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IMPACT

OF SOCIOECONOMIC VARIABLES IN THE HUMAN DEVELOPMENT INDEX OF THE LATIN AMERICAN ECONOMIES

IMPACTO DE VARIABLES SOCIOECONÓMICAS EN EL ÍNDICE DE DESARROLLO HUMANO DE LAS ECONOMÍAS LATINOAMERICANAS

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ASTRACT

Latin American countries in the 2008-2017 study period show variations in the Human Development Index (HDI), due to the influence of standard and non-standard variables. The objective is to determine the impact of these variables on the HDI of Latin American countries, stipulating the relevance and significance of the variables with the highest incidence. The methodology consists in carrying out a correlational investigation through bibliographical reviews that support the data corresponding to 60 observations with the theory, with the determination of explaining through variables of the panel, the variables of greater incidence over time among the different countries. The latent variables obtained from the one were Life Expectancy, GNI Per Capita and Literacy Rate. Therefore, the information obtained is useful for the authorities of each country using public policies that improve Human Development.

Keywords: HDI, health, education, socioeconomic variables.

RESUMEN

Los países latinoamericanos en el periodo de estudio 2008-2017 presentan variaciones en el Índice de Desarrollo Humano (IDH), debido a la influencia de variables convencionales y no convencionales. El objetivo es determinar el impacto de estas variables en el IDH de los países de América Latina, logrando estipular la relevancia y significancia de aquellas variables con mayor incidencia. La metodología consistió en la realización de una investigación correlacional mediante revisiones bibliográficas que sustentaron los datos obtenidos correspondientes a 60 observaciones con la teoría, con la finalidad de explicar mediante datos de panel las variables de mayor incidencia a través del tiempo entre los diferentes países. Las variables latentes obtenidas de la estimación fueron Esperanza de Vida, INB Per Cápita y Tasa de Alfabetización. Por lo tanto, la información obtenida resulta útil para que las autoridades de cada país empleen políticas públicas que mejoren el Desarrollo Humano.

Palabras clave: IDH, salud, educación, variables socioeconómicas.

INTRODUCTION

The Human Development reference as such appeared at the end of the 1980s, constituted as a protocol for measuring the development of a society, presented by the United Nations in 1990. Amartya Kumar Sen, Bengali Economist and Nobel Prize in Economics in 1998 for its Contributions to the welfare economy points out that Human Development represents a radical change that involves the development process as the expansion of people's capacities but not as the increase in profits and economic satisfaction.

As a result of the above, Human Development does not necessarily imply accumulation of physical capital but rather prioritizes the accumulation of human capital through the provision of options that allow people to live a long life, avoid diseases, access knowledge, among others.

Inequality exists in society since the human being saw the light, since time immemorial there have been vulnerable groups that have suffered the rigidities of poverty and marginalization. For this reason, for Sen (2000), *"development requires the elimination of important sources of the absence of freedom such as: poverty and tyranny, scarce economic opportunities and systematic social deprivation, lack of public services, intolerance and over-action of states repressive".* (p. 15)

Globally, the average value of the HDI of women (0.705) is 5.9% lower than that of men (0.749), however the gender gap is smaller in Latin America and the Caribbean (2.3 %) that is, men have an average value of HDI (0.748) while women (0.765).

Latin America and the Caribbean with an average annual growth between 1997 and 2017 of 0.71 in its HDI, has one of the lowest rates of rise in this indicator when compared with the other regions established by UNDP: 1, 39 in South Asia; 1.30 in East Asia and the Pacific; 1.12 in sub-Saharan Africa; 0.84 in the Arab States and 0.62 in Europe and Central Asia. According to Torres & Allepuz (2009), *"criticizes the excessive simplicity of the indicator, the limited information offered within the different groups of countries".* (p. 549)

From these precepts it is necessary to address the problem as the main research axis, what latent variables affect the HDI? The research is in correspondence with economic science, given that it consists in knowing those socioeconomic variables that contribute to the growth or reduction of the HDI in Latin America during the period 2008-2017 and therefore through the results and information obtained, the main authorities of each country under study can make decisions based on real data and for the benefit of society.

The Human Development Index determines the level of well-being of each country, it is generally defined by the United Nations Development Program (2018), as *"a composite index that focuses on three basic dimensions of human development: ability to have a long and healthy life, the ability to acquire knowledge and the ability to achieve a decent standard of living".* (p. 1)

However, based on López (2002), studies the combination of other factors that have an efficient impact on the HDI is considered, such as access to basic services, poverty index and health expenditure. Therefore, Govea (2018), mentions that the satisfaction of society's needs depends on the synthesis of the components of economic and social development.

The generation of per capita income through the implementation of social and economic policies improves the living conditions of the population, increasing economic development indicators and thus reducing poverty. Citing Smith (1776), the work generated by a country is one that substitutes the needs and well-being that is consumed, that is, the product that a country conceives determines the number of people who consume it. Therefore, the per capita income of an economy implies its well-being.

According to Anand & Harris (1994), they affirm that *"the gross domestic product (GDP) per capita is a very adequate proxy when measuring the degree of development of the countries"* (p. 38). The authors argue that a welfare indicator is key when it comes to making a difference between factors that determine the development of a country.

The per capita income or GDP per inhabitant is one of the most used indicators to measure the level of development of a country, it is calculated through GDP, represented by the amount of final goods and services produced by an economy during a given period, generally one year, the same that is divided for the number of inhabitants. However, the criticism of this indicator is based on the fact that it does not reflect the equity and efficiency of income, because a minority of the population can contribute greatly to GDP, while the vast majority live in poverty.

For Organization for Economic Cooperation and Development (2017), life expectancy is an indicator responsible for measuring the average number of years that people born today can expect to live, based on prevailing age-specific death rates nowadays. This calculation is done as a weighted life expectancy for both men and women.

Life expectancy is one of the components of the health variable and therefore is an important part of the HDI. Therefore, public policies aimed at increasing human well-being should be focused in a relevant way towards the health sector. Taking as a reference the Preston classic (1975), income is one of the determining factors for life expectancy, there is a positive relationship between both variables, that is, higher income, greater life expectancy. This classic basically proposes that by increasing income people have greater access to quality goods and services in terms of health.

According to Health World Organization (1948) the term health implies "***physical, mental and social well-being and not only the absence of conditions or diseases"*** (p. 1). Stability in health allows a lighter lifestyle with low levels of stress, thus improving performance in the work environment contributing to productivity in an economy. Evidently, Sánchez (2018), mentions that "***access to health services captures the impact of employment on the health of the worker and his family"*** (p. 112), with total health expenditure being a determinant that contributes to the increase in HDI.

Navarro, Ayvar & Giménez (2016), consider that the consolidation of expansive fiscal policies focused on nutrition programs, hiring qualified doctors, campaigns to reduce the risk of contracting HIV, appropriate delivery assistance, accessibility of medicines, social insurance and pensions to retirees, stimulate individual and collective benefits.

The mortality rate is another factor that affects the coverage of health services, according to United Nations International Children's Emergency Fund is a determining indicator for social development. Therefore, it is considered in the model to determine its incidence in the HDI, given that Córdova, Román & Galvarro (2018), establish that countries that maintain a low and medium-low HDI tend to obtain high mortality rates, therefore, the health of a person influences the economic development and the quality of life of society.

Communicable and no communicable diseases reduce life expectancy, being a factor associated with the variations of HDI, undoubtedly for Atamari, et al. (2018), it is necessary to apply government measures that promote good eating habits to reduce the chances of contracting diseases that prevent personal and collective development.

According to the United Nations Educational, Scientific and Cultural Organization (2019), the tertiary gross enrollment rate is calculated as the total number of people enrolled at the tertiary or university level, regardless of age, divided by the population belonging to the five-year group, based on the age at which they should finish high school.

The education and fundamentally the higher education allows to generate and to improve the abilities of the people obtaining that they accede to the fulfillment of needs like feeding, health, employment, housing, among others. That said, access to higher education denotes economic and social well-being, therefore it constitutes a relevant indicator in the explanation of the HDI of an economy.

These statements are corroborated by López (2016), indicating that Latin American countries that register ***"the best TBM in higher education have better levels of human development, high public investments in education, the lowest levels of poverty"*** (p. 24). Therefore, public policies aimed at increasing the accessibility of higher education allow reducing inequality and increasing social welfare.

The literacy rate determines the ability to read and write of a specific age, Sánchez (2019), indicates that globally the policies implemented in recent years managed to increase the literacy rate by 80%. Therefore, the capacity to prepare reflects the impact of facing the demands of the labor market.

On the other hand, Mexico has implemented strategies through the efficient use of resources that promote the quality of education, such as educational plans, infrastructure, relevant teacher performance and integration with the community in order to reduce socioeconomic inequality and increase well-being.

MATERIALS AND METHODS

The modality of the research work corresponds to a Correlational Research the same as according to Salkind (1998), ***"it is intended to show or examine the relationship between variables or results of variables"***. It should be noted that this type of research establishes only relationships between variables or their results without explaining causality between them, that is, associations but not causal relationships are examined.

In the first instance, the methodological process consists of manipulating databases of international organizations of the World Bank and of the Economic Commission for Latin America and the Caribbean ECLAC from 2008-2017, selecting Ecuador, Chile, Colombia, Argentina, Mexico and Brazil as reference according to its political regime of Center, Right and Left orientation.

For the execution of the research work the statistical program Stata 14.0 was used Stata is a statistical system

conducive to manipulate and analyze data using statistical and graphic methods, allowing flexible database management through generation or transformation of new variables, thus achieving estimation work according to what the researcher wishes to explain.

Subsequently, the variables that best estimate and contribute significantly to the behavior of the HDI were selected. For this, a simple or bivariate regression was applied to determine the individual significance of each variable, and then perform a multiple regression in order to jointly explain the HDI over time between the different countries. In this way a long data panel corresponding to 6 countries and 10 years is obtained, strongly balanced with a total of 60 observations made up of 8 returnees.

For Gujarati & Porter (2010), the panel data correspond to data sets that can be individuals, companies, states, countries, etc., which are followed over time, for this reason, this model is favorable because it maintains more complex behaviors, given the presence of heterogeneity, reduction of bias, dynamics of change, more information, less collinearity and greater variability.

Therefore, Wooldridge (2010), mentions that constant unobservable aspects of these same units must be controlled, which are correlated with explanatory variables in the model (Table 1).

The application of multiple regression from the theoretical bases is developed by the following general equation:

Table 1. Nomenclature.

Yi	Back
α	Origin or intercept
βi	Parameter or coefficient
Xi	Back
εi	Disturbance Error

RESULTS AND DISCUSSION

To choose the most consistent model, 13 regressions were compiled to verify which variables most frequently affect the HDI. Through the R2, Correlation, Rho, Prob> F, Hausman Test and the Breusch & Pagan Lagrangian Test it is possible to determine the validity of the model.

In theory, the calculation and explanation of the HDI focuses on three dimensions: life expectancy, health and GNI per capita. However, by introducing exogenous variables, it is determined that Total Health Expenditure, Poverty Index, HIV Prevalence Rate and Mortality Rate affect Human Development. Regarding the results obtained, the coefficient of determination aims to explain the relationship between the regressive and returned variable, its R2 is optimal, therefore, and the explanatory variables analyzed are the most appropriate for the model, there is statistical significance, given that, its p-value is less than 0.05.

In Latin American countries, the variable with the highest incidence in HDI is life expectancy, as this factor increases by 1%, the HDI tends to increase by 0.18859%, followed by GNI Per Capita with a coefficient of 0.00992, and In addition, the literacy rate influences the increase in HDI by 0.00428%. In short, these three variables constitute the most relevant in explaining the behavior of Human Development.

Considering that the Tertiary TMB is related to the theory, it is reflected that at higher enrollment rates in Higher Education the HDI increases, in this case for every 1% increase in said rate the Development Index increases by 0.00070. It should be noted that Total Health Expenditure and the Poverty Index have a positive and negative impact on the HDI explanation.

The Hausman Test reflects a probability of less than 5%, confirms that the type of model corresponds to an estimate of fixed effects, therefore, there are relevant variables in the explanation of the data due to its consistency. The Breush & Pagan Lagrangian Test shows a probability greater than 5%, asserting the above, the test accepts the existence of differences between panels. In short, there are variables that accentuate these differences between countries.

CONCLUSIONS

Based on the bibliographic revisions and according to the estimated results, in short, the HDI constitutes an indicator of the quality of life of the inhabitants of each country, through the compilation of regressions with socioeconomic variables it was determined that the conventional factors: Life expectancy, GNI Per Capita and Literacy Rate maintain a trend in the HDI. Each of these variables has coefficients of 0.18859, 0.00986 and 0.00428 respectively.

Regarding the first item, Total Health Expenditure cited by Sánchez (2018), mentions that the importance of the increase in preventive and curative services, family planning, leads to improved nutrition in the early ages of childhood. Therefore, investments in health directly benefit the economic growth of countries, improving the quality of life of society.

The variables Mortality Rate and HIV Prevalence Rate were considered in the explanation of the model; given that it contributes fundamentally to the correspondence in the explanation of the Life Expectancy variable. Increasing

its coefficient by approximately 0.40%, therefore, the sign of the variable is relevant to the positive relationship between Life Expectancy and the HDI.

Finally, it is clear that the authorities of each Latin American country involved in the investigation should focus on the consolidation of public policies aimed at improving each of these indicators through Total Health Expenditure and Public Investment, in order to favor and strengthen Human Development.

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