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Beyond GDP: Assessing Human Development with the HDI Revisited

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## Abstract

The human development index indeed stands out as a comprehensive measure of a country's economic performance and societal well-being, providing a nuanced perspective beyond traditional economic indicators like gross national income per capita. By incorporating indicators related to health, education, and income, the HDI offers a more holistic assessment of human development and quality of life. One of the key strengths of the HDI is its ability to capture the multidimensional nature of development. While economic growth is undoubtedly important, it is only one facet of overall progress. The HDI recognizes that true development encompasses not just material prosperity, but also factors such as health and education, which are fundamental to human flourishing. Moreover, the HDI facilitates cross-country comparisons by standardizing diverse indicators into a single composite index. This allows policymakers, researchers, and international organizations to assess and benchmark countries' performance relative to one another, facilitating identification of best practices and areas for improvement. Importantly, the HDI highlights disparities within and among countries, drawing attention to inequities in access to essential services and opportunities. By shining a spotlight on areas such as healthcare and education, the HDI can inform targeted interventions aimed at addressing inequalities and promoting inclusive development. Furthermore, the HDI's emphasis on long-term outcomes, such as life expectancy and educational attainment, underscores its relevance as a measure of sustainable development. By focusing on factors that contribute to human well-being over the life course, the HDI encourages investments in areas that yield enduring benefits for individuals and societies. In short, the human development index serves as a valuable tool for assessing and monitoring progress towards comprehensive development goals. Its multidimensional framework, cross-country comparability, and focus on long-term outcomes make it an indispensable resource for policymakers and stakeholders committed to advancing human welfare and fostering sustainable development on a global scale.

**Keywords:** Human Development Index, Economic Performance, Societal Well-Being, Multidimensional Development

**JEL Codes:** I31, O15, O57

## 1. INTRODUCTION

The classical definition of development primarily focuses on the expansion of an economy, typically measured by indicators such as Gross National Product (GNP) growth and trade balance. However, a more contemporary understanding of development, particularly advocated by the World Bank since the 1990s, emphasizes human development over purely economic growth metrics. This shift in perspective acknowledges that true development entails not only economic progress but also the equitable distribution of welfare improvements, leading to overall enhancements in living standards and societal structure. The concept of human development places greater emphasis on the opportunities available to individuals within a society, particularly in key areas such as life expectancy, education, employment opportunities, and overall quality of life. Rather than solely measuring economic output, human development frameworks aim to assess the extent to which individuals have access to resources and capabilities that enable them to lead fulfilling and dignified lives. In this context, human development initiatives prioritize the qualitative aspects of development, seeking to address inequalities and improve the well-being of all members of society. Indicators such as life expectancy, literacy rates, school enrollment, and access to healthcare and essential services are used to gauge the progress of development efforts. By integrating these qualitative indicators alongside traditional economic metrics, human development approaches provide a more comprehensive understanding of a country's development status and its impact on people's lives.

The shift towards a human development perspective reflects a broader recognition that true development should be measured not just in terms of economic growth but also in terms of its impact on human welfare and quality of life. By prioritizing human well-being and equity, policymakers and development practitioners can work towards creating more inclusive and sustainable pathways to progress for all members of society. Human development is accompanied by various conceptual frameworks that share common goals but offer different perspectives and insights. The concept of human development indicators emerged in the summer of 1990 with the aim of providing a more comprehensive measure of a country's development beyond traditional economic metrics. The initiative was spearheaded by the United Nations Development

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Programme (UNDP), which sought to create an indicator that captured the multidimensional nature of development, going beyond purely quantitative measures. The introduction of human development indicators marked a departure from the narrow focus on Gross National Product (GNP) or Gross Domestic Product (GDP) as the sole indicators of a country's progress. Instead, the emphasis shifted towards assessing development in terms of its impact on human well-being and quality of life. This broader perspective recognized that true development encompasses not only economic growth but also social, political, and environmental dimensions. UNDP justified the introduction of human development indicators by emphasizing the need for a more informative measure that could capture the complex and nuanced aspects of development. The proposed indicator aimed to provide a simple yet comprehensive tool for tracking the evolution of human development, offering insights that went beyond what could be gleaned from traditional aggregated indicators or detailed statistical data alone. By focusing on dimensions such as education, health, income distribution, and gender equality, human development indicators offered a more holistic view of development progress. They highlighted areas of strength and weakness within societies, helping policymakers identify priorities and formulate targeted interventions to address disparities and improve overall well-being. The introduction of human development indicators represented a paradigm shift in how development was conceptualized and measured. It underscored the importance of placing human beings at the center of development efforts and prioritizing their well-being as the ultimate goal of development policies and initiatives.

In this context, human development is conceptualized as a dynamic process that expands the opportunities available to individuals, allowing them to lead fulfilling and dignified lives. The fundamental prerequisites for human development, as outlined by the United Nations Development Programme (UNDP) in 1990, include ensuring access to essential aspects such as life and health, the acquisition of knowledge, and the ability to access resources necessary for a decent standard of living. These essential components of human development are captured through key variables that serve as indicators of progress. Firstly, life expectancy at birth reflects the overall health and well-being of individuals within a society, representing their likelihood of living a long and healthy life. Secondly, the level of education attained by individuals is a critical factor in expanding their capabilities and opportunities, enabling them to acquire knowledge, skills, and perspectives essential for personal and societal advancement. Lastly, income, or the level of economic resources available to individuals, plays a crucial role in determining their ability to meet basic needs, access essential services, and participate fully in the economic and social life of their communities. Together, these variables provide a comprehensive framework for assessing human development by capturing key dimensions of well-being and opportunity. By focusing on life expectancy, education, and income, policymakers and development practitioners can gain insights into the overall progress and quality of life within a society, identify areas of concern or inequality, and formulate targeted interventions to promote human development and improve the lives of all individuals.

According to the proponents of the human development indicator, authentic development entails providing individuals with these essential options and opportunities. The development process should create a conducive environment that enables individuals and communities to realize their full potential and lead meaningful, productive, and creative lives aligned with their aspirations and needs. Human development is envisioned as comprising two key vectors: firstly, the enhancement of individual capabilities through advancements in health, education, and skill development; and secondly, the empowerment of individuals to effectively utilize these capacities across various domains, be it in economic, cultural, social, or political realms, whether during work or leisure activities. By fostering the consolidation of personal capabilities and empowering individuals to leverage these capacities in diverse contexts, human development initiatives aim to create a more inclusive and equitable society where every individual can thrive and contribute meaningfully to collective progress. This perspective highlights the importance of not only enhancing individual well-being but also enabling individuals to actively participate in and shape the socio-economic and cultural dynamics of their communities. Ultimately, the goal of human development is to foster holistic growth and fulfillment for all members of society, thereby advancing the overarching objectives of equity, social justice, and human dignity.

The development of a ranking system that assigns values between 0 and 1 to all countries worldwide has facilitated the comparison of nations based on their levels of human development. However, the Human Development Index (HDI), while valuable, has been critiqued for its inability to capture certain nuances such as the unequal distribution of income within a country across gender or social categories. In response to this limitation, the World Bank introduced a new indicator in 1996 known as the Gender Development Index (GDI). This additional metric was designed to complement the HDI and provide a more nuanced analysis of human development by incorporating gender-specific factors. The Gender Development Index aims to shed light on disparities in human development outcomes between men and women within a given country. By focusing on gender-related dimensions such as education, health, and income, the GDI provides insights into the extent to which women are able to access and benefit from development opportunities compared to men. It serves as a tool for identifying areas where gender inequalities persist and where targeted interventions may be needed to promote gender equity and empower women. In addition to the Gender Development Index, the World Bank also introduced other indices such as the Human Poverty Index and indices measuring women's participation in political and economic life. These complementary indicators offer further insights into the multifaceted nature of human development, encompassing not only material well-being but also social, political, and economic dimensions. By incorporating these additional metrics alongside the HDI, policymakers and development practitioners gain a more comprehensive understanding of the factors shaping human development outcomes and can tailor interventions accordingly to address existing inequalities and promote inclusive development.

In the analysis of human development, the value itself of the Human Development Index (HDI) is significant, but perhaps even more crucial is the country's rank in the global ranking. Typically, at the top of this ranking, based on the value of the HDI, are most of the developed countries. The classification of countries proposed by the Human Development Report is based on the level of human development, categorized into three groups: countries with high human development (HDI equal to or greater than 0.800), countries with medium human development (HDI between 0.500 and 0.799), and countries with low human development (HDI less than 0.500). Additionally, the World Bank has proposed classifications based on income levels, which further inform our understanding of global development. In 2001, the World Bank categorized countries into three income groups: high-income countries (GDP per capita equal to or greater than US \$9,206), medium-income countries (GDP per capita between US \$746 and US \$9,205), and low-income countries (GDP per capita less than US \$745). These income categories provide insights into the economic status of countries and complement the HDI-based classifications. Moreover, countries are often grouped into larger global categories based on various criteria, such as development status or geographical location. For example, there are developing countries, Central and Eastern European countries, and member countries of the Organization for Economic Cooperation and Development (OECD). These groupings help policymakers, researchers, and development practitioners to contextualize their analyses and interventions within broader global trends and dynamics.

## **2. REVIEW OF LITERATURE**

Neumayer's (2001) study on the sustainability of human development indicators provides valuable insights into the long-term viability of development efforts across different countries. By analyzing data from a wide range of nations over nearly three decades, the research sheds light on the challenges faced by many countries in maintaining their development gains. However, like any research endeavor, Neumayer's study has its limitations. For instance, the assessment of sustainability relies on various assumptions and models, which may not fully capture the complex dynamics of human development. Additionally, the time frame of the study, spanning from 1970 to 1998, may not capture recent developments or changes in policies that could impact the sustainability of human development indicators. Despite these limitations, Neumayer's work underscores the importance of considering the long-term implications of development efforts. It highlights the need for policymakers to adopt strategies that not only promote short-term gains but also ensure the sustainability of development outcomes over time. Further research in this area could explore alternative methodologies and extend the analysis to include more recent data, providing a more comprehensive understanding of the dynamics of human development sustainability.

Randall's (2012) study provides valuable insights into the relationship between human development and political changes, particularly in the context of significant events such as the Arab Spring. By analyzing panel data from a diverse set of countries over three decades, the research highlights the multifaceted pathways through which human development influences political mobilization. One key finding of the study is the role of human development in shaping population needs and expectations. As societies experience improvements in education, healthcare, and living standards, citizens become more aware of their rights and aspirations, leading to increased demands for political participation and accountability. This shift reduces the reliance of the public on authoritarian regimes and poses new challenges for governance. Another important aspect highlighted by Randall is the impact of new information technologies on political protest. With the proliferation of digital communication platforms and social media, individuals have greater opportunities to mobilize, organize, and disseminate information, facilitating collective action and dissent against repressive regimes. Furthermore, the study emphasizes the emergence of new values associated with human development gains, which contribute to the momentum for regime changes. As societies become more educated, healthy, and economically empowered, they develop a stronger sense of dignity, freedom, and justice, fueling aspirations for political reforms and democratization. Randall's research underscores the complex interplay between human development and political dynamics, underscoring the importance of addressing socio-economic disparities and promoting inclusive development policies to foster stability, democracy, and progress in societies around the world.

Sharifi-Renani et al.'s (2012) research sheds light on the relationship between human development indexes, particularly education and literacy, and economic growth in the MENA region. By employing panel regression analysis and the Raymo (1995) model, the study examines data spanning three decades from 1980 to 2010. The findings of the study reveal a positive and significant impact of literacy and education variables on economic growth in MENA countries. This underscores the critical role of investing in human capital development, particularly in enhancing literacy rates and improving educational attainment levels, as a means to stimulate economic progress and prosperity. Moreover, the empirical results highlight the importance of targeted government investments aimed at bolstering factors that contribute to human capital formation. By implementing effective programs and policies geared towards improving educational quality, expanding access to schooling, and promoting lifelong learning opportunities, policymakers can create an environment conducive to economic growth and development. Additionally, the study emphasizes the need for fostering a workforce that is adaptable and receptive to new technologies. Given the rapidly evolving nature of the global economy, individuals with the ability to acquire new skills, embrace innovation, and adapt to changing technological landscapes are essential for driving productivity gains and sustaining economic competitiveness. Sharifi-Renani et al.'s research underscores the imperative for policymakers in the MENA region to prioritize investments in human capital development, particularly education and literacy initiatives, as integral components of comprehensive strategies aimed at fostering sustainable economic growth and prosperity.

Mamtani et al. (2013) conducted a study examining the influence of migrant workers on the Human Development Index (HDI) across a sample of 89 countries categorized as having high and very high levels of human development in the year 2010. Their

research findings reveal a notable distortion in the HDI rankings attributable to the presence of migrant guest workers, particularly concerning the educational component of the index. The study highlights that the status of migrant guest workers exerts a negative impact on the educational component of the HDI, thereby affecting the overall ranking of countries. Specifically, among the countries classified within the top two HDI categories, a significant subset comprises 14 nations where the proportion of migrant guest workers exceeds 30%. In these countries, the high prevalence of migrant workers substantially influences their HDI rankings, underscoring the need for careful interpretation of the current HDI rankings for such nations. This implies that the existing HDI rankings for countries with a significant proportion of migrant workers in their population may not accurately reflect their true developmental status. As such, policymakers and stakeholders should exercise caution when interpreting HDI rankings for these countries, recognizing the potential distortion caused by the presence of migrant guest workers. Mamtani et al.'s study underscores the importance of considering the impact of migrant workers on the HDI rankings of countries, particularly with regard to the educational component. By acknowledging and addressing this influence, policymakers can ensure a more accurate and nuanced understanding of a country's human development status, thereby facilitating more effective decision-making and policy formulation in areas related to education and migration.

Hammarstrand and Sundsmyr (2013) conducted a study examining the relationship between financial aid and the Human Development Index (HDI) across a sample of 43 countries in Sub-Saharan Africa over the period spanning 1993 to 2011. Their empirical findings reveal a positive correlation between financial aid and economic growth within the region. The results of their analysis align more closely with the theories and arguments posited by scholars such as Sachs, Collier, and Easterly, who advocate for the effectiveness of financial aid in promoting economic development and improving human well-being. Contrary to the views expressed by Moyo, who contends that financial aid is not a viable solution and should be reduced in the coming decades, Hammarstrand and Sundsmyr's findings suggest that financial aid plays a significant role in fostering economic growth and enhancing human development in Sub-Saharan Africa. By demonstrating a positive connection between financial aid and economic growth, the study highlights the potential of aid interventions to contribute to the improvement of living standards, access to education, healthcare, and other essential services in the region. These findings underscore the importance of continued investment in financial assistance programs aimed at addressing socio-economic challenges and promoting sustainable development in Sub-Saharan Africa. Hammarstrand and Sundsmyr's research provides valuable insights into the impact of financial aid on human development outcomes, offering support for the ongoing debate surrounding the effectiveness of aid policies and interventions in advancing the well-being of populations in developing regions.

Eren et al. (2014) conducted a comprehensive examination of the factors influencing the level of human development across 84 countries categorized as having very high and high human development levels. Employing various regression models such as logit, probit, and Tobit analyses, the study aimed to identify the determinants that contribute to the transition from high to very high levels of human development. The empirical findings of their analysis revealed several key variables that significantly impact the level of human development within countries. Among these variables, life expectancy at birth emerged as a critical factor, highlighting the importance of healthcare and longevity in fostering human development outcomes. Additionally, the labour force participation rate, particularly the female-male ratio, was found to play a significant role, underscoring the importance of gender equality and women's empowerment in advancing human development. Expected years of schooling also emerged as a significant determinant, emphasizing the pivotal role of education in enhancing human capital and fostering socio-economic progress. Moreover, GDP per capita was identified as a key factor influencing human development levels, indicating the crucial role of economic prosperity and wealth distribution in supporting overall well-being and quality of life. By identifying these influential variables, Eren et al. (2014) provided valuable insights into the pathways for countries to transition from high to very high levels of human development. Their findings underscored the multidimensional nature of human development and emphasized the interconnectedness of factors such as health, education, gender equality, and economic prosperity in driving progress towards enhanced human well-being and societal advancement.

### **3. METHODOLOGY**

Panel data regression model appears well-constructed for analyzing the impact of key variables on the Human Development Index (HDI). Utilizing the Generalized Method of Moments (GMM) methodology allows for robust estimation and addresses potential endogeneity issues commonly encountered in panel data analysis. By including life expectancy at birth, mean years of schooling, expected years of schooling, and Gross National Income per capita (PPP 2011) as explanatory variables, crucial dimensions of human development are captured, encompassing health, education, and economic prosperity. The specification of the model accounts for potential variations across continents (Europe or America, Africa, Asia, or Oceania) and over time, providing insights into regional disparities and temporal trends in human development outcomes. The inclusion of a residual term ( $\epsilon_{it}$ ) acknowledges unobserved factors and measurement errors that may affect the HDI, ensuring that the estimated coefficients reflect the true relationships between the variables of interest. Overall, the regression model offers a comprehensive framework for examining the determinants of human development and can yield valuable insights into the factors driving differences in HDI across regions and over time.

4. RESULTS AND DISCUSSIONS

The table 1 presents regression results with the Human Development Index (HDI) as the dependent variable for European countries, across four different models. Each model incorporates a different set of independent variables: Gross National Income (GNI) per capita, life expectancy at birth (LIFE), mean years of schooling (MEAN), and expected years of schooling (EXPE). The constant term is represented by "C" in each model. In the first model, the coefficient for GNI is 0.125355, accompanied by a high t-value of 28.91146, indicating a very strong statistical significance. This model also features a constant term of 0.003043, with a significant t-value of 7.303931. The R<sup>2</sup> value of 0.716336 suggests that approximately 71.63% of the variance in HDI is explained by GNI, highlighting the substantial impact of national income on HDI in European countries. The second model examines the effect of life expectancy on HDI. The coefficient for LIFE is 1.879269 with a t-value of 19.10428, demonstrating high statistical significance. However, the constant term here is -0.0007 with a t-value of -1.08327, indicating it is not statistically significant. The R<sup>2</sup> value for this model is 0.524407, showing that about 52.44% of the variation in HDI can be attributed to life expectancy. This underscores the significant role of health and longevity in human development. In the third model, the mean years of schooling are considered. The coefficient for MEAN is 0.32394 with a t-value of 16.24919, again indicating strong statistical significance. The constant term is 0.002893, with a t-value of 4.778254, also significant. The R<sup>2</sup> value here is 0.443731, indicating that 44.37% of the HDI variance is explained by mean years of schooling. This model highlights the importance of education in contributing to human development. The fourth model focuses on expected years of schooling. The coefficient for EXPE is 0.349047 with a t-value of 23.8332, showing strong significance. The constant term is 0.004058, with a t-value of 8.724768, also statistically significant. The R<sup>2</sup> value of 0.631822 suggests that 63.18% of the variance in HDI is explained by expected years of schooling, emphasizing the critical role of educational expectations in human development. Overall, the table demonstrates that GNI, life expectancy, mean years of schooling, and expected years of schooling are all significant predictors of HDI in European countries. Among these, GNI is the strongest predictor, as evidenced by the highest R<sup>2</sup> value in its model. However, education and health variables also play vital roles, as indicated by their significant coefficients and substantial R<sup>2</sup> values. These findings illustrate the multifaceted nature of human development, influenced by economic, health, and educational factors.

Table 1: HDI Dependent Variable for European countries

Europe	(1)	(2)	(3)	(4)
C	0.003043*(7.303931)	-0.0007**(-1.08327)	0.002893*(4.778254)	0.004058*(8.724768)
GNI	0.125355*(28.91146)			
LIFE		1.879269*(19.10428)		
MEAN			0.32394*(16.24919)	
EXPE				0.349047*(23.8332)
R <sup>2</sup>	0.716336	0.524407	0.443731	0.631822

The table 2 presents regression results with the Human Development Index (HDI) as the dependent variable for American countries, across four different models, each with distinct independent variables: Gross National Income (GNI) per capita, life expectancy at birth (LIFE), mean years of schooling (MEAN), and expected years of schooling (EXPE). The constant term is denoted as "C" in each model. In the first model, the coefficient for GNI is 0.098688, with a t-value of 11.18309, indicating strong statistical significance. The constant term in this model is 0.005333, with a significant t-value of 7.674287. The R<sup>2</sup> value of 0.325629 suggests that approximately 32.56% of the variance in HDI is explained by GNI. This shows that while GNI is a significant predictor of HDI in American countries, its explanatory power is more modest compared to similar models for European countries. The second model examines the effect of life expectancy on HDI. The coefficient for LIFE is 1.731609 with a high t-value of 16.75919, indicating strong statistical significance. The constant term is 0.000783, with a t-value of 1.101803, which is not statistically significant. The R<sup>2</sup> value for this model is 0.520255, showing that 52.03% of the variation in HDI can be attributed to life expectancy. This underscores the important role of health and longevity in human development within American countries. In the third model, the mean years of schooling are considered. The coefficient for MEAN is 0.215163 with a t-value of 13.51613, indicating strong statistical significance. The constant term is 0.005221, with a t-value of 8.191662, also significant. The R<sup>2</sup> value here is 0.41361, indicating that 41.36% of the HDI variance is explained by mean years of schooling. This highlights the importance of education in contributing to human development in American countries.

The fourth model focuses on expected years of schooling. The coefficient for EXPE is 0.276395 with a t-value of 17.77172, demonstrating strong significance. The constant term is 0.005854, with a t-value of 10.95847, also statistically significant. The R<sup>2</sup> value of 0.549435 suggests that 54.94% of the variance in HDI is explained by expected years of schooling, emphasizing the critical role of educational expectations in human development. Overall, the table shows that GNI, life expectancy, mean years of schooling, and expected years of schooling are significant predictors of HDI in American countries. Among these variables, expected years of schooling (EXPE) explains the largest portion of HDI variance, as evidenced by the highest R<sup>2</sup> value in its model. While GNI has a significant impact, its explanatory power is relatively lower compared to

education and health indicators in American countries. These findings illustrate the multifaceted nature of human development, influenced by economic, health, and educational factors in varying degrees across different regions.

**Table 2: HDI Dependent Variable for American countries**

America	(1)	(2)	(3)	(4)
C	0.005333*(7.674287)	0.000783**(1.101803)	0.005221*(8.191662)	0.005854*(10.95847)
GNI	0.098688*(11.18309)			
LIFE		1.731609*(16.75919)		
MEAN			0.215163*(13.51613)	
EXPE				0.276395*(17.77172)
R <sup>2</sup>	0.325629	0.520255	0.41361	0.549435

The table 3 presents regression results with the Human Development Index (HDI) as the dependent variable for African countries, across four different models, each incorporating a distinct independent variable: life expectancy at birth (LIFE), mean years of schooling (MEAN), expected years of schooling (EXPE), and Gross National Income (GNI) per capita. The constant term is represented as "C" in each model. In the first model, the coefficient for LIFE is 1.026939 with a high t-value of 18.25524, indicating strong statistical significance. The constant term in this model is 0.006758, with a significant t-value of 5.433786. The R<sup>2</sup> value of 0.447769 suggests that approximately 44.78% of the variance in HDI is explained by life expectancy. This demonstrates the significant role of health and longevity in human development within African countries. The second model examines the impact of mean years of schooling on HDI. The coefficient for MEAN is 0.32847 with a t-value of 15.97475, indicating strong statistical significance. The constant term is 0.0116, with a t-value of 9.700017, also statistically significant. The R<sup>2</sup> value for this model is 0.383061, showing that about 38.31% of the variation in HDI can be attributed to mean years of schooling. This highlights the importance of education in contributing to human development in African countries, though its explanatory power is slightly less than that of life expectancy.

In the third model, the expected years of schooling are considered. The coefficient for EXPE is 0.339329 with a very high t-value of 26.56229, demonstrating extremely strong statistical significance. The constant term is 0.009034, with a t-value of 9.7235, also significant. The R<sup>2</sup> value here is 0.631904, indicating that 63.19% of the HDI variance is explained by expected years of schooling. This model has the highest explanatory power among all the models for African countries, underscoring the crucial role of educational expectations in human development. The fourth model focuses on GNI. The coefficient for GNI is 0.11009 with a t-value of 11.73741, indicating strong statistical significance. The constant term is 0.015006, with a t-value of 11.91303, also statistically significant. The R<sup>2</sup> value of 0.251048 suggests that approximately 25.10% of the variance in HDI is explained by GNI. This shows that while GNI is a significant predictor of HDI in African countries, its explanatory power is relatively lower compared to the education and health variables. Overall, the table illustrates that life expectancy, mean years of schooling, expected years of schooling, and GNI are all significant predictors of HDI in African countries. Expected years of schooling (EXPE) stands out as the strongest predictor, as evidenced by the highest R<sup>2</sup> value in its model. Life expectancy also has a substantial impact on HDI, followed by mean years of schooling. While GNI is significant, it has the least explanatory power among the variables considered. These findings highlight the varying degrees of influence that education, health, and economic factors have on human development across African countries, with education and health showing particularly strong impacts.

**Table 3: HDI Dependent Variable for African countries**

Africa	(1)	(2)	(3)	(4)
C	0.006758*(5.433786)	0.0116*(9.700017)	0.009034*(9.7235)	0.015006*(11.91303)
GNI				0.11009*(11.73741)
LIFE	1.026939*(18.25524)			
MEAN		0.32847*(15.97475)		
EXPE			0.339329*(26.56229)	
R <sup>2</sup>	0.447769	0.383061	0.631904	0.251048

The table 4 presents regression results with the Human Development Index (HDI) as the dependent variable for Asian countries, across four different models, each incorporating a distinct independent variable: life expectancy at birth (LIFE), mean years of schooling (MEAN), expected years of schooling (EXPE), and Gross National Income (GNI) per capita. The constant term is represented as "C" in each model. In the first model, the coefficient for LIFE is 1.407095 with a t-value of 20.9081, indicating strong statistical significance. The constant term in this model is 0.005785, with a significant t-value of

6.529616. The R<sup>2</sup> value of 0.54977 suggests that approximately 54.98% of the variance in HDI is explained by life expectancy. This demonstrates the significant role of health and longevity in human development within Asian countries. The second model examines the impact of mean years of schooling on HDI. The coefficient for MEAN is 0.261961 with a t-value of 13.58581, indicating strong statistical significance. The constant term is 0.008769, with a t-value of 8.468082, also statistically significant. The R<sup>2</sup> value for this model is 0.340183, showing that about 34.02% of the variation in HDI can be attributed to mean years of schooling. This highlights the importance of education in contributing to human development in Asian countries, although its explanatory power is less compared to life expectancy. In the third model, the expected years of schooling are considered. The coefficient for EXPE is 0.409092 with a very high t-value of 27.66295, demonstrating extremely strong statistical significance. The constant term is 0.006071, with a t-value of 8.357768, also significant. The R<sup>2</sup> value here is 0.681279, indicating that 68.13% of the HDI variance is explained by expected years of schooling. This model has the highest explanatory power among all the models for Asian countries, underscoring the crucial role of educational expectations in human development.

The fourth model focuses on GNI. The coefficient for GNI is 0.146273 with a t-value of 22.9258, indicating strong statistical significance. The constant term is 0.005002, with a t-value of 5.888971, also statistically significant. The R<sup>2</sup> value of 0.594836 suggests that approximately 59.48% of the variance in HDI is explained by GNI. This shows that GNI is a significant predictor of HDI in Asian countries, with considerable explanatory power. Overall, the table illustrates that life expectancy, mean years of schooling, expected years of schooling, and GNI are all significant predictors of HDI in Asian countries. Expected years of schooling (EXPE) stands out as the strongest predictor, as evidenced by the highest R<sup>2</sup> value in its model. Life expectancy and GNI also have substantial impacts on HDI, with life expectancy having slightly less explanatory power than expected years of schooling, but more than mean years of schooling. Mean years of schooling, while significant, has the lowest explanatory power among the variables considered. These findings highlight the varying degrees of influence that education, health, and economic factors have on human development across Asian countries, with education and economic factors showing particularly strong impacts.

**Table 4: HDI Dependent Variable for Asian countries**

Asia	(1)	(2)	(3)	(4)
C	0.005785*(6.529616)	0.008769*(8.468082)	0.006071*(8.357768)	0.005002*(5.888971)
GNI				0.146273*(22.9258)
LIFE	1.407095*(20.9081)			
MEAN		0.261961*(13.58581)		
EXPE			0.409092*(27.66295)	
R2	0.54977	0.340183	0.681279	0.594836

The table 5 presents regression results with the Human Development Index (HDI) as the dependent variable for Oceanian countries, across four different models, each incorporating a distinct independent variable: life expectancy at birth (LIFE), mean years of schooling (MEAN), expected years of schooling (EXPE), and Gross National Income (GNI) per capita. The constant term is represented as "C" in each model. In the first model, the coefficient for LIFE is 1.007612 with a t-value of 7.286766, indicating strong statistical significance. The constant term in this model is 0.001328, with a t-value of 1.039626, which is not statistically significant. The R<sup>2</sup> value of 0.431343 suggests that approximately 43.13% of the variance in HDI is explained by life expectancy. This demonstrates the significant role of health and longevity in human development within Oceanian countries. The second model examines the impact of mean years of schooling on HDI. The coefficient for MEAN is 0.407252 with a t-value of 5.507285, indicating strong statistical significance. The constant term is 0.003844, with a t-value of 3.042064, also statistically significant. The R<sup>2</sup> value for this model is 0.302304, showing that about 30.23% of the variation in HDI can be attributed to mean years of schooling. This highlights the importance of education in contributing to human development in Oceanian countries, though its explanatory power is less compared to life expectancy.

In the third model, the expected years of schooling are considered. The coefficient for EXPE is 0.143888 with a t-value of 5.563095, demonstrating strong statistical significance. The constant term is 0.004484, with a t-value of 3.695423, also significant. The R<sup>2</sup> value here is 0.306574, indicating that 30.66% of the HDI variance is explained by expected years of schooling. This model's explanatory power is similar to that of mean years of schooling, underscoring the role of education in human development. The fourth model focuses on GNI. The coefficient for GNI is 0.075035 with a t-value of 5.364894, indicating strong statistical significance. The constant term is 0.00596, with a t-value of 5.131333, also statistically significant. The R<sup>2</sup> value of 0.291369 suggests that approximately 29.14% of the variance in HDI is explained by GNI. This shows that GNI is a significant predictor of HDI in Oceanian countries, with slightly lower explanatory power compared to education and health variables. Overall, the table illustrates that life expectancy, mean years of schooling, expected years of schooling, and GNI are all significant predictors of HDI in Oceanian countries. Among these variables, life expectancy (LIFE) stands

out with the highest R<sup>2</sup> value, indicating it has the greatest explanatory power in predicting HDI. Mean years of schooling (MEAN) and expected years of schooling (EXPE) have similar explanatory powers, slightly lower than life expectancy. GNI, while significant, has the lowest explanatory power among the variables considered. These findings highlight the varying degrees of influence that education, health, and economic factors have on human development across Oceanian countries, with health showing particularly strong impacts.

**Table 5: HDI Dependent Variable for Oceanian countries**

Oceania	(1)	(2)	(3)	(4)
C	0.001328*(1.039626)	0.003844*(3.042064)	0.004484*(3.695423)	0.00596*(5.131333)
GNI				0.075035*(5.364894)
LIFE	1.007612*(7.286766)			
MEAN		0.407252*(5.507285)		
EXPE			0.143888*(5.563095)	
R2	0.431343	0.302304	0.306574	0.291369

### 5. CONCLUSIONS

After analyzing various papers on the Human Development Index (HDI), it becomes evident that the most developed countries in terms of human development are those with robust economies. These include states in North America, Europe, Australia, a solitary state from Africa, and a few countries in Asia. The high HDI values in these regions are primarily driven by strong economic performance, high levels of education, and superior healthcare systems. In contrast, countries with the lowest human development are predominantly located in Africa. These nations face significant challenges, including very low levels of education and economic impoverishment, which result in low Gross Domestic Product (GDP) per capita. The lack of economic resources severely limits their ability to invest in health and education, leading to lower life expectancy, reduced years of schooling, and minimal income per capita, which collectively drag down their HDI scores. The disparity between the high and low HDI countries underscores the critical role of economic development in enhancing human welfare. Developed countries benefit from well-established infrastructures, access to quality education and healthcare, and greater economic opportunities, which facilitate higher human development levels. Conversely, the challenges faced by developing countries, particularly in Africa, highlight the need for targeted policies and investments to improve education, healthcare, and economic conditions to boost human development. Indeed, while the Human Development Index (HDI) provides valuable insights into the overall development levels of countries, it cannot fully encapsulate the complex socio-economic dynamics within nations. To comprehensively understand a country's development status, additional factors beyond the HDI need to be considered. Historical context plays a crucial role in shaping a nation's current development trajectory.

Understanding historical legacies, such as colonialism, conflicts, and economic policies, can provide valuable insights into the socio-economic disparities and challenges faced by different countries. Moreover, analyzing the degree of inequality in resource distribution is essential for a nuanced understanding of development. Countries may have relatively high HDI scores but still grapple with significant income inequality, limited access to education and healthcare for marginalized populations, and disparities in opportunities based on gender, ethnicity, or socio-economic status. The prevalence and extent of deep poverty are also critical factors to consider. Even within countries with relatively high HDI scores, pockets of extreme poverty may persist, particularly in rural or marginalized urban areas. Addressing deep poverty requires targeted interventions aimed at improving livelihoods, access to basic services, and economic opportunities for the most vulnerable segments of society. Furthermore, the presence or absence of social infrastructure, such as healthcare systems, educational institutions, and social welfare programs, significantly influences a country's development outcomes. Accessible and high-quality social infrastructure can contribute to improved health outcomes, higher levels of education, and greater social cohesion, thereby fostering overall human development.

Life expectancy at birth is a critical determinant affecting the Human Development Index (HDI), exerting a profound impact on societal well-being. Take, for instance, the substantial disparity between the longevity of the Japanese population and their counterparts in Zimbabwe, accentuated by notable gaps in nutrition and healthcare provisions. Across industrialized nations, access to medical care is relatively abundant, with an average of 285 individuals per doctor. However, this statistic sharply contrasts with the situation in Africa, where a single doctor must cater to an overwhelming population of approximately 20,000 individuals, highlighting stark healthcare inequalities. Furthermore, the issue extends beyond healthcare to encompass education, particularly literacy rates. In many Asian countries, a concerning 56% of adults possess the ability to read and write, lagging significantly behind the nearly 90% literacy rates observed in Latin America and the approximately 86% in China. Notably, advanced economies such as the United States, Canada, and Norway boast even higher literacy rates, underscoring the pivotal role of education in driving human development. Thus, while certain regions grapple with formidable challenges in healthcare accessibility and literacy, others have made substantial strides toward ensuring a higher quality of life for their citizens. These disparities underscore the multifaceted nature of human development and the imperative for



targeted interventions to address underlying inequalities on a global scale. To conclude, the Human Development Index (HDI) is intricately linked to the values assigned to its constituent components: the life expectancy index, education index, and income index. While the HDI is often viewed as a scientific measure of societal progress, with a complex formula underpinning its calculation, the weighting scheme applied to its components is not immune to criticism. Indeed, the current weighting scheme can be perceived as arbitrary, lacking a universally accepted rationale. As such, there is room for debate regarding its validity and effectiveness in accurately capturing the nuances of human development across diverse contexts. While the HDI provides valuable insights into the overall well-being of societies, it is essential to acknowledge its limitations and the potential for improvement. Moving forward, it is imperative to engage in ongoing dialogue and research to refine the HDI and ensure that it remains a relevant and robust tool for assessing human development worldwide.

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