

UNDERSTANDING THE LINK BETWEEN EDUCATION AND HUMAN DEVELOPMENT: NOTES IN INDIAN CONTEXT

¹K.M.Joshi and ²Kinjal V.Ahir

¹Department of Economics, Maharaja Krishnakumarsinhji Bhavnagar University, Bhavnagar
²P.G. Department of Economics, Sardar Patel University, Vallabh-Vidyanagar

ABSTRACT

Education plays a crucial role in improving human capital and therefore is apportioned appropriate weightage in the calculation of Human Development Index. The use of various education indicators are also considered in the calculation of Gender Development Index (GDI), Gender Inequality Index (GII), Multidimensional Poverty Index (MPI). This paper tries to separate and analyze indicators related to education in the calculation of various indices, the weightages assigned, and a comparative analysis of the performance of India in context of these indicators. The results show that the primary education enrolments are satisfactory. However, the literacy, secondary and higher education enrolments, and public expenditure on education in India are not comparable with the world average, developing countries average or medium human development countries. The paper envisages for effective policy intervention for enhancing access, and improving quality at all levels of education.

Key words: Human development, Education indicators, Comparative analysis, India

Introduction

The origin of the word 'education' can be traced back to 16th century in Latin. It is defined by the Oxford Learner's dictionary as "The process of teaching, training and learning, especially in school or colleges, to improve knowledge and develop skills" (<http://www.oxfordlearnersdictionaries.com/definition/english/education>). It connotes that the process stated above is related with the augmentation of knowledge and skills possessed by an individual who undergoes this process. The stakeholders associated with knowledge production, dissemination and consumption have received approbations and appreciations in retrospect; endeavors to quantify the paybacks originating due to the access of knowledge began more scientifically from 1950s. In the literature of economics, the growth models laid increased

prominence on the role that education played towards achieving economic growth. Several empirical research also attempted to calculate private rates of return to education and conceptualize the social rates of return to education. Along with this, the concept of human development evolved, international organizations like UN drew increased attention of the economies towards the policy initiatives focused on enhancing education. In 1945, UNESCO was established and education was considered to be pivotal to transmute lives, and the spread of education was associated with eradication of poverty, building peace, and driving sustainable development. Currently, UNESCO is entrusted with the responsibility to lead the action towards achieving global education goals through Agenda 2030 (<http://en.unesco.org/>). Progressively various indexes evolved to compare numerous attributes of different countries across the world on different parameters. Of these majority of the indexes endorsed a significant role of education as one of the indicators.

The present paper is an effort to trace various indicators related to education in the calculation of various indices, thereby making an attempt to capture the conceived contribution of education in human development. Subsequently, a critical appraisal is undertaken regarding the performance of India in various such indexes as compared to other countries and regions. Finally, some policy implications are discussed.

1. Objectives

The objective of this research paper is to identify those indicators that are exclusively related to education and have been used as indicators in various indices comparing nations globally along various human development dimensions in the indexes by the UNDP. Besides, an attempt has also been made to undertake a critical analysis of the performance of India in various indicators, and to compare them with high and low performing countries, and consequently suggest policy implications.

2. Methodology & data collection

Being an exploratory analysis, an attempt has been made to identify various criteria exclusively related to education at any level (primary, secondary, higher secondary or tertiary) that are used in calculating indexes used for global comparison of nations. It begins with an examination of the subject 'Economics of Education'. Taking a lead from theoretical framework, an endeavor has been made to further explore the focused theme of the contribution of education to an individual and the society (nation at large), and extend a critical appraisal of such attempts in context of India.

To undertake this focused study the data is used from secondary sources including several research papers and websites of different international organizations involved in preparation of such indices (like UNDP, UIS, etc.).

Average annual growth rates have been calculated for selected period of time in context of education and human development. Graphical tools are used for a comparative analysis of performance of India on various parameters related to education as drawn from the data on the mentioned websites.

3. Limitations

The study is confined to secondary data and hence the limitations associated with the source of the data remain. The study can be made more scientific by pursuing the primary data collection at the grass-root level. In particular, the qualitative parameters that are not captured by the sources discussed above (like the issues associated with the quality aspects of education) can be collected and analyzed to enhance the understanding on the issues discussed here.

4. Theoretical framework and Literature Review

4.a. Education and economic growth: There are several empirical evidences in the economic literature that substantiate the notion about the contribution of education to economic growth. Until 1950s, the conventional factors of production namely land, labour, capital and entrepreneur were only considered to be contributing towards the economic growth. The simple Solow model showed the role of education through 'effectiveness of labour' (A_t) along-with the conventional factors of production capital (K) and labour (L) (Solow, 1956). The augmented Solow model was then used to demonstrate the aggregate output as a function of the rate of growth of human capital by Barro (1991), Denison (1967, 1985) and Maddison (1982, 1991). Denison in his study explored the sources of economic growth of US, and found that during the period 1929 to 1957, a 2 percent per annum rise in the average education per worker was the source of 23 percent of growth of total real national income, and 42 percent of growth of real national income per person employed (Denison, 1962b). Mankiw, Romer and Weil (1992) demonstrated a link between educational expenditure and growth through human capital investment rates. These exogenous models, however, did not incorporate the externalities associated with education. Later Lucas model (1988) allowed for 'external effect' and suggested that the long run growth is a function of investment in physical and human capital. Gylfason (2001) observed that the public expenditure on education and expected years of schooling were positively correlated with economic growth across countries for the sample that he selected. For 86 observations he also concluded that a 40 percent rise in the secondary school enrolments from one country to another goes along-with a one percentage point rise in annual rate of growth of GNP per capita. Spence (1973) suggested

that education provides a signal in the job market and that the degree can be used by the employers to indicate an ability that differentiates educated from the 'duds' (Joshi and Ahir, 2007).

4.b. Private rates of return on education: The private internal rate of return is equal to the discount rate that equalizes the real costs of education during the period of study to the real gains from education thereafter. In its most comprehensive form, the costs equal tuition fees, foregone earnings, net of taxes adjusted for the probability of being in employment minus the resources made available to students in the form of grants and loans (OECD, 2002). According to Duraisamy (as cited in Agrawal, 2011), the rates of return per year of schooling in 1993-94 for primary, middle, secondary, higher secondary and graduate levels of education was 7.9, 7.4, 17.3, 9.3 and 11.7% respectively. But Agrawal (2011) observed that in case of India the rates of returns to education increases with the rise in the levels of education: Primary (5.47), Middle (6.15), Secondary (11.38) Higher secondary (12.21) and Graduate (15.87). Hence, Agrawal (2011) observed that the rates of returns for higher education showed that the rates of returns corresponded with the income quintiles (high returns for high quintiles and low returns for low quintiles). The returns are also observed to be higher for urban areas than rural areas (Agrawal, 2011; Joshi and Ahir, 2014).

4.c. Social rates of return on education: The social internal rate of return refers to the costs and benefits to society of investment in education, which includes the opportunity cost of having people not participating in the production of output and the full cost of the provision of education rather than only the cost borne by the individual. The social benefit includes the increased productivity associated with the investment in education and a host of possible non-economic benefits, such as lower crime, better health, more social cohesion and more informed and effective citizens (OECD, 2002). Barro and Lee (1994) in their study found a positive correlation between educational attainment and life expectancy and negative correlation between educational attainment and infant mortality. By increasing the efficiency of the labor force, by fostering democracy (Barro, 1997) and thus creating better conditions for good governance, by improving health, by enhancing equality (Aghion et. al., 1999), and so on, the labour productivity increases (<http://www.sciencedirect.com/science/article/pii/S0014292101001271>). Education being largely subsidized and due to the difficulties to capture the exact social benefits of education, the social returns to education are observed to be lower than the private returns (Agrawal, 2011, p. 3). Akhter (2012) stated that educated women rear better and healthy children as a potential workforce, that influence to keep family size small, and hygienic and nutritional practices increase family productivity. Patrinos (2008) observed that higher social rates of returns for females than males was associated with reduced infant mortality rates and lower fertility rates.

But Hanushek and Woessmann (2007) further clarify that the cognitive skill of the population are more strongly associated with the economic growth of the country rather than only the school attainment and that the deficit of such skill set is more in developing countries. Hanushek (2008) associated increased cognitive levels instead of merely time spent in pursuing education with increased annual earnings.

6. Observations and Findings

6.a. Education in various indexes of global comparison of nations

With more than 25 years of focused efforts towards human development, UNDP institutionalized the concept of investing in human capital. Ever since its first launch in 1990, the human development report (HDR) has put focused efforts, and has encouraged the national policies also towards investing in health and education of its citizens. It forms an interesting case to study the changing role played by education in the calculation of the human development over the years by UNDP.

6.a.i. Education and Human Development Index (HDI): The education index is assigned 1/3rd weightage in calculating the overall HDI. Education index is the arithmetic mean of two indices namely, 'mean years of schooling index' and 'expected years of schooling index'. Both these indices are thus assigned an equal weightage (i.e. half of 1/3rd each in overall HDI).

6.a.ii. Education and Gender Development Index (GDI): For GDI, the weightage to mean years of schooling and expected years of schooling is same as assigned to HDI.

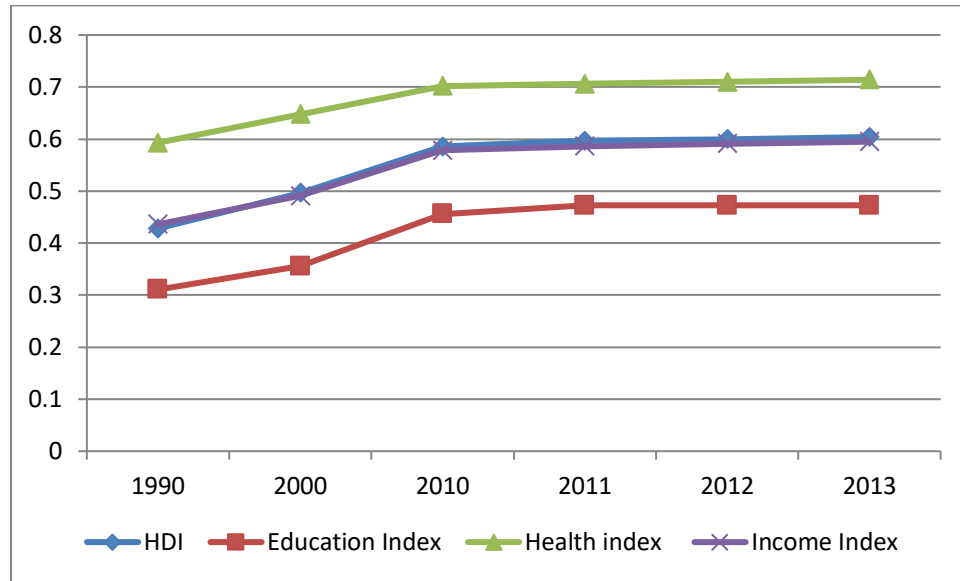
6.a.iii Education and Gender Inequality Index (GII): In the calculation of GII, the 'attainment at secondary and higher education' is assigned a weightage of 1/5th as a component of 'empowerment'.

6.a.iv. Education and Multi-Dimensional Poverty Index (MPI): Each of the two indicators related to education namely 'school attainment (no household member has completed at least six years of schooling)' and 'school attendance (a school age child, up to grade 8 is not attending school)' are assigned half of 33.3 weightage, i.e. 16.7 percent.

Hence, it can be observed that in the calculations of three out of four indices, education is given a weightage of 33.3 percent and for GII it is half of the weightage allocated to empowerment.

6.b. Comparative analysis of performance of India on selected parameters of education

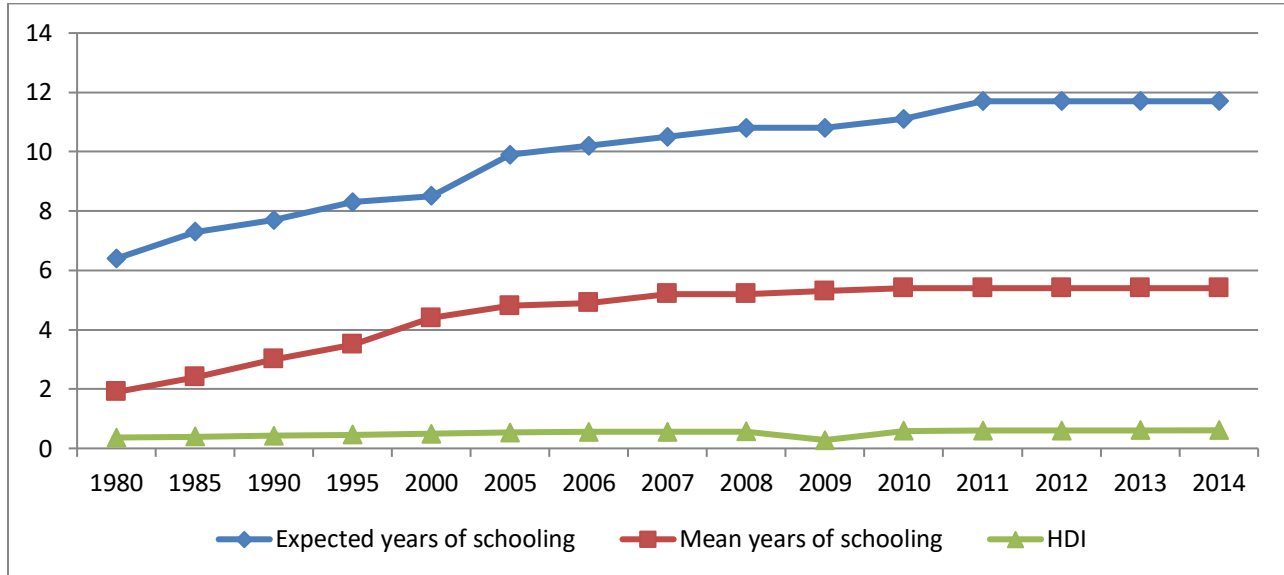
Figure 1. HDI, education, health and income index for India: 1990-2013



Source: UNDP (2015a)

As can be seen in figure 1, the education index for India has gradually moved forward over past two decades (1990-2000 and 2000-2010), and has then largely remained stable since 2010. While the pace of growth of education index seems to be gradual, it seems to be appreciable considering the fact that the average annual growth rate of the population for the period of 2000-2005 was 1.6 and for 2010-2015 was 1.2. Besides this, the population in absolute numbers for the year 2014 was 1.2 billion. Another noteworthy issue in figure 1 is that the education index is at the lowest level as compared to the other two indices namely, health index and income index. While all the three indices are almost parallel to each other, the initial point itself for education index has been low and thus needs a greater momentum to rise to a higher level and thereby also raise HDI.

Figure 2: 'Expected years of schooling' and 'mean years of schooling' for India: 1980-2013



Source: UNDP (2015a)

Note: Data for 'A school age child is not attending school' is in lakhs.

Expected years of schooling is defined as the number of years of schooling that a child of school entrance age can expect to receive if prevailing patterns of age-specific enrolment rates persist throughout the infant's life. Figure 2 exhibits a clear rise in the expected years of schooling for the period during 1980 to 2013. Mean years of schooling is defined as average number of years of education received by people ages 25 years and older, converted from educational attainment levels using official durations of each level. The mean years of schooling too show a rise, although smaller rise than expected years of schooling for the period during 1980 to 2013 (UNDP, 2015b).

For the calculation of GDI, the expected years of schooling for females was 11.3 and that for males was 11.8. Similarly mean years of schooling for females was 3.6 and that for males was 7.2. The combine effect of the inequality between females and males in these two parameters of education index contribute 33.3% in the GDI inequality between females and males (UNDP, 2015b). The calculation of Gender Inequality Index (GII) includes 27 percent of adult women with at least a secondary level of education as compared to 56.6 percent of males with at least secondary level of education. In context of GII India's rank (130) is below Bangladesh (111) and Pakistan (121). In the calculation of MPI, the contribution of education to overall poverty of

deprivation in percentage was 22.7 percent while that of health was 32.5 percent and for living standards was 44.8 percent.

Although these growth rates deserve to be appreciated considering the fact that the rise in the population was also observed, and with a huge population base certain other parameters related to education do not show remarkable progress.

Besides various other indicators related to education influence human development. For those indicators the value for India in comparison with Norway (Highest HDI), Niger (lowest HDI) and World for the year 2014 is as shown in table 1 and figure 4.

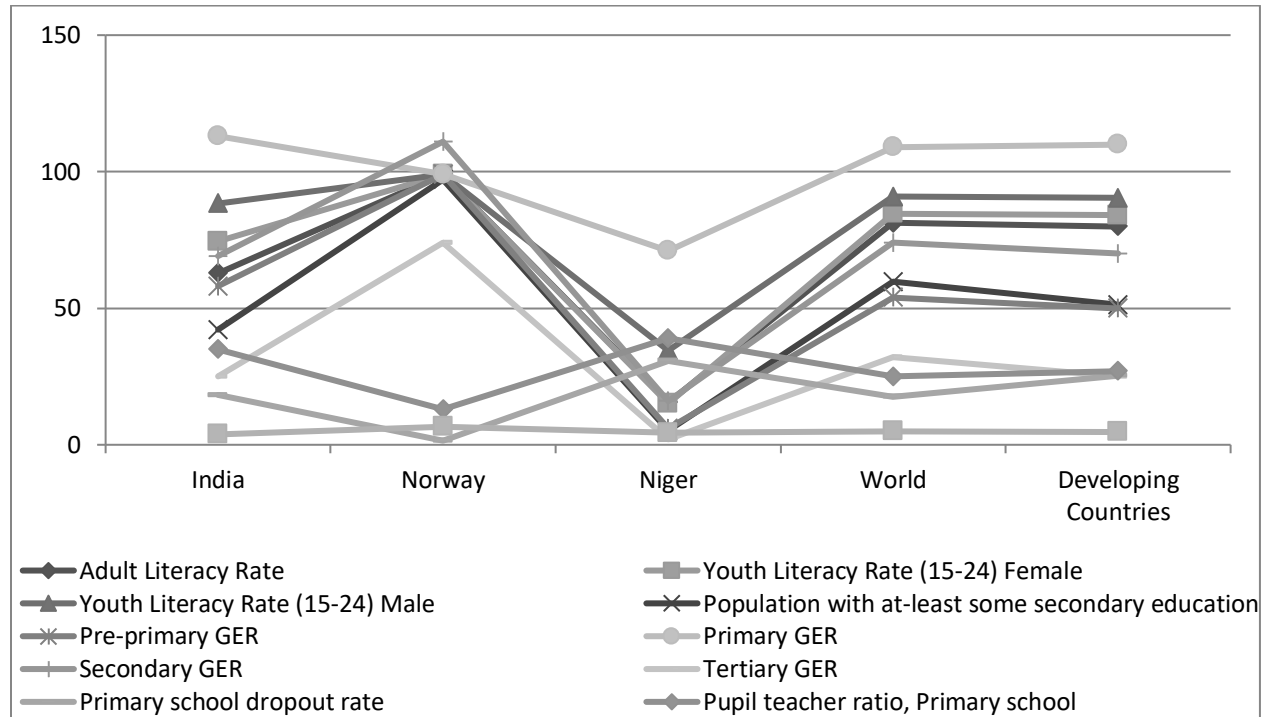
Table 1: Comparison of India with Norway, Niger, World and Developing countries for 2014 on selected education criteria

Criteria	India	Norway	Niger	World	Developing Countries
Adult Literacy Rate	62.8	99	15.5	81.2	79.9
Youth Literacy Rate (15-24) Female	74.4	99	15.1	84.7	84.1
Youth Literacy Rate (15-24) Male	88.4	99	34.5	90.8	90.4
Population with at-least some secondary education	42.1	97.1	5.2	59.7	51.2
Pre-primary GER	58	99	6	54	50
Primary GER	113	99	71	109	110
Secondary GER	69	111	16	74	70
Tertiary GER	25	74	2	32	25
Primary school dropout rate	18.2	1.5	30.7	17.6	25.3
Pupil teacher ratio, Primary school	35	13	39	25	27
Public expenditure on education	3.8	6.6	4.4	5	4.7

Source: UNDP (2015c), UIS (2016) and Knoema (2016a, 2016b)

Note: Highlighted box data has been taken from UIS (2016) or from Knoema (2016a, 2016b)

Figure 4: Comparison of India with Norway, Niger, World and Developing countries for 2014 on selected education criteria



Source: UNDP (2015c)

Table 1 and figure 4 compare the performance of India on various indicators of education with Norway (with highest HDI), Niger (with lowest HDI), with the averages for the world and with the average of developing countries. For most of the indicators, the performance of India is better than Niger but not better than Norway, world average or even the average of the developing countries. Performance of India in comparison to world average or the average of developing countries with regard to the indicators related to primary education are noticeable like pre-primary and primary GER and low primary school drop-out. But the GER considers the percentage of enrolments at a particular level of education as a percentage of population belonging to the relevant age-cohort. Thus, higher primary GER is logical due to huge number of people with primary education compared to the population belonging to the age-cohort relevant to primary education. Besides the above three indicators in context of all the other indicators, the performance of India is lower than not only Norway but also the average of the world and that of developing countries.

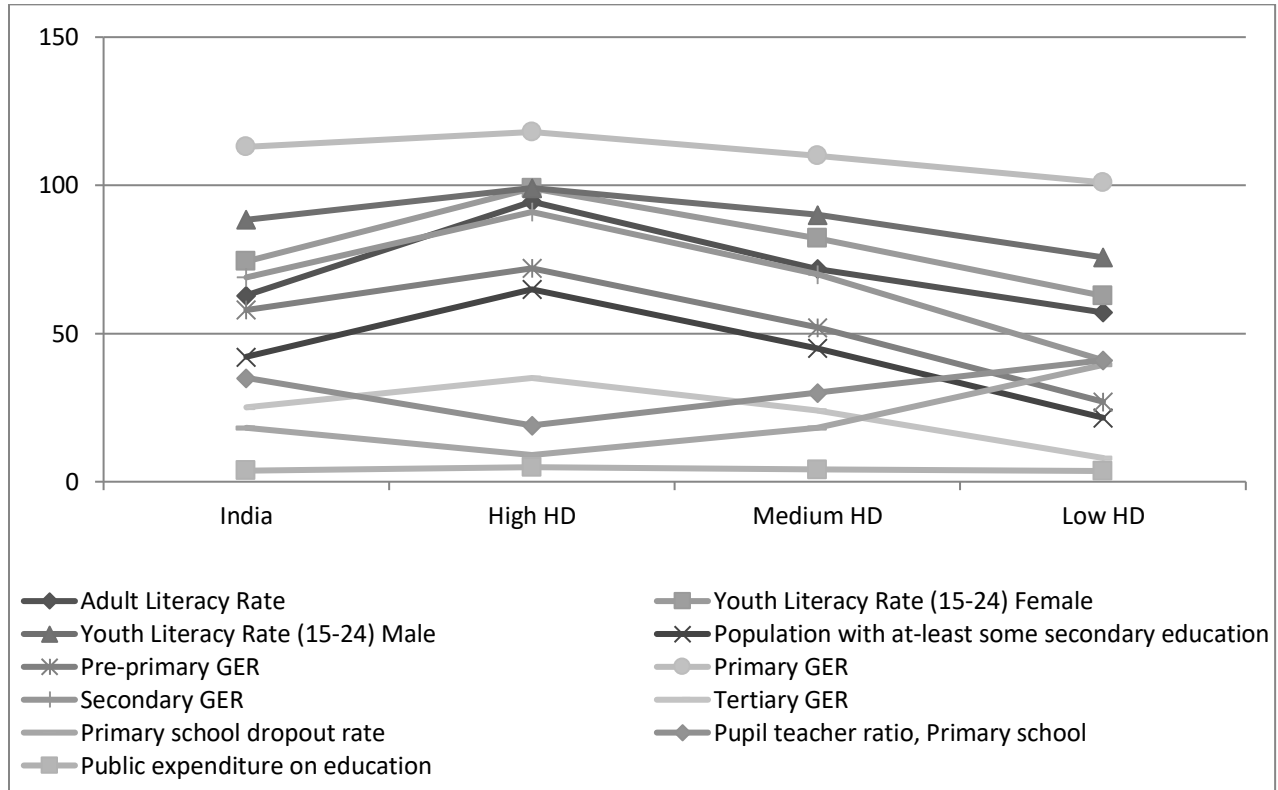
Table 2: Comparison of India with High, Medium and Low Human Development Countries for 2014 on selected education criteria

Criteria	India	High HD	Medium HD	Low HD
Adult Literacy Rate	62.8	94.5	71.8	57.1
Youth Literacy Rate (15-24) Female	74.4	99	82.2	62.7
Youth Literacy Rate (15-24) Male	88.4	99.1	90.1	75.7
Population with at-least some secondary education	42.1	64.9	45	21.6
Pre-primary GER	58	72	52	27
Primary GER	113	118	110	101
Secondary GER	69	91	70	41
Tertiary GER	25	35	24	8
Primary school dropout rate	18.16	9	18.1	39.4
Pupil teacher ratio, Primary school	35	19	30	41
Public expenditure on education	3.8	4.9	4.1	3.6

Source: UNDP (2015c)

For similar indicators, the value for India in comparison with high, medium and low human development for the year 2014 is as depicted in table 2 and figure 5. The conclusions are similar as discussed above for table 1 or figure 4. The performance of India largely lies between that of Medium human development countries and Low human development countries except for indicators related to pre-primary and primary education GER and low primary school drop-out rate.

Figure 5: Comparison of India with High, Medium and Low Human Development Countries for 2014 on selected education criteria



Source: UNDP (2015c)

8. Policy implications

Performance of India in terms of Primary education is appreciable. However, a lot more efforts would be required to enhance the education index and thereby HDI and other related indices. Investments, both government and private, would be required to address the issues related to gender-based inequalities and access to education (Joshi and Ahir, 2016a). Regulatory initiatives like the 'Right to education', mid-day meal programs and various other policy incentives have been constructive in terms of increasing access to primary education. However, low funding and less public expenditure on education is likely to attest insufficient and inadequate to support the higher levels of education (Joshi and Ahir, 2013; 2015; 2016b). Besides this, the quality issues remain persistent like the high pupil-teacher ratio resulting into lower literacy rates and high drop-outs. Such wastages result into inefficiencies in the provision of education and hence corrective initiatives should be taken by employing more qualified teachers, retaining the existing students, and thereby assuring higher completion rates. Improved infrastructural facilities, provision of textbooks, easy access to educational institutions - geographically and financially, increased number of qualified teachers, enhancement of various processes related to

improvement of educational quality (curriculum, pedagogy, and assessment), incentivizing philanthropic contributions, focusing on enhancement of ethics, skills and attitude, amongst others are imperative. Mannathoko (2008) associated the provision of infrastructural facilities with the increased access to female education. Besides equitable access to females, poor, rural population and ethnically impoverished communities are likely to assure an inclusive access to education. Asadullah and Choudhary (2008) concluded that in the religious educational institutions adequate incentives may play a crucial role in reducing the gap between gender, economic and religious groups. Therefore, a coordinated approach involving various stakeholders including, government, private entities, students, parents and non-governmental organizations is necessary to achieve the mammoth task of enhancing education index and thereby the HDI.

9. Scope for further research

Data can be collected and critically analyzed from primary sources to enhance the understanding of certain qualitative issues discussed here. Along with this, the researchers can also inquire and study similar comparative analysis for health – another crucial parameter used in measuring human development.

Conclusion

There are enough empirical evidences to suggest that the returns to education both private and social are high across countries. It is widely accepted that the investments in education not only enhances the educational achievement but also generate positive externalities i.e., the impact on health as well as improved standards of living. Therefore, the policy initiatives directed towards enhancing educational access and quality is likely to enhance a country's performance not only in economic terms but also in terms of radical social changes, enhanced political awareness, and participation by the citizens. If India aspires to reap rich benefits from its demographic dividend, financial investments, effective regulatory directives and participatory management of the stakeholders of education would be imperative.

Reference

- Agrawal, T. (2011). Returns to Education in India: Some Recent Evidence. Working Paper: WP-2011-017, Indira Gandhi Institute of Development Research (IGIDR), Mumbai.
- Akhter, S. (2012). Indirect benefits of women's education: Evidence from Bangladesh. Doctor of Philosophy Thesis, School of Economics and Information Systems, University of Wollongong.

- Asadullah, M. N. and Choudhary N. (2008). Holy Alliances: Public subsidies, Islamic high schools & female schooling in Bangladesh. In Tembon, M. and Fort, L. (eds.) *Girl's Education in the 21st Century: Gender equality, empowerment and economic growth* Chapter 13, The World bank, ISBN: 978-0-8213-7474-0 .
- Barro, R.J. (1991). Economic Growth in a Cross-Section of Countries. *Quarterly Journal of Economics*, 106: 407-43.
- Barro, R.J. and Lee, Jong-Wha (1994). Sources of economic growth. Carnegie-Rochester Conference Series on Public Policy, Vol. 40. P 1-46. Retrieved as on 28.12.16 from [http://dx.doi.org/10.1016/0167-2231\(94\)90002-7](http://dx.doi.org/10.1016/0167-2231(94)90002-7)
- Denison, E.F. (1962a). *The Sources of Economic Growth in the United States and the Alternatives before us*. New York: Committee for Economic Development.
- Denison, E.F. (1962b). Education, economic growth and gaps in information. *The Journal of Political Economy*, Vol. LXX, No. 5, Part 2, Universities- National Bureau committee for Economic Research. ISBN: 0-87014-306-9. p 124-128. Retrieved as on 1.1.17 from <http://www.nber.org/chapters/c13576>
- Denison, E.F. (1967). *Why Growth Rates differ?* Washington D.C.: The Brookings Institution.
- Denison, E.F. (1985). *Trends in American Economic Growth, 1929 - 82*. Washington D.C.: The Brookings Institution.
- Gylfason, T. (2001). Natural resources, education and economic growth. *European Economic Review*, 15th Annual congress of the European Economic Association, Vol. 45, Issue 4-6. Retrieved as on 28.12.16 from [http://dx.doi.org/10.1016/S0014-2921\(01\)00127-1](http://dx.doi.org/10.1016/S0014-2921(01)00127-1)
- Hanushek, E. A. (2008). Schooling, gender equity and economic outcomes. In Tembon, M. and Fort, L. (eds.) *Girl's Education in the 21st Century: Gender equality, empowerment and economic growth* Chapter 2, The World bank, ISBN: 978-0-8213-7474-0 .
- Hanushek, E.A. and Woessmann, L. (2007). The rold of education quality for economic growth. *World Bank Policy Research Working Paper*, No. 4122. Retrieved as on 28.12.16 from <https://ssrn.com/abstract=960379>
- Joshi, K. M., & Ahir, K. V. (2007). Economics of privatization: An introspection of Indian higher education. *Indian Development Review: An International Journal of Development Economics*. Serials Publication, Volume 5 No. 2. December: 317- 340.
- Joshi, K.M. & Ahir, K.V. (2013). Indian Higher Education: Some Reflections. *Intellectual Economics*, Vol 7 (1). ISSN 1822-8038: 42-53.
- Joshi, K.M. & Ahir, K.V. (2014). Reflections on changing landscape of Private higher education space in Indian higher education. *Intellectual Economics*, Vol 8, No. 2(20). ISSN 1822-8038: 8-22

- Joshi, K.M. & Ahir, K.V. (2015). The State of Higher Education Governance in India: A Perspective. In K.M. Joshi, and S. Paivandi (eds), *Global Higher Education: Issues in Governance*,. New Delhi: B.R. Publishing Corporation. pp. 262-314
- Joshi, K.M. & Ahir, K.V. (2016a). Equity in Indian Higher Education: Issues and Challenges in Access and Participation. In Saeed Paivandi & K.M.Joshi (eds) *Equity in Higher Education: A Global Perspective*, Studera Press, New Delhi. ISBN 978-93-85883-06-4. pp 55-82.
- Joshi, K.M., & Ahir, K.V. (2016b). Higher Education Growth in India: Is Growth Appreciable and Comparable? *Higher Education Forum*, Volume 13, March, 2016, Research Institute of Higher Education, Hiroshima University. ISBN978-4-902808-97-1 : 57-74.
- Knoema (2016a). Human Development Index, World Rankings. Retrieved as on 10.1.2016 from <https://knoema.com/vhxjid/human-development-index>
- Knoema (2016b). India country report, Human Development Index. Retrieved as on 10.1.2016 from <https://knoema.com/vhxjid/human-development-index?country=India>
- Lucas, R.E. 1988. On the Mechanics of Economic Development. *Journal of Monetary Economics*, 22: 3-42.
- Maddison, A. (1982). *Phases of Capitalist Development*. Oxford: Oxford University Press.
- Maddison, A. (1991). *Dynamic Forces in Capitalist Development. A Long-run Comparative View*.Oxford: Oxford University Press.
- Mankiw, N.G.; Romer, D. and Weil, D.N. (1992). A Contribution to the Empirics of Economic Growth. *Quarterly Journal of Economics*, 107: 407-37.
- Mannathoko, C. (2008). Promoting education quality through gender friendly schools. In Tembon, M. and Fort, L. (eds.) *Girl's Education in the 21st Century: Gender equality, empowerment and economic growth* Chapter 8, The World bank, ISBN: 978-0-8213-7474-0 .
- OECD (2002).Glossary of Statistical Terms.Education at a glance, Education and Training Statistics, OECD, Paris.Retrieved on 23.12.16 from <https://stats.oecd.org/glossary/detail.asp?ID=5412>
- Patrinos, H. (2008). Returns to education: The gender perspective. In Tembon, M. and Fort, L. (eds.) *Girl's Education in the 21st Century: Gender equality, empowerment and economic growth* Chapter 4, The World bank, ISBN: 978-0-8213-7474-0 .
- Solow, R.M. (1956). A Contribution to the theory of Economic Growth. *Quarterly Journal of Economics*, 70: 65-94.
- Spence, A.M. (1973). Job Market Signaling. *The Quarterly Journal of Economics*, MIT Press, vol. 87(3): 355-74. August.
- UNDP (2015a). Human Development Report 2015. UNDP. Retrieved as on 12.1.16 from <http://hdr.undp.org/en/2015-report>

- UNDP (2015b). Briefing note for countries on the 2015 Human Development Report - India. Work for Human Development, Human Development Report 2015, UNDP. Retrieved as on 12.1.16 from http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/IND.pdf
- UNDP (2015c). Statistical Annex. for Human Development, Human Development Report 2015, UNDP. Retrieved as on 12.1.16 from http://hdr.undp.org/sites/default/files/hdr_2015_statistical_annex.pdf