International Journal of Contemporary Issues in Social Sciences
Volume 3, Issue 2, 2024 ISSN(P):2959-3808 | 2959-2461

FROM KNOWLEDGE TO PROSPERITY: ASSESSING THE RELATIONSHIP BETWEEN KNOWLEDGE ECONOMY AND LIVING STANDARDS

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Received: May 03, 2024 **Revised:** June 10, 2024 **Accepted:** June 25, 2024 **Published:** June 30, 2024

ABSTRACT

Improving the standard of living is the primary objective of all societies, as it reflects the overall quality of life. This research investigates the rationale behind living standards by examining the knowledge economy. The study utilises secondary data from world development indicators for selected economies, covering 2000 to 2023. Appendix (A) contains the catalogue of nations chosen for this study. The independent variables comprise knowledge capital, Education, and technology (represented by High-technology exports). Additional variables include health, Foreign direct investment (FDI), life expectancy, gross capital formation, labour force participation and inflation. To address the research objective, a model investigates the influence of knowledge capital variables on per capita income, which indicates living standards.The study employs a log-log model, with variables transformed using natural logarithms. The model was evaluated using panel-corrected standard error to address the limitations of ordinary least squares (OLS) and account for potential non-spherical errors, heteroskedasticity, and correlation. The findings indicate that the explanatory variables have a positive influence on the standard of living.

INTRODUCTION

The growing significance of knowledge as the pillar of up-to-date economies has been mainly acknowledged over the last decades. The production, distribution and employment of knowledge have been critical in enhancing economic development and public welfare. The appliance of knowledge is now considered the key source of expansion in the globalised economy. The expression Knowledge Economy reveals the enlarged implication of knowledge. A knowledge-based economy refers to the economy where administrations, entrepreneurs and general masses obtain, generate, distribute and use knowledge more competently and productively for the broader outlook of socio-economic development.

From this perspective, science and technology are crucial factors in creating knowledge. Universities, and especially research organisations, play a primary function in creating and transmitting scientific knowledge. There are certain close ties between science, technology and economic growth; innovation is vastly essential for economic development and competitiveness, there is improved magnitude of education and long term learning and more investment is driven for intangibles such as R&D, and education, which sometimes get greater in volume than of investments in fixed capital. Differences in nationwide or regional income levels are often elucidated by variations in total factor productivity(Hall & Jones, 1999; Prescott, 1998) (Hall and Jones, 1999; Prescott, 1997). It is broadly held that technological advancement plays a fundamental part for productivity gains and economic growth. New growth theory, e.g. emphasizes that knowledge generation of firms and other agent contributes to long-run growth because of the presence of industry-wide

knowledge spillovers (Grossman & Helpman, 1991; Romer, 1986) (Romer, 1990; Grossman and Helpman, 1991).

Increased weight of knowledge brings up the greater prospective for economies to reinforce their economic and social development by generating more efficient ways for production of goods and services and to distribute them more efficiently and at lower costs to a larger number of people. However, at the same time danger of a 'knowledge divide is being also raised between advanced developed economies, who are coming up with for the most part of this knowledge, and developing countries, many of which are failing to compete with the emerging, advanced scientific knowledge for the reason of their inadequate awareness, poor economic induced political eras, incompetent economic policies and weak institutions. According to (UNESCO, 2005), The knowledge division is the result of differences in living standards among those who can discover, produce, manage, practice, and spread information and knowledge, and persons who are behind in this phenomenon.

The evolution of knowledge capital is leading to greater increased international competition, which (advanced knowledge) is minimizing the natural resource advantage and low labor cost advantage of most developing economies.

To elucidate certain essential phenomenon in economics, starting from the wealth and poverty of nations to the trend of global trade, economists frequently depends upon large, residual yield differences. That is, there is some vital factor of production which is different from the role of that of physical capital. This is knowledge capital differences that can play an extended function in the global economy and may facilitate in explaining many of stylized facts. Cross-country difference emerges all the way through the quality and quantity of labor (skilled). Quality relies on the ability of skilled workers to gain and aggregate sophisticated knowledge. Quantity depends on workers preference to acquire higher education (JONES, 2009)(Jones, 2009**).**

Hence, during the last few decades, the study of the factors that enhance and mould the pattern of economic growth has become the major area for researches in modern economics. On the theoretical front, certain models were developed that postulated sustained economic growth can take place in the absence of exogenous growth in the productivity. On the empirical side, there has been an intense research on variables that correlate with growth performance. Macroeconomists have diverted their intention from the study of mere business cycle to the study of growth phenomenon. The present study intends to come up with the empirical findings to see that if the variables that account for knowledge capital correlate with standard of living, because general public welfare cannot be seen only by a higher growth level, rather than finding the relationship between growth and knowledge capital. Secondly, the interest would be to see the reduced level of inequalities as a by-product of knowledge capital.

Knowledge capital creation leads to higher income growth, and it leads to lower poverty level. But does knowledge capital lead to better standard of living? This is the matter, which we would examine in this study, because mere increase in growth does not mean that every individual of the economy is getting better off. In addition the study intends to find that whether inclusive growth results due to creation of knowledge capital? Whether there is a trickle down effect of high income growth and economic benefits as a result of investment in knowledge capital, or disparity are increasing among the people?

Further questions which this particular study would probe in detail include the impact of high tech exports, spending on public education, and Research and development expenditure on income growth, standard of living and income inequalities. The main objectives of this study are:

a) To study the impact of knowledge capital on country's standard of living

b) To examine the trickle down effect of knowledge capital.

The hypothesis of the study is that there is a significant relationship between knowledge capital and country's standard of living.

Human capital theories explain that the impartment of knowledge and abilities in the human resource results in the human resource development and the enhanced human resource skills results in the increased productivity and earning of the mass. Moreover, upgraded human capital can have an effect of reducing multidimensional poverty. This study would describe how significant increase in human capital spending can lead to improved

standard of living, and how does it effects the pattern of inclusive growth and inequalities.

The rest of the study is organized as section two deals with the literature review, section three contains description of the variables to be used along with their data source. It also discusses the model and econometric technique. section four explains for theoretical framework. section five contains econometric results and their interpretation. Conclusion of the study is discussed in section six.

Data for the variables accounting for knowledge capital is not sufficiently available for larger time period and cross sections. Hence, those countries are included for which sufficient data was available for greater number of years. The study includes 17 cross sections covering the time period from 2000 to 2014.

LITERATURE REVIEW

Most economists would decide that having a less twisted distribution of national income is desirable for a highly uneven economy provided that average incomes in the two are the same. A frequently articulated opinion is that education can play a vital role in plummeting income inequality. Schultheiß et al. (2024)Schultz (1963) proposes that enhancing human capital as one method to decrease income disparity and greater than before funding for public education might be one tactic to achieve this. (Baba et al., (2009)Fields (1980) presents the counter argument that the gradation of income inequality did not reduce even as various economies spent more and more resources on public education. As a final point, (Ram, (1989)Ram (1989) examines preceding theoretical papers and determines that there are not robust provisions that growing education inside the population depresses income inequality. One should not be astonished that education cannot clarify much of differences in income inequality between different economies.

Adams (1990)Adams (1990) studies that the formation of an enhanced knowledge pool at the universities, through public expenditure on R&D (in the shape of funded published research articles), has a positive influence on the development of productivity in the manufacturing industry in the USA and in turn the overall per capita income, but the trade-off is that the time lags involved in this case may be more than a few decades long (15 to 30 years).

In recent times, Nadiri (1993)Nadiri (1993) examines the outcome of R&D investment on per capita growth, chiefly at the firm and industry levels in developed countries such as USA, UK, France and Germany. Coe et al., (1997)Coe, Helpman, Elhanan and Hofster (1997) investigate the possible technological spillovers during trade between developed and developing countries and its effect on the total factor productivity of the developing countries. The study investigates how a rise in the expenditure of R&D in developed countries impacts the group of developing countries. For this purpose the data of 77 developing economies is used of the same time period. The higher secondary school enrolment rate is used as a measure of human capital. The results revealed that there is significant technological spillovers from developed to developing economies. They came up with the result that increase in R&D expenditure of developed world by 1% will increase the production in the developing countries by 0.06%.

Godo and Hayami (2002)Yamauchi and Godo (2001) work on the bidirectional association between economic growth and education. The study used the causality analysis and the data was of time series in nature. The work was conducted for the economy of Japan to see the part of education in augmenting economic growth. It was concluded that education does not discover its way into its dynamic usage automatically and the study termed it as a complex relationship.

Ulku (2004)Ulku (2004) examines the chief hypotheses of the R&D centered growth models that innovation is generated in the R&D segments of the economy and it permits long term durable economic growth, given that there are constant returns to innovation in terms of R&D. The study makes use of different panel data methods and employs patent and R&D figures for twenty OECD and ten Non-OECD countries for the time span 1981–97.Even though the results of the study lend support to endogenous growth models, there is minimal support for constant returns to innovation in terms of R&D, suggesting that innovation does not always culminate in boosting economic growth.

Gyimah-Brempong and Wilson, (2004)Brempong (2004) examine the effect of human health capital

on the growth level of the per capita income. The study used the data on OECD and Sub-Saharan African countries. The research expands the traditional neo classical growth model of Solow. The study employs dynamic panel estimator for panel data. The study concludes that there exists a positive and strong relationship between per capita income growth rate and human health investments.
Weinhold and Nair-Reichert, (2009)Laik (2005) examines the influence of a vibrant Intellectual Property Regime IPR in the economic growth of a nation. According to Laik (2005) it enables entrepreneurs to recuperate their novel innovation based expenses. Unquestionably, intellectual property structures must be established so as to bring in more and more economic and intellectual growth. However, the fear that stringent IPR might in fact incite IPR violations in many emerging economies also seems to be a concern which needs to be looked at very carefully. The imbalance between prejudicial competition laws and IPR also take up significance of high degree and hence needs to be predominantly highlighted.
Mogues and Carter (2005)Mogues and Carter (2005) examine that what kind of relation prevails between the growth of the economy and social capital. It is found that those regions of the world have advanced level of social capital; they should realize the advanced growth level in comparison to those economies that are behind in social capital accumulation. Thus, for the growth on both macro and micro grounds, social capital requires special focus.
Gyimah-Brempong et al. (2006)Brempong (2006) prove positive and statistically significant impact of education on per capita GDP growth for the case of African economies. The study use panel data for the period 1960 to 2000. A dynamic panel estimator is used to investigate the impact of higher education on economic growth in African countries. In the analysis, growth elasticity of education human capital was found to be twice as that of the physical capital. They emphasized the need for African countries to use higher education effectively in human capital in growth oriented policies.
Ramos et al. (2009)Ramos, Surinach and Artis (2009) employs yearly data for Gross Domestic Product, stock of capital having productivity, emp and certain indicators for human capital. The data was selected for the fifty Spanish provinces. Time period range was from 1980 to 2008. The study concludes that regional productivity and growth are positively influenced by physical capital. Human capital also shows that it has a vital role to play in upgrading regional productive efficiency and growth: tertiary studies prove to have a substantially positive impact on productivity and similarly secondary studies shows the same positive impact on growth level.
Barro (2000)Barro (2013) confirmed that availability of better education and upgraded health services increased raises the productivity level of labor as a result of which output production also increases. Lifetime earnings of a person are affected in a positive manner by the attainment of higher education level.
According to Allahdadi and Aref (2011) human capital plays a pivotal role in the process of rural development is alleviation of poverty. They study examine the role of human resource development for poverty alleviation in rural areas of Marvdasht, Iran. It is suggested that in knowledge-based economies, a major shift in the way we look at human capital is necessary. Jarreau and Poncet (2012)Jarreau and Poncet (2011) study the influence of export sophistication on the overall performance of the Chinese economy by accounting for domestic distinction within one single economy (China) over the time span of 1997–2009.The study found that regions focusing on the exports of high tech goods consequently grow faster. There was considerable difference in high tech export sophistication at the provincial level. The results reveal that these technological gains are restricted to the normal export undertakings by local firms.(Arshed et al., 2022; Ghulam et al., 2021b, 2021a, 2024; Gul et al., 2022; Huang et al., 2023; Muhammad, 2024; Shabeer, 2022; Shabeer, Ayyubi, et al., 2024; Shabeer, Azra, et al., 2024; Shabeer et al., 2022; Shabeer & Rasul, 2024b, 2024a; Wang et al., 2023; Zain et al., 2024; Zubair et al., 2024)
Abbas (2022)Shahid, Hassan and Chani (2012) shows that that human capital plays a positive role in determining national income. To check the causal relationship between economic development and human capital formation, the study uses Pair-wise Granger Causality test on the time series data ranging from 1972-2009. The results of the co-integration revealed that the variables are co-integrated. The study concludes

that there exists long run stable equilibrium relationship between them. Furthermore, causality test directed the bidirectional causal relationship between economic development and human capital formation.

Khan and Nawaz (2019)Gökmen and Turin (2013) studied the relations among the fore mentionedabovementioned variables variables making use of data of European Union countries for the period 1995 to 2010 and found out that economic freedom level (EFL), human development level(HDL) and foreign direct level (FDI) together have a statistically significant progressive impact on High technology exports (HTX). The study employ panel causality test and find out that that long-run Granger causality exist there running from FDI, HD, and EFL to HTX

THEORATICAL FRAMEWORK

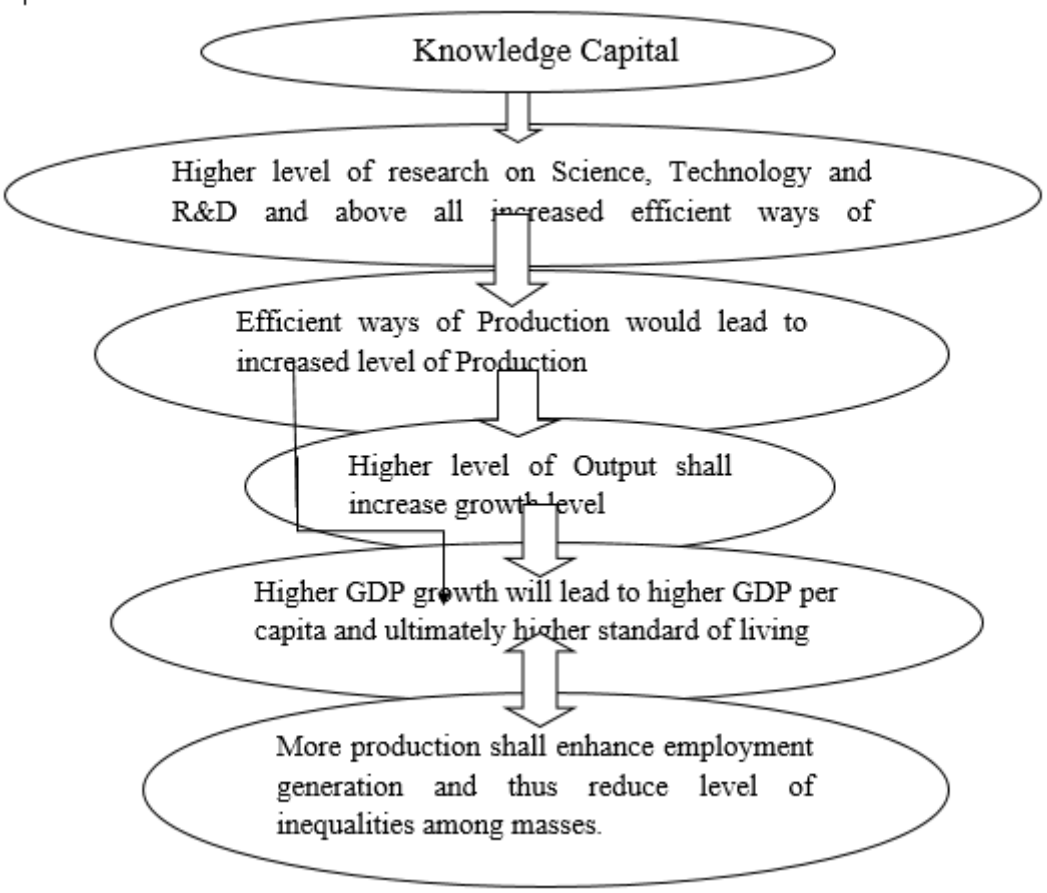
Classical growth theories have evolved significantly over time. Adam Smith (1776) proposed that population growth is endogenous, depending on available sustenance. Investment, determined by savings, and land productivity through new land occupation or technological advancement also play roles. Smith emphasised that specialisation, driven by the division of labour, machinery, and foreign trade, fuels economic growth. David Ricardo (1817) adapted Smith's model by integrating the concept of diminishing returns to land, which limits growth as land, unlike other resources, is finite. Ricardo argued that technological improvements could mitigate the decline in profits resulting from increasing land rents and rising agricultural prices, which impact wages.

The Malthusian model (1798) suggests that without technological progress and land expansion, population growth would self-regulate due to limited resources, leading to stagnant living standards. Later, the Solow-Swan model (1950s) introduced the idea that economic growth results from increased labour and capital inputs but is constrained by diminishing returns, highlighting the importance of technological progress for sustained growth.

Paul Romer's (1986) endogenous growth theory expanded the concept of capital to include human capital, challenging the notion of diminishing returns. Romer argued that investment in education, research, and development leads to continuous innovation and increased productivity, resulting in sustained economic growth. Lucas (1988) further developed this by focusing on human capital as a key growth driver, with a constant return to scale (Mankiw et al., 1992).

The significance of human capital, encompassing education, training, and health, has been increasingly recognised as vital for long-term economic growth. Improved human capital enhances productivity and innovation, making it a cornerstone of modern growth models, especially in developing economies. Figure 1 shows a diagrammatic representation of the theoretical framework.

Figure 1 Diagrammatic representation for Theoretical Framework



The data is secondary and selected from world development indicators for all economies, and the data will be available from 2000 to 2023. The list of the selected countries is given in Appendix (A). Here, the dependent variable is gross domestic product per capita, and the independent variables are knowledge capital (Research and Development Expenditure as % of GDP), Education (Spending on education, total as % of GDP) and technology (High-technology exports). Some control variables are health (Health expenditure as % of total GDP), Foreign direct investment (FDI), life expectancy, gross capital formation, labour force participation (total, % of total population ages 15-64) and inflation (consumer price index).

To capture the objective, a model examines the impact of knowledge capital variables on per capita income, which measures the standard of living. The variables used are transformed by taking natural logarithms. Thus, the model is a log-log model.

After estimating a log-log model the coefficients can be used to determine the impact of explanatory variables (X) on explained variable (Y). The coefficients in a log-log model represent the elasticity of the dependent variable with respect to independent variable. To be more precise, the coefficient is the expected percent change in X variable for a percent change in Y variable.

The study incorporates knowledge capital in the classical production function to see the impact of knowledge capital on output. Here output is in per capita terms.

$$\frac{Y}{L} = f(K.C, K, L) \text{ ---------- (1)}$$

K. C represents knowledge capital. K represents capital where as L shows labor. Based on above equation in this study we will estimate the following econometric model:

$$(Y/L)_{it} = \beta_0 + \beta_1(K.C)_{it} + \beta_2(C.V)_{it} + \mu_{it} \text{ ---------- (2)}$$

The variables have i and t subscripts for i = 1, 2… N cross sections and t = 1, 2,…,t time periods. C.V shows the controlled variables used in the study.

The parameter β_0 is the intercept term, whereas β_1 and β_2 are the slope coefficients. Here the expected signs for independent variables are positive i.e. $\beta_1 > 0, \beta_2 > 0$

For this model equation is as under:

$$lnGDPPerCapita_{it} = \beta_1 + \beta_2 lnEduExp_{2it} + \beta_3 lnR\&DExp_{3it} + \beta_4 lnGrossCapitalformation_{4it} + \beta_5 lnHightechExports_{5it} + \beta_6 lnLabor\ force\ participation_{6it} + \beta_7 lnForeign\ Diect\ Investment_{7it} + \beta_7 Inflation + \mu_{it}$$ ---------- (3)

Where ln representsthe natural logarithm. The above equation can be interpreted as; one percent change in explanatory variables will change the standard of living (per capita income) by one percent in same direction. First Pooled OLS model is tested, and its results are given in Table 1. It is the simplest approach, and the equations are estimated using the ordinary least square technique. In general, it is written as:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it} \quad (4)$$

After estimating the desired equation, main concern is the diagnostic tests for the presence of multicollinearity, hetroskedsticity and autocorrelation. If VIF<5, value of Breusch- Pagon test and Walt test is closer to zero then the presence of said problems exist and the results can be misleading and distorted. Table 2 shows the results of the Breusch-Pagon test.

Because of the biases of the results of pooled OLS, the fixed effect technique is used to account for the individuality of each cross-sectional unit where the slope coefficient is assumed to be constant, but the intercept varies across the individuals. In the fixed effect technique, everyone's intercept is time-invariant. Its general equation would be as follows:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it} \quad (5)$$

Subscripton intercept term shows that the intercept of cross-sections may be different. This heterogeneity can be due to "other factors". Thus, FEM assumes that the slope coefficients of the explanatory variables do not differ across individual countries or over some time. In the fixed effect technique, the intercept varies under the dummy variable technique. Therefore, the above equation is written as:

$$Y_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \alpha_4 D_{4i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \mu_{it} \quad (6)$$

Here, dummies are being used to estimate the fixed effects. It is, therefore, known as the least-squares dummy variable model.

Having applied the fixed effect technique, everyone's intercept is time-invariant. Table 3 shows the results of the fixed effect model. The diagnostic tests are applied. The presence of heteroskedasticity and autocorrelation have made the results biased and inconsistent. Table 4 shows the cross-sectional dependence test to determine if there is any cross-sectional dependence. Pr in Table 4 confirms that cross-sections are independent. Hence, the fixed effect assumption that individual-specific effect is correlated with independent variables is not fulfilled.

Diagnostic tests are conducted to deduct the presence of heteroskedasticity and autocorrelation to see the consistency of the fixed effect model. Results are given in Table 5, which shows the modified Wald and Wooldridge tests. The modified Wald test checks the group-wise heteroskedasticity in the fixed-effect regression model. The P-value concludes that heteroskedasticity is a problem in this model. Wooldridge test is used to detect the autocorrelation problem in the panel data. This test confirms the presence of serial correlation as its null hypothesis that no first order autocorrelation is rejected. Because of heteroskedasticity and autocorrelation, the fixed effect model is no longer consistent, and results can be biased.

DISCUSSION

The study estimated the model using panel-corrected standard error to overcome the

issues. Beck and Katz (2006) suggest that estimating linear models of TSCS data by ordinary least squares (OLS) and proposed a sandwich-type estimator of the covariance matrix of the estimated parameters, which they called panel-corrected standard errors (PCSE) that is robust to the possibility of non-spherical errors. The panel-corrected standard error estimate is robust to unit heteroskedasticity and against possible contemporaneous correlation across the unit that is common in panel data. They show that standard errors are underestimated in data sets with more realistic sizes than in previous procedures. The reason is that the number of parameters to be estimated in the error-covariance matrix is large, and several observations used to estimate them is relatively smaller. As a result, it over-fits the data or, more precisely, over-fits the error term's pattern.

They show that the efficiency gains from contemporaneous correlation correction are normally small compared to standard error bias, which is relatively large. Consequently, they propose to estimate standard errors according to a robust method which tends to incorporate contemporaneous correlation information into the coefficient variance-covariance matrix without adjusting the coefficient estimate. Thus, this procedure controls for serial correlation in a simpler way before the final estimation and relies on robust standard errors; in other words, panel-corrected standard errors (PCSE) possess small sample properties compared to alternatives.

Table 6 Panel corrected standard errors

Independent Variables	Coefficients	Z-statistic	Standard Errors	P-value
LEdu	0.7926***	4.54	0.1747	0.000
LRD	0.7036***	10.82	0.6505	0.000
LHTE	0.7744***	2.85	0.2720	0.004
LGCF	0.6336***	4.03	0.1573	0.000
LLFP	-1.3034***	-5.19	0.2511	0.000
LP	.-0.6126***	-9.53	0.6428	0.000
LFDI	0.2117***	6.12	0.3462	0.000
Constant	4.5012***	3.12	1.4432	0.002
R-Square	0.8217	Wald Chi Square	1085.75	

*** shows that coefficient is significant at 1%

The results of panel corrected standard errors reveal that all the coefficients are significant at a 1% significance level. Table 6 shows the panel-corrected standard error results. It shows that an increase of 1% in public spending on education will increase GDP per capita by 0.79%. If research and development expenditure is increased by 1%, an increase of 0.703% will occur in GDP per capita. If the exports of high technological exports are

increased by 1%, we shall have an increment of GDP per capita of 0.775%.

The controlled variables of the study are as follows: gross capital formation raises per capita by 0.6336%, and foreign direct investment raises per capita income by 0.2117% if it is increased by 1%. However, the labour force participation rate and inflation reduce the standard of living.

Table 6 shows that all the knowledge capital variables are statistically significant with the expected signs. Hence, the alternative hypothesis is accepted that there is a significant relationship between knowledge capital and standard of living.

The reason that the coefficient of education spending is higher than that of R&D is that the provision of education forms the basis of knowledge capital, and the primary focus of every government is to increase this base of knowledge capital creation, whereas R&D expenditure forms the tip of knowledge capital and usually is very refined and specialised. The expected benefits of R&D are not expected in the short run, which is why some governments prefer to divert their resources from spending on R&D to the education sector. The labour force participation rate holds a negative relationship with GDP per capita. This can be because most of the study's economies are developing where a large number of labourers are unemployed. Because of this higher unemployment level, the labour force participation rate does not cause GDP per capita to rise. This unemployment level results in the negative impact of labour force participation on the GDP per capita.

CONCLUSIONS

The study intends to find how knowledge capital is related to the standard of living of the masses. The focus of the study is to see the pattern of change in the standard of living of people as a result of a change in knowledge capital and to check whether if the standard of living is increasing or decreasing, then income disparity increases or decreases.

The study finds that exports of high technological goods raise the standard of living. High-tech exports ensure higher revenue or profit than low-tech products. Greater returns increase production, and employment opportunities are offered. High-tech exports demand more skilled labour and scientific expertise, and the wage rate is greater than that of unskilled labour. High-tech exports increase research and scientific activities, and a higher wage rate for skilled labour incentivises people to work out more in science and technological-oriented learning. The prospects of future higher returns invest more and more in research and development.

Also, the study found that public expenditure on education is significant in our model of the standard of living, and there is a direct link between this variable and the standard of living because, in the long run, it is education expenditure that enhances the productivity level and lifetime income stream level. Higher public education spending ensures a higher level of education, which increases the productivity level, and the labour's productivity determines the wage rate.

Research and development (R&D) expenditure also has a significant and direct relationship with the standard of living. R&D, through innovation, offers new sophisticated products into the market, and introducing novel products tends to attract new customers, increasing the consumption of these new sophisticated products. A firm gets the exclusive right to produce a newly innovated product that raises its profit margin. The quest for higher profits translates into higher expenditure on research and development so that the growth cycle of the firm continues.

In the present study, Goss capital formation, a controlled variable, also positively affects GDP per capita. More capital formation raises production activities and, ultimately, GDP per capita. Foreign direct investment has a positive significant impact on GDP per capita. More investment in the country raises the country's business activities and production level. Increased level of production generates employment opportunities. The labour force participation rate and inflation rate have negatively impacted the standard of living. The negative impact of the labour force participation rate points towards the unskilled and incompetent labour force, which cannot transform working hours into a higher standard of living.

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APPENDIX

A- List of the selected economies:

Croatia	Estonia	Poland	Slovenia	Hungary	Bulgaria
Malaysia	Mexico	Romania	Russia	Turkey	China
Guatemala	South Africa	Thailand	Madagascar	Pakistan	

B- Table of the outcomes:

Table 1 Pooled OLS

Independent Variables	Coefficients	T-statistic	Standard Errors	P-value
LEdu	0.7926	3.69	0.2150	0.000
LRD	0.7036	8.12	0.8664	0.000
LHTE	0.7744	2.14	0.3621	0.034
LGCF	0.6336	2.47	0.2567	0.015
LLFP	-1.3034	-3.36	0.3881	0.001
LP	-.6126	-7.94	0.7717	0.000
LFDI	.2117	4.48	0.4726	0.000
Constant	4.5012	2.35	1.9180	0.020
R-Square	0.8217	F(7,157)		103.36

Table 2 Breusch-Pagon test

Chi-Square	0.88
Probability	0.3483

Table 3 Fixed effects regression model

Independent Variables	Coefficients	T-statistic	Standard Errors	P-value
LEdu	-0.1391	-0.84	0.1663	0.404
LRD	0.9295	0.74	0.1257	0.461
LHTE	0.4964	10.27	0.4832	0.000
LGCF	-.3840	-2.23	0.1725	0.028
LLFP	-.2671	-0.26	1.020	0.794
LP	-.2825	-5.07	0.5568	0.000
LFDI	0.2407	7.07	0.3403	0.000
Constant	-4.7932	-1.14	4.1961	0.255
R-Square	0.5911	F test		146.60

Table 4 Cross-sectional dependence test

Pesaran's test of cross sectional independence	0.561
Pr	0.5747

Table 5 Diagnostic tests

Modified Wald test			
Chi square	365.02	Probability	0.0000
Wooldridge test			
F-Statistic	8.891	Probability	0.0093