
A STUDY ON GENDER EQUALITY IN TERMS OF HDI, IHDI AND GDI

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Article Received: 28 August 2025

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Article Revised: 18 September 2025

Assistant Professor, Department of Economics, Sri Shakthi Institute of

Published on: 08 October 2025

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DOI Link: <https://doi-doi.org/101555/ijrpa.7223>

ABSTRACT

Investing in women, ending poverty, using gender-based finance, moving towards a green economy and social care, and empowering women's transformation are some of the indispensable actions for holistic development of the economy. The paper aimed to study the gender equality with the help of indices such as HDI, IHDI and GDI and to interpret the dimensions of these indices in measuring gender equality of the ten largest economies of the world. Percentage analysis and Correlation were used to interpret the variables and indices. HDI reveals overall progress in human development, but masks gender disparities. IHDI shows that inequality, including gender inequality, significantly reduces human development. GDI specifically highlights gender-based disparities in health, education, and income. By prioritizing gender equality, we can unlock the full potential of human development, reduce inequality, and create a more just and sustainable world for all.

KEYWORDS: Gender equality, Inequality Measures, Holistic development, inclusive growth and progress

INTRODUCTION

“Gender equality not only liberates women but also men from prescribed gender stereotypes.” Women and girls make up half of the world's population and therefore half of its potential. Gender equality is not only a human right, but also indispensable for peace, the realization of human potential and sustainable development. Additionally, empowering women has been proven to increase productivity and economic growth.

Unfortunately, UN warns that there is still a long way to go to achieve full equality of rights and opportunities for women and men. It is therefore crucial to end the various forms of gender-based violence and ensure that women and girls, as well as men and boys, have equal access to education, health care, financial resources and political life. Balance in business, leadership and decision-making at all levels are also important.

The United Nations Secretary-General Antonio Guterres said that achieving gender equality and empowering women and girls is the unfinished business of our age and the greatest challenge of humanity in today's world. Guterres said gender equality is more important than ever if we want to build a prosperous economy and a healthy world. But it also acknowledges that we face a big challenge: the annual gender gap will reach \$360 billion by 2030. : Investing in women, ending poverty, using gender-based finance, moving towards a green economy and social care, and empowering women's transformation.

Gender Equality and Human Development

Gender equality and women's empowerment are essential for human development. Progress has been made since the 1995 Beijing Declaration and Platform for Action, but at the same time new and broader challenges to women and their layers of nature have emerged, as well as to the deficit. Given expanding research and knowledge and more and better data on the factors affecting these issues, it is time to examine how achieving equality and women's empowerment can be better measured in a global context. As new sources and more gender-disaggregated data become available, previously difficult-to-measure dimensions of deprivation will become easier to understand. At the same time, progress in concepts, knowledge and information processes can help create new ways to measure gender equality and women's empowerment. Goals, targets and indicators of the post-2015 process can establish national benchmarks, as well as analyze progress, improve monitoring and bolster strength.

Inequality-adjusted Human Development Index (IHDI)

While the HDI can be seen as an average measure of the achievement of the dimensions of human development, the IHDI is a level of human development that takes into account the full distribution of the actions of various groups of people in society. When there is no inequality, the IHDI will be equal to the HDI, but when inequality increases, the IHDI will be lower than the HDI. The difference between the HDI and the IHDI (expressed as a percentage of the HDI) indicates the loss of human development due to inequality.

Introduced as a test in the 2014 Human Development Report, the human inequality coefficient is a simple average of health, education and income inequality. The mean is calculated as the unweight arithmetic mean of the parameters estimated in length. When all levels of inequality are similar, the difference between the total loss of the human inequality coefficient and the human development index is negligible; When the levels of inequality are different, the loss from the human development index will be higher than the coefficient of human inequality.

Objectives

1. To study the gender equality with the help of indices such as HDI, IHDI and GDI
2. To interpret the dimensions of these indices in measuring gender equality

Scope of the Study

The study could be further empirically analyzed how each variable influences the gender inequality so that more specific targeted policies would be formulated and technical support with adequate data helps in keen monitoring and review appraisal.

LITERATURE REVIEW

Rinkoo Shantnu and Monali Ray (2023) attempted on comparative analysis of HDI, IHDI and GDI data of selected countries in each group. The findings of the study were that there was a significant difference in HDI& IHDI and HDI & GDI of selected countries in very high, high, medium and low HDI group of countries.

Alekseeva et al., (2018) carried out an analysis of the indicators of IHD of 2016 and also the comparative analysis of IHD, taking into account updating of the Index of inequality of IHRI. The study proved the need of inclusion of indexes of inequality, such as, gender inequality, poverty level, level of availability of the person to progress products. And also revealed the need of the solution of problems of inequality of human development within the country and its regions.

Sanjay Mohanty and Bidyadhar Dehury (2012) compared the estimated HDI using the old and new (revised) methodology and examined the feasibility of constructing the new human development indices (IHDI, GII and MPI) in the states of India. The study indicated that the value of HDI computed using the new methodology is substantially lower than that computed with the old methodology cutting across the states.

METHODOLOGY

The paper, in the aim of studying gender equality in terms of the indices used second hand published reports of the UNDP report, 2023 of the top 10 largest economies of the world. Percentage analysis and Correlation were used to interpret the variables and the indices.

Analysis and Interpretation

The status of the countries are determined based on their economic performance and financial stability which is most significant, apart from that the welfare of the society is more indispensable that act as the catalyst of the sustainable economic progress. After analyzing this importance there evolved the emergence and measurement of composite indices such as Human Development Index, Gender Development Index, Physical Quality of Life Index, Gender Inequality Index and Inequality adjusted HDI.

The study focused to view gender equality in terms of HDI, IHDI, GDI and also verifies whether there is significant relation between gender inequality and GDP growth rate. Hence it included the top 10 largest economies of the world.

Table 1: HDI, GDI, IHDI of the Countries.

Country Name	HDI	IHDI	GDI
USA	0.927	0.745	1.005
China	0.788	0.547	0.962
Japan	0.920	0.761	0.968
Germany	0.952	0.817	0.966
India	0.644	0.401	0.852
UK	0.940	0.773	0.976
France	0.910	0.764	0.986
Brazil	0.760	0.424	1.000
Italy	0.906	0.729	0.969
Canada	0.935	0.785	0.988
Correlation between HDI and IHDI			0.97
Correlation between IHDI and GDI			0.52
Correlation between HDI and GDI			0.70

Source: United Nations Human Development Report, 2023

The above table 1 presents the indices value of the 10 largest economies of the world. Based on the value of HDI, the countries may be ranked as Germany, UK, Canada, USA, Japan, France, Italy, China, Brazil and India. In the same way, the countries are ranked on the basis of IHDI. With the estimation of GDI, USA ranks first and least is India. The correlation

analysis reveals that there is a significant correlated relation between HDI and IHDI, moderate correlation between HDI and GDI and less correlation between IHDI and GDI.

Table 2: Gender Inequality Index.

Country Name	GII	Share of seats in parliament (%)	Population with at least some secondary education (%)	Labour Force Participation (%)
USA	0.18	28.1	95.4	58
China	0.186	24.9	79.7	53.8
Japan	0.078	15.4	98.2	54.2
Germany	0.071	34.8	95.4	56.1
India	0.437	14.6	41	28.3
UK	0.094	31.3	99.8	59.1
France	0.084	36.4	84.3	52.5
Brazil	0.391	17.5	67.4	53.8
Italy	0.057	33	78.6	40.7
Canada	0.069	35	97.8	61.5

Source: United Nations Human Development Report, 2023

The Gender Inequality Index (GII) of the 10 largest economies is presented in the above table 2. Among the 10 countries, India leads in this value, followed by Brazil, China, USA, UK, France, Japan, Germany, Canada and Italy. Among some of the variables of this index such as Women percentage in share of parliament seats, secondary educated population and labour force participation rate reveals the degree of inequality existing in each of the country.

Table 3: Inequality Measures.

Country Name	Coefficient of Inequality	Inequality adjusted income index	Inequality adjusted life expectancy index	Inequality adjusted education index
USA	10.7	0.745	0.845	0.885
China	15.3	0.547	0.853	0.622
Japan	8.1	0.761	0.972	0.813
Germany	7.1	0.817	0.907	0.921
India	30.5	0.401	0.607	0.359
UK	7.8	0.773	0.923	0.906
France	9.8	0.764	0.937	0.769
Brazil	22.4	0.424	0.743	0.61
Italy	11.14	0.729	0.96	0.739
Canada	7.4	0.785	0.928	0.885

Source: United Nations Human Development Report, 2023

The table 3 highlights the inequality measures of those countries where the coefficient of inequality is high for India and low for Germany. The other variables of inequality such as its adjustment with income, education and life expectancy indices depict the variations in the level of inequality in each category of the above countries.

The Inequality-adjusted Human Development Index (IHDI) is a measure of human development that takes into account inequality in three dimensions:

1. Life expectancy
2. Education
3. Income

The IHDI is calculated as follows:

1. Calculate the Human Development Index (HDI) for each country using the standard HDI formula.
2. Calculate the inequality-adjusted coefficients for each dimension:
 - Life expectancy: $1 - (1 - (\text{average life expectancy} / \text{maximum life expectancy}))^2$
 - Education: $1 - (1 - (\text{average years of schooling} / \text{maximum years of schooling}))^2$
 - Income: $1 - (1 - (\text{GNI per capita} / \text{maximum GNI per capita}))^2$
3. Calculate the overall inequality-adjusted coefficient by taking the geometric mean of the three dimension-specific coefficients.
4. Calculate the IHDI by multiplying the HDI by the overall inequality-adjusted coefficient.

The IHDI formula: $\text{IHDI} = \text{HDI} \times (1 - (1 - (\text{average life expectancy} / \text{maximum life expectancy}))^2)^{1/3} \times (1 - (1 - (\text{average years of schooling} / \text{maximum years of schooling}))^2)^{1/3} \times (1 - (1 - (\text{GNI per capita} / \text{maximum GNI per capita}))^2)^{1/3}$;
Where: HDI is the standard Human Development Index, Average life expectancy, average years of schooling, and GNI per capita are the average values for each country, Maximum life expectancy, maximum years of schooling, and maximum GNI per capita are the maximum values observed across all countries. The IHDI ranges from 0 to 1, where 1 represents perfect equality and 0 represents perfect inequality.

CONCLUSION

“India has made significant progress in human development, as reflected in its HDI score, which has consistently improved over the years. However, despite this progress, India still

faces challenges in achieving gender equality, as evident from its GDI score, which highlights disparities in health, education, and income between men and women.

To address these disparities and achieve sustainable development, India must prioritize gender-sensitive policies and programs that address the systemic barriers and social norms perpetuating gender inequality. This includes:

- Investing in girls' education and women's empowerment programs
- Improving access to healthcare, particularly reproductive health services
- Promoting women's participation in the workforce and closing the gender pay gap
- Addressing gender-based violence and discrimination

By addressing these challenges and leveraging its human development progress, India can unlock the full potential of its citizens, achieve gender equality, and move closer to realizing the United Nations' Sustainable Development goals

"The Human Development Index (HDI), Inequality-adjusted Human Development Index (IHDI), and Gender Development Index (GDI) collectively highlight the critical importance of addressing gender inequality to achieve sustainable human development.

Key findings

- HDI reveals overall progress in human development, but masks gender disparities.
- IHDI shows that inequality, including gender inequality, significantly reduces human development.
- GDI specifically highlights gender-based disparities in health, education, and income

Together, these indices demonstrate that gender equality is essential for achieving:

- Full human potential
- Sustainable development
- Reduced inequality
- Improved health, education, and economic outcomes

To achieve gender equality, governments and stakeholders must:

- Address systemic barriers and social norms perpetuating gender inequality
- Invest in gender-sensitive policies and programs
- Promote women's empowerment and participation in all aspects of life
- Monitor progress using gender-disaggregated data and indices like GDI

By prioritizing gender equality, we can unlock the full potential of human development, reduce inequality, and create a more just and sustainable world for all.”

REFERENCES

1. Alekseeva, O., Zelinskaya, E., Ryabtsev, A., Strashko, E. and Shunevych, O (2018). Influence Indicators of the Inequality of Human Development to the Human Development Index (HDI) of the World Countries, *Advances in Economics, Business and Management Research*, 47, 826-831
2. Levanon, Asaf & David B. Grusky, (2016). The Persistence of Extreme Gender Segregation in the Twenty-first Century, *American Journal of Sociology*, 122(2), 573-619
3. Marcus, R., (November, 2018). Gender, Social Norms, and Women’s Economic Empowerment”
4. Nidhi Shukla & Saumya Singh, (2022). Emerging Concepts of Gender Equality and Inclusion: Integrate and Apply Now, *Indian Journal of Gender Studies*, 29(2), 222-228
5. Qi Wang, (2015). In Tailwind, in Headwind: Gender Quotas in China, *Indian Journal of Gender Studies*, 22(3), <https://doi.org/10.1177/0971521515594277>
6. Ramya Subrahmanian (2005). Gender equality in education: Definitions and measurements, *International Journal of Educational Development*, 25, 395–407
7. Rinkoo Shantnu and Monali Ray (2023). A Cross Analysis of HDI with IHDI and GDI In Selected Countries, *International Journal of Advanced Research in Arts, Science, Engineering & Management*, 10(2), 1300-1306
8. Samidha Jain, (2023). Gender equality still a far cry: report, Retrieved from <https://www.forbesindia.com/article/news/gender-equality-still-a-far-cry-report/86197/1>
9. Sanjay K. Mohanty and Bidyadhar Dehury (2012). Human Development Indices: Old and New, *Artha Vijnana*, 54(1), 19-38
10. Suneeta Dhar, (2018). Gender and Sustainable Development Goals (SDGs), *Indian Journal of Gender Studies*, 25(1), <https://doi.org/10.1177/0971521517738451>
11. Tanni Mukhopadhyay, C. Rivera, Heriberto Tapia, (2019). Gender Inequality and Multidimensional Social Norms, Working Paper United Nations Development Programme, Human Development Report Office, 1-24.