators tend to be quantified.

This quantification of qualitative data represents the combined approach of quantitative and qualitative methods, which allows for crosschecked and multidimensional evaluations. Purely quantitative indicators are not sensitive, for example, to power relations and to the exercise of freedom (Moser, 2007).

One of the most widespread indexes in social studies is the Human Development Index (HDI), which measures, in addition to GDP per capita, the education and the longevity of a population. The HDI was created in 1990 as an alternative to the indices that focused only on economic variables to measure wealth and welfare. However, the analyzed variables of HDI are not disaggregated by sex.

Then, in 1995, coinciding with the Fourth World Conference on Women in Beijing, the United Nations Program for Development (UNDP) developed two important indices: the Gender-Related Development Index (GDI) and the Gender Empowerment Measure (GEM).

However, both measures had serious limitations regarding the measurement of gender inequality itself. The GDI was essentially the HDI adjusted for men and women, and therefore considered an indicator of development rather than one of inequality (Klasen & Schuler, 2011). The GEM focused on female access to certain levels of power, which restricts its analysis to certain social groups - the elites, especially at urban areas of developed countries (Beteta, 2006).

In 2010, the UNDP replaced the GDI and the GEM for the Gender Inequality Index (GII), a combination of the previous indexes intended to solve their limitations (UNDP, 2011). In 2007, the organization Social Watch developed the Gender Equity Index (GEI). Similar to the GEM and in contrast to the GDI, the GEI analyzes political power in addition to education and economic participation (SOCIAL WATCH, 2007).

It should be noted that gender inequality does not operate solely in the public sphere, but also in the domestic one. Given that family life is often seen as female responsibility, indicators such the fertility rate per woman the maternal mortality rate may also be considered relevant variables as measures of women's reproductive labor.

In 2009, the Organization for Economic Cooperation and Development (OECD) innovated to address the institutional causes of gender inequality, implementing an index based on traditions and social norms, the Social Institutions and Gender Index (SIGI). Its variables concern family law, civil liberties, violence, preference for male children and property rights, complementing the framework of measures that focus exclusively on economic factors (Klasen & Schuler, 2011).

Also focused on institutional dimensions, is the Women's Economic Opportunities Index (WEOI), developed in 2010 by the Economist Intelligence Unit. It examines, among other variables, the regulation of the labor market, labor laws, social security and access to credit (ECONOMIST INTELLIGENCE UNIT, 2010).

The international indexes mentioned above illustrate that it is possible for different indicators to reveal different aspects of gender inequality. Therefore, the position of countries in inequality rankings may vary considerably depending on the index that is used for analysis (Mills, 2010).

2. GLOBAL GENDER GAP INDEX (GGI)

Taking into account that the GDI and the GEM are no longer calculated, the index with the longest time series is the Global Gender Gap Index (GGI), elaborated annually by the World Economic Forum since 2006. The GGI quantifies the magnitude of gender inequality and its progress over time in more than 100 countries.

Although international indexes tend to quantitative forms of measurement, the GGI is innovative because it combines quantitative data with qualitative data, which is obtained by the Executive Opinion Survey of the World Economic Forum. Moreover, the GGI is a fairly comprehensive index, measuring ratios between men and women in four dimensions: economic, with five variables; educational, with four variables; political, with three variables; and the health one, through two variables.

After calculating each ratio, one must calculate the average of the variables for each specific dimension. Then, the average of the four dimensions will be the final score of the country and it will vary between zero (maximum inequality) and 1 (equality), binding the scores between inequality and equality benchmarks.

Nonetheless, the variables on the health dimension are an exception. In the case of sex ratio at birth, the equality benchmark is set to be 0.944 and the healthy life expectancy benchmark is set to be 1.06 (Hausmann, Tyson & Zahidi, 2015). Moreover, for all variables, the benchmark of equality assigns the same score of 1 if countries show parity between men and women and if women surpassed men.

The scores represent how (un)equal is the access of men and women to the resources in their country, regardless the aggregate amount of national resources. What is being assessed is how uneven is the way that men and women benefit from the national stage of development and not the progress of national development. The GGI is not an index of development, but of inequality.

In that sense, it can be pointed out in the Global Gender Gap Report of 2015 that although the highest scores belong to Iceland and Norway, countries like Nicaragua and Namibia present higher scores than those of Belgium and Canada (Hausmann, Tyson & Zahidi, 2015).

Table I below shows Brazil's performance at GGI rankings and Table II illustrates in detail how the GGI is structured. Both tables present data collected from Hausmann, Tyson & Zahidi, 2015.

SAMPLE		INDEX		ECONOMY		EDUCATION		HEALTH		POLITICS	
Year	No. of countries	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
2015	145	85	0.686	89	0.642	1	1.000	1	0.980	89	0.12
2014	142	71	0.694	81	0.649	1	1.000	1	0.980	74	0.14
2013	136	62	0.695	74	0.656	1	1.000	1	0.980	68	0.14
2012	135	62	0.691	73	0.650	1	1.000	1	0.980	72	0.13
2011	135	82	0.668	68	0.649	66	0.990	1	0.980	114	0.05
2010	134	85	0.665	66	0.643	63	0.990	1	0.980	112	0.04
2009	134	81	0.670	75	0.637	32	0.999	1	0.980	114	0.06
2008	130	73	0.674	59	0.653	1	1.000	1	0.980	110	0.06
2007	128	74	0.664	62	0.645	84	0.969	1	0.980	96	0.06
2006	115	67	0.654	63	0.604	74	0.972	1	0.980	86	0.06
2006–2015 CHANGE		▲ 0.032		▲ 0.038		▲ 0.028		▲ 0.000		▲ 0.062	

Table I: Brazil's performance at the Global Gender Gap Index over time

Subindex	Variable	Source			
	Ratio: female labor force participation over male value	International Labour Organization, Key Indicators of the Labour Market (KILM), 2010.			
	Ratio: female wage over male value for similar work	World Economic Forum, Executive Opinion Survey (EOS), 2013.			
Economic Participation	Ratio: female estimated earned income over male value	World Economic Forum, calculations based on the United Nations Development Programme methodology (refer to Human Development Report 2009).			
	Ratio: the number of women over men in high position jobs	International Labour Organization, ILOStat online database, 2010.			
	Ratio: the number of women over men in technical professions	International Labour Organization, ILOStat online database, 2010.			
	Ratio: female literacy rate over male value	UNESCO Institute for Statistics, Education database, 2012 or latest data available			
	Ratio: female net primary enrolment rate over male value	UNESCO Institute for Statistics, Education database, 2012 or latest data available			
Educational Attainment	Ratio: female net secondary enrolment rate over male value	UNESCO Institute for Statistics, Education database, 2012 or latest data available			
	Ratio: female gross tertiary enrolment rate over male value	UNESCO Institute for Statistics, Education database, 2012 or latest data available			
	Ratio: female seats in parliament over male value	Inter-Parliamentary Union, Women in Politics: 2013, reflecting elections/appointments up to 1 January 2013			
Political Empowerment	Ratio: female at ministerial levels over male value	Inter-Parliamentary Union, Women in Politics: 2013, reflecting elections/appointments up to 1 January 2013			
	Ratio: number of years of a female head of state over male value	World Economic Forum calculations, 30 June 2013			
	Sex ratio at birth	Central Intelligence Agency, The CIA World Factbook, data updated weekly, 2013			
Health and Survival	Ratio: female life expectancy over male value	World Health Organization, Global Health Observatory database, data from 2007			

Table II: Structure of the Global Gender Gap Index

As shown in Table I, Brazil has a stable and egalitarian performance in regards to the dimensions of health and education. There has been some overall progress in the last few years due to the election of Dilma Rousseff. It is noteworthy that the political dimension of the index tends to present the lowest score in all countries of the ranking.

Finally, it must be considered that indices of international comparison are an aggregate and do not always represent local or regional characteristics of the countries analyzed (Székely & Hilgert, 2007). Thus, it is necessary to closer examine the assumed homogeneity of the GGI, evaluating possible state differences in the federal units of Brazil.

3. NATIONAL INDEX OF GENDER INEQUALITY

It is very important to measure gender inequality in Brazilian states and relate the results to the index of the World Economic Forum, making it possible to disaggregate the national reality and to represent the magnitude of gender inequality in different parts of the country.

To this purpose, it is built an index of gender inequality analogous to the Global Gender Gap Index. It follows the same structure presented in Table II, except for the data sources. The National Gender Inequality Index (INDG) relies on data from the Brazilian Institute of Geography and Statistics, in addition to online data available from political organisms.

Microdata from the National Household Sample Survey (PNAD) of 2009 by the Brazilian Institute of Geography and Statistics (IBGE) was the main data source used. To calculate the economic participation dimension, individuals over 16 years old, their sex and federal unit were considered.

The subindex of labor market participation in each state was measured as the ratio between the economically active population and the working age population, using the V4704 variable. The average salary subindex was based on the monthly income for main occupation (V4718) divided by the number of hours worked per week in the main occupation (V9058).

The number of women and men in high positions was obtained from the variable of occupational groups (V4810) equals 1: a group of leaders in general, which includes top managers and members of the government, companies and

organizations. Similarly, the number of women and men in technical positions was obtained by the same variable when it is equal to 3: mid-level support personnel.

The wage gap between women and men occupying the same position derives from the previous sub-indices, relating technical professionals and managers (V4810) to their hourly wage (V4718 / V9058).

Regarding the dimension of Education, the subindex on literacy is equal to the ratio between the proportions of individuals over the age of 10 who can read and write (V0601) in relation to the total number of individuals.

Net primary school enrollment is calculated as follows: the number of children aged 7 to 14 years regularly enrolled in elementary school (V6003 equals to 1) is divided by the total number of children in the same age group.

Similarly, the net enrollment in secondary school (V6003 equals 2) considers individuals who are 15 to 17 years old. For gross enrollment in higher education, individuals enrolled in undergraduate degree (V6003 equals 5) and graduate (V6003 equals 11, masters or doctorate students) are considered regardless of their ages.

The political power dimension was structured from the collection of online data available to the 54th Legislature (2011-2015), at the website of the Brazilian Federal Senate, of the House of Representatives, of State Legislative Assemblies and of State Governments.

The proportions are calculated among male and female parliamentarians (senators, state and federal deputies), secretaries of state and the number of years that the governorship was exercised by a man or a woman in a twenty years period, from 1989 to 2009.

Finally, the dimension of Health and Survival is constructed based on the data available at the IBGE website. Same as the GGI, the INDG establishes benchmarks equals to 0.94 and 1.06 for the sub-indices of birth and life expectancy, respectively. It is worth noting that the birth sub-index is not that relevant to Brazilian states, but it is an international concern due to the large number of selective abortions that occur mainly in India and China.

Adjustments were only made in the political dimension variables. Instead of ministerial seats, secretaries of state were considered; and instead of head of state, state governors were considered. All tables and results are available at the Appendix file. Only final scores will be taken in consideration here.

In the economic dimension, Roraima had the overall best result (0.87) – it shows the highest score on the number of men and women in high positions (0.96), a perfect 1 for the ratio of technicians, in addition to one of the highest scores on the estimated average salary (0.98), whereas the worst economic result was from Santa Catarina (0.67).

Concerning education, the literacy rate and the net primary enrolment variables are very close to 1 for all states, while the net secondary enrolment rate shows female prevalence in all states. The same happens with the gross tertiary enrolment ratio, except for Rio Grande do Norte. Therefore, all states scored very close to 1.

In all variables of the political empowerment dimension, men are significantly more numerous than women. In sixteen states and in the Federal District, only men were elected to be senators. In Mato Grosso do Sul and in Sergipe, no woman holds the position of federal deputy. Rio Grande do Norte and Maranhão showed the best results, equal to 0.4 and 0.31, respectively, in the overall political dimension. Interestingly, as in the economic dimension, Paraná and Santa Catarina obtained the lowest scores.

The objective of the INDG is to replicate the GGI. Hence, the same structure, dimensions and variables were maintained. However, there is no evidence in Brazil of sex-selective abortions nor do women, in relation to men, suffer deprivations that might reduce female life expectancy. Therefore, all states scored very close to 1 in both health variables.

The final results of INDG, presented in Table III, demonstrate that the GGI computed for Brazil by the World Economic Forum is not homogeneous throughout the national territory. There are considerable differences in gender inequality among Brazilian states. Rio Grande do Norte, in the Northeast, obtained the highest overall score of 0.78, which is 15 % higher than that of Santa Catarina, the worst overall score of 0.676.

The Northern region presents the highest average score, equals to 0.739, while the average score of the Northeast is very close, equals to 0.732. The average score of the Southeast region was equal to 0.721. Midwest and South had an average of 0.706 and 0.698, respectively.

Although all states did well in regards to equality between men and women in the dimensions of education and health, the final INDG score was not higher than 0.8 in any state. The economic and political variables analyzed represent how Brazilian women, to a greater or lesser extent depending on the state where they live, do not yet benefit from the public sphere the same way men do, whether in the labor market or in the government.

States	ECONOMY INDEX	EDUCATION INDEX	POLITICS INDEX	HEALTH INDEX	INDG
Acre (AC)	0.80705	0.99378	0.15730	1	0.73953
Alagoas (AL)	0.75379	1	0.07767	1	0.70787
Amapá (AP)	0.78215	0.99789	0.22800	1	0.75201
Amazonas (AM)	0.72405	1	0.20653	1	0.73265
Bahia (BA)	0.79862	0.99703	0.09587	1	0.72288
Ceará (CE)	0.77226	0.99753	0.05529	1	0.70627
Distrito Federal (DF)	0.75576	1	0.10763	1	0.71585
Espírito Santo (ES)	0.73809	1	0.16787	1	0.72649
Goiás (GO)	0.69314	0.99321	0.09829	1	0.69616
Maranhão (MA)	0.76160	1	0.31271	1	0.76858
Mato Grosso (MT)	0.71440	1	0.05931	0.99830	0.69300
Mato Grosso do Sul (MS)	0.72230	0.99652	0.16162	1	0.72011
Minas Gerais (MG)	0.73433	1	0.11934	1	0.71342
Pará (PA)	0.73885	1	0.16077	1	0.72491
Paraíba (PB)	0.83163	0.99516	0.12004	0.99803	0.73621
Paraná (PR)	0.69063	0.99250	0.04460	1	0.68193
Pernambuco (PE)	0.75424	1	0.07509	1	0.70733
Piauí (PI)	0.77528	0.99949	0.12024	1	0.72375
Rio de Janeiro (RJ)	0.71615	1	0.19465	1	0.72770
Rio Grande do Norte (RN)	0.72114	0.99221	0.40476	1	0.77953
Rio Grande do Sul (RS)	0.72699	0.99751	0.22896	1	0.73836
Rondônia (RO)	0.72867	0.99505	0.15995	1	0.72092
Roraima (RR)	0.87007	0.99929	0.23709	0.99824	0.77617
Santa Catarina (SC)	0.66957	1	0.03563	1	0.67630
São Paulo (SP)	0.72846	1	0.14284	1	0.71782
Sergipe (SE)	0.82716	1	0.14021	1	0.74184
Tocantins (TO)	0.78648	1	0.12264	0.99944	0.72714
BRASIL	0.73831	1	0.10239	1	0.71018

Table III: Final Scores of the National Index of Gender Inequality

Although the Northern and Northeastern states have presented better INDG scores than the Mid-Southern ones, it is not possible to standardize state performances regionally. As shown in Figure I, only Southeastern states obtained same-leveled scores.

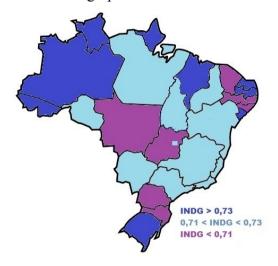
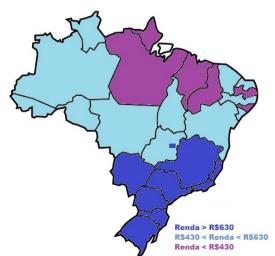
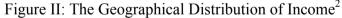


Figure I: The Geographical Distribution of the INDG

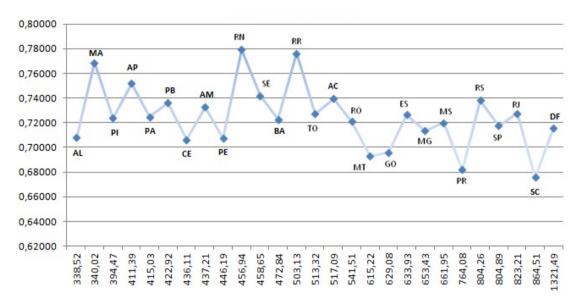
It should be emphasized that although the INDG and the GGI are not indicators of development, but of inequality, the issue of gender equality cannot be isolated from the socio-economic context in which it is immersed. Income is generally the economic indicator used to represent development and its distribution is shown in Figure II. Contrasting Figure I, in which no regional patterns are established, Figure II displays a highly regional homogenization relative to income.





² Income represents the average monthly household income per capita in reais (R\$).

It appears that states with higher incomes do not necessarily have a higher INDG score. Graph I correlates the values of INDG and of income, but there seems to be no strong trend line established between the two variables. Thus, it is not possible to conceptualize the status of Brazilian women as a linear result of economic development.



Graph I: Relation between the INDG and Income per-capita

Boserup (1970) was one of the first economists to challenge the notion that economic development is a linear process that is beneficial to all. She defended the idea that the sexual division of labor determines the social effects of development and they take different forms according to the regional stage of development.

In her book *Women's Role in Economic Development*, Boserup argues that the modernization of production in developing countries may result in the loss of women's work, for artisanal products made in families and communities are replaced by industrial ones made by the male labor force that is formally employed.

In this sense, Boserup argues that there is a deterioration process of the productive role of women that limits female capacity due to existing social structures in the early stage of development. However, ongoing sustained growth may increase the demand for labor, which will increase female participation in the labor market. As time goes by, new structures in society are likely to be established, encouraging non-discriminatory and inclusive social rules.

Similarly, Eastin & Prakash (2009) suggest that economic development and gender equality exhibit a nonmonotonic relationship, marked by three different phases, similar to the Kuznets curve. A Kuznets curve is the graphical representation of Simon Kuznets' hypothesis that as a country develops, there is a natural cycle of economic inequality driven by market forces, which at first increases inequality, and then decreases it after a certain average income is attained (Kuznets, 1955).

Female remuneration is not correlated with that of men, so as the wage gap increases, so does the opportunity cost of women's work. When female opportunity cost turns out to be favorable for employment, assuming previous investments in human capital, there will be incentives for the establishment of new institutional rules that encourage gender equality.

Amin & Kuntchev (2012) perform an econometric analysis using cross-section data of one hundred and twenty countries and conclude that there is a strong negative relationship between gender inequality and growth among the relatively low-income countries, but not among high-income countries.

Although it is possible that the stage of development of the Brazilian states may explain the results of INDG, this study does not analyze the dynamics of economic growth for each Brazilian state nor does it assess the status of Brazilian women over time.

CONCLUSION

It was here presented a multidimensional quantitative assessment of inequality between men and women in the federal units of Brazil through the formulation of the National Gender Inequality Index (INDG). The final results obtained show considerable differences among Brazilian states, especially in regard to economic activity and political representation.

Despite the egalitarian dimensions of education and health, no states presented a final score close to 1. The dimensions of economic opportunity and political empowerment represent the persistent inequality Brazilian women live with. Although, states' scores are different, they are similar in the sense that equality is still far to be reached everywhere.

Although the North and the Northeast regions show, in general, better results in the INDG than the states in the Mid-South, scores cannot be standardized regionally. Moreover, it is defended that the income variable does not seem to determine how unequal is the relationship between men and women in Brazilian states. Therefore, it is not possible to conceptualize the status of women as a direct result of economic development.

Although the stage of development might explain INDG results, this study does not test temporal correlations between the dynamics of economic growth and the evolution of gender inequality for each state.

Finally, it should be stressed that gender inequality is a fundamental structure of social organization, which is constantly constructed individually and collectively, being impossible to measure all its complexity. However, although quantitative indicators present limitations, it is essential to recognize its importance to give visibility to multidimensional phenomena in a simplified manner.

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