

Inadequacy of Economic Growth for Economic Development; an Empirical Study of Indian Economy

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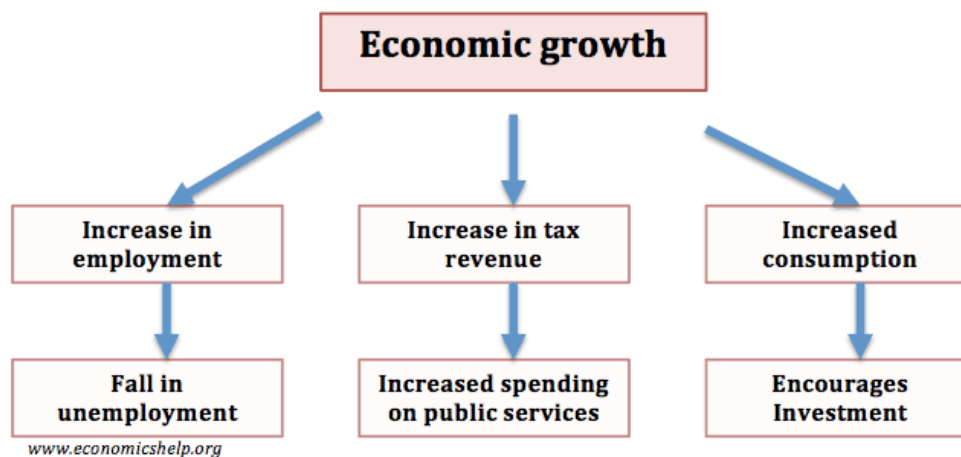
Abstract: GDP or per capita GDP growth is often seen as a measure of well-being and economic success. However, the multifaceted nature of economic development is not taken into account by these indicators, which focuses more on income equality and proper utilization of power. The current measure of economic growth as a GDP has several limitations when it is used to analyze economic development. To study the multidimensional form of development, various indicators such as Human Development Index, Economic Freedom Index, Happiness Index, etc. should be considered more appropriate indications.

This paper covers and examines the relationship between Gross Domestic Product Per Capita PPP \$(GDP Per Capita), Human Development Index (HDI) and the Economic Freedom Index (EFI), in context of India through statistical analysis of published data from 1996 to 2018. Studies had already been done on Happiness Index; therefore, it is completely excluded. Time series techniques examine the direction of the relationship and co-integration among the variables. Granger causality test results proved that unidirectional causality is running between HDI and GDP Per capita as well as between HDI and EFI whereas causality is found absent between GDP Per Capita and EFI. This study helps in identifying possible impediments that limit proper policy implementation on one hand and lack of strategic planning and management on the other.

Key words: Gross Domestic Product PPP \$, Human Development Index, Economic Freedom Index, growth and development, government policies

Introduction

Economic growth means an increase in real GDP. This effectively interprets increase in national income, GNP, and total expenditure. Economic growth should allow for an increase the standard of living and an increase in consumption of goods and services.



For a long time, the indicator used to measure growth was gross national product (GNP) (later GDP - Gross Domestic Product), expressed in terms of per capita terms. The fact is that World Bank's annual World Development Report's comparison is still based on this indicator that shows particular country's economic health and somehow misinterprets the idea of equal development in people's minds, especially by those people who are interested in development on a professional basis. Those who support this vision believe that unless there is an increase in per capita gross national product, there will be no development (Storey, 2003). However, this simplistic approach of economic growth is often criticized because quality of life depends on many factors other than real GDP growth. The equality of economic growth and development never shows how resources are distributed in a country. The causal relationship between economic growth and development has long been the focus of many discussions and debate among many economists and policymakers.

"Development can be seen as a process of expanding the real freedoms that people enjoy." Amartya Sen

Literature Review

Classical economists first stemmed the idea of economic growth which simply said that growth in national income represents the growth in the wealth of a nation – the classical hallmark of success. Nobel Prize winner, Simon Kuznets wrote extensively in 1930s about national statistics and exaggerated the use of GDP as an effective measure of national income of the US. He quoted, "The total of national

income is an amalgam of relatively accurate and only approximate estimates rather than a unique, highly precise measurement” (Kuznets, 1934).

Flammang argued that economic growth and economic development are different components of well-being. They can be considered as complementary in long run but in short run they are competitive to each other. (Flammang, 1979). Growth is said to be a necessary but insufficient condition for sustainable human development – it can support gains in health, education and per capita incomes but many more factors are also important for determination of the development process.

Martin Paldam elaborated political stability that could or could not be achieved through economic growth. As per his *good growth hypothesis*: economic growth generates higher incomes, which should make people approve of the government. Hence growth generates stability. On the contrary the *destabilizing growth hypothesis*: growth generates complex changes in society, and therefore instability. (Paldam, 1998).

Jordan Shan & Alan Morris used Toda & Yamamoto (1995) causality testing procedure to investigate the relationship between financial development and economic growth. They found inadequate evidence that financial development directly or indirectly leads to economic growth (Morris, 2002).

G. Ranis, F. Stewart, A. Ramirez explain that human development is considered as "the goal of human activity and economic growth, at the same time, is a strategic instrument in advancing it" (G. Ranis, 2000).

Shome and Tondon have also investigated the movement of two GDP and HDI parameters and examined whether there is a significant correlation between their trends. They analyzed that higher spending on education, health, and poverty reduction ultimately have an impact on population productivity that further leads to higher economic growth (Tondon, 2010)

According to some economists, more useful measure of economic well-being is to look at a wider range of factors, such as the Human Development Index (HDI) which not only measures GDP but also prepares statistics about literacy and healthcare standards. Few suggested that we should not be using GDP but, a happiness index. If economic growth is achieved without social development, it will not only encourage inequality but also give rise to socio-economic and socio-political unrest and instability.

This paper of mine seeks to review the current literature in order to expand this topic of debate by finding out cause and effect relationship among three economic indicators; these are GDP Per Capita income, Human Development Index and Index of Economic Freedom. Taking into consideration certain historical facts and studies, along with World Bank statistics, my quantitative data analysis will try to draw certain results of the study by contemplating under mentioned objectives:

1. To analyze causal relationship between GDP Per Capita income, Human Development Index and Index of Economic Freedom

2. To find out the influence of one variable at a time on the other by applying test of Co-integration, Regression analysis and Granger Causality test on time series, extracted from published data by World Bank.
3. To find out limitations of economic growth that limits economic development up to certain extent.

Theoretical Framework

GDP per capita PPP \$

GDP per capita based on purchasing power parity (PPP) is GDP which is converted into international dollars using the parity rate of purchasing power. The international dollar has the purchasing power at the same GDP as the US dollar in the United States. GDP at prices of purchase is the sum of the total prices of all products produced inside the economy, excluding product taxes minus any subsidies (Net Indirect Taxes) in the value of the products. It is calculated without depreciation or depletion of natural resources. Equality of economic growth and purchasing power are important indicators of economic growth (Ghorpade, 2004). Countries use criteria such as GDP per capita, real national income and per capita income to measure people's economic potential. Economic development indicates the economic health or actual potential of a country. This development process is used by the countries to improve the economic, political and social benefits of residents and other stakeholders.

Human Development Index

Human Development Index (HDI) measures three basic aspects of human development: longevity and healthy life, knowledge and good quality of life. The indicators used to calculate this index are life expectancy at birth, mean years of schooling, expected years of schooling and gross national income per capita. According to Martin (Martin, 2009) economic development refers to changes in the income level of individuals, while human resource development refers to the development of people's capabilities, knowledge and skills. The strategy basically includes various activities of employee welfare, undertaken by the organizations. Human resource development strategy mainly includes factors such as "the economic, social, political, cultural, educational, physical, biological, mental and emotional characteristics of people associated with any organization or national economy" (Kurihara, 2008).

Economic Freedom Index

The Economic Freedom Index is the index that is prepared on annual basis and was created for the first time by The Wall Street Journal and The Heritage Foundation in 1995 to measure ranking of economic freedom worldwide. The overall index of economic freedom includes total ten components which are classified into four broad categories: Rule of Law, Limited Government; Regulatory Efficiency and Open Markets.

1. Rule of law

- Property rights
- Judicial effectiveness
- 2. Government size**
 - Tax burden
 - Government spending
 - Fiscal health
- 3. Regulatory efficiency**
 - Business freedom
 - Labor freedom
 - Monetary freedom
- 4. Market openness**
 - Trade freedom
 - Investment freedom
 - Financial freedom

In overall economic freedom score 100 represents the maximum freedom out of the scale of 0 to 100.

Limitations of economic growth

If we focus on GDP and economic benefits exclusively, in order to measure development, it ignores the negative impacts of economic growth that can be faced by society. It is critically important not to avoid the limitations of GDP and so that development measures can be broaden and quality of life of society can be assured.

- **Inequality and distribution.** It is not necessary that economic growth reduce relative poverty. It depends on the income distribution. Economic growth can ignore the poorest people in society. In 1980s, for example, only the richest 1% benefitted disproportionately when Gini coefficient rose sharply.
- **Negative externalities.** Economic growth sometimes leads to negative external diseconomies such as pollution, high crime rates and congestion which actually affect the quality of life. For example, China has experienced rapid economic growth, but as far as quality of life is concerned, it is experiencing severe levels of air pollution in major cities, underemployment, employees' stress etc.
- **Economic growth may conflict with the environment.** For example, increased carbon production is at the root of global warming. Economic growth may have short-term benefits, but it also has long-term costs.
- **It depends on what is produced.** The Soviet Union had a remarkable rate of economic growth, but for the most part it was not really very useful to produce a lot of steel and pig iron.

- **Economic growth can be unsustainable.** If growth is too fast, it can lead to inflation, current account deficit and both boom and recession.
- **Does happiness actually increase?** Philip Brickman and Donald T. Campbell coined the term in their essay "Hedonic Relativism and Planning the Good Society" (Brickman & Campbell, 1971). According to this theory, increasing output has no effect on changing life quality or happiness.

Research Question

What are the factors and features that sufficiently influence the economic performance and standard of a country? How can government policies and regulations play an important role to achieve economic development along with economic growth? What are the impediments that affect favorable implementation of developmental policies?

Hypothesis

The null hypotheses for this study (H0) are:

1. Gross Domestic Product(GDP) Per Capita Purchasing Power Parity(PPP) and Human Development Index(HDI) does not affect each other.
2. Gross Domestic Product(GDP) Per Capita Purchasing Power Parity(PPP) and Economic Freedom Index(EFI) does not affect each other.
3. Economic Freedom Index (EFI) and Human Development Index(HDI) does not affect each other.

The alternative hypotheses (H1) for the study are:

1. Gross Domestic Product (GDP) Per Capita Purchasing Power Parity (PPP) and Human Development Index (HDI) affect each other as the variables are strongly correlated and co-integrated with each other.
2. Gross Domestic Product (GDP) Per Capita Purchasing Power Parity (PPP) and Economic Freedom Index (EFI) affect each other as the variables are strongly correlated and co-integrated with each other.
3. Economic Freedom Index (EFI) and Human Development Index (HDI) affect each other as the variables are strongly correlated and co-integrated with each other.

Research Methodology

The objective of this paper is to investigate statistically the dynamics among GDP, HDI and EFI, in India. For this we are using annual data between 1996 and 2018, published by the authentic sources of The World Bank, The United Nations and The Heritage Foundation. The empirical strategy for this study is as follows: (1) Unit root tests for stationarity, (2) lag length selection, (3) cointegration analysis, and (4) Granger causality tests. All variables included are stationary in first differences, so that models and lag order are properly specified to observe the likelihood for short and long-run relationships. Then we determined the direction of causalities. In addition, every model is examined for goodness of fit also.

The test can show one-way causation or no causation at all. According to multiple previous research studies, in order to determine causality, Granger Causality requires two separate equations (Farzanegan, 2014).

$$X1(t)=\sum_{j=1}^p A11,jX1(t-j)+\sum_{j=1}^p A12,jX2(t-j)+E1(t)$$

$$X2(t)=\sum_{j=1}^p A21,jX1(t-j)+\sum_{j=1}^p A22,jX2(t-j)+E2(t)(1)$$

These regression equations show the effect of one variable on the other in terms of a lagged structure. A variable is said to be Granger Caused by another when lagged values of 'X' are forecasting the current values of 'Y', provided other relevant information is available (Stern, 2011). In this study, we calculated X by taking natural log of GDP per Capita PPP (economic growth), Y is Human Development Index and Z is the natural log of Economic Freedom Index. E-views econometric software is used to process and run various functions.

Table 1
Economic Indicators of India (1996-2018)

Year	GDP Per Capita PPP Measure: US \$ Source: The World Bank	Ln (GDP Per Capita PPP) (X)	Human Development Index Measure: points Source: The United Nations (Y)	Economic Freedom Index Measure: points Source: The Heritage Foundation	Ln (EFI) (Z)
1996	2334.3	7.755467	0.471	47	3.850148
1997	2383.86	7.776476	0.477	50	3.912023
1998	2485.14	7.818084	0.484	50	3.912023
1999	2656.57	7.884791	0.492	50	3.912023
2000	2710.26	7.9048	0.497	47	3.850148
2001	2792.31	7.934624	0.502	49	3.89182
2002	2849.97	7.955064	0.508	51	3.931826
2003	3023.64	8.014217	0.521	51	3.931826
2004	3210.91	8.07431	0.53	52	3.951244
2005	3411.02	8.134767	0.539	54	3.988984
2006	3629.43	8.196831	0.548	52	3.951244
2007	3848.95	8.255556	0.558	54	3.988984
2008	3910.05	8.271305	0.565	54	3.988984
2009	4158.39	8.332883	0.571	54	3.988984
2010	4451.23	8.400936	0.581	54	3.988984
2011	4624.56	8.439137	0.59	55	4.007333

2012	4817.2	8.479948	0.6	55	4.007333
2013	5064.56	8.530023	0.607	55	4.007333
2014	5337.89	8.582586	0.618	56	4.025352
2015	5743.43	8.655812	0.627	55	4.007333
2016	6143.29	8.723116	0.637	56	4.025352
2017	6516.17	8.782042	0.643	53	3.970292
2018	6888.19	8.837564	0.647	55	4.007333

Source: The World Bank, TheGlobalEconomy.com

Table 2

Pairwise Granger Causality Tests

Sample: 1996 - 2018

Lags: 2

	Null Hypothesis	F-Statistic	Prob.	Result	Nature of Causal Relationship
Set 1 (X and Y)	Human Development Index does not Granger Cause GDP Per Capita PPP	5.92785	0.0118	H0 rejected	Unidirectional Causal Relationship
	GDP Per Capita PPP does not Granger Cause Human Development Index	2.66228	0.1004	H0 accepted	
Set 2 (X and Z)	Economic Freedom Index does not Granger Cause GDP Per Capita PPP	0.01275	0.9873	H0 accepted	No Causal Relationship
	GDP Per Capita PPP does not Granger Cause Economic Freedom Index	0.01130	0.9888	H0 accepted	
Set 3 (Y and Z)	Economic Freedom Index does not Granger Cause Human Development Index	0.89446	0.4283	H0 accepted	Unidirectional Causal Relationship
	Human Development Index does not Granger Cause Economic Freedom Index	8.28749	0.0034	H0 rejected	

Note: Calculated with E-View

Table 3

Sample (adjusted): 1999 2018

Included observations: 20 after adjustments

Trend assumption: Quadratic deterministic trend

Series: X Y Z

Lags interval (in first differences): 1 to 2

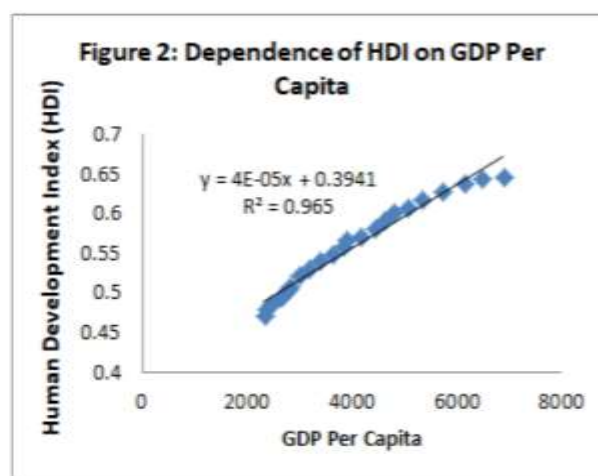
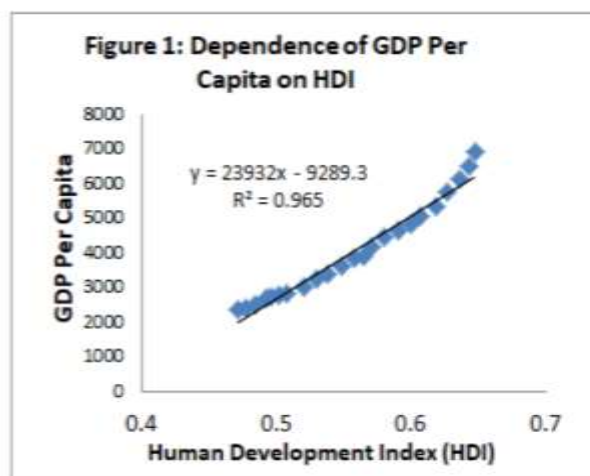
Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.708195	36.88940	35.01090	0.0311
At most 1	0.446998	12.25603	18.39771	0.2904
At most 2	0.020201	0.408157	3.841465	0.5229

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Note: Calculated with E-View

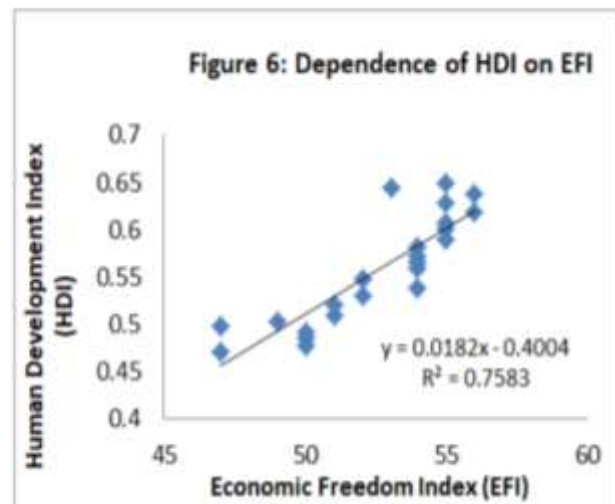
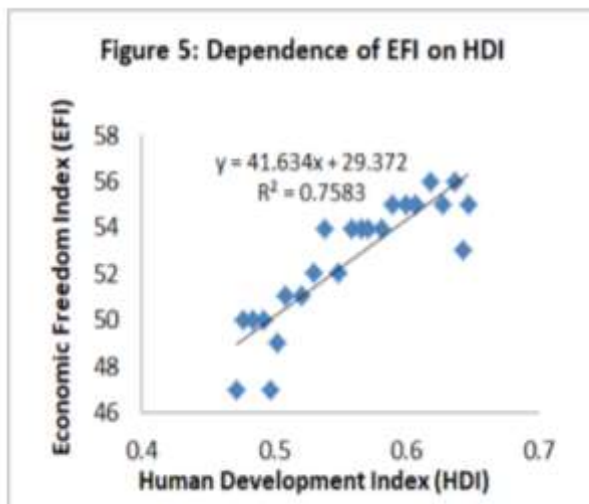
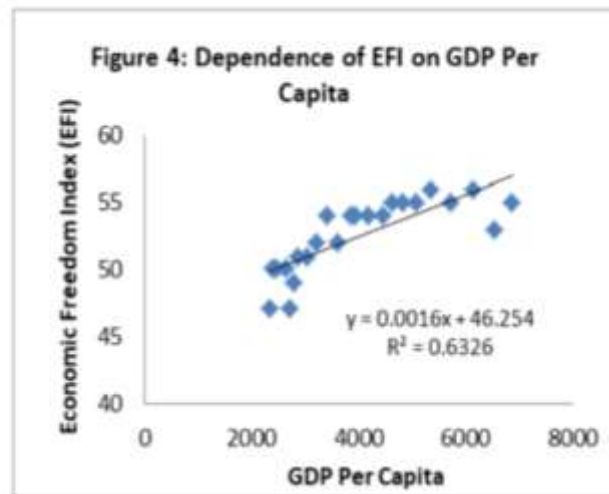
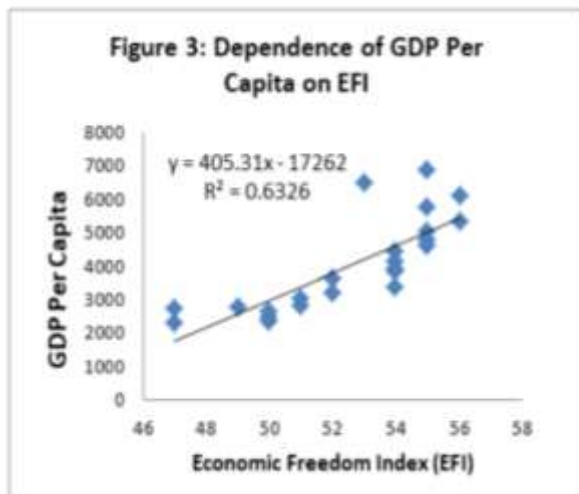


Table 4

Analysis of Regression Equations

Economic Indicators:

- GDP Per Capita is X R- Squared (R^2) Intercept (a) Slope (b)
- HDI is Y
- EFI is Z

When X depends on Y	-9289.3	23932
0.965		
When Y depends on X	0.3941	4.03229E-05
When X depends on Z	-17262	405.31
0.6326		
When Z depends on X	46.254	0.0016
When Z depends on Y	29.372	41.634
0.7583		
When Y depends on Z	-0.4004	0.0182

Note. $y = bx + a$

y is dependent variable

x is independent variable

a is intercept that shows the value of y variable when $x=0$

b is the slope of trend line that shows rate of change in y with respect to rate of change in x

R^2 is Coefficient of Determination as an indicator of the goodness of fit

Results

Granger Causality Test

Table 2 shows the results of Granger causality test in which we can interpret our Null hypothesis on the basis of value of probability. If probability value is less than 0.05 or 5%, we reject H_0 and if it is greater than 0.05 or 5%, we accept H_0 . The test results of our Null hypothesis are as under;

1. Human Development Granger Causes GDP Per Capita PPP, whereas GDP Per Capita PPP does not Granger Cause Human Development.
2. Neither Economic Freedom Granger Cause GDP per Capita PPP nor GDP Per Capita PPP Granger Cause Economic Freedom.
3. Economic Freedom does not Granger Cause Human Development but, Human Development Granger Causes Economic Freedom.

Test of Co-integration

Table 3 shows the results of co-integration test in which we can identify stable, long-run relationships between sets of non-stationary time series. We have chosen here Johansen test as it avoids the issue of choosing a dependent variable as well as issues created when errors are carried from one step to the next.

H0: No co-integration exists (No long run relationship exists between variables) In order to analyze test results, we need to focus on probability value and trace statistics. Null hypothesis H_0 is rejected if any of the probability value is less or equal to 0.05 or 5% and any of the trace statistics is greater than critical value. In table 3 we can find that at one place value of p is less than 5% and trace statistics is also greater than critical value. Hence we reject H_0 and states that the variables taken for the study are co-integrated.

Regression Analysis

With the help of regression analysis we determined the strength and character of the relationship between one dependent variable by taking it on 'y' axis and a series of other variables on 'x' axis. Figure 1, 2, 3, 4, 5 and 6 are showing all six cases in which dependence of one variable is analyzed at a time on another variable. Table 4 is showing results of regression equations of all the six cases.

Test of goodness of fit (R^2)

Maximum value of coefficient of determination or R^2 is when we checked relationship between GDP Per Capita (X) and Human Development Index (Y). More than 96% value is showing that variables X and Y are highly defining each other. The second largest value is more than 75% which can be seen in case of relationship between Human Development Index (Y) and Economic Freedom Index (Z). The third case is the relationship between GDP Per Capita (X) and Economic Freedom Index (Z) where value of R^2 is comparatively lesser yet it is greater than 63%, that clearly witnesses that these two variables are also defining each other up to a great extent.

Intercept (a)

Value of intercept shows the value of dependent variable 'y' at the point where value of independent variable 'x' is 0 (zero). In table 4 we found three values that are in negative term.

- i. (-9289.3) In case when X or GDP per capita depends on Y or Human Development. It interprets that GDP per capita is expected to be negative if Human development is zero.
- ii. (-17262) In case when X or GDP per capita depends on Z or Economic Freedom. It interprets that GDP per capita is expected to be negative if Economic Freedom is zero.
- iii. (-0.4004) In case when Y or Human Development depends on Z or Economic Freedom. It interprets that Human Development is expected to be negative if Economic Freedom is zero.

Slope (b)

Value of slope shows the proportionate change in dependent variable as a result of proportionate change in independent variable. Higher the value of slope, higher is the response of dependent variable with respect to any change in independent variable and vice versa. In table 4 higher values can be witnessed when;

- i. GDP per capita (X) is depending on Human development (Y).
- ii. GDP per capita (X) is depending on Economic freedom (Z).
- iii. Economic freedom (Z) is depending on Human development (Y).

Conclusion

The growth rate of a country appears in the value of the Gross Domestic Product (GDP) per Capita whereas the influence of human power resources is shown in the value of HDI and the influence of freedom in economic activities is shown in the value of EFI. These two indicators are able to influence the level of economic growth in the value of its GDP which is proved through our various statistical tests and its analysis. The economic health of a country can be improved by the progress of social and economic technology. Economic development focuses on the improvement of the coefficient of Human Development Index (HDI) on one hand which collectively is an index of health, education and decent living standards and the improvement of the Economic Freedom Index (EFI) which is a composite index of judicial effectiveness, property rights, tax burden, government integrity, government spending, business freedom, fiscal health, labor freedom, monetary freedom, investment freedom, trade freedom and financial freedom on the other. It is evident from the results of our study that GDP per capita coefficient of our country can be improved if more efforts are done for enhancing and improving the status of human development and economic development. There is no uniformity in the distribution of growth in the country and the traditionally marginalized sections such as Dalits, tribal and women remain excluded from the growth process. This situation can be attributed not to the inadequate allocation of resources to states, but possibly to their priorities. The programs may not always work uniformly well in all states across the country, as the context within which policies are implemented is also very important and varies from state to state

Our father of nation - Mahatma Gandhi truly stated that "India lives in its villages". Even today his statement is valid from political, social and economic perspectives. Unemployment and poverty are strongly connected with each other and these problems can be witnessed at a severe level in rural India. Five major failures of planning are there with which our country is continuously struggling. These are;

- Poverty elimination
- Enhancement of employment for the growing labor force
- Reduction in inequality of Income and Wealth
- Prevention from the growth of black money
- Implementation Land Reform

Government of India initiated several self-employment programs for the problem of rural unemployment. However, desired results could not be achieved under these schemes. As the Government of India is the main donor of social services in the states, it must simultaneously assure the role of monitoring and supervising for successful implementation. There is also a need to improve monitoring and evaluation systems in the country. Transparency in implementation of programs and computerization in maintaining records and official functioning must be encouraged to make the system more open and efficient and also less corrupt. The adoption of a rights-based approach, particularly if rights are secured from below, is a positive development and offers some hope to the most vulnerable sections. The role of judiciary particularly, assumes importance in this context. Allocation of resource to

social sectors must be increased. Outcomes need to be improved by ensuring the more effective utilization of available resources. The various ways in which this can be done are: (i) simplifying procedures, (ii) improving monitoring and evaluation (that is, the reporting system, and quality assessment), (iii) resolving personnel issues, and (iv) promoting Public–Private Partnerships (PPPs).

MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Act), launched in February 2006, is the largest rural employment program ever undertaken in India unleashing wage employment and livelihood opportunities for millions of rural poor in the country. Currently, wage rates under MGNREGA in 17 states are less than the corresponding state minimum wages. The fatuously low wage rates have resulted in lack of interest among workers in working for MGNREGA schemes, as an opportunity contractors and middle men took over local controls. MGNREGA's success directly connected to proper and uninterrupted fund flow to the states. The fund allocation is insufficient to ensure its proper implementation on the ground. According to many studies, published in top peer-reviewed academic journals, people enjoy greater prosperity and longer lives that live in countries with high levels of economic, political and civil liberties. Several institutions around the world have ranked countries on economic freedom over the past decade. Hong Kong, Taiwan, Malaysia and Singapore are among the most economically free countries in the world and way ahead of India. None of these countries enjoy the level of political freedom that Indian democracy offers. But that doesn't mean that a high level of political freedom high economic freedom is contradictory to each other. The US, UK, Germany, France and Australia are ranked much higher than India on economic as well as political freedom. India needs to increase its level of economic freedom on one hand and to preserve its already prevailing high political freedom on the other, so that political freedom can be enjoyed most by combining it with economic freedom.

Recommendations

The success of government initiated social and economic programs are to be evaluated not in terms of the tangible economic benefits they produce but in terms of the tangible and intangible non-economic benefits they extend to the targeted groups and the public at large.

For further research, researchers can add variables and indicators that prove what aspects have a correlation and influence on GDP. Researchers must also see that each country must also know their SWOT (Strength, Weakness, Opportunity, and Threat) in several sectors such as Finance, Monetary, Investment, Infrastructure, Food, and Energy.

References

1. Brickman, & Campbell. (1971) Hedonic relativism and planning the good society. (N. Y. Press,Ed.) (M. H. Apley, ed., Adaptation Level Theory), 287–302.
2. Farzanegan, M. R. (2014). Military spending and economic growth: the case of Iran. *Defence and Peace Economics* , 25(3), 247-269.
3. Flammang, R. A. (1979, October). Economic Growth and Economic Development: Counterparts or Competitors? *Economic Development and Cultural Change*, 28(1), 47-61.
4. G. Ranis, F. S. (2000). Economic growth and human development. QEH, Working Paper # 18.
5. Ghorpade, J. (2004). Management and the human resource function: a model based on social systems theory. *International Journal of Human Resources Development And Management*, 4(3), 235.
6. Kurihara, Y. (2008). Information technology and economic development. Hershey: Information Science Reference.
7. Kuznets, S. (1934). National Income, 1929-1932. National Bureau of Economic.
8. Martin, J. (2009). Human resource management. SAGE.
9. Morris, J. S. (2002). Does Financial Development 'Lead' Economic Growth? *International Review of Applied Economics*, 16(2), 153-168 .
10. Paldam, M. (1998). Does Economic Growth Lead to Political Stability? . *The Political Dimension of Economic Growth*, 171-190.
11. Stern, D. I. (2011). From correlation to Granger causality. *Crawford School Research*, 13.
12. Storey, A. (2003). Measuring Development (Local to the Global. *Key Issues in Development Studies* ed.). (G. a. McCann, Ed.) London: Starling: Pluto Press.
13. Tondon, S. S. (2010). Balancing Human Development With Economic Growth: A Study of Asean 5. *10 (1)*, 335-348.