

Socioeconomic and demographic scenario of Brazil, India and Australia

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Abstract

This work presents a study on the social, economic and demographic aspects of Brazil, India and Australia. For this study, a socioeconomic and demographic survey was carried out, analysing Brazil, India and Australia, aimed at comparing the current scenario of these three countries. For the qualitative and quantitative analysis, data mining on the World Bank, IndexMundi, CountryEconomy, Trading Economics and the Organisation for Economic Co-operation and Development (OECD) databases was performed, having subsequently drawn graphs that summarise the textual information found. With the results, among other conclusions, it was observed that Indian women are not highly present in the job market, with Brazil and Australia having an analogous rate of working women. Furthermore, a similarity was found between the rates of articles published in scientific journals in both Brazil and Australia. Regarding per capita spending on health, it could be noted that the rate in Australia is 10 times higher than in Brazil, while this rate is 20 times lower in India when compared to Brazil. It was also concluded that, although India has 60% more requests for resident and non-resident patent applications, the revenue from intellectual property in this country is 36% lower than the one in Australia and 19% lower than in Brazil.

Keywords: *population; health expenditure; gross domestic product; economically active population; patents.*

1. Introduction

The studies on the socioeconomic and demographic aspects allow an interpretation of the singularities and development levels of each region. In this work, three countries were selected for research: Brazil, India and Australia. The interest in these countries is a result of reading academic literature and statistics observed, which highlighted the singularities of each country, having become a great motivation for this work.

Brazil and India are emerging countries with significant differences between each other in terms of territorial area and population. The extension of the Indian territory is approximately three times smaller than the Brazilian territory, despite the population in India being seven times higher than the one in Brazil.

In turn, Australia, a developed country with a similar territorial area than Brazil, has a population of around 11% the size of the Brazilian population and only 1.8% of the Indian population.

In a demographic perspective, the result of these data is reflected on the distribution of these inhabitants. The population flow depends on survival opportunities, being usually associated to the economic processes of the region. Both of these aspects result in several adjustments to public policies, in order to address the social needs from this movement.

This study was aimed at carrying out a socioeconomic and demographic survey in Brazil, India and Australia for producing a descriptive-comparative paper, with quali-quantitative data that can compare the scenario of the three countries for the year of 2016. Although it is not possible to interpret the data of an entire population with one single study, it is still considered that findings registered in this paper will be able to contribute for a wider understanding of this context.

The limitation of this research can be attributed to the lack of updated data available, as it was not possible to obtain all the information of the countries in study for the year of 2017 until the time this paper was developed, in February 2019. Therefore, 2016 was considered the most recent year which had the complete elements available for reaching the objectives established for this study.

Regarding the research method carried out, a mixed approach was considered, characterised by qualitative variables with qualitative elements of research. The procedures for a quantitative analysis were based on the study of the databases from: *World Bank*, *IndexMundi*, *CountryEconomy*, *Trading Economics* and the *Organisation for Economic Co-operation and Development* (OECD). For the theoretical foundation of the qualitative study, a descriptive-comparative literature review was made on the socioeconomic and demographic aspects of Brazil, India and Australia in 2016, following a synchronic approach. Although no deductions can be drawn from the information obtained, under the understanding that the subjects of these studies are relevant for formulators of public policies and researchers of the field, this paper is considered a valid contribution to those interested in analysing the countries studied.

2. Methodology

This study used a mixed approach (CRESWELL, 2010; CRESWELL; CLARK, 2013; GRAY, 2012), with a descriptive-comparative text and quali-quantitative data, aimed at comparing the socioeconomic and demographic scenario of Brazil, India and Australia. The procedure carried out for the qualitative and quantitative analyses was as follows. For the quantitative analysis, data mining of the following databases was performed: *World Bank*, *IndexMundi*, *CountryEconomy*, *Trading Economics* and *Organisation for Economic Co-operation and Development* (OECD); followed by a set of graphs drawn using Excel and tables containing more heterogeneous data, which visually summarise the textual information obtained. As for the qualitative study, a literature review from scientific journals containing studies on this issue was made. The search terms, in Portuguese, were: “socioeconomic AND demographic AND Brazil”; “socioeconomic AND demographic AND India”; “socioeconomic AND demographic AND Australia”. Regarding the literature review for India and Australia, the same terms were also searched in English, in order to extract foreign authors. The Boolean operator OR was also necessary in times, between the terms socioeconomic and demographic.

3. Brief profile of Brazil, India and Australia

Brazil is located South of the Equator, in eastern South America, along the Tropic of Capricorn, bordering the Atlantic Ocean, with Brasília as its capital. **India** is located North of the Equator, in South Asia, along the Tropic of Cancer, bordered by the Indian and Pacific oceans, with New Delhi being the capital. Finally, **Australia** is located South of the Equator, in Southeast Oceania, along the Tropic of Capricorn, bordered by the Indian and Pacific oceans, having Canberra as its capital.

According to the literature, Brazil consists of 26 states and the Federal District, hosting different climatic subtypes: equatorial, tropical, high-altitude tropical, Atlantic tropical, subtropical and semiarid. India has (mostly) monsoon, tropical, equatorial (S), arid tropical (NW) and mountain (N) climates, with 25 states. In turn, Australia hosts arid, semiarid, tropical, humid tropical and subtropical climates, with 6 states and territories.

Regarding the economy of these three countries, the World Bank (2019) states that the Brazilian economy includes agricultural products such as: cotton, rice, coffee, sugarcane, orange, soybeans. For livestock, cattle, equine, caprine, asinine, buffalo, swine, ovine, poultry and rabbit are the main products. In mining, the main products are bauxite, iron, manganese, gold and oil. In the industry, the industries of processing, consumer goods and durable goods play a key part in the Brazilian economy.

As for the Indian economy, the agricultural products include rice, tea, cotton, cashew nuts, jute, coffee, sugarcane, vegetables, wheat, spices and beans. In terms of livestock, cattle, equine, caprine, buffalo, swine, ovine, poultry and camel are the main products, while iron, diamond, coal, bitumen and chromite play a key role in the economy. In addition, the food, metallurgical (iron and steel), textile, chemical and pharmaceutical industries are of great importance.

In terms of the Australian economy, agricultural products such as sugarcane, cotton, wheat, grapes and other fruits have great contribution. In terms of livestock, cattle, equine, swine, ovine and poultry are the main meats produced. In mining, coal, iron, lead, copper, gold, silver, oil, natural gas and bauxite are explored. The industry is dominated by the tobacco, machinery and equipment, metallurgical, oil extraction, coal, chemical, graphic and editorial, wood, paper and drinks sectors.

According to data from Wikipedia (2018a), Brazil maintains international relations with the United Nations (UN), the World Trade Organization (WTO), the Organization of American States (OAS), the Latin American Integration Association (ALADI), the Southern Common Market (Mercosur), Latin-American Economic System (SELA) and BRICS – Brazil, Russia, India, China and South Africa.

In turn, the World Bank, the Great British Community, WTO, the International Monetary Fund (IMF), UN, Asian Development Bank, BRICS New Development Bank and the Non-Aligned Movement are some of the international ties maintained by India, according to data from Wikipedia (2018b).

Finally, Australia, maintains international relations with the Asia-Pacific Economic Cooperation (APEC), the World Bank, IMF, the Great British Community, UN, WTO, the Organisation for Economic Co-operation and Development (OECD), the Commonwealth of Nations, Multilateral Banks and MIKTA – Mexico, Indonesia, the Republic of Korea, Turkey, Australia (AUSTRALIAN GOVERNMENT, 2019).

4. Demographic data

4.1 Territory and Population

Data from the World Bank (2019) have considered an area of 8,358.14 km² for the Brazilian territory, with a population of 207,652.87 million inhabitants, with 86.04% living in urban areas and 13.96% in rural areas. As for the Indian territory, it consisted of 2,973.19 km² in 2016, with a population of 1,324 billion inhabitants, 33.18% of the territory consisting of urban areas and 66.81% of rural land. In turn, in 2016, Australia had a territory of 7,692.20 km², with a population of 24,210.809 million inhabitants, with 85.80 % in urban areas and 14.2 % rural areas.

In 2016, the demographic density of Brazil was of 23.86 pop./km², with a life expectancy of 75.5 years. On the other hand, the population density in India was of 445.371 pop./km² and a life expectancy of 68.5 years, while Australia had a population density of 3.148 pop./km² in the same year and a life expectancy of 84.5 years (WORLD BANK, 2019). Data from Indexmundi (2016) show Brazil with a population growth of 0.82%, with India exhibiting approximately 1.15 % a year and Australia approximately 1.41% a year.

Table 1. Data of territory and population of Brazil, India and Australia in 2016

Country	Territorial Area (Km ²)	Total Population	Population Density (pop./km ²)	Life Expectancy (years)	Urban Population (%)	Rural Population (%)	Annual Population growth (%)
Brazil	8,358.14	207,652.87	23.86	75.5	86.04	13.95	0.82
India	2,973.19	1,324,000.000	445.371	68.5	33.18	66.81	1.15
Australia	7,962.20	24,210,809	3.148	84.5	85.80	14.20	1.4

Source: Based on the data presented in this section.

It is observed that Brazil and Australia have a greater urban population when compared to the rural population, requiring appropriate infrastructure at all levels in order to meet the demands of migratory flow. On the other hand, India's rural population is twice the size of its urban population. According to Shah (2007, p.1), "spatial inequality is one of the important aspects of poverty in India". Another important aspect of poverty in India, observed by Kumar, Deka and Sinha (2017, p.20) is that "the housing shortage in the rural areas is in excess of 43 million units, which is more than twice that of the urban sector". With such statement, it is possible to conclude that, although the urban population is two times smaller, there is great housing shortage in India. Therefore, one can infer that there is a real need for effective social policies in this country.

4.2 Economically active population and female presence

According to the World Bank (2019), in 2016, the economically active Brazilian population stood at 103,214.044 million people, with a female participation of 42.91%. Among the workers aged between 15 and 64 years old, 59.43% were women. As for India, the economically active population totalled

512,765.199 million workers, with women representing 24.69%. Among the workers aged between 15 and 64 years old, 23.90% were women. In turn, in 2016, the economically active Australian population was registered at 12,741.985 million workers, with the presence of women accounting for 46.13%. In addition, 71.61% of the workers aged between 15 and 64 years old were women (See figure 1).

Regarding the distribution per work sector, the most recent data was found in IndexMundi (2018). Among the economically active Brazilian population in 2016, 50.2% are inserted in the service sector, with 39.8% in the industry sector and 10% in the agriculture sector. In India, the economically active population of 2014 was the most recent data found, with 31% of the population in the service sector, 22% in the industry sector and 47% in the agriculture sector. Finally, the most recent data found for Australia was for the year of 2009, showing 75.3% of the population in the service sector, 21.1% in the industry sector and 3.6% in the agriculture sector.

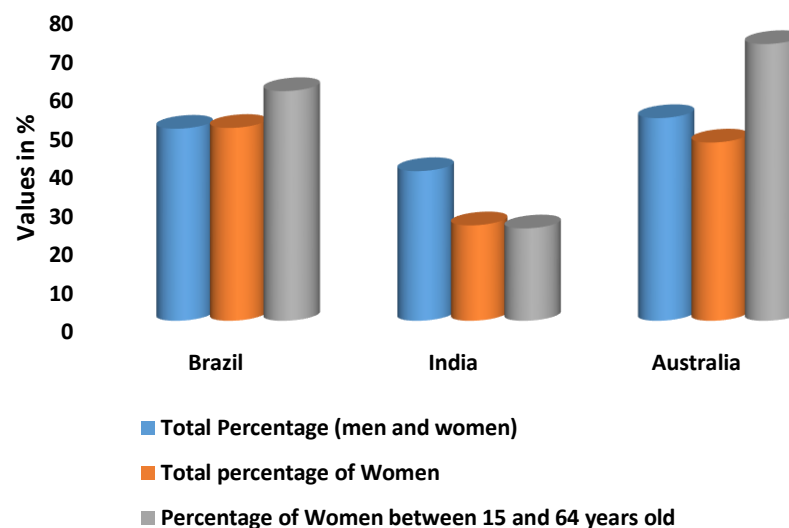


Figure 1. Economically Active Population in Brazil, India and Australia in 2016

Source: Data from the Word Bank (2019)

The purchasing power can either reduce or increase social inequality. Thus, it is considered an important indicator for measuring human development in a country. Even though this work was not focused on this analysis, it is worth mentioning that “the territory itself – being more than a simple receptacle – constitutes an identity expressed by the interaction between human and physical factors that form the process of economic and social development” (LIMA; BRAGA, 2013, p.58). Another aspect to be taken into account is the ever-growing female presence in the indicators of the economically active population. However, it can be observed that the data in India is reduced, when compared to Brazil and Australia.

5. Economy and research data

5.1 Gross Domestic Product in the world ranking

Data from the World Bank (2017) show that the industrial sector represented approximately 18.50% of the Gross Domestic Product (GDP) of Brazil in the year of 2016. In the Indian economy, the industry sector accounted for 29.02% of the GDP, while this share was of 36.70% in the Australian GDP.

Data from the World Bank (2018) show a GDP of U\$1.893 (R\$ 6.079 trillion) for Brazil in 2016, being the world's seventh largest economy, with an annual GDP growth of -3.50%. In India, the GDP totalled\$ 2.40 (R\$7.706 trillion), considered the world's third largest economy, with an annual GDP growth of 7.10%. As for the Australian GDP, it accounted for U\$1.275 (R\$4.094 trillion) ranked as the nineteenth largest economy in the world, with an annual GDP growth of 2.80%.

The percentage shares of the service, industry and agriculture sectors in the GDP of Brazil, India and Australia are shown in Table 2. According to the World Bank (2019), the industry sector had a share of 18.30% in the Brazilian GDP, while the service and agriculture sectors accounted for 76% and 5.50% in the GDP, respectively. In turn, these sectors represented 26.60%, 53.66% and 17.32% in the Indian GDP, respectively. As for Australia, these shares were of 22.30%, 61.10% and 2.20 %, respectively.

Regarding the annual per capita income, in 2016, TradingEconomics (2019) shows a sum of 50,426.83 (in reais) in Brazil, a total of 22,027.85 (in reais) in India and 152,873.28 (in reais) in Australia. As for the annual GDP per capita growth in the year of 2016, Brazil had a negative coefficient of -4.25%, with India presenting a figure of 5.89%, while Australia had a total of 1.29%.

The following information on health expenditure were obtained from CountryEconomy (2019). In 2016, both the public and private Brazilian sectors registered expenditures of 33.22% with health, with 9.9% being associated with the government, which directed 3.91% of the GDP to this area. As for the public per capita expenditure on health in Brazil, a figure of 1,145.45 (in reais) was found for the same year. In India, both the public and private sectors represented 25.43% of health expenditure, with 3.14% being associated with the government, having directed 0.93% of the GDP to this field and a public per capita expenditure on health of 54.22 (in reais). Considering the Australian public and private sectors, health expenditures totalled 68.31%, with 17.42% being associated with the government, having directed 6.32% of the GDP to this sector, with public per capita expenditure representing 11,579.87 (in reais).

Table 2. Brazil, India and Australia – data on GDP and health expenditure 2016

	Brazil	India	Australia
Gross Domestic Product (trillions of reais)	6.079	7.706	4.094
World Rank (place/position)	7th	3rd	19th
Annual GDP growth (%)	-3.50	7.10	2.80
Annual GDP Per Capita growth (%)	-4.25	5.89	1.29
Industry share in the GDP (%)	18.30	26.60	22.30
Service share in the GDP (%)	76.00	53.66	61.10
Agriculture share in the GDP (%)	5.50	17.32	2.20
Total health expenditure (public and private) (%)	33.22	25.43	68.31
Government share in total health expenditure (%)	9.90	3.14	17.42
Public expenditure on health in terms of GDP (%)	3.91	0.93	6.32
Public per capita expenditure on health (in reais)	1,145.45	54.22	11,579.87

Source: Based on the data presented in this section.

This work was not intended at developing and/or analysing measuring techniques, as Abreu et al. (2011) did, but at presenting socioeconomic indicators which, according to the statement in the abstract of the work carried out by these authors: “enables an interpretation of reality, capable of generating subsidies for urban planning and municipal management”. The data found by the study foment this reflection for addressing the basic needs of the population, namely in the health sector. In Brazil, which has a population approximately 7 times smaller than the one in India, public expenditure on health was three times greater than in India. On the other hand, in Australia, which has a population of only 11% the size Brazilian population, public expenditure on health was observed as being twice as much as in Brazil.

It is worth pointing out that the OECD (2018) presented a social inequality index (GINI) of 0.470 for Brazil, 0.495 for India and 0.330 for Australia, in the year of 2016. Regarding the Human Development Index (HDI), CountryEconomy (2019) expresses that, in 2016, Brazil reported an index of 0.758, being the 79th in the world ranking, with India having an index of 0.636, occupying the 129th position in the world ranking, and Australia having a value of 0.938, 3rd in the HDI world ranking.

5.2 Scientific articles, requests for patent applications and intellectual property

Another factor of socioeconomic development in countries englobes research and innovation, which has been an issue of great importance in the economy of countries around the globe. Among the indicators concerning these aspects, scientific articles, which help socialising research and knowledge, and patents are extremely relevant. Patents are protected titles that concede exclusive right of use to their inventors for a period of 20 years, aimed at stimulating research and increasing knowledge dissemination. The protection of this intellectual property is governed by a specific law of each country around the world, under the supervision of the World Intellectual Property Organization (WIPO).

In 2016, the World Bank (2019) registered 53,606 Brazilian articles in scientific and technical journals, with a total of 110,313 Indian articles published and 51,068 from Australia. Regarding patent applications, Brazil had 5,200 resident applications, with India exhibiting a total of 13,199 and Australia 2,620. The non-resident patent applications reached a total of 22,810 in Brazil, with 31,858 in India and 25,774 in Australia.

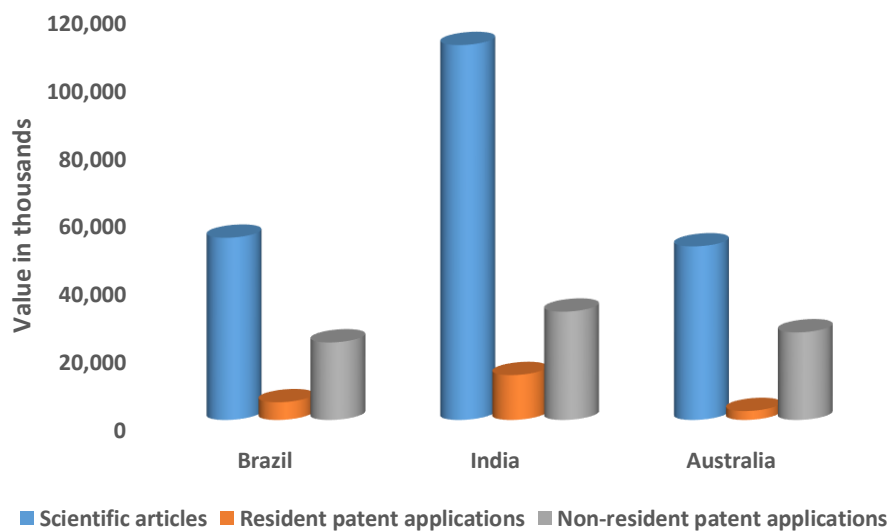


Figure 2. Total scientific articles and requests for patent applications per country

Source: Data from the Word Bank (2019)

The request and concession procedure for patents generates dividends for a country. The World Bank (2019) expresses the revenue from intellectual property in American dollars, with these sums being converted to Brazilian reais in this study. Accordingly, Brazil generated the equivalent of 2,200.46 billion (reals), India 1,774.62 and Australia 2,775.39.

6. Final remarks

With this study, it is possible to observe that the Indian population is more concentrated in rural areas, with Brazil and Australia having similar population distributions between urban and rural areas. Life expectancy in India is seen as being much lower than in Brazil and Australia. In turn, the annual population growth in Australia is much higher when compared to the population of India, which is almost twice the size of the Brazilian population. In 2016, the Australian public per capita expenditure on health was 10 times greater than in Brazil, with the Indian expenditure being 20 times lower than the Brazilian. The HDI of the three countries demonstrated that, although both Brazil and India are developing countries, poverty indexes still remain alarming.

The shares of the industry, service and agriculture sectors in the GDP showed that agriculture represented a greater part of the work sector in India when compared to Brazil and Australia. In addition, it was concluded that the Indian industry sector had greater shares than the Brazilian industry sector, with the latter having similar shares than the Australian industry sector in GDP. The shares of the service sector in Brazil were 41% greater than the one in India, and 24% higher than the one in Australia. Furthermore, the numbers show that the Indian women were not very active in the job market, while in both Brazil and Australia these rates were similarly higher than those in India. In 2016, the women aged between 15 and 64 years old represented more than half of the economically active population of Brazil, reaching more than 70% in Australia.

Furthermore, it was found that Brazil and Australia exhibited similar numbers of articles published in scientific and technical journals, although Brazil's population is 10 times greater than the Australian population. The requests for non-patent applications in Brazil and Australia were also similar, although these requests were 60% higher in India. As for the revenue from intellectual property, despite the fact that India had 60% more requests for resident and non-resident applications, India generated 36% less revenue than Australia and 19% less than Brazil in 2016.

The authors suggest the expansion of this work with future studies, based on the understanding that the information obtained can be a valuable support for researchers, also enabling formulators of public policies and researchers to carry out social analyses of the countries involved.

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