The Long–Run Relationship Between Economic Development and Human Capital in India: Co–Integration Analysis

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ABSTRACT:

The development of a nation's economy is influenced by a variety of variables, including its natural resources, human resources, physical capital, technical advancements, and social and political considerations. In this essay, the contribution of human capital to India's economic development is discussed. Healthcare spending has been utilised as a stand–in for human capital in this study, which looks at the relationship between economic growth and human capital in India from 1995 to 2014. The Neo–classical Solow production function and numerous linear regression models serve as the foundation for this research article. In addition to finding a high positive correlation between human capital and economic growth, this study also found that secondary school enrollment and gross capital formation had a favourable impact on India's economic growth. According to this study, secondary school enrollment has the biggest influence on India's GDP expansion. According to the study's findings, policymakers should think about directing financial resources to enhancing India's human capital, which may be done by increasing health care spending and allocating more money to education. The population of India need not be a barrier to economic development.

KEYWORDS:

Human Capital, Economic Growth, Positive Correlation, School Enrollment, Financial Resources, Education.

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Introduction:

A nation's economic development is influenced by a number of variables, including its natural resources, human capital, physical assets, technical advancements, and social and political considerations. In this essay, the contribution of human capital to India's economic development is discussed. India's economy ranks third in PPP terms and seventh at the current exchange rate in the world. (2002) Agiomirgianakis In 2014, India had a per capita income of $1, 600 and was ranked 145th in the world. Financial institution IMF Traditional village farming, contemporary agriculture, handicrafts, a vast array of modern businesses, and a plethora of services are all part of India's diversified economy. The production of services accounts for 45. 4% of India's GDP, with agriculture contributing 16. 5% and industry 29. 8%. (Center for Intelligence) The current economic growth rate in India Center for Intelligence Analysis) India currently has the fourth-fastest economic growth rate in the world, at 7. 6%. (Barro, 1992) This essay examines the several elements contributing to Indi's rapid growth, with human capital as the primary consideration. India currently has the second-highest population in the world, but by 2030, it is expected to be completely empty. India's economy is among the fastest growing in the world, but according to the CIA's World Fact Book, 21. 9% of the population was living below the poverty line in 2016. One of the key variables in a nation's economic development is its human capital. This resource has benefited India, but if policies are useless in the use of the resource and may be wasted. This essay aims to inform decision-makers about the advantages of employing human capital effectively in India. These measures may be useful in achieving both a higher standard of living and long-term sustainable economic growth. These measures may help lessen poverty in India. India has the potential to have the largest economy and highest per capita income.

Review of Literature

The relationship between human capital and economic growth has been the subject of many empirical studies. Nelson R. and. -7. (1966) Their argument that "according to their model, the rate of return to education is larger the more technologically progressive the economy" also included the suggestion that society should invest more in human capital than in tangible capital as technology becomes more dynamic. The expansion of human capital is both a requirement and a result of economic growth, according to Mincer's aggregate function paradigm from 1981.

Human capital activities, according to his argument, are both the source and the producer of new knowledge. He also asserted that regardless of the initial geographic concentration, human capital drives global economic progress. (Barro, Economic Growth and Human Capital, 1992) It has also been stated that while human capital has a favourable impact on physical investment, it has a negative impact on fertility. This essay examines the significance of secondary enrollment during the study period in order to highlight the value of education in human capital. According to some research, it is advantageous to subsidise education because it contributes to human capital (Galor O. &., 1997). the upbringing of a particular group of people who will ultimately produce enough positive externalities to push society as a whole toward equality and prosperity. (1994) Benhabib

According to the study, which is based on overall cross-country data, human capital should be included in growth rate regressions when accounting for growth. Their research didn't, however, produce the desired outcomes. They did, however, present two additional theories that explain the significance of human capital in economic growth by acting as a magnet for attracting physical capital and as a gauge of the size of a country's surplus residual. (Yan, 2003) Additionally mentioned in their study was the role that human capital played in China's explosive economic expansion. They discover that the buildup of human capital in China, as indicated by the average number of school years, was quite quick and considerably influenced the country's economic development.

In contrast to the pro-reform phase, however, the rate of increase of human capital slowed throughout the reform period of 1978–1999, and it made a lower contribution to GDP growth. Kemli–Ozcan (2000) argued in favour of human capital investment and the impact it has on economic expansion. They have looked at how lowering mortality affects the motivation to invest in education. Because education investments would pay off over a longer period of time, they examined how greater life expectancy boosts the ideal amount of education. (GyimahBrempong, 2004) examines the impact of human capital on the rate of per capita income growth in OECD and Sub–Saharan African nations. Panel data, a dynamic panel estimator, and an enlarged Solow growth model have all been employed. After adjusting for other factors, they discovered that the growth rate of per capita income is strongly and favourably influenced by the stock of and investment in human health capital. 2013 (Hanushek)

debated the contribution of human capital to developing nations' economic expansion. This outcome draws attention to concerns about educational quality, as emerging nations have had far less success bridging the gap with developed nations. Without raising the standard of education, developing nations would struggle to boost their long–term economic performance. He clarified that in order to accomplish long–term, enhanced economic growth, developing nations should think about increasing both fundamental and advanced skills. (Agiomirgianakis, 2002) uses a sizable panel of data from 93 nations to examine the part that human capital plays in economic growth. The finding revealed that education might not be a very important factor in determining growth when long–run dynamics are taken into account. The extent of this benefit grows as education level (primary, secondary, and tertiary) increases, according to the analysis, which shows that education does, in fact, have a large and favourable long–run effect on economic growth. (2007) (Van Leeuwen)

Co–integration test was used to compare the economic growth and human capital of developing and developed nations. The findings backed up the idea that human capital accumulation should be regarded as a component of production because it influences economic growth in less developed nations like India. But as a nation approaches the technological frontier, such as Japan, technology will become more self–developed, and a sizable portion of human capital will be used to increase the technological frontier (Shukla, 2017).

Objectives

The goal of human capital formation and economy growth is

· To transform people resources into human assets.
· Human Resources It speaks to the current level of education, training, expertise, and knowledge in a country.
· Economic growth goals include enabling higher living standards, better tax collections, and aiding in the creation of new jobs.

Methodology of Data.

The source and types of data, the method utilised to characterise the data, and the variable descriptions used in this study are all explained in this section of the publication. The study's model is also covered in this section.

The Data

The factors that represent the impact of human capital on India's

economic growth should be carefully chosen for the study. GDP, per–capita health spending, gross capital formation, and secondary school enrollment are all included in this study. This analysis is based on time series data, and all of the secondary data included in it was gathered from OECD and World Bank national accounts data files. The study's secondary data will be estimated using the multiple regression analytical technique.

This study is based on a multiple regression model, where GDP (current US$) is the dependent variable and school enrolment, secondary (% gross), PPP (constant 2011 international $), health spending per capita, and gross capital formation are dependent factors. The logarithm is used to alter each variable. The whole list of variable descriptions is shown below.

Definition of variables

The World Bank's definitions of each variable used in the study are provided below.

Variables	Variables Definition
GDP (current US$)	GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. Data are in current U. S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used
Health expenditure per capita, PPP (constant 2011 international $)	Total health expenditure is the sum of public and private health expenditures as a ratio of total population. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include the provision of water and sanitation. Data are in international dollars converted using 2011 purchasing power parity (PPP) rates

Gross capital formation (current US$)	formation (current US$) Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and work in progress. " According to the 1993 SNA
School enrollment, secondary (% gross	Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialized teachers

The Hypothesis
- The following alternative and null hypotheses are tested in this study:
- Ho: In India, there is no meaningful connection between human capital and economic growth.
- Ha: In India, human capital and economic growth are significantly correlated.

The Model:

The Solow production function serves as the foundation for the economic growth model used in this study. The 1946 Harrod–Domar model was expanded upon in the neo–classical model, which also introduced the concept of productivity growth. According to the classic Solow model, technical advancement is the only way to achieve growth in the long run. According to Solow's theory, economic growth is a result of the accumulation of capital, an increase in the labour force, and a "exogenous" element, technological advancement that increases the productivity of

both physical capital and labour. That is:

Yt = (Kt, At, Lt)...(1)

Where Yt = Aggregate real output.

K = Capital stock

A = Efficiency factor

t = Time dimension

L = Labour

By adding human capital (H), this model can be modified like this:

Yt = (Kt, At, Lt, Ht)....................... .... (2)

The reduced equation for the above will be as

LogYt = (LogKt, LogAt, Log Lt, LogHt) ....(3)

Based on the above equations, the model can be re-written as:

LGDP = $\square$ + $\square$0LHEP +$\square$1LGCF + $\square$2LSES ....(4)

Equation (4) shall be estimated during this study

RESULTS

Correlation table

	LGDP	LHEP	LGCF	LSES
LGDP	1			
LHEP	0. 987301	1		
LGCF	0. 991679	0. 969004	1	
LSES	0. 981375	0. 970809	0. 962975	1

The correlation analysis results among all the study's variables are displayed in the above table. According to the findings, there is a significant positive association between GDP and health care spending per person (0. 98), gross capital formation (0. 99), and secondary school enrollment (0. 98).

Regression Statistics

Regression Statistics Multiple R	0. 998444581
R Square	0. 996891582
Adjusted R Square	0. 996308754
Standard Error	0. 037700186
Observations	20

The model's statistical significance is indicated by the high values of multiple R (0. 99) and R Square (0. 99). It also demonstrates that the

variations in real Gross Domestic Product (GDP) over the study periods in the Indian economy were explained by total healthcare spending, gross capital formation, and labour force, with some other determining factors outside the model accounting for the remaining 1% difference. This outcome demonstrates the regression model's goodness of fit for the investigation.

Regression coefficients

	Coefficients	Standard Error	T Stat	P–value
Intercept	11. 936118375	0. 865632852	13. 78896806	2. 68144E–10
LHEP	0. 41006701	0. 091924546	4. 460908755	0. 000394173
LGCF	0. 402100228	0. 049122305	8. 18695444	4. 112E–07
LSES	0. 735512798	0. 224786154	3. 272055621	0. 004793249

Conclusion

This study examines the relationship between economic growth and human capital in India between 1995 and 2014. The cost of healthcare has been used as a stand–in for human capital.

The neo–classical Solow production function and numerous linear regression models serve as the foundation for this research article. This study found that, as expected, there is a strong positive correlation between human capital and economic growth. Other variables included in the analysis, such as gross capital formation and secondary school enrollment, also had a favourable impact on India's economic growth. According to this study, secondary school enrollment has the biggest influence on India's GDP expansion. This study indicates that policy makers should think about spending financial resources towards developing India's human capital in order to achieve long–term sustained economic growth It might be accomplished by raising health care spending and allocating more money to education. The population of India need not be a barrier to economic development. There are various areas in this discipline where further research can be conducted. The study of human capital and economic growth in India's rural and urban areas may be one topic of focus.

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