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Trade, FDI, and Human Development: An Analysis of Developing Countries

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Abbreviation

ASEAN: Association of Southeast Asian Nations

Ex: Export

EU: European Union

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

GNP: Gross National Product

HD: Human Development

HDI: Human Development Index

ICE: Import Content of Exports

Im: Import

IIT: Intra-industry Trade

MERCOSUR: South American Common Market

MNE: Multi National Enterprises

NAFTA: North American Free Trade Agreement

OECD: Organisation for Economic Co-operation and Development

RCA: Revealed Comparative Advantage ()

TRI: Trade Restrictiveness Index

UN: United Nations

UNDO: United Nations Development Organization

UNDP: United Nations Development Program

1. INTRODUCTION

Trade is essential to economies, facilitating the exchange of goods and services to promote economic growth and efficiency while simultaneously helping countries leverage competitive advantages to develop products with which they have an edge, leading to more efficient use of resources (Simon, 1955). Export, one of the components of the trade, plays a vital role in a country's economy by generating revenue, balancing trade, and creating employment opportunities. Furthermore, export helps to enhance a country's competitiveness by exposing domestic companies to advanced technologies and international business methods. Another component of the trade is import. The ability to import goods and resources from other countries is crucial as it provides access to a wider variety of products, increasing competition and driving down prices for consumers (Ghymn, 1983). Additionally, it can also help countries to stay with new technologies and advancements by accessing them through imports. Maintaining a balance between the value import and export is crucial for a country's economic stability and growth. Positive trade balance, in which exports exceed imports, demonstrates a robust domestic economy and can lead to economic expansion. By contrast, negative balance, where imports exceed exports, can signal dependence on foreign goods and services and put additional pressure on domestic economies. A country's trade balance also impacts its exchange rate as well as global markets - therefore keeping an equilibrium between import and export activities is vital to its economic prosperity (Lane & Ferretti, 2002).

FDI is vital to developing country economies because it offers important capital, innovation, and employment opportunities. FDI may drive economic growth by increasing demand for domestic goods and services, resulting in greater employment and a higher quality of life. (Razzaq et al., 2021). By reducing the demand for imports and promoting exports, it can also help strengthen the balance of trade. Additionally, FDI may help the host nation by transferring skills and expertise and fostering the development of new sectors. Additionally, FDI might increase local market rivalry, which could result in lowered consumer costs and higher product quality. FDI may, in general, significantly contribute to the growth and development of underdeveloped nations (Schneider et al., 2022).

Conventional development strategies have not been effective in closing the gap between developing and developed countries, leading to the emergence of people-centered approaches in the 1970s. These approaches and policy plans prioritize human welfare over income growth. This shift in thinking led to the creation of Human Development Index. UNDP created an index

value in 1990 to calculate the human development index of countries, based on Amartya Sen's work in the field of development (Sen, 1979). With this index value called "Human Development Index" the development of countries in three main fields (education, health, income) is analyzed and makes international comparisons possible. Other than having a high level of wealth, the most common characteristic of countries at the top of the Human Development Index ranking is that their income distribution is comparatively more equal than other countries (Sharps et al., 2008). In addition, the countries in this category draw interest with their balanced population growth, developed health facilities, stronger gender representation in all sectors. On the other hand, developing countries has high population growth rate, low schooling and health facilities and low human development rate (Foster & Alkire, 2010).

By analyzing how institutions, such as laws and regulations, affect economic activity, institutional economics plays a crucial role in the growth of economies. Therefore, it is essential to comprehend how institutional policies and practices affect economic growth if it is aimed to promote economic development in developing countries (Bradley, 2021).

We can better understand how trade agreements and regulations may impact how the advantages of trade are distributed within a society by using institutional economics. For instance, trade liberalization can improve economic growth and overall prosperity, but it can also result in job loss and income inequality if measures aren't put in place to mitigate these negative effects. (Edwards, 1993). Institutional economics can assist decision-makers in creating trade agreements and policies that support both economic growth and the equally distribution of trade benefits. (Ferri, 2003).

Concentrating on developing economies might have a few advantages. One advantage is that it is possible to observe rapid economic growth and development. Research can lead to fascinating topics like understanding what hinders growth, the economy's structure and impact of institutions on it. Furthermore, developing economies offer insights into the effectiveness of various economic institutions and policies; by identifying those which encourage economic development while simultaneously decreasing poverty levels this research may have an enormous effect on their economic growth and development.

***Scope and Limitation of the Study*:** The scope of the thesis is based on the investigation of the relationship between international trade and FDI and HDI. The study was also limited to developing countries with a time period covering years 1990- 2018 (28 years). The time frame of

1990 to 2018 was selected because it covers the range of the oldest and most recent HDI data available at the time of preparing this study.

In this thesis, it was focused on developing countries. Because focusing on developing countries may offer various advantages. These include the opportunity to observe rapid economic growth and development, which can provide fascinating research topics like development obstacles, shifts in the economic structure, and the impact of institutions (Hausmann & Rodrik, 2002). Additionally, authors found that the variety of economic policies and systems in developing nations can provide useful information regarding the effectiveness of various economic institutions and policies. (Acemoglu et al., 2001). Besides, the study may have a significant impact on these nations' economic development by locating policies and institutions that may promote economic growth and alleviate poverty (Easterly, 2002).

2. OBJECTIVES TO ACHIEVE

By thinking about how exports affect economies and the ways that a robust economy might draw foreign investment. It is possible to comprehend the relationship between exports, FDI, and HDI. Exports can boost income and generate employment, which can increase economic growth. Foreign investors could find a country more alluring as it develops economically because they can see the potential for lucrative opportunities. Foreign investors may find a countries with a broad export structure more alluring since it is less likely to be impacted by changes in demand for a particular good or service. By giving people the chance to earn higher incomes, exports can also aid in the reduction of poverty and inequality.

Briefly, foreign investment can also boost exports by providing companies with the resources and technology needed to improve their production processes and expand into new markets. In addition, robust economy can foster human development by enabling the government to allocate more resources towards education, healthcare, and other social initiatives.

The connection between imports, HDI and FDI can be explained by analyzing how imports affect a country's economy and how access to various goods and services can enhance human development. Imports can provide a country with access to a variety of inputs for production and a diverse consumer base which can help to drive economic growth and improve living standards. Imports can provide a country with access to inputs for production, which can boost the productivity and competitiveness of domestic firms. Additionally, a diverse import structure can also make a country more attractive to foreign investors as they can see the potential for profitable opportunities.

For emerging economies, it is crucial to explain the connections between international trade, foreign direct investment, and the human development index because these three variables are interdependent and can have a big impact on a overall development and economic progress (Michie, 2001). New technology, capital, and expertise can be introduced through trade and FDI, which can raise productivity and income and ultimately improve human development metrics like health, education, and living standards. (Yusuf et al., 2020). Nevertheless, in the absence of appropriate regulations and institutions, these flows can have undesirable implications such as rising inequality. Understanding the connections between these three criteria might thus assist policymakers in developing countries in establishing effective policies that promote sustainable and inclusive growth. (Stern, 2002).

Despite a significant number of studies on the factors that influence trade, there has been minimal focus on the impact of HDI (Human Development Index) on trade. By considering all above, in this study, it was aimed to examine the economic, FDI, and non-economic, HDI, factors affecting trade and to investigate the role of public institutions in this aspect.

In this thesis, research questions were determined as follows;

- Is there any relationship and causality among the variables Export; HDI and FDI?
- Is there any relationship and causality among the variables Import; HDI and FDI?
- What kind of strategy should be implemented to boost trade?

By considering research questions, the hypothesis was set as follows;

H_{0a}: There is a significant causality and relationship between exports and HDI
H_{0b}: There is a significant causality and relationship between exports and FDI
H_{0c}: There is a significant causality and relationship between imports and HDI
H_{0d}: There is a significant causality and relationship between imports and FDI

3. MATERIALS AND METHODS

3.1 General Research Methodology

There are several methodologies that could be used to confirm the relationship between HDI and trade activity. Some potential methodologies include:

i. Cross-country regression analysis: This methodology involves estimating the relationship between HDI and trade activity using data from multiple countries. This can help control for other factors that may affect HDI and trade activity, such as economic growth and political stability (Pomfret, 2014).
ii. Time-series analysis: This methodology involves analyzing data from a single country over time to examine how changes in trade activity affect HDI. This can help control for other factors that may affect HDI and trade activity, such as education levels and infrastructure (Box et al., 2015).
iii. Case studies: This methodology involves in-depth analysis of the experiences of a specific country or group of countries. This can be useful for understanding the complexities of the relationship between HDI and trade activity and for identifying potential causal mechanisms (Yin, 2013).

Panel data analysis is a statistical technique which involves the examination of data compiled from multiple cross-sections of individuals or entities over time. It can be an effective means for exploring relationships among variables as well as controlling time-invariant ones such as individual characteristics or country-specific factors (Lee, 2002). There are several reasons why it may be chosen to use panel data analysis instead of other techniques, such as cross-country regression analysis, time-series analysis, or case studies analysis:

i. Control for time-invariant variables: Panel data analysis allows to control for time-invariant variables, such as individual characteristics or country-specific factors, which can help to reduce omitted variable bias and improve the accuracy of results.

ii. Improve statistical power: Panel data analysis can improve the statistical power of the analysis by increasing the sample size and allowing researcher to examine changes over time.

iii. Capture dynamic relationships: Panel data analysis can help researcher capture dynamic relationships between variables by allowing to analyze changes over time.

iv. Better suited to certain research questions: Panel data analysis may be more appropriate for certain research questions, such as those that involve examining changes over time or controlling for time-invariant variables.

In the thesis, a panel data analysis will be conducted to examine the relationship between variables. This type of analysis combines time series observations of economic units in a cross-sectional format, providing a more comprehensive econometric analysis than either cross-sectional or time series analysis alone (Baltagi, 2005). The basic model for the panel data can be expressed as follows:

$$Y_{it} = \rho_i Y_{it-1} + \delta_i X_{it} + \varepsilon_{it} \quad \textbf{(1)}$$

In the equation, the variables i = 1, ..., N and t = 1, ..., T to represent the cross-sectional units and points of observation, respectively. The variable N represents the number of units in the model and T represents the number of observations for each unit. The error term for each unit at a given time, ε_{it}, is assumed to be a white noise disturbance. If the absolute value of ρ_i is less than 1, the variable Y_i is considered stationary, and if the absolute value of ρ_i is equal to 1, Y_i has a unit root. X_{it} is an explanatory variable. It represents a factor that is believed to have an impact on the dependent variable Y_{it}. The parameter δ_i represents the effect of X_{it} on Y_{it}. It shows how much Y_{it} changes for a unit change in X_{it}. The variable X_{it} is included in the equation to capture the influence of any additional factors on the dependent variable Y_i.

In panel data analysis, two commonly used methods for testing for unit roots are the Levin-Lin-Chu (LLC) test and the Im-Pesaran-Shin (IPS) test. These tests have been proposed by (Im et al., 2003; Levin et al., 2002). The LLC and IPS unit root tests are different in terms of the assumptions and test statistics used to evaluate the ρ_i coefficient in equation 1. The LLC test assumes that the ρ_i coefficients are identical for all cross-sections of the panel data, or $\rho_i = \rho$ for all i. On the other hand, the IPS test assumes that the ρ_i coefficients vary among the cross-sections of the panel data. Both LLC and IPS unit root tests are based on the ADF (Augmented Dickey-Fuller) principles, where the basic equation can be represented as $\alpha = \rho - 1$:

$$Y_{it} = \alpha_i Y_{it-1} \sum_{j=1}^{p_i} \beta_{ij} \Delta Y_{it-j} + X_{it}\delta + \varepsilon_{it} \quad \textbf{(2)}$$

Null and alternative hypotheses of the model for the LLC unit root test can be seen below.

$H_{0:}\ \alpha_i = 0$

$H_{0:}\ \alpha_i = \alpha < 0$ **(3)**

The LLC unit root test is used to determine if the time series of each cross-sectional unit in the panel includes a unit root or not, and therefore, if the time series of each cross-sectional unit is stationary or not. In other words, it tests for the presence of a unit root in the time series of each cross-sectional unit.

The hypotheses for the IPS unit root test are:

$H_{0:}\ \alpha_i = 0, \forall_i$

(4)

H_A: $\alpha_i = 0$ $i = 1,2,\ldots,N_1$

: $\alpha_i < 0$ $i = N+1, N+2,\ldots,N$

The null hypothesis states that all of the cross-sectional units of the panel have a unit root, indicating that none of the time series are stationary. The alternative hypothesis, on the other hand, posits that not all of the cross-sectional units have unit roots, meaning that some or all of the time series are stationary.

In the LLC unit root test, the standard t statistic is applied to the normal distribution of the standard α_i coefficient. In contrast, the IPS unit root test employs the arithmetic mean of the t statistics, which is calculated for each cross-section.

The co-integration relationship indicates that there is a long-term relationship between the series, even with the presence of external shocks that may impact the variable series. When testing the correlation between the two variables, it will also be examined if there is a common co-integration among the variables or if there are any deviations. If the series are not stationary, they

must be transformed. One way to do this is by using the co-integration analysis developed by (Pedroni, 1999, 2004). This can be represented as follows.

$$Y_{it} = \alpha_i + \delta_{it} + \beta_i X_{it} + e_{it} \quad \textbf{(5)}$$

Y_{it} and X variables are found to be stationary when taking the first difference. The α_i and δ_i parameters indicate the unique impact of each cross-section.

The Pedroni co-integration analysis examines whether there is a co-integrating relationship between variables *Y* and X by conducting stationarity tests on the e_{it} error terms. These stationarity tests of the error terms are as follows.

$$e_{it} = \rho_i e_{it-1} + u_{it} \quad \textbf{(6)}$$

$$e_{it} = \rho_i e_{it-1} + \sum_{j=1}^{p_i} \psi_{ij} \Delta e_{it-j} + u_{it} \quad \textbf{(7)}$$

The hypothesis tests aim to determine if the ρ_i coefficient is equal to 1 or not. As such, the null hypothesis for Pedroni co-integration asserts that there is no correlation between Y and X variables. The alternative hypothesis has two scenarios: the first being that the ρ_i coefficients are different for all cross-sections. The null and alternative hypotheses for the ρ_i coefficient in the 8th equation of the Pedroni co-integration analysis can be represented as follows.

$$H_0: \rho_i = 1$$

$$H_a: \rho_i = \rho < 1 \quad \textbf{(8)}$$

In the second scenario, some of the ρi coefficients are not the same. This situation requires examination of whole-panel co-integration. The null and alternative hypotheses for the ρ_i coefficient can be represented in the 9th equation of Pedroni's co-integration analysis.

$$H_0: \rho_i = 1$$

$$H_a: \rho_i < 1 \quad \textbf{(9)}$$

In the (Pedroni, 1999) co-integration analysis, there are seven test statistics which are divided into two categories. The first category, intra-group test statistics, includes the variance ratio, non-parametric Phillips and Perron type ρ, nonparametric Phillips and Perron type t, and Dickey-Fuller type t statistics. The null and alternative hypotheses shown in equation 9 can be applied to this category. The second category, between-groups test statistics, includes the Phillips and Perron type ρ, Phillips and Perron type t, and (Dickey & Fuller, 1979) type t statistics. The null and alternative hypotheses shown in equation 9 can be applied to this category.

The co-integration analysis makes it possible to examine the long-term relationship between the variables. The analysis of the short-term causality relationship between economic variables is carried out by causality tests. The causality in economics is used to express the causal relations between economic variables with delay. In addition to the traditional Granger causality test, an alternative method developed by (Holtz-Eakin et al., 1988a) is used in panel causality analysis. The Granger causality can be estimated as it follows.

$$\Delta X_{it} = \alpha_{it} + \sum_{l=1}^{m} \beta_{it} \Delta y_{it-1} + \sum_{l=1}^{n} \delta_{it} \Delta x_{it-1} + u_{it} \quad \textbf{(10)}$$

$$\Delta Y_{it} = \alpha'_{it} + \sum_{l=1}^{P} \boldsymbol{\gamma}_{it} \Delta y_{it-1} + \sum_{l=1}^{q} \boldsymbol{\varphi}_{it} \Delta x_{it-1} + v_{it} \quad \textbf{(11)}$$

In the equation 10, it is tested that the variable Y is the dependent and the variable X is the independent variable. In the equation 11, it is tested that the variable X is the dependent and the variable Y is the independent variable. So, by calculating the F statistics, it is examined if β_{it} and ϕ_{it} are different from zero as group. If there is a correlation between Y and X variables, error correction parameter is added to the models. In this case, for example, the change in X is affected by deviation from the long-term relationship between X and Y in the previous period.

In the panel data analysis, two different models can be applied due to the characteristics of α_{it} and α'_{it} in equation 10 and 11. These models are panel data fixed effects and panel data random effects models. The fixed effects model assumes that the individual differences between units can be seen by differences in the constant term. In this case, each economic unit will have a constant term which does not change by time. Constant terms show the effects of omitted

variables that are excluded from the model**.** In the fixed effects model, the fixed term takes a different value for each unit in the panel.

In the model of random effects, it is assumed that the constant term is changed randomly for units. In other words, it is assumed that individual effects arise randomly. The constant term is assumed to be independent of the model's error term. Both terms are assumed to be independent at all times and for all units.

In the estimation of the panel data according to the standard OLS method, it is assumed that the constant term is the same for all units in the panel.

In the literature, there are tests to choose fixed effects and random effects models in panel data estimation. These are the Hausman and Breusch-Pagan tests. However, there is no clear explanation whether only one of the models which are fixed effects or random effects models should be used. Making a choice between these models may result in incorrect estimates. In another study, (Erlat, 2006) stated that the results of the Hausman test do not provide a certain choice between the fixed effects and the random effects model.

Causality test developed by (Holtz-Eakin, et al 1988) is as follows;

$$y_{it} = \alpha_0 + \sum_{j=1}^{m} \boldsymbol{\alpha}_j y_{it-j} + \sum_{j=1}^{m} \boldsymbol{\delta}_j x_{it-j} + f_i + u_{it} \qquad \textbf{(12)}$$

The difference of the model was taken to remove the constant effects indicator in the model and the new form of the model is as follows;

$$y_{it} - y_{it-1} = \sum_{j=1}^{m} \boldsymbol{\alpha}_j (y_{it-j} - y_{it-j-1}) + \sum_{j=1}^{m} \boldsymbol{\delta}_j (x_{it-j} - x_{it-j-1}) + (u_{it} - u_{it-1}) \qquad \textbf{(13)}$$

As it is seen from the equation, there is a relationship problem between the error terms and the dependent variable. Therefore, the panel causality test which was proposed by Holtz-Eakin et al is based on the two-stage OLS method. To see causality, it is tested whether the δ **j** are equal to zero as a group in equation 13. Thus, it is examined if x causes the y. Another aspect of causality is about how y's cause x or not, it has been tested in equation 13 by changing places of x's and y's by turn.

In this study, the existence of a causality relationship between series was investigated by the method developed by (Dumitrescu & Hurlin, 2012). Causality analysis, first developed by Granger (1969), allows to investigate whether variables other than that variable provide useful information in predicting the future value of a variable (Holtz-Eakin et al., 1988a). Many new techniques have been used in recent years for the panel causality relationship, which has been examined within the framework of panel data. The main advantage of the (Dumitrescu & Hurlin, 2012) test compared to other tests is that it tests the absence of homogeneous Granger causality relationship under the basic hypothesis against the alternative hypothesis that accepts the existence of this relationship in at least one cross section. The Pedroni co-integration test considers the interdependence between countries within the panel. Additionally, it is robust to variations in the ratio of time periods to the number of countries in the panel, meaning it is able to produce accurate results regardless of whether the time dimension is larger or smaller than the cross-section size.

(Dumitrescu & Hurlin, 2012) examined the causal relationship between γ and χ by using the linear model described below.

$$\gamma_{i,t} = \infty_i + \sum_{k=1}^{K} \gamma_i^{(k)} \gamma_{i,t-k} + \sum_{k=1}^{K} \beta_i^{(k)} + x_{i,t-k} + \varepsilon_{i,t} \quad \textbf{(14)}$$

Here K denotes the length of lag, which is identical for all horizontal sections, while $\beta_i=(\beta^{(1)}{}_i,\ldots, \beta^{(K)}{}_i)$. The basic and alternative hypotheses established for the above equation are as follows (Dumitrescu & Hurlin, 2012):

H_0: $\beta_i = 0$

H_1: $\beta_i = 0\ \forall_i = 1,\ldots,N$

$\beta_i \neq 0\ \forall_i = N_1+1, N_1+2,\ldots,N$

(Dumitrescu & Hurlin, 2012) calculated individual Wald statistics ($W_{i,T}$) for cross-section units in order to test the basic and alternative hypotheses and obtained the Wald statistics $(w_{N,T}^{HNC})$ for the panel by taking the average of these statistics. In other words $(w_{N,T}^{HNC}) = 1/N.\sum_{I=1}^{N} W_{i,T}$.

(Dumitrescu & Hurlin, 2012) recommend using the $Z_{N,T}^{HNC}$ statistic, which has an asymptotic distribution when the time dimension is larger than the cross-section dimension, while it is recommended to use the Z_{N}^{HNC} statistics if the cross-section size is larger than the time dimension. $Z_{N,T}^{HNC}$ and Z_{N}^{HNC} test statistics were calculated as below. In the equation 15 and 16 d denotes divergences.

$$Z_{N,T}^{HNC} = \sqrt{\frac{N}{2K}}(W_{N,T}^{HNC} - K) \xrightarrow[N\to\infty]{d} N(0,1) \quad \textbf{(15)}$$

$$Z_{N}^{HNC} = \frac{N^{1/2}[w_{N,T}^{HNC} - N^{-1}.\sum_{i=1}^{N} E(W_{i,T})]}{\sqrt{N^{-1}.\sum_{i=1}^{N} Var(W_{i,T})]}} \xrightarrow[N\to\infty]{d} N(0,1) \quad \textbf{(16)}$$

In this study, panel causality test was applied to the stationary series and the results obtained are presented in equation 16. In the study, the directions of the causality relations between the series were determined based on the results of the $Z_{N,T}^{HNC}$ test statistics suggested by (Dumitrescu & Hurlin, 2012) because the time dimension is larger than the cross-section dimension.

In their study, (Dumitrescu & Hurlin, 2012) applied a panel causality test to stationary series and presented the results in equation 16 The direction of causality between the series was determined by using the $Z_{N,T}^{HNC}$ test statistics suggested by Dumitrescu and Hurlin as the time dimension is greater than the cross-section dimension.

3.2 Material of the Study

There are various control variables available that could help verify the relationship between human development index (HDI) and trade activity. One such control variable would be gross domestic product (GDP). GDP is a measure of total goods and services produced in any one country and it provides a handy measure that is tightly connected to both HDI and trade activity. Political stability can affect both HDI and trade activity, so it could be useful to control for this variable. Infrastructure, such as transportation networks and communication systems, can facilitate trade and impact HDI. Higher education levels are often associated with higher HDI and increased trade activity, so controlling for education levels could be useful. Another variable may be natural resources. Countries with abundant natural resources may have higher trade

activity and higher HDI, so controlling for this variable could be useful. Population size may also be used as control variable. Larger population size may be associated with higher trade activity and higher HDI, so controlling for population size could be useful.

In the thesis, the relationship between exported goods as % of GDP, FDI % of GDP and HDI and was examined, as well as the relationship between imported goods as % of GDP, FDI as % of GDP and HDI. By examining the relationship between these variables, it is possible to identify patterns or trends that can help explain the relationship between trade activity and human development. It's important to note that the relationship between these variables may not be simple or straightforward. For example, higher levels of trade activity may be associated with higher HDI, but this relationship may be influenced by other factors such as economic and political stability, infrastructure, education levels, and natural resources.

It may be helpful to control for these and other potential confounding variables in order to more accurately assess the relationship between exports of good as percent of GDP, import of good as percent of GDP, FDI as a percentage of GDP, and HDI.

Developing countries as they typically encounter distinct difficulties and opportunities when it comes to economic growth and poverty elimination. These nations tend to have lower levels of economic growth, weaker institutions, and more inequality compared to developed countries. These characteristics make them more vulnerable to economic disturbances and harder to advance sustainably. On the other hand, developing countries provide opportunities for fast economic growth and poverty elimination through economic development. By analyzing these countries, economists can understand the factors that enhance or impede economic development and discover policies and methods that can support sustainable and inclusive growth.

Countries were selected from developing countries, and these countries are Argentina, Belize, Botswana, Brazil, Bulgaria, China, Colombia, Costa Rica, Dominican Republic, Ecuador, Gabon, Guatemala, Guyana, Indonesia, Jamaica, Jordan, Malaysia, Mexico, Namibia, Paraguay, Peru, South Africa, Thailand, Tonga and Turkey. Time interval is 29 years and covers the 1990-2018 period. Countries having missing data were removed from the analysis. Analysis covered 29 years from 1990-2018 period; countries without data were removed prior to analysis; results are provided via well-known resources like United Nations Development Program database World Bank database and OECD Database.

4. RESULTS AND THEIR DISCUSSION

In this section test results are discussed. For testing, different techniques were applied in EViews-9. These techniques are unit root test, co-integration test and panel data analysis.

4.1 Unit Root Test Results

In this part, unit root test results were given both at the level and at the first difference of variables and results were given in table 1 and table 2.

Table 1 Augmented Dickey Fuller Test Results at Level (Levin-Lin-Chu)

Order of integration	**Variables**	**Intercept**	**Trend and intercept**	**None**
Level	L Ex	-2.03659**	-2.43619*	-0.79404
Level	L FDI	-7.78012*	-7.02697*	-4.41818*
Level	L Imp	-3.36027*	-3.79309*	0.13075
Level	L HDI	-3.55903*	-3.36782*	25.0310

Source: Own calculation based on data

Notes: Values with * indicates significant at 1%

Values with ** indicates significant at 5%

Values without * indicates insignificant

None: No intercept and no trend

Table 2 Augmented Dickey Fuller Test Results at First Difference (Levin Lin Chu)

Order of integration	**Variables**	**Intercept**	**Trend and intercept**	**None**
First difference	Δ Ex	-21.8464*	-19.1791*	-24.3750*
First difference	Δ FDI	-26.6961*	-23.2369*	-29.3425*
First difference	Δ Imp	-24.3069*	-18.4002*	-26.5030*
First difference	Δ HDI	-13.7960*	-15.1684*	-7.27984*

Source: Own calculation based on data

Notes: Values with * indicates significant at 1%

Values with ** indicates significant at 5%

Values without * indicates insignificant

None: No intercept and no trend

The unit root test of Liu Chu indicates that some of the variables have unit roots at their own level, but no unit root is present at the first differences. On the first difference, it can be inferred that all series are stationary.

To make sure, if the variables are stationary Im Peseran Shin test was also applied to variables at level and first difference. Results were shown in table 3 and table 4 below.

Table 3 Augmented Dickey Fuller Test Results at Level (Im Peseran Shin)

Order of integration	**Variables**	**Intercept**	**Trend and intercept**
Level	L Ex	-1.10737	-1.74615
Level	L FD	-8.20523*	-6.71286*
Level	L Imp	-2.56557*	-3.44983*
Level	L HDI	2.73222	-0.42297

Source: Own calculation based on data

Notes: Values with * indicates significant at 1%

Values without * indicates insignificant

As seen in the table 3, while some variables are significant, other variables are insignificant at the level.

Table 4 Augmented Dickey Fuller Test Results at First Difference (Im Peseran Shin)

Order of integration	**Variables**	**Intercept**	**Trend and intercept**
First difference	Δ Ex	-20.8164*	-18.4847*
First difference	Δ FDI	-26.0989*	-23.7488*
First difference	Δ Imp	-22.5375*	-18.6341*
First difference	Δ HDI	-14.3726*	-14.3180*

Source: Own calculation based on data

Notes: Values with * indicates significant at 1%

As seen in the table 4, when Im Peseran Shin test were applied to variables at the first difference, it was seen that variables are significant.

Using non-stationary series in analysis can give results as if there is a relationship between series, although there is no relationship between them. Therefore, in order to eliminate the possibility of such a false or spurious regression, it is necessary to test whether the series are

stationary or not. After taking the first differences of the series, although some variables are stationary at level, all variables were found stationary at the first difference, in other words it was seen that there was no unit root in the test results. At the end, it was concluded in the test result that variables, Export import FDI and HDI, can be used in analysis and will not give spurious results.

4.2 Johansen Co-Integration Test

As it is usually accepted, a minimum of six statistically significant results out of 11 are sufficient to support the existence of co-integration relationships among time series(Enders, 2004). This reasoning comes from Johansen co-integration test's purpose in testing against its null hypothesis that there are no co-integration relationships among them According to statistical theory of hypothesis testing, if the test statistic falls outside of its critical region (defined according to your level of significance - typically 0.05 or 0.01) then the null hypothesis can be rejected and tested further. If six or more test statistics fall outside the critical region, one may draw the inference that the null hypothesis is unlikely to hold and there is enough evidence supporting the co-integration relationship among time series. The exact number of statistically significant results required to provide evidence for co-integration can vary based on context and characteristics of time series being examined; however, six statistically significant results out of 11 is often used as an indicative number (Enders, 2004).

Table 5 Pedroni Intra Dimension Results-Intercept (Export, FDI, HDI)

Variables	Statistics	Probability	Weighted Statistics	p-value
Panel v	1.327695	0.0921	0.741167	0.2293
Panel rho	-2.178905	0.0147	-1.740666	0.0409
Panel PP	-4.113615	0.0000	-3.150972	0.0008
Panel ADF	-3.801976	0.0001	-3.053962	0.0011

Source: Own calculation based on data

Table 6 Pedroni Inter Dimension Results (Export, FDI, HDI)

Variables	Statistics	p-value
Group rho-Statistic	0.278417	0.6097
Group PP-Statistic	-2.201891	0.0138
Group ADF-Statistic	-2.095883	0.0180

Source: Own calculation based on data

As seen in the table 5 and 6, for intra-dimension results, six out of eight statistics' probability are significant and Inter Dimension results, two out of three statistics' probabilities are significant. It means that four of seven statistics are significant. According to the Pedroni co-integration test for model, the H_0 hypothesis (no co-integration between the series) in which the long-lasting effect of HDI and FDI as % of GDP was rejected, hence H_1 was accepted. It can be concluded that there is long term relationship between variables for those countries.

Table 7 Pedroni Intra Dimension Results-Intercept and Trend (Export, FDI, HDI)

Variables	Statistics	Probability	Weighted Statistics	p-value
Panel v	-1.024118	0.8471	-1.696752	0.9551
Panel rho	-0.439442	0.3302	0.064711	0.5258
Panel PP	-3.595612	0.0002	-3.012300	0.0013
Panel ADF	-3.587800	0.0002	-3.234895	0.0006

Source: Own calculation based on data

Table 8 Pedroni Inter Dimension Results (Export, FDI, HDI)

Variables	Statistics	p-value
Group rho-Statistic	1.501352	0.9334
Group PP-Statistic	-2.693116	0.0035
Group ADF-Statistic	-2.180860	0.0146

Source: Own calculation based on data

Table 7 and table 8 showed that for intra-dimension results, four out of eight statistics probability are significant and for Inter Dimension results, two out of three statistics probabilities are significant. It means that four of seven statistics are significant. According to the Pedroni co-integration test for the model, the H_0 hypothesis (no co-integration between the series) in which

the long-lasting effect of HDI and FDI as % of GDP was rejected, hence H_1 was accepted. It can be concluded that there is long-term relationship between variables for those countries.

Table 9 Pedroni Intra Dimension Results-None (Export, FDI, HDI)

Variables	Statistics	p-value	Weighted Statistics	p-value
Panel v	0.294365	0.3842	0.372045	0.3549
Panel rho	0.774466	0.7807	-0.242151	0.4043
Panel PP	0.262493	0.6035	-1.176480	0.1197
Panel ADF	0.274589	0.6082	-0.991460	0.1607

Source: Own calculation based on data

Table 10 Pedroni Inter Dimension Results (Export, FDI, HDI)

Variables	Statistics	p-value
Group rho-Statistic	1.505878	0.9340
Group PP-Statistic	-0.430554	0.3334
Group ADF-Statistic	-0.402656	0.3436

Source: Own calculation based on data

According to results indicated table 9 and table 10 above, there is no significant result. Overall, two out of three tests are significant, so it can be said that there is long run relationship among the variables.

Table 11 Pedroni Intra Dimension Results-Intercept (Import, FDI, HDI)

Variables	Statistics	p-value	Weighted Statistics	p-value
Panel v	2.269724	0.0116	-0.120118	0.5478
Panel rho	-3.075988	0.0010	-2.677787	0.0037
Panel PP	-5.159730	0.0000	-5.368228	< 0.001
Panel ADF	-6.552478	0.0000	-7.256953	< 0.001

Source: Own calculation based on data

Table 12 Pedroni Inter Dimension Results (Import, FDI, HDI)

Variables	Statistics	p-value
Group rho-Statistic	-0.898247	0.1845
Group PP-Statistic	-4.553907	< 0.001
Group ADF-Statistic	-6.735272	< 0.001

Source: Own calculation based on data

Table 9 and table 10 demonstrated that for intra-dimension results, six out of eight statistics probability are significant and Inter Dimension results, two out of three statistics probabilities are significant. It means that four of seven statistics are significant. According to the Pedroni co-integration test for model, the H_0 hypothesis (no co-integration between the series) in which the long-lasting effect of HDI and FDI of% GDP was rejected, hence H_1 was accepted. It can be concluded that there is long term relationship between variables for those countries.

Table 13 Pedroni Intra Dimension Results-Intercept and Trend (Import, FDI, HDI)

Variables	Statistics	p-value	Weighted Statistics	p-value
Panel v	-0.522819	0.6995	-2.901709	0.9981
Panel rho	-0.523990	0.3001	-0.106210	0.4577
Panel PP	-3.897681	< 0.001	-5.152285	< 0.001
Panel ADF	-5.704060	< 0.001	-7.897944	< 0.001

Source: Own calculation based on data

Table 14 Pedroni Inter Dimension Results (Import, FDI, HDI)

Variables	Statistics	p-value
Group rho-Statistic	1.532080	0.9372
Group PP-Statistic	-4.090806	< 0.001
Group ADF-Statistic	-7.043799	< 0.001

Source: Own calculation based on data

According to table 11 and 12, for intra-dimension results, four out of eight statistics' probability are significant and Inter Dimension results, two out of three statistics' probabilities are significant. It means that four of seven statistics are significant. According to the Pedroni co-integration test for model, the H_0 hypothesis (no co-integration between the series) in which the long-lasting effect of HDI and FDI as % of GDP was rejected, hence H_1 was accepted. It can be concluded that there is long term relationship between variables for those countries.

Table 15 Pedroni Intra Dimension Results-None (Import, FDI, HDI)

Variables	Statistics	p-value	Weighted Statistics	p-value
Panel v	0.900455	0.1839	-0.755868	0.7751
Panel rho	0.122498	0.5487	-0.165426	0.4343
Panel PP	-0.551923	0.2905	-1.304568	0.0960
Panel ADF	-0.707677	0.2396	-1.663201	0.0481

Source: Own calculation based on data

Table 16 Pedroni Inter Dimension Results (Import, FDI, HDI)

Variables	Statistics	p-value
Group rho-Statistic	0.660116	0.7454
Group PP-Statistic	-2.082903	0.0186
Group ADF-Statistic	-3.114966	0.0009

Source: Own calculation based on data

According to results in table 15 and table 16 above, there is no significant result. In total, two out of three tests are significant, so it can be said that there is long run relationship among the variables.

Co-integration analysis is used to establish whether there is an ongoing relationship between two or more variables. Before initiating co-integration tests in this study, first differences of series were taken and checked to see if they were stationary; some tests were then run to verify this determination - the series indeed proved stationary! In any event, co-integration analysis is then carried out to establish long-term relations between co-integrated vectors and series.

Empirically, co-integration analysis was utilized to assess whether there is any long-term correlations between export-FDI-HDI and import-FDI-HDI. Co-integration analyses are often used as an approach for establishing long-term relationships among variables.

The variables used in the co-integration analysis are Export - FDI and HDI, import - FDI and HDI. As a result of the test, a long-term relationship was found between export FDI and HDI.

Similarly, test results show that there is a long-term relationship between import FDI and HDI. In other words, if there is an increase or decrease in any of the variables, which are Export - FDI and HDI, in the long term, the other variables will be affected by this situation. Similarly, if there is an increase or decrease in any of the variables, which are import - FDI and HDI, in the long term, the other variables will be affected by this situation.

In sum, this test is one of the key points to see long run relationship. At the end, the test result showed that there is co-integration among the variables, it means that variables move together in the long run.

4.3 Causality Test

Causality test result of the analysis were shown below.

Table 17 Dumitrescu Hurlin Panel Causality Tests

			W-Stat.	Zbar-Stat.	p-value
HDI	→	Export	3.86117	3.41497	0.0006
Export	→	HDI	3.14268	1.93792	0.0526
FDI	→	Export	1.84306	-0.73379	0.4631
Export	→	FDI	2.86401	1.36504	0.1722
FDI	→	HDI	3.50418	2.68109	0.0073
HDI	→	FDI	3.79141	3.27156	0.0011

Source: Own calculation based on data

In table 17 causality test result showed that there is a unidirectional relationship between export and HDI. In this causality relationship, Export doesn't cause HDI significantly (at 5% significance level), although HDI affects export. While there is a unidirectional causality relationship between HDI-export and FDI-HDI, there is no causality relationship between FDI-Export or Export- FDI.

Table 18 Dumitrescu Hurlin Panel Causality Tests

			W-Stat.	Zbar-Stat.	p-value
HDI	→	Import	5.44905	3.31538	0.0009
Import	→	HDI	5.70257	3.71638	0.0002
FDI	→	Import	3.65803	0.48256	0.6294
Import	→	FDI	4.29455	1.48933	0.1364
FDI	→	HDI	5.25997	3.01633	0.0026
HDI	→	FDI	5.05672	2.69485	0.0070

Source: Own calculation based on data

Table 18 showed that while there is a bidirectional causality relationship between HDI-import and there is a unidirectional FDI-HDI. In addition, there is no causality relationship between FDI- import or import - FDI.

(Granger, 1983; Engle & Granger, 1987) showed in their studies that if the variables are integrated at the first difference, if there is a co-integration relationship between the variables, there may be unidirectional or bidirectional causality in the variables. In addition, in this case, the regression in which the existence of co-integration predicted will be free from the factors that cause false or spurious regression. Therefore, causality test can be applied for variables that have a co-integration relationship between them.

As a result of the tests applied, no significant causality was found between export and FDI. When the relationship between export and HDI was examined, it was seen that HDI affects export, but export doesn't affect HDI. In other words, there is a one-way causality relationship between those variables. For example, although an increase or decrease in HDI causes an increase or decrease in export.

Tests result showed that there was no significant causality between import and FDI. When the relationship between import and HDI was checked, it was seen that HDI affects import and import affects HDI. In other words, there are a two-way causality relationship between them. For example, an increase or decrease in import causes an increase or decrease in HDI. Similarly, an increase or decrease in HDI causes an increase or decrease in import. Briefly, analysis showed that the two variables affect each other.

In sum, the Causality test result showed that while there is a unidirectional causality relationship between HDI-export, there is a bidirectional relationship between HDI-import and there is a unidirectional relationship between FDI-HDI. Test results also indicated that there is no causality relationship between FDI- import, import- FDI and FDI- export, export- FDI.

4.4 Panel Data Analysis

Table 19 Panel Data Analysis(Export)

Variable	Coefficient	Std. Error	t-Statistic	p-value
C	17.62730	3.894209	4.526541	< 0.001
FDI	0.121609	0.089274	1.362201	0.1736
HDI	15.04304	5.797737	2.594639	0.0097
Effects Specification Cross-section fixed (dummy variables)				
R-squared	0.855712	F-statistic		159.2132
Adjusted R-squared	0.850337	Prob (F-statistic)		0.000000

Source: Own calculation based on data

As seen table 17 above, R square is very high, so the model is fit.

According to the Panel model estimation results, while the probability of HDI and C are significant at %1, the probability of FDI is insignificant. The co-efficient of HDI was found positive and it is (λ) 15.04. Normally, the interpretation would be like the model showed that 1 unit increase in HDI cause 15.04 unit increase in export. However, since HDI is measured on a scale between 0 and 1, it is more accurate to say that a 1% increase in HDI is associated with a 15.04% increase in exports, rather than a 15.04 unit increase.

Table 20 Panel Data Analysis (Import)

Variable	Coefficient	Std. Error	t-Statistic	p-value
C	14.68683	3.700529	3.968845	0.0001
FDI	0.746393	0.084834	8.798296	0.0729
HDI	25.85248	5.509385	4.692444	< 0.001
Effects Specification Cross-section fixed (dummy variables)				
R-squared	0.879641	F-statistic		196.2045
Adjusted R-squared	0.875158	Prob(F-statistic)		0.000000

Source: Own calculation based on data

As seen table 18 above, R square is very high, so the model is fit.

According to the Panel model estimation results, the probability of FDI, HDI and C are significant at %1. The co-efficient of HDI was found positive and it is (λ) 25.85. Since HDI is measured on a scale between 0 and 1, it is more accurate to say that a 1% increase in HDI is associated with a 25.85% increase in import.

In this section, panel data analysis has been carried out using data from the period 1990-2018. In the analysis, export was used as dependent variable, Human Development Index published by UNDP and FDI was used as independent variables. In the analysis, as in the causality analysis, a significant relationship between FDI and export has not been detected. However, contrary to this situation, a significant relationship has been found between export and HDI, and this relationship is positive.

When developed countries' economies are investigated, it is seen that countries with high export volumes also have a high level of welfare. Therefore, export is important for countries. When the literature is reviewed, HDI was generally used as the dependent variable in the studies, and export was used as the independent variable. So, the aim of this analysis was to make a contribution to eliminate this deficiency, therefore the export was used as dependent variable and HDI was used as independent variable.

Based on the literature, it was inferred that export and import are important to increase the development and welfare levels. In order to increase exports and human development level, regulations must be made by public institutions in developing countries.

In the research HDI and FDI were used as independent variables while export and import used as dependent variables.

HDI is calculated based on three key elements: health, knowledge and income level. These elements are essential to a high quality of life and play a key role in human development. The study shows that these factors not only contribute to human development but also contribute to export. As a result, increasing HDI is also important for export, and public institutions play an important role in this case.

One of the components of HDI is health and another is knowledge. Improving those conditions may be beneficial in terms of trade. Another dimension of HDI is a decent standard of living and measured by GNI per capita. Raising GNI and fair income distribution within the country are

important for welfare. It should be done by the government, that is, by the public institutions, to spread the wealth throughout the country and to increase the income.

In order to increase GNI per capita, it is important to reach high level education. Trained, educated and qualified employees is also another crucial point, because trained workforce will work with higher productivity. High productivity will reduce both costs and increase profitability. Another issue may be strengthening the infrastructure, for example improving transportation facilities, providing facilities during production, improving telecommunication services such as internet service. Startup companies should be supported by the government. This support may be provided as consultancy service or economic support.

4.5 Hypothesis Result

This section of the thesis provides summary of the study results, specifically in relation to the hypotheses that were developed at the outset of the research.

a- The initial stage of the analysis involved performing unit root tests to determine whether the variables were stationary at the first difference. The findings of the thesis indicated that after taking the first differences of the variables, there was no unit root in the series, indicating that the variables (export, import, FDI and HDI) could be utilized in the analysis without yielding spurious results.

b- To identify the long-term relationship between the variables, a co-integration test was conducted. The test indicated a long-term relationship between export and FDI, as well as between export and HDI, and similarly, between import and FDI and import and HDI.

c- Causality tests were performed in the third step. The literature suggests that unidirectional or bidirectional causality may exist in the variables if a co-integration relationship exists between them. The results of the tests showed that there was no significant causality between export-FDI and import-FDI.

d- The causality test result between export-HDI and import-HDI revealed that HDI had an effect on export, but export did not have an effect on HDI. Regarding the

relationship between import and HDI, it was discovered that HDI had an effect on import, and import also had an effect on HDI.

e- In the final step, panel data analyses were conducted. The results showed that there was no significant relationship between FDI-export and FDI-import.

f- The panel data analyses revealed a significant positive relationship between HDI-export and HDI-import.

The results presented in sections a through f provide a comprehensive analysis of the relationships and causality among the variables under investigation. These findings serve as the basis for the evaluation and acceptance/rejection of the hypotheses proposed at the outset of the research, as discussed in (i) and (ii).

i. Hypotheses H0b and H0d, which claim there is significant causality and relationship between export and FDI and import and FDI respectively, were rejected based on findings presented in section c that demonstrated no causality between these factors; similarly in section e which used panel data analyses demonstrated no meaningful relationships between FDI-export and FDI-import relationships.

ii. H0a: There is a significant causality and relationship between export and HDI and H0c: There is a significant causality and relationship between import and HDI hypothesis are accepted. Because as mentioned in d, there is causality relationship between export – HDI and import – HDI. As mentioned in f, panel data analyzes supports causality analysis. Because result indicated significant relationship between HDI - export and HDI – import.

5. CONCLUSION AND RECOMMENDATION

International trade involves buying and selling of goods and services between different nations, which involves activities like importing/exporting of products/services, foreign investments, labor migration across national boundaries and labor force mobility. Global trade has historically been an engine of economic development; giving countries access to new markets, resources and production capacities they could otherwise never access or focus on producing competitive products/services in which their economies excelled. Through globalization and technological progress however, its scale has exponentially grown as countries become interdependent on one another and more interdependent in recent years than ever before - both interdependence increases trade volumes significantly among nations involved and dependency among them all involved parties involved.

While economies are growing it is seen that economic growth alone does not bring prosperity to the people. It has been noted that countries that are productive and closely track technological progress and invest in their growth are at the top of the human development index rankings. There are significant gaps in both humanitarian and economic factors between developing and developed countries. No high levels of human development can be expected in countries with factors such as inequality and other unfavorable circumstances. Therefore, economic growth, economic development and human development should be considered together to reach high level welfare.

Development economics and institutional economics are similar in that they aim to explain the growth differences among the countries.

In general, institutional economics is an approach which attempts to express economic processes, focusing on government institutions and by considering social factors. According to the institutional economics models, the source of welfare differences among the countries is emerged from differences in social structures and therefore the structures of institutions. The institutional economics approach indicates the economic and social systems are different and the various institutional structures are linked to this situation. In the institutional economics approach, organizations are influenced by the structure of society, and these institutions form the behavioral habits of individuals and communities.

Development economics is a field of study that concentrates on the economic growth and reduction of poverty in low-income nations. It looks into the factors that lead to these

developments and determines policies and methods to achieve sustainable and inclusive progress. This field covers a variety of topics including poverty and inequality, trade and investment, education and health, infrastructure and institutions, and the environment and natural resources.

Researchers seek to clarify the discrepancies between developing and developed countries on a number of economic and non-economic factors. There have been several opinions on understanding the differences in development among countries and with several studies, this situation has been explained in various ways.

In this aspect the purpose of this study is to investigate the economic factors such as foreign direct investment and non-economic factors like human development index on trade and to explore the role of public institutions in relation to it. While export and import variables were used as dependent variable, FDI and HDI were used as independent variables in the analysis. Panel data analysis was used to evaluate the relationship of the data collection.

In the analysis developing countries were used because studying developing countries is important in development economics as these nations often face challenges and opportunities in terms of economic growth and poverty reduction. They usually have lower levels of economic development, weaker institutions, and greater inequality than developed countries. These characteristics make them more susceptible to economic shocks and harder to develop sustainably. Developing countries also offer potential for rapid economic growth and poverty reduction through economic development. By examining these countries, economists can gain understanding of the factors that promote or hinder economic development and identify policies and strategies that can support sustainable and inclusive growth. Countries that did not have data were excluded, resulting in a total of 25 developing countries being included. The period of 1990 to 2018 was chosen as the time frame for analysis as it encompasses the range of the oldest and most recent Human Development Index (HDI) data available at the time the study was conducted.

To begin the analysis, unit root tests were performed to see whether the variables were stationary at the first difference. When using non-stationary series in analysis may produce results which indicate a relationship between series even there is none. To avoid the possibility of a false or spurious regression, it is crucial to verify if series are stationary. According to the results in this thesis, there was no unit root in the series after taking the first differences of the variables. In

other words, the test results showed that the variables export, import, FDI and HDI can be used in the analysis without producing spurious results.

Following stationarity tests, the co-integration test was used to see the long-term relationship. Co-integration analysis is used to establish whether two or more variables possess long-term relationships. Before conducting the co-integration test in this analysis, first differences of series were taken and tested against their stationarity status. The series have been found to be stationary. The co-integration analysis was then performed to evaluate the long-term relationship among those co-integrated vectors.

It was empirically investigated whether there is a long-term relationship among export and FDI or HDI, as well as import and FDI or HDI. The test revealed a long-term relationship between export and FDI and export - HDI. Similarly, test results show that import and FDI and import and HDI have a long-term relationship. In other words, when any of the variables, including export, FDI and HDI increases or decreases in magnitude, other variables will be influenced in the long term. If either import variables FDI and HDI increase or decrease significantly over time, other variables could also be adversely impacted.

At the third step causality tests were applied. According to the literature, there may be a unidirectional or bidirectional causality in the variables if there is a co-integration relationship between them and the variables are integrated at the first difference. It means that the regression model will be free of the factors that lead to incorrect or spurious regression, so the causality test can be used for the estimation.

Test results demonstrated no significant causal relationship between export and FDI. When considering the relationship between HDI and export, it becomes apparent that while HDI has an influence over export but none on HDI. Thus there exists a uni-directional relationship between variables; an increase or decrease in HDI causes an equivalent rise or decline in exports.

Analysis results showed that there was no significant causality between import and FDI. When the relationship between import and HDI was examined, it was found that HDI has an effect on import and import has an effect on HDI. In other words, variables have a bidirectional relationship. A change in import, for example, causes a change in HDI. In the same way, an increase or decrease in HDI causes an increase or decrease in import. In summary, variables import and HDI have a bidirectional causality relationship.

At the final step, panel data analyzes were performed by using data from 1990 to 2018. Export and import were used as a dependent variable, while human development index and foreign direct investment were used as independent variables. According to the analysis, there was no significant relationship between FDI - export and FDI - import, in the study, as it was in the causality analysis. In contrast to that, a significant relationship was discovered between HDI - export and HDI - import, and it was a positive relationship.

According to the test results, while 1% increase in HDI is associated with a 15.04% increase in exports, 1% increase in HDI is associated with a 25.85% increase in import. Thus, if countries desire to positively impact their exports and import, they should increase human development level. Since import as one the well-being indicator and exports have a particular significance in the development and strengthening of the economy, the government should strive to increase HDI as an activity.

The HDI is measured using three main factors: health, knowledge, and income. These components are essential for a high quality of life and play an important role in human development. These factors, according to the report, not only contribute to human development but also to import power. As a result, rising HDI is critical for trade, and public institutions play a key role in this respect.

Institutional and development economics asserts that when there is a correlation between human development index (HDI) and import/export ratios and imports/exports rates, that implies nations or regions with higher levels of human development can import more goods and services, while regions or nations with high HDI levels tend to have businesses capable of exporting these same goods/services more likely. This underscores human development's significance in economic growth and international commerce by linking positively to enterprises' capacity for import/export of products/services between import/export capacities of enterprises based on HDI values.

In sum, investing in human development by promoting education and healthcare, which can increase productivity and competitiveness in international trade; Prioritizing poverty reduction and economic stability by implementing policies that increase purchasing power are crucial in terms of trade and HDI. Institutions should monitor and analyze the connection between HDI

and trade regularly to understand the changing dynamics of the relationship and to adapt policies accordingly. It is also important for governments to cooperate and coordinate their efforts in order to address the different aspects of human development and ensure that everyone has the opportunity to succeed. This includes working together to address issues related to education, health, economic development, social welfare, and the environment, among other areas. By working together and coordinating their efforts, governments can more effectively address the needs of individuals and communities and promote the overall well-being and prosperity of society.

6. NEW SCIENTIFIC RESULTS

This research has made a contribution to existing knowledge and introduced a new perspective on the topic of trade HDI and FDI. To make the study's findings more relevant to many countries, data from multiple countries was utilized rather than just data from one country, thus making the results of the study applicable to a larger number of countries. So, the study offers valuable insights into factors that influence decision maker in challenging markets, specifically focusing on developing countries.

Using the different database and different statistical methods, it was analyzed that effects of HDI and FDI on trade variables import and export by countries.

Developing countries often struggle to achieve a high level of welfare due to various difficulties, one of the ways to overcome these difficulties is through exports. State interventions and support are sometimes necessary to boost exports, and these supports are typically provided to sectors directly linked to the economy. However, this study considered non-economic variables that also have a direct impact on the economy, such as the Human Development Index (HDI) which includes dimensions like long and healthy life, knowledge, and decent standard of living. Through analysis, it was found that an increase in HDI had a positive effect on exports.

Import levels can provide an indication of a country's level of economic development. Countries that import at high rates generally enjoy strong economies and higher standards of living as they can purchase goods from other nations at relatively affordable prices. But import levels alone do not indicate this fact - high importers may have high trade deficits, current account deficits or other economic problems which require attention as well. A country with low import levels could indicate less development; alternatively it could indicate domestic production powering the economy or an effective protectionist trade policy that restricts access to foreign markets - this study explored positive aspects associated with imports while finding that an increase in HDI had a direct positive effect on imports as a positive influencer on imports overall.

My thesis focused on exploring the relationships among human development, foreign direct investment (FDI) and international trade in developing countries. My aim was to gain valuable insight into factors affecting decision makers in challenging markets within developing nations; furthermore providing new perspective into international trade and investment processes and

complexity. Through data from multiple countries and various statistical methods I was able to make some new scientific findings that are listed below.

1- I have discovered that an increase in Human Development Index (HDI) had a positive influence on exports in developing countries, suggesting that non-economic factors play an integral part in stimulating economic development via international trade.

2- The International Institute has found that increasing HDI had a beneficial impact on imports, suggesting that increased access to knowledge and technology can facilitate accessing foreign markets as well as increasing domestic consumption.

3- In spite of my expectations, my findings showed no conclusive relationship between Foreign Direct Investment (FDI) and import/export trade, thus emphasizing the complex and multidimensional nature of international trade/investment and necessitating further research to comprehend factors driving trade patterns in developing nations.

4- Utilizing data from multiple countries and applying various statistical techniques, I provided insightful analyses into the key factors affecting decision makers in challenging markets - specifically developing countries - while offering fresh perspectives on HDI, FDI and trade relations.

7. SUMMARY

Globalization has led to increased interconnection of economies and an ever-evolving trade environment, making trade an essential driver of economic development across both developing and developed nations alike.

Exporting is crucial for any country's economy as it generates income, creates employment opportunities, and increases competitiveness by providing access to new technologies and business practices from around the globe.

Importing is another essential element of trade. One advantage is access to goods and services not produced locally - these could include raw materials for manufacturing, finished products for consumption, or specialized equipment or technology that cannot be produced domestically. Imports also help increase competition within domestic markets which in turn results in lower prices and improved quality products for consumers, driving economic growth by creating demand for domestic goods and services and thus driving economic expansion; high import levels also signal strong economies with access to international resources and products.

FDI can play a vital role in any country's economy by providing capital, technology and job opportunities. FDI can drive economic growth by stimulating domestic consumption of goods and services while simultaneously improving balance of trade by decreasing reliance on imports while increasing exports. Furthermore, FDI contributes to new industries being established within host countries and the transference of knowledge and skills transference resulting in reduced prices and better quality products being made available for consumers.

Economic growth alone cannot provide an accurate assessment of population welfare; that's why the Human Development Index (HDI) has become such an invaluable indicator. Therefore, to achieve high levels of welfare in a society it is crucial that economic development and human welfare be examined together as key metrics of well-being.

Institutional economics is essential when considering trade and human development; its studies show how trade regulations, political systems, and broader economic systems of a nation all impact economic growth as well as citizen welfare.

Few studies have examined the effect of HDI on trade, yet many factors impacting it have been studied extensively. With that in mind, this thesis explores the relationship among trade, foreign direct investment, economic growth, human development, institutional economics and developing countries; specifically developing nations. Focusing on developing nations offers several advantages; such as opportunities to observe high economic growth and development revealing interesting aspects such as obstacles to it or shifts in its structure or the impact of institutions.

The analysis includes 25 developing countries, after removing countries with missing data. The time frame for the analysis is 1990 to 2018, as it covers the range of the oldest and most recent HDI data available at the time of conducting the study.

To analyze the data, the Augmented Dickey-Fuller Test was first applied to determine if the variables were stationary. The results showed that the variables were stationary at the first difference, indicating that the data would not produce inaccurate results in further analysis. Next, the Johansen co-integration test was applied and the results indicated that there is co-integration among the variables, meaning that the variables move together in the long run. Thirdly, the Dumitrescu Hurlin causality test was applied to the variables. The results of these tests indicated a unidirectional relationship between HDI and export, and bidirectional between HDI and import. Furthermore, causality relationships were observed between FDI and HDI but none between export/import.

Panel data effect analyses confirmed the positive relationship between export and HDI. Unfortunately, however, no significant relationship was revealed between FDI investments and import/export activities; this may be caused by various reasons, including sectors not directly connected with import/export or consumption being directed at domestic consumption rather than exports and imports. Conversely, import and HDI were discovered to share an association.

In conclusion, non-economic variables like HDI, which encompasses factors such as long and healthy life, knowledge, and a decent standard of living, have a positive impact on trade. Improving these conditions will lead to increased trade activity Institutions, both economic and non-economic, all play an essential role in society and its economy. No single institution can claim to be superior at fostering human development across various aspects; each plays an essential part. Each institution should collaborate closely in order to be most effective.

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