

IMPORTANCE OF LITERACY IN INDIA'S ECONOMIC GROWTH

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Abstract

India today faces some grave challenges economically. Unemployment, underemployment, poverty and unequal distribution of wealth being few of them. Nothing other than rectifying the low literacy rate can present solutions to almost all these problems. Further literacy also reduces the economic inequality and reduces the income disparity, all of which India faces today.

This paper attempts to study the impact of literacy on economic growth and population growth and also how all the three variables are related to each other. By doing so, there is an attempt made to understand the key challenges which India faces today and highlight the importance of addressing those challenges as they could potentially turbo-charge prosperity of the country.

Literacy rate is one of the key indicators of the economic situation in a country as increased literacy rate leads to enhancement of a country's human capital.. Literacy also provides better employment prospects and gives a higher socio-economic status. Increased literacy rate also leads to decreased population growth rate and thus a country's resources better shared among less people. Thus literacy rate is given its due importance in this paper as a key to India's prosperity.

Key Words: Literacy rate, economic growth (GDP), population growth (TFR), Human Resource, Human Capital.

INTRODUCTION

India demographics occupy 2nd rank among the world's most populated countries. With a population of 1.21 billion and a growth rate of 1.41% the population will only grow more enormous in size. However when age structure of India is considered, 65% of India's population is of the age group 15-64 and 30% of population being under the age of 15, it can be inferred that India's population is very young.

When literacy rate of India is considered, it stands at 74.04% (2011). India's literacy rate at the time of independence was a mere 14%, over the years literacy rate has been increasing but with varied rates in different states with some states like Kerala and Mizoram well above national average and Bihar with a dismal rate of 63.8%. There is also a concern for female literacy rate (65.46%) which is much below the male literacy rate (82.14%). Therefore there is a need to improve the overall literacy rate as improved literacy rate has an impact on increasing a country's economic growth rate and decreasing population growth rate. Also as India has a very young population, literacy will play a very important role in turning the young population into potential human capital.

Once the literacy rate concern is addressed there is an immediate need for creating jobs as India is expected to have 300 million more labor force by 2025. Strong policies to create employment are needed as more labor force enters the economy. To do so there is a strong need to have tax reforms and other supply-side policies as demand side policies involve a lot of social-cost and hence not suitable for long-run. India today faces unemployment at 9.4%, if strong and effective measures to create employment are not taken then the number of unemployed people will only increase with the increase in the labor force. Thus effective policies to create employment are a must for India as these will help in the increase in the labor productivity which otherwise might not be utilized and thus hampering India's growth in the long run.

OBJECTIVE OF PAPER

This paper attempts to study the relationship among literacy, population growth and GDP and there by emphasizing the importance of literacy in the achieving inclusive economic growth. India today is turning out to be one of the faster developing economies but for India to emerge as a developed economy it has to use its most important resource (human resource) exhaustively and our ability to do so to a very great extent will depend on the formation of human capital which can be attributed to a large extent on how soon we can have full literacy.

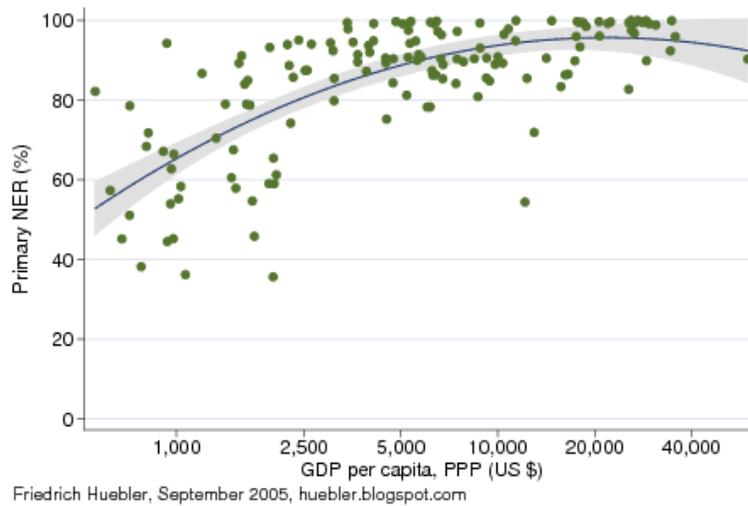
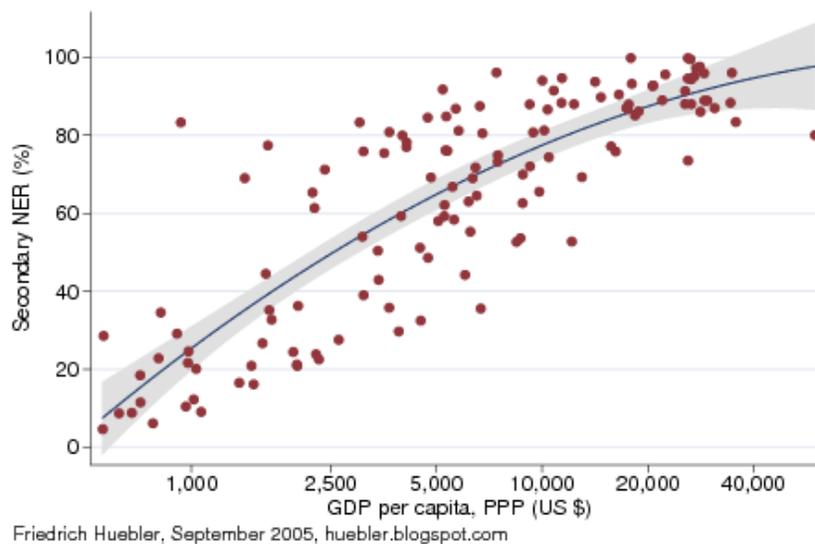
RESEARCH METHODOLOGY

The empirical study of data is divided into three parts. Alongside the main objective of the paper, which is to emphasize the importance of literacy in the economic growth, the effect of literacy on the population growth and the effect of economic growth on the population growth are also studied. The methodology adopted to interpret the empirical result is hypothesis testing. The hypothesis testing is done for each of the studies by first stating null hypothesis (H0) and the research hypothesis (H1) and then either of the hypotheses is accepted based on the empirical result.

LITERACY AND THE ECONOMIC GROWTH

Literacy is always considered to be an important key for socio-economic growth. Economic prosperity of a country entirely depends on the economic resources it has and human resource is an important part of economic resource. Human resource includes the population, its growth rate, skills, standard of living and the working capacity of the labor force and all the above factors can be enhanced by increasing the literacy rate of a population. Thus literacy rate plays a key role in economic growth of a country. Japan can be an example where an economy has developed by excelling in human resources despite the deficiency of natural resource. As the biggest asset India has is its human resource, effective utilization of the human resource becomes very crucial for the country's economic progress and thus literacy plays all the more an important role in determining India's growth.

Friedrich Huebler (2005) shows the correlation between GDP per capita and education by plotting the school net enrollment ratios (NER) against GDP per capita of 120 different countries. Higher the income levels of a country, higher the levels of school enrollment. The graphs below present the primary and the secondary school NER in 2002/03 in relation to GDP per capita in 2002.

Figure 1. Primary school NER and GDP per capita of 120 countries, 2002**Figure 2. Secondary school NER and GDP per capita of 120 countries, 2002**

Source: International Education Statistics

The graphs make clear that there exists an obvious link between the GDP and school enrollment (especially at the secondary level of education). Virtually all countries with a secondary school NER below 60% have a GDP per capita less than \$10,000 and this is the region where India falls. In contrast, all countries with a per capita income of more than \$15,000 have NER levels near or above 80%.

The causation in the above case might work both ways: better education will lead to higher GDP as human capital is an important cause of growth and higher GDP per capita will lead to better education due to more investment in education. Thus there is sufficient evidence to suggest that increasing education levels of people will lead to a higher growth of the economy.

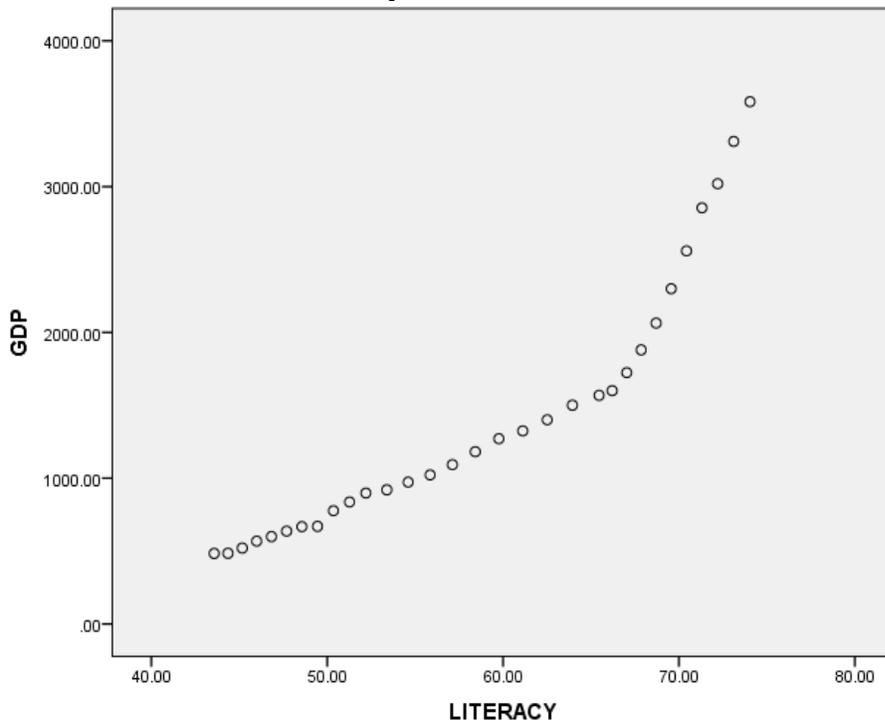
To put forth the above argument in India’s case, investigation of the following hypothesis is done:

H0: Literacy rate has no strong impact on the economic progress of India.

H1: Literacy rate has a strong impact on the economic progress of India.

To study the relation between literacy rate and GDP in India, correlation has been done. The period under consideration is 1981-2011. Data for literacy has been collected from the Ministry of Home Affairs official site on census and GDP data has been collected from Index Mundi website.

Correlation result for Literacy and GDP



(Note:- due to the non availability of annual literacy data, the decadal census data has been taken and CAGR between the two successive decadal literacy rates has been calculated. Then the literacy rate for all the years in between the two years is calculated as by multiplying the base year literacy rate with $(1+CAGR)^n$, where n is the nth year from the base year)

Correlation result

		LITERACY	GDP
LITERACY	Pearson Correlation	1	.930**
	Sig. (2-tailed)		.000
	N	31	31
GDP	Pearson Correlation	.930**	1
	Sig. (2-tailed)	.000	
	N	31	31

** . Correlation is significant at the 0.01 level (2-tailed)

As the result shows a very high positive correlation between literacy and GDP, the null hypothesis (H0) is rejected and the research hypothesis (H1) is accepted. Thus literacy having a strong impact in the economic progress of India can be verified from the above result. If India's GDP is considered over the past few decades, it has been increasing with an increasing growth rate in general. This growth rate has also had its effect on the literacy rate in turn increasing the literacy rate. However there are certain challenges as just being literate will not guarantee access to jobs.

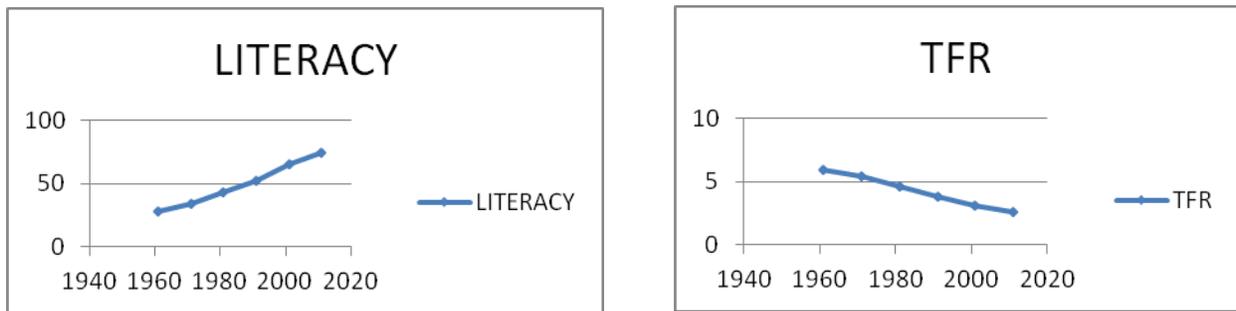
Literacy, as defined by the census operations, is the ability to read and write with understanding in any language. This is a definition which closely matches the UNESCO's definition. But given the importance of specific technical skills in improving health to access jobs it is critical that importance to those specific skills is also given. Just being literate (as per the definition of census operation) does not make people competent enough to enter the labor force in the market. Moreover enhancing additional supplementary skills is a necessity in an economy like India which has a lot of structural unemployment. It will reduce the occupational immobility of labor and will also improve the employability of the labor supply. Unskilled labors are seasonally employed, mainly in agricultural fields, and paid minimal wages. Imbibing skills in these workers will ensure them more permanent jobs and higher wage rates. Agricultural sector, which employs more than 50% of the workforce, is highly unproductive. Imbibing technical skills in these workers will enable them to work in productive, decent-wage jobs in industries. Thus enabling better utilization of human capital and making most of the human resource.

LITERACY AND THE POPULATION GROWTH

When a study of India's population growth is done over the past century, it depicts a typical case of classical theory of demographic transition. According to the classical demographic transition model, a country undergoes a transition from high birth and death rates to low birth and death rates as it develops from a pre-industrial to an industrialized economic system. The population of India in 1901 was 238 million with a density of 77 per sq km, from 1901-1921 India almost had a stagnant population. The period 1921-1951 saw India having a steady growth rate but from 1951-1981 the country underwent a rapid high growth in population with growth rate averaging around 19%. From 1981-2001 India faced high growth with definite slowing down. The latest census data of 2011 also shows this slowing down as India's population grew at a rate of 17.64% in the past decade. India has successively passed through all the phases of demographic transition and is now widely believed to have entered the fifth phase, characterized by rapidly declining fertility. When the TFR data of past 50 years is considered, it has come down from 5.9 in 1960 to 2.65 in 2010.

If literacy rate in the same period is considered, India had a literacy rate of mere 6% in 1901. It has been on an increase ever since. After independence schooling was made free and compulsory for children aged between 6 and 14 under the Right to Education Act. If data of past 50 years is considered, literacy rate has increased from 28.31% in 1961 to 74.04% in 2011. So if one notices there has been an increase in the literacy rate and a decrease in TFR. Studies show a very strong negative correlation between literacy rate and TFR and thus a strong reduction in population growth rate with an increase in literacy.

Figure 3. Literacy rate and Total Fertility Rate of India



Source: (Ministry of Home Affairs)

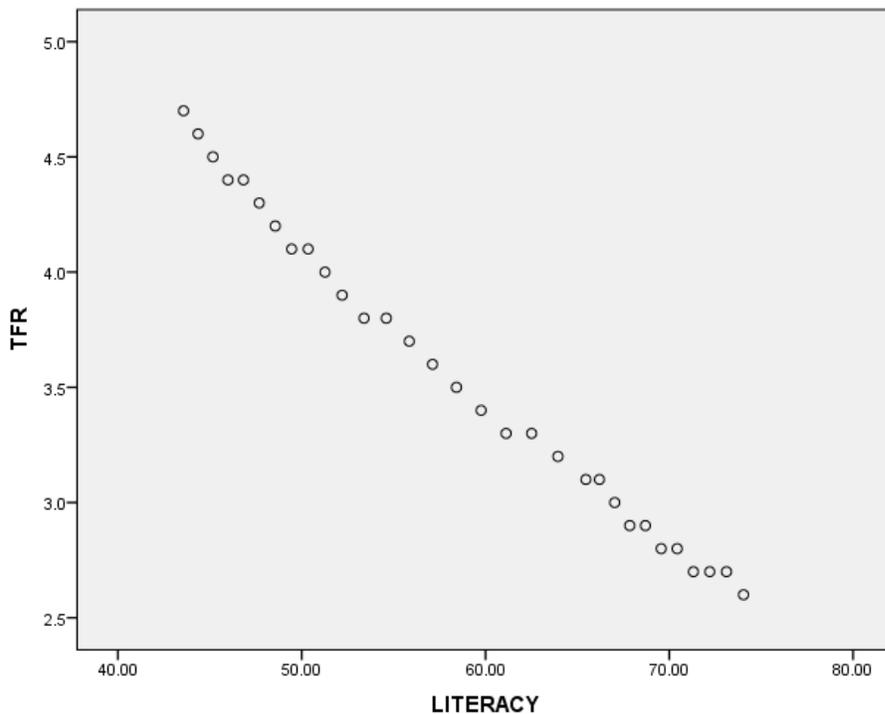
As can be seen above, literacy rate has been on a continuous rise and the total fertility rate has taken a continuous fall. In order to argue that an increase in literacy rate will decrease the population growth rate, investigation of the following hypothesis is done:

H0: Increased literacy does not slow down the population growth.

H1: Increased literacy slows down the population growth.

In order to examine the impact of the literacy rate on population, correlation has been done. The period under consideration is 1981-2011. Data for literacy has been collected from the Ministry of Home Affairs official site on census and TFR data has been collected from Index Mundi website.

Correlation Result for Literacy and TFR



(Note:- due to the non availability of annual literacy data, the decadal census data has been taken and CAGR between the two successive decadal literacy rates has been calculated. Then the literacy rate for all the years in between the two years is calculated as by multiplying the base year literacy rate with $(1+CAGR)^n$, where n is the nth year from the base year)

Correlation Result

		LITERACY	TFR
LITERACY	Pearson Correlation	1	-.996**
	Sig. (2-tailed)		.000
	N	31	31
TFR	Pearson Correlation	-.996**	1
	Sig. (2-tailed)	.000	
	N	31	31

** . Correlation is significant at the 0.01 level (2-tailed).

As the result shows a very high negative correlation, null hypothesis (H0) is rejected and the research hypothesis (H1) is accepted. There is a surprising near perfect negative correlation of -0.996. This shows that there is a definite impact of literacy in bringing awareness to control population growth among the people. Thus it can be inferred that literacy has a definite positive impact on the control of population growth of a state.

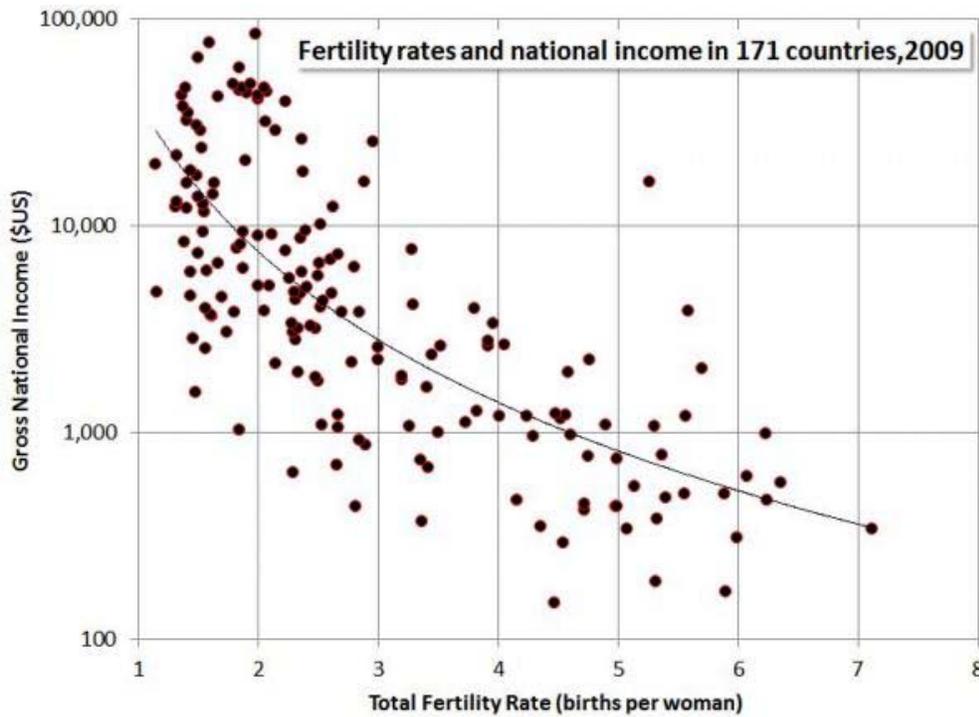
The challenge is to lessen the gap between the male and female literacy rate. Increased female literacy rate will only have a stronger impact on the TFR level and thus bringing it further down which will help in curtailing the population growth. Also if the urban and rural literacy rates are considered then literacy rate in rural areas is 68.91% (2011) which is much less compared to urban literacy rate of 84.98% (2011). This is reflected in the TFR of the rural areas which is 2.9 as compared to the urban TFR which is 2.0. Thus there is a special need to increase the rural literacy rate.

POPULATION AND THE ECONOMIC GROWTH

The existing state of knowledge does not warrant any clear-cut generalization as to the effect of population growth on economic development in the developing world. But in India's case it has been established that the huge population can potentially become its biggest asset in the near future. It is not just size of the population which should be considered to judge whether the population of a country is its asset or liability but also the age structure of the population. When the age structure of Indian population is considered it is clearly evident that it is favorable for economic growth as the Indian population is very young with the median age of 26.2 years (2011). However the population has to be converted to human capital by imparting literacy, technical skills and competencies in order to perform labor so as to produce economic value.

Contrary to the idea of population growth having an impact on economic growth, it can be more confidently put that economic growth does impact the population growth and slows it down. When the fertility rate in 171 countries was plotted against the GNI (Gross National Income) by Philip N. Cohen in 2009, the graph, shown below, was showing lower fertility rates with nations with higher GNI than the nations with lower GNI. This can be inferred to as declining fertility rates for an economy with increasing growth.

Figure 4. GNI and TFR of 171 countries, 2009.



Source: Filip Spagnoli (Wordpress, 2010)

This can also be attributed to the fact that developed countries typically have lower infant mortality rates than agrarian economies. Also that female literacy rate and FWPR (female work participation ratio) is more in developed countries than in developing countries means lower TFR.

To explain this phenomenon in India’s case, the following hypothesis has been investigated:

H0: Economic growth has no impact on population growth

H1: Economic growth has an impact on population growth

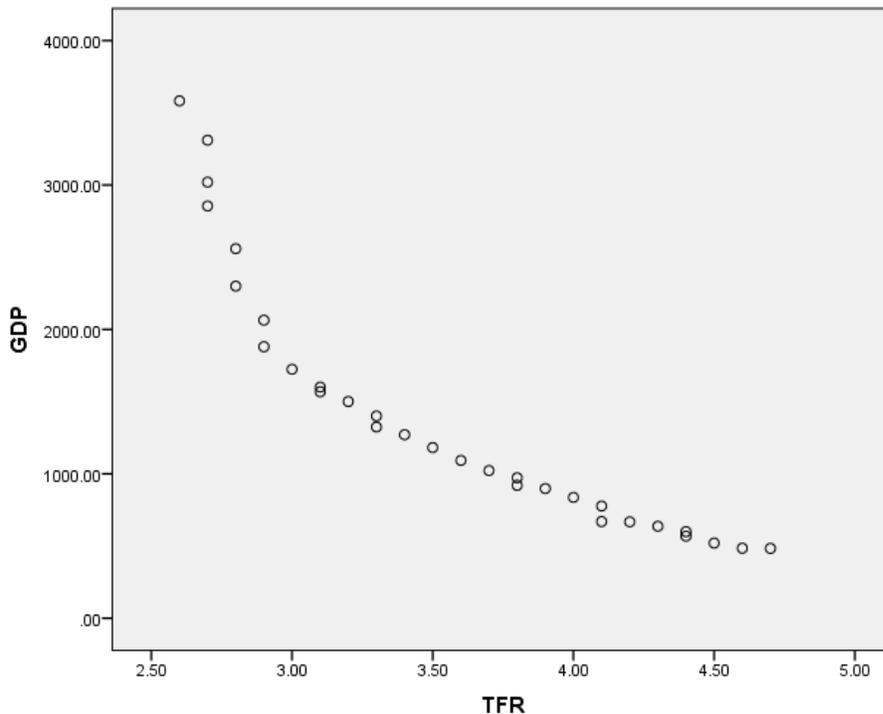
The past data of the country’s GDP and population growth rate (measured as a function of TFR) is considered. In order to examine the impact of GDP on the population growth rate, correlation has been done. The period under consideration is 1981-2011. Data for GDP and TFR has been taken from Index Mundi website.

Correlation result

		TFR	GDP
TFR	Pearson Correlation	1	-.907**
	Sig. (2-tailed)		.000
	N	31	31
GDP	Pearson Correlation	-.907**	1
	Sig. (2-tailed)	.000	
	N	31	31

** . Correlation is significant at the 0.01 level (2-tailed).

Correlation result for TFR and GDP



The correlation result shows a very high negative correlation which can be used to reject the null hypothesis (H0) and accept the research hypothesis (H1). This implies that increase in the GDP will have an impact on population growth rate to become slower.

As the graph depicts above, the TFR in India declined continuously with the increase in GDP as India transformed from largely an agrarian economy to service economy. The fact that FWPR and female literacy rate have also contributed to the decrease in the fertility rate can be clarified from the fact that female literacy rate went up from 29.8% (1981) to 65.46% (2011) and FWPR went up to 29.4% (2004-05) from 22.3% (1991).

IMPORTANCE OF LITERACY IN THE CONTEXT OF INDIA'S ECONOMIC GROWTH

Considering the above results, it can be said that literacy, economic growth (GDP) and the population growth (TFR) are all strongly correlated with each other and thus an increased literacy will lead to an increased level of GDP and at the same time maintains a steady level of population growth so that the country's resources are better shared amongst fewer people. Having said this, it is better to emphasize the key areas where the focus should be. As India is a much diversified country socially, there lie key challenges which have to be given their due priority as these are the potentially decisive areas of improvement which can have a greater say in India's sustainable inclusive economic growth. Some of these issues have been discussed below.

The potential of Indian workforce has always been underutilized. This comes after it is accepted that most important resource of India is its working population. The low female work participation rate (FWPR) is one of the indicators of human capital being underutilized in India. Women constitute 48.26% of the total population and contribute to only 23% of the GDP. Studies suggest that decrease in fertility rate and wage differential and an increase in literacy rate usually contribute to higher FWPR. However in India's case this has not been proved due to various socio-cultural reasons and thus a decrease in TFR and increase in female literacy rate have not had proportionate impact on the increase in FWPR.

India ranks 112th out of 134 countries surveyed for gender equality with a dismal score of 0.6155 (WEF report, 2010) which is lowest amongst the BRIC nations. Much worse, India ranks much below than many other economically backward countries. All this has led to potential loss of women contributing to the economic development of the country. With an FWPR less than most of the other developing countries, the unutilized female workforce comes as an opportunity cost to the economic development of India. India has to exhaustively utilize its human capital to leverage its human resource and thus high female work participation is very much essential. This is a call for an urgent wave of reforms to curb the gender inequality so that a right kind of atmosphere is created where in FWPR will increase.

Even though India is now becoming an industrial economy, majority of the population still lives in rural areas. There is a strong economic divide between rural and urban India as industrialization has benefitted mostly the urban areas. Though 68.84% of people live in rural areas, the main source of income is by and large only agriculture. As agriculture contributes to only 17% of India's GDP but has 52% of the total labor force working in it, the economic condition of rural India is lagging that of urban India. This can be clarified from the fact that the per-capita income in 2004-05 was Rs 16,327 in rural areas as compared to Rs 44,223 in urban areas. The implications of this huge economic divide can also be seen in low literacy rate and high TFR in rural areas. So the urban-rural income gap is another major challenge India faces which it has to overcome for an inclusive growth. This can be done in part by giving emphasis to the alleviation of the handloom sector and micro industry sector alongside the agriculture sector as agriculture sector on its own can't support 52% of the workforce to give them livelihood.

India also has a huge diversity in its population in terms of language, culture and genetics. Historically there have been few sects in the Indian society which have been classified as backward, the scheduled caste and the scheduled tribe being the two of them. These two categories of India's population are closely scrutinized by the national census for they are amongst the most improvised sects in the Indian society. States with highest proportion of SC/ST population are generally the ones with lower literacy level; further the per capita income level of these communities is lower than the national average. If there has to be inclusive growth then these sects can't be neglected and regions with significant proportion of SC/ST population have to be given special attention in terms of increasing the literacy level and providing job opportunities.

The income inequality as a result of the above factors can be measured by the Gini coefficient which is 36.8 (2004) ranking India 79th in the list of countries by income equality. It is a proven fact that there exists a negative correlation between Gini coefficient and per capita income growth and thus addressing the social issues India faces today will tackle the unequal income distribution and will only help in increasing the per capita income. Again education will play a

very important role in tackling social inequality as increased level of education will give more opportunities and bring in social awareness. Thus better level of education is the cure for social inequality which will lead to better standards of living.

Considering the stage of the population growth India is undergoing it can very well be said that the enormous size of India's population could just turn out to be a blessing in disguise as it comes with a potential to abet India's economic growth. India has a very young population with half of it being less than 25 years in 2010 and by 2030 half of the population set to be less than 28 years, this gives the country a special advantage of possessing a 'demographic dividend' where there is a general rise in economic growth due to a strong rise of working age people in a population. This also generally leads to a situation of low 'dependency ratio' which is a ratio of people in a population not a part of labor force to the rest of the population who are potential labor force. This situation leads to a rise in earnings due to more people working and increased savings as there are fewer people who depend on the earning people thus leading to a possible situation of an increase in investment in the economy. However what comes as a special advantage to India is not just it will have a demographic dividend but it comes at a time when the rest of the world, especially the developed world, is set to have ageing population. The advantage of this can be seen easily as India will produce 300 million labor force by 2025 and by then 25% of world's working population will be Indian (Indian labor report, 2009). The number of people in working age population was 781 million (2010) and is expected to increase to 916 million in 2020 to a staggering 1.02 billion in 2030 (The Wall Street Journal). The EU is expected to have 16% decline in working age population and 19% increase in elderly population between 2010 and 2050 (European Commission report, 2006). When the BRIC nations are considered, except for India, the number of people older than 65 will rise to 46% by 2020. These are favorable demographic statistics which point to a large demographic dividend. If the example of China is considered, the country in the last 16 years (1995-2011) leveraged its demographic dividend to build the world's second largest economy. Chinese nominal per capita GDP increased 7 fold in the past 16 years. For India to leverage its demographic dividend it needs to have policies which create jobs in manufacturing and service sector as agriculture can't provide livelihood to more than half of India's population. Manufacturing sector in India, though contributing to 28% of GDP, employs only 14% of workforce. There need to be in place labor-intensive manufacturing so that there is no large disproportion in the number of people employed and the output. The disproportionate services GDP contribution is an anomaly in a poorer country like India. The vast majority of service employment in India is in low-level and low-paying industries. The contribution of higher-level of industries to services GDP is driven by information technology and software sectors which do not employ large number of people. This brings to light the importance of making people literate and simultaneously imparting technical skills so that there is abundant skilled labor to drive the economy.

CHALLENGES TO LITERACY AND SOLUTIONS IN IT

A country with the highest growth rate in the number of engineers produced also has the maximum school dropouts (India had 21 million children out of school in 2005). This is one of the stark contrasts of the Indian education system. Many children, mostly in the rural areas, have no access to schools at all. A survey conducted by EEA (European Economic Association) shows that 25% of teachers in government schools will be absent on any given day and only 50% are actively engaged in teaching. Infrastructure of government schools remains one of the main deterrents from educating the improvised children across the rural and urban India. Most of the

government schools lack basic amenities like a black board in a class and a toilet for the school. All these factors have contributed to the sluggish growth of literacy in India. This can be seen from the fact that though literacy rate was always on the rise in India, the number of illiterates was never on decline due to the population growth rate being more than the literacy growth rate. Only in the year 2001 did the absolute number of illiterates actually fell for the first time, from 328 million to 296 million.

Literacy growth in India is at a sluggish pace of 1.5 per cent per year (NSSO report, 2008) with more than 33% of the children dropping out of the schools before reaching the fifth grade and 90% dropping out before they reach high school. With almost 26% of illiterate population, India has by far the largest illiterate population and the state of government schools and the quality of teachers there does not make the problem any easier to solve.

Out of the total dropouts from the primary schools, only six states account for two-third of those dropouts- Andhra Pradesh, Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal. These are also amongst those states to have the lowest literacy levels. Regions such as the BIMARU (Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh) have severe social problems which have infected the state education schemes with them. The caste tension in these states has seeped into the schools, especially in the villages, where the schools are divided between the castes. As a result half the OBC and ST villages in states like Madhya Pradesh and Uttar Pradesh do not have a single school. All this has turned India's government schools into education of the last resort.

In the past, state governments have been successful in implementing the education schemes- such as the Education Guarantee Scheme (EGS)- when there has been decentralized school management to local governments and panchayats. However, the efforts to make such changes permanent are often scuttled in the war for political power between state and local governments. The biggest barrier to decentralizing power over schools to local bodies has been the teachers' unions (Abhijit-Imagining India, 2008). Due to the political power teachers' unions have held over the years, they have been able to oppose any move which would undermine their power.

But there have been positives in the literacy growth story of India. Schemes such as Sarva Siksha Abhiyan and National Literacy Mission have brought in a lot of development across the government schools in India. The mid-day meal scheme, originally started in Tamil Nadu, has been able to drive the school enrollments up. Most of the southern states, especially Kerala and Tamil Nadu, have achieved considerable amount of success in driving up their literacy rates and this has been mainly possible because of effective policies to educate the poor children. Thus the states which have to address the problem of school education have to address the challenges of educating the poor students. This in-turn requires for the appropriate measures being taken to improve the state of government schools, which will then automatically increase the number of students attending these schools. Until these measures are effectively taken, the problem of the sluggish growth rate of literacy level will persist.

Given the importance of literacy in improving the economic situation of a country, as it has been shown that there exists a high correlation between literacy rate and the GDP, it becomes an imperative to find some innovative measures to increase the literacy growth rate. Milton Friedman, recipient of the Nobel Memorial Prize, had suggested in 1955 the idea of introducing school vouchers. According to this idea, the government would fund students for education

instead of schools which would essentially mean a transfer of power to the students and thus allowing student choices to determine where the government's education funds go. This system would bring in competition in the schools, be it private schools or government schools, and thus leading to a better education system. Decentralizing power over schools to local bodies and reducing the political power of teachers' unions would also lead to a better infrastructure in schools and a better education system. There could be many more measures to add to the above suggested measures which can dramatically improve the quality of education system in the country, particularly the government run schools. However what needs is a careful examination for the best alternative and the political will for effective implementation. Until these reforms in the education sector are not taken upon seriously there would be a waste of human resource and India would have foregone a golden opportunity to change the course of its economic history.

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