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RESEARCH PAPER

Analysis of the US Unilateral Trade Policy for the Developing Countries Impact on Trade Creation

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ABSTRACT

This study investigates the effects of the US unilateral trade policy on exports from beneficiary developing countries (BDCs) to the US market. It utilizes the Gravity model framework of international trade, employing the core gravity equation introduced by Tinbergen (1962) and Poyhonen (1963), and augments it with Batra's (2006) framework to account for other determinants of trade. The analysis focuses on factors such as Generalized Scheme of Preferences (GSP) imports, logistic performance index (LPI), Human Development Index (HDI), Concentration index, Global Innovation Index (GII), and dummy variables representing the African Growth & Opportunity Act (AGOA), Least Developing Countries (LDC), and landlocked countries. Surprisingly, the study finds that GDP has a negative impact, while distance has a positive impact on exports, contrary to the assumptions of the gravity model. The results also show a positive effect of GSP imports, but a significant negative impact of the AGOA variable on BDC exports. Moreover, the study highlights the positive influences of LPI and HDI on BDC exports. However, the Global Innovation Index and Concentration Index do not show significant effects on BDC exports. Therefore, the study suggests that BDCs should focus on enhancing human development and infrastructure to exploit export potential, as highlighted by the study's findings.

KEYWORDS Beneficiary Developing Countries BDCs, Generalized scheme of Preference (GSP), Non-reciprocal, Unilateral Trade Policy

Introduction

The Generalized Scheme of Preferences (GSP), established in 1968 under the United Nations Conference on Trade and Development (UNCTAD), offers trade preferences to Beneficiary Developing Countries (BDCs) through duty-free and nonreciprocal treatments for specific imports. Unlike the World Trade Organization's (WTO) principles, the GSP allows industrialized countries to provide preferential access to developing nations as aid. The US (GSP), created in 1971 under the Trade Act of 1974, reduces duties on specific products from over 119 designated beneficiary countries/territories.

While many studies have analyzed the impact of the GSP scheme on trade creation in developing countries, a comprehensive analysis of the US GSP scheme is needed. This study aims to fill this gap by examining the US GSP scheme and its various programs. The GSP program's rationale is to stimulate economic growth in developing nations by integrating them into international trade, ultimately reducing poverty and improving living standards.

To assess the relative impact of these variables, the study employs an augmented gravity model framework of (Batra, 2006). Historically, economists to analyze bilateral trade factors such as legal systems, common borders, currencies, colonial legacies, and languages have used the gravity model. However, it has also been applied to study trade

policies and agreements. This study incorporates various variables highlighted in the literature, such as the global innovation index, logistic performance index, product concentration index, (HDI), and the extended preference program AGOA of the US. The analysis aims to provide valuable insights into the effectiveness of the GSP program in promoting trade and economic development in developing countries, with implications for policymakers, trade bodies, and international organizations involved in promoting trade and development in these nations.

The unilateral and non-reciprocal trade policies of the developed world are the subject of debate. Kohnert (2015) argues that these policies have catered to the export interests of the developed world at the expense of inclusive growth. Similarly, Young & Peterson (2013) find a paradox at the heart of this relationship of development. Whereas some authors argue that these policy initiatives have adverse impacts on developing countries due to stringent non-tariff barriers such as product regulation, technical measures, and sanitary and phytosanitary requirements.

However, there is vast literature available on the promising outcomes of these non-reciprocal trade policies for trade creation in developing countries. Nevertheless, it is also debated that the benefits of this preference are uneven for different beneficiary countries because some developing countries have benefited more than others (Persson & Wilhelmsson, 2007; Nilsson, 2007; Sorgho & Tharakan, 2019).

Persistent inequality in living standards, economic development, and welfare between the developed and the developing world persists despite decades of unilateral trade policies. Therefore, this study aims to analyze the effectiveness of the US's Unilateral Trade policy, which promises to reduce disparities in economic development and poverty post waivers of the General Agreement of Trade and Tariff (GATT) in its multilateral trade regime, such as "Reciprocity," "Non-discrimination," and the MFN (Most Favored Nation) rule. Thus, this study focuses on the desired effect of the US's unilateral preference margin and identifies factors/drivers of trade that contribute to trade flows of developing countries under the US unilateral trade policies

Literature Review

Globalization and increased market integration are perceived as drivers of economic growth and development by facilitating exchange among individuals, businesses, and governments. This perception suggests a potent tool for countries to leverage for economic development, enhancing living standards and alleviating poverty (Dollar, 2005). However, the benefits of this development have been uneven, with significant improvements in living conditions in some areas while progress has been slower in others.

Brandt (1980) argued that there is a significant gap in living standards along the North-South divide due to the North's successful trade in manufactured goods. He proposed a visual representation of this divide, known as the Brandt Line, which has become famously known as the "Global North and Global South." This concept refers to the disparity in economic growth, where the Global South represents lower-income countries and the Global North refers to developed countries (Wolvers et al., 2018). Brandt emphasized the importance of reducing global inequality by proposing the transfer of resources from developed to developing countries, noting that the latter mainly trade in intermediate goods and earn relatively lower revenue.

Scholars like Solarz, (2012) offer a contrasting view, arguing that by examining various factors of global development such as GDP growth, the (HDI), and the Happiness Index, the assertion made by Brandt regarding rich and poor countries may not hold true. Suggesting that these alternative development indicators depict a global shift, citing China

and Sub-Saharan Africa as examples, challenging Brandt's thesis that the North-South divide is an accurate representation of global development.

Lees (2021) evaluated the Brandt Line's relevance after four decades since its popularization, assessing its contemporary significance in global inequalities and international relations. Through an evidence-based systematic assessment, Lees concludes that the Brandt Line is still relevant, as comparative income levels remain unchanged and countries south of the divide are as dissatisfied as they were four decades ago.

The debates surrounding the world's division between the developed North and the poorer developing countries of the South, focusing on inequality and poverty, were central to the understanding of the global landscape from the 1960s to the late 1980s. These debates drove the activities of scholars and policymakers alike. It was during this period that early proponents of the idea of developing countries fostering industrial capacity, such as Love, (1980) and Singer (1950), gained prominence. Their main arguments centered around the need for developing countries to build non-traditional industrial capacity to reduce import dependence and diversify export commodities.

According to Frankenhoff (1962), the progress of technology in the world economy has been uneven, leading to a division between industrial centers and peripheral countries engaged in primary production, which forms the core of Prebisch's theory of industrialism. He argues that the laissez-faire approach lost its influence in the face of political and economic interests, leading to the popularity of the more protectionist theory of Friedrich (Henderson, (1982). Therefore, weaker countries must adopt a judicious combination of policies to become competitive at the production level before engaging in free trade.

The world trading system has evolved significantly since the establishment of the General Agreement on Tariffs and Trade (GATT) in 1947. The UN Conference on Trade and Development (UNCTAD) in 1960 and early 1971 saw debates on disparities and policy conflicts with GATT's principles, resulting in waivers that allowed developing countries to implement protectionist policies. These waivers permitted tariff preferences on goods, granting developing countries leeway within the GATT regime.

Scholars worldwide have evaluated the impact of these waivers and have compared the trade effects of the EU and US non-reciprocal preferential trade agreements (NRPTA). Nilsson (2007) argues that the EU's GSP scheme has a greater trade-creating effect than the US's GSP program, particularly benefiting the poorest countries. Sorgho & Tharakan (2019) suggest that extended programs such as EBA and AGOA offer limited benefits, noting that products exported by developing countries often do not fully utilize the preferential margins, leading to the underutilization of associated products. Unilateral or (GSP) programs for developing countries have a mixed history of success and failure, with criticisms including limited product coverage, which some argue is intentional to protect domestic industries (Snyder, 2011)

Despite criticisms, proponents argue against labeling the unilateral (GSP) programs, like the US GSP scheme, a failure, citing extensive literature supporting its uneven but significant benefits for developing countries. Richer developing countries with diversified export baskets, such as Taiwan, Singapore, Mexico, and Malaysia, have historically benefited more. In contrast, the least developed countries in sub-Saharan Africa, along with countries like Pakistan, Haiti, and Nepal, are among the least beneficiaries, receiving minimal assistance (Seyoum, 2006). Numerous studies have analyzed the impact of unilateral trade preferences of the U.S and EU on trade creation in developing countries. Özden & Reinhardt (2005) suggest that countries that graduated from the GSP program adopted more liberal reciprocal trade policies, indicating that full integration into the world international trade regime may be more beneficial than continuing unilateral GSP preference programs. Persson & Wilhelmsson (2007) argue that certain preference systems have a large trade

creation effect, citing the EU preference program for African, Caribbean, and Pacific (ACP) countries, which increased exports by 30%.

Gamberoni (2007) studied the effect of unilateral preferences on export diversification, suggesting that the GSP program for least developing countries did not affect their export pattern significantly. However, the traditional preference regime for combating drug products recorded a diversification effect. Rubbo & Canali (2008) analyzed the impact of the EU and US unilateral trade policies on agri-food products, finding that the EU policies had a larger trade-creating effect, especially for upper-middle-income countries.

Hoekman and Nicita (2011) analyzed the effect of trade policies and trade costs on developing countries' exports, finding that logistics and trade facilitation had a greater positive effect on trade creation than preference margin (tariffs). Sorgho & Tharakan (2019) argued for other policy tools, such as "Aid for Trade" and reduction of non-tariff barriers, to support exports for developing countries in light of limited benefits from GSP schemes.

Mukhopadhyay and Sarma (2020) studied the impact of India's withdrawal from the US GSP program, finding that it would affect India's exports to the US market at the product level, with varying effects across product codes.

After reviewing the relevant literature, we hypothesized that

H1: Trade between the U.S and the developing country is significantly being influenced by the size of their economy and the proximity between them.
H2: The Unilateral Trade Policy of the U.S has a significant effect on the trade creation of beneficiary developing countries.
H3: The extended preferential margin of AGOA for sub-saharan beneficiary developing countries has a significant negative impact on the exports of all BDCs to the US.
H4: The standard GSP program for beneficiary developing countries has significant trade creating effect than the AGOA, LDC & landlocked.
H5: Logistics performance of a country has a significant impact on trade creation than the preference margin under the GSP scheme.
H6: The innovation level of a country has a significant impact on trade creation than the preference margin under the GSP scheme.
H7: Product concentration of a country has a significant impact on trade creation than preference margin under the GSP scheme.
H8: Human developing of a country has a significant impact on trade creation than preference margin under the GSP scheme.

Material and Methods

This study utilizes the gravity model framework, which derives from Newtonian physics laws. According to this model, trade between two countries is determined by the size of their economies and the distance or proximity between them. It represents the flow of trade between two countries as a function of their characteristics (such as origin and destination) and certain obstacles to trade.
Isard (1954) initially introduced the gravity model in the economic world. The core gravity equation has been used for empirical analysis since the econometric studies of trade by (Tinbergen, 1962) and (Poyhonen, 1963).

The basic model for the trade between two countries (i & j) is defined as below:

$$Fij = G.\frac{(MiMj)}{Dij} \qquad \text{(Equation 01)}$$

In the gravity model, the trade flow (F) between two countries or regions (ij), M in this equation signifies the economic dimension of the trading partner, and G is the gravitational constant whereas D exhibits the distance coefficients being measured. For economic analysis, this equation can be changed into a linear form by employing logarithms**. Gravity model basic form for regression analysis after employing logarithms.**

Log Xij = c + b1 log GDPi + b2 log GDPj + b3 log Dij + eij (Equation 02)

Whereas Xij indicates exports proceeds from country i to country j, GDP i and j indicates country's gross domestic products, Dij variables indicates geographical distance between countries and eij in the model is an error term.

Despite criticism for its weak theoretical foundation, the gravity model has shown empirical robustness in analyzing trade flows. While some argue against its predictive use due to theoretical weaknesses, others find its consistency with empirical data useful for practical applications.

Early justification for the model was provided by Linnermann (1966), with Anderson (1979) and others offering theoretical foundations. Deardorff (1998) showed its consistency with various trade models, while Evenett and Keller (2002) highlighted the importance of the H-O model and increasing returns to scale in explaining the gravity equation's success. The Heckscher-Ohlin model predicts that countries will export goods that use locally abundant factors and import those using scarce factors. While New Trade Theories emphasize increasing returns to scale and network effects, suggesting that most trade occurs between similar countries (Krugman, 1979).

Theoretical/Conceptual Framework

The study's conceptual framework focuses on the economic integration of developed and developing countries to enhance welfare and bridge the North-South divide, involving harmonizing economic policies and eliminating trade barriers. This integration's theoretical foundation dates back to the 1950s (Viner, 2014), with Balassa (2013) summarizing its benefits, including reduced trade barriers leading to economic and political integration. Ricardo's theory of comparative advantage (Costinot & Donaldson, 2012) further supports the benefits of free trade, advocating for specialization and trade based on comparative advantage. The study employs this conceptual model to assess the relative impact of the US GSP policy and other trade determinants.

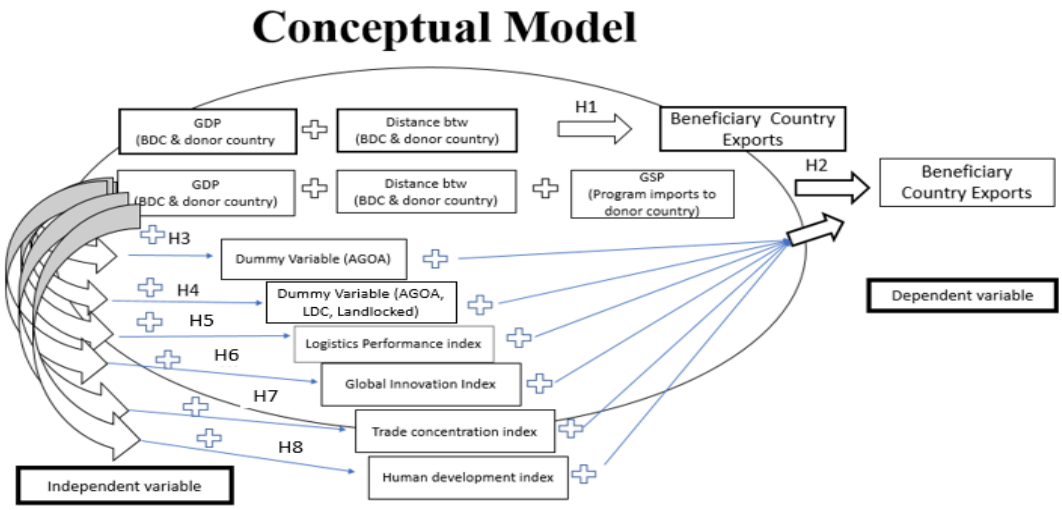


Figure 1: Conceptual model of the study

Research Design

The study uses multivariate regression analysis to explore the significance of independent variables on the dependent variable, employing a positivist philosophy for empirical testing. It adopts deductive reasoning and a mono method approach, specifically explanatory (causal) quantitative research design, utilizing panel data estimation techniques like multivariate regression analysis. Thus, the study employs panel data and estimation techniques to determine the dependency of developing countries' trade flow on US imports under the (GSP) Program, logistic performance, Level of innovation, product diversification/concentration, and Human Development Index.

Data collection and Variables

The data for this study was sourced from secondary data like World Bank Database, World development indicator, WIPO (World Intellectual Property Organization) Annual Reports ,USITC (the United States International Trade Commission), UNCTAD (United Nations Conference on Trade and Development), and ITC Trade Map .

Table 01
Description of Variable and Measuring Techniques

No	Variable	Methodology	Source
	Econometric Models	$LnExports = b_0 + b_1LnGDP_{ij02} + +b_2Ln(Remote\ Distance) + e_{ij}$ $LnExport = b_0 + b_1\ LnGDP_{ij02} + b_2Ln(Remote\ Distance) + b_3LnGSPImp + e_{ij}$ $LnExports = b_0 + b_1LnGDP_{ij02}\ b_2Ln(Remote\ Distance + b_3LnGSPImp\ b_4DAGOA + e_{ij}$ $LnExports= b_0 + b_1LnGDP_{ij02}+ b_2Ln(Remote\ Distance + b_3LnGSPImp\ b_4DAGOA + b_5DLDC + b_6\ DLL + eij$ $LnExports = b_0 + b_1LnGDP_{ij02}+ b_2Ln(Remote\ Distance + b_3\ LnGSPImp + b_4\ LnLPi+ eij$ $LnExports= b_0 + b_1LnGDP_{ij02}+ b_2Ln(Remote\ Distance + b_3LnGSPImp + b_4LnGII + e_{ij}$ $LnExports = b_0 + b_1LnGDP_{ij02}+ b_2Ln(Remote\ Distance + b_3LnGSPImp + b_4\ LnCon_{ij} + e_{ij}$ $LnExports= b_0 + b_1LnGDP_{ij02}+ b_2Ln(Remote\ Distance + b_3LnGSPImp + b_4\ LnHDI_{ij} + e_{ij}$ Where, LnExports is log value of BDCs Exports to the US LnGDPij is the log of sum of GDP trading partners Ln(Remote is Log value of (Distance multiple by BDC GDP divide by world Gdp) LnGSPImp is log value of Import to the US under GSP from BDC and LDBDC DAGOA is dummy variable of African Growth & Opportunity Act DLDC is dummy variable of least developing countries DLL is dummy variable of landlocked countries amoung BDCs LPLPI is log value of logistic performance value of BDCs LnGII is log Global innovation index of BDCs LnCon is log value of concentration index Of BDCs LnHDI is log value of Human development index value of BDCs	
1	LnExports	BDCs exports to the US	ITC Trade Map
2	GDP (BDCs & Donor Country)	Log value of (US GDP + BDC GDP)	World development indicator
3	Distance (BDC & Donor Country)	Log value of (Distance value multiple by BDC GDP Divide by world Gdp) Distance data for BDC busiest sea port to the donor country US busiest sea port Los Angeles	https://sea-distances.org/H5seaport

4	GSP Program Imports	imports to the U.S under GSP for BDCs and AGOA for LDBDCs	United States International Trade Commission (USITC).
5	Dummy Variables (DAGOA, DLDC, DLL)	Using dummy variable to estimate the effect of these dummy variable in econometric model, if exist 1 otherwise 0	USITC,
6	Logistics Performance Index (LPI)	Weighted average value at the country level comprising six dimensions Logistic service quality, infrastructure quality, Custom performance, Shipment arrangement mechanism, and Track and trace system of consignments. Which measures the relative efficiency and ease of products that can be moved into and inside a country.	World Bank
7	Global Innovation Index (GII)	The GII is an aggregated sum of 8 pillars comprised of 81 different variables, that include five input pillars Human capacity, Technology sophistication, Infrastructure, Business market and Capital, and three output pillars comprise Competitiveness, Knowledge, and wealth.	WIPO (World Intellectual Property Organization) Annual Reports
8	Trade Concentration Index	When the estimated result = 1, it means that a country is exporting only a single product and closer the estimated result to zero, the more diversified is the export basket	UNCTAD
9	Human Development Index	Life Expectancy Index (LEI) LEI is equal to 1 when life expectancy at birth is 85 years, and 0 when life expectancy at birth is 20 years. 2. Education Index (EI) 2.1 Mean Years of Schooling Index (MYSI) Fifteen is the projected maximum of this indicator for 2025. 2.2 Expected Years of Schooling Index (EYSI) Eighteen is equivalent to achieving a master's degree in most countries. 3. Income Index (II) II is 1 when GNI per capita is $75,000 and 0 when GNI per capita is $100. Finally, the HDI is the geometric mean of the three normalized indices	UNdata

Statistical Analysis

This section covers the descriptive analysis of all variables included in this study, their correlation matrix and econometric analysis:

Table 2
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ln(Exports)	750	8.29	24.82	18.36	2.95315	-0.298	0.089	0.248	0.178
Ln(GDP02)	750	49.44	59.37	54.31	1.90199	0.238	0.089	-0.026	0.178
Ln(Remote Distance)	750	-6.42	3.47	-1.571	2.03027	0.102	0.089	-0.112	0.178
Ln(GspImp)	750	1.5	24.16	11.06	5.0238	0.44	0.089	-0.47	0.178
HDI	750	0.34	0.96	0.6261	0.12436	0.003	0.089	-0.863	0.178
LnHDI	750	-1.08	-0.04	-0.4888	0.20544	-0.324	0.089	-0.824	0.178
LnGII	400	2.67	3.72	3.3446	.21422	.046	-.421	.122	-.331
LnLPI	400	.71	1.33	.9787	.11621	.014	.506	.122	.147
LnCon	400	-2.69	-.22	-1.3345	.59001	.348	-.272	.122	-.733
DLL	750	0	1	0.3067	0.46142	0.84	0.089	-1.297	0.178
DAGOA	750	0	1	0.3867	0.48731	0.466	0.089	-1.787	0.178

DLDC	750	0	1	0.32	0.46679	0.773	0.089	-1.406	0.178
Valid N (listwise)	750								

Table 01 provides a detailed statistical analysis of all study variables, based on 750 observations with no missing data. The key statistics include mean, median, mode, standard deviation, skewness, and kurtosis.

The distance and dummy variables exhibit smaller standard deviations compared to GSP imports, which have the largest deviation, indicating higher data dispersion. Skewness values are close to zero for all variables, while kurtosis values are also near zero, indicating mesokurtic distributions for all variables.

Table 3
Correlation Matrix

	LnExports	LnGDP02	LnRemtedistance	LnGspImports	LnCon	LnGII	LnLPI
LnExports	1						
LnGDP02	-0.0217	1					
LnRemtedistance	0.5571	0.0299	1				
LnGspImports	0.28	0.1276	0.6094	1			
LnCon	-0.2276	-0.0308	-0.3115	-0.0079	1		
LnGII	0.198	-0.1025	0.2956	0.0862	-0.474	1	
LnLPI	0.427	0.0062	0.6951	0.372	-0.4469	0.5	1
LnHDI	0.2637	0.0686	0.2299	-0.0612	-0.4687	0.6627	0.3126
DLandlock	-0.2066	-0.0119	-0.3354	-0.2628	0.2806	-0.1209	-0.4214
DAGOA	-0.3067	-0.0059	-0.1914	0.3682	0.3534	-0.4261	-0.1613
DLDC	-0.2233	0.0162	-0.3388	-0.1462	0.2503	-0.5435	-0.3159
	LnHDI	DLandlock	DAGOA	DLDC			
.LnHDI	1						
DLandlock	-0.0239	1					
DAGOA	-0.6662	-0.1373	1				
DLDC	-0.4691	0.126	0.5447	1			

Table 03 presents the correlation coefficients among variables. BDC exports exhibit a very weak negative correlation with the trading partner GDP (r = -0.0217) and a moderate positive correlation with the distance variable LnRemotedistance and GSP imports (r = 0.5571 & 0.2800) respectively. Overall, the coefficient correlation matrix of the variables is within the acceptable value of 0.7

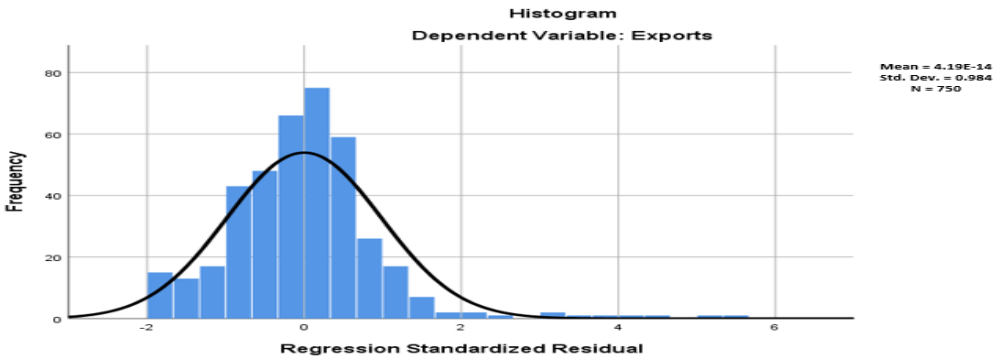
Econometric Analysis

The study utilizes a multiple regression model to examine the trade creation impact of the unilateral trade policy of the US on the dependent variable, which is the exports of beneficiary developing countries. Additionally, the study explores the relative influence of other trade determinants such as the HDI, concentration index, innovation index, and logistic performance index. It also incorporates dummy variables for least developing countries, landlocked countries, and the extended preference program of AGOA for sub-Saharan countries.

To conduct this analysis, the study employs the Tinbergen, Anderson, & Wincoop (2003) gravity model after ensuring that the assumptions of regression analysis are met. Firstly, the study confirms that the dependent variable is continuous, which is appropriate for the panel data context. Secondly, all variables are continuous. Thirdly, the study verifies a linear relationship between the response and predictor variables, as evidenced by the significant linear relationships observed in the correlation matrix (Table 2).

Fourthly, the study examines multicollinearity, finding that all correlation values in Table 2 are below the threshold of 0.7, indicating no multicollinearity. Tolerance values exceeding 0.04 and IVF values near 1 for all variables further support this conclusion. The fifth assumption regarding influential outliers is met, as Cook's distance values are all below 1. The sixth assumption checks residuals' normal distribution (heteroscedasticity). P-P plots confirm that standardized residuals are normally distributed, with only minor disturbances. Additionally, the Breusch-Pagan test and the response of residuals to increasing independent variables reveal no heteroscedasticity issues. The seventh assumption, autocorrelation, is tested using the Durbin-Watson value, which is around 2, indicating no autocorrelation in the data.

Figure 2



Histogram
Figure 3: P-P Plots

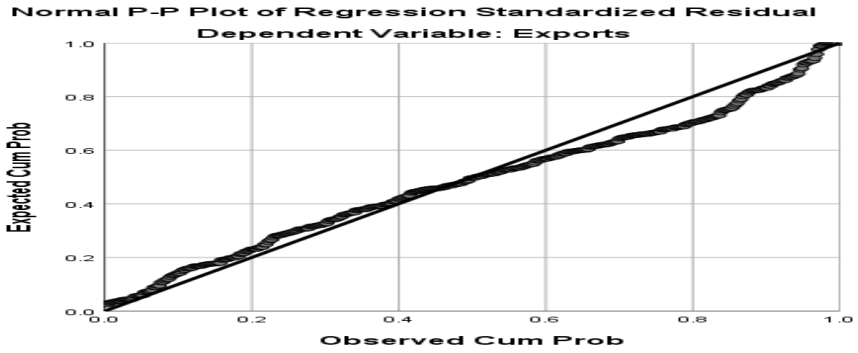


Figure 4: Normal Q-Q Plots

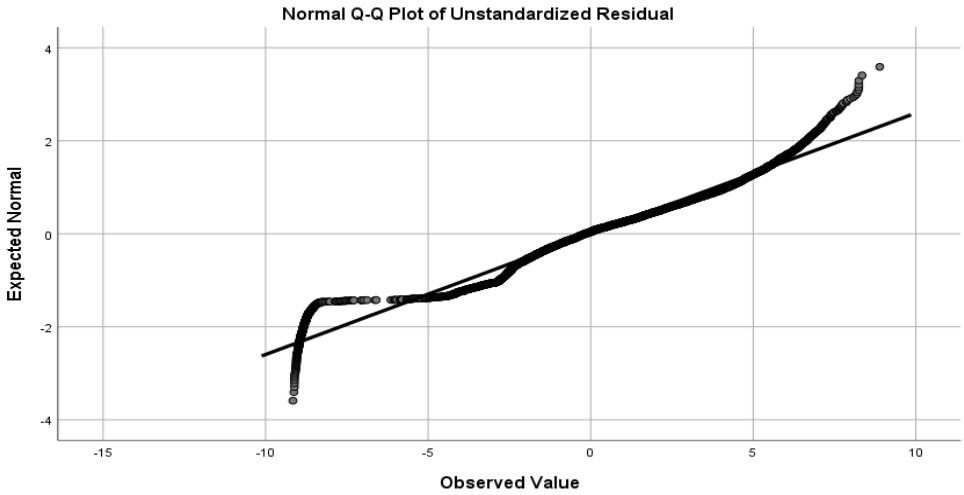


Table 04
No Heteroskedastic alternative approach
ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.000	12	.000	.000	1.000[b]
	Residual	386.000	386	1.000		
	Total	386.000	398			

a. Dependent Variable: Residual
b. Predictors: (Constant) LnGDP02, Ln(RemoteDistance), DAGOA, DLandlock, LnGII, LNExports, DLDC, LNCON, LnLPI, LnHDI, LnGSPIMP

Table 05
No Multicolliniarity as VIF is < 10 and Tolerance values are > 0.25

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	20.310	5.536		3.669	.000		
DLandlock	.084	.322	.012	.260	.795	.622	1.608
DAGOA	-2.334	.514	-.360	-4.541	.000	.225	4.451
DLDC	1.709	.408	.240	4.191	.000	.433	2.311
Ln(Remote Distance)	-2.821	.486	-.265	-5.805	.000	.679	1.472
LnGSPImp	.127	.046	.193	2.762	.006	.289	3.458
LnGII	-.771	.894	-.053	-.862	.389	.369	2.707
LnLPI	2.084	1.646	.078	1.266	.206	.370	2.702
LnCon	-.677	.301	-.129	-2.251	.025	.429	2.330
LnHDI	-1.104	.905	-.080	-1.220	.223	.329	3.041
LnGDP02	.028	.005	.461	6.061	.000	.244	4.100

a. Dependent Variable: LnExports

Regression Analyses and Empirical Findings

This study investigates the impact of the US unilateral trade policy on trade creation in beneficiary developing countries. It employs an augmented gravity model to assess the effect of the US preference program for developing country exports in comparison with other trade determinants.

Testing of Hypotheses

This study aims to analyze the effects of the unilateral trade policies of the United States (US) on trade creation in beneficiary developing countries. To achieve this, the following hypotheses are tested:

H1: Trade between the U.S and the developing country is significantly being influenced by the size of their economy and the proximity between them.

To evaluate the first hypothesis, this study employed the traditional gravity model framework of international trade to analyze the impact of the product of the GDP of the US and (BDCs) and the distance variable (LnRemoteDistance) on the exports of the BDCs (LnExport). The result of the Hausman test suggested that the chi-square statistic is 1.18 with a p-value of 0.5553, indicating that there is no systematic difference between the coefficients estimated in both models.

Therefore, both models could be used. However, the estimation of the gravity model of international trade (Martínez , & Nowak (2003) and Mummolo & Peterson (2018)) suggests using fixed effects due to the time-invariant nature of some variables. Therefore, in the given scenario, the coefficients of the fixed effects are analyzed for the first hypothesis of the study.

The fixed-effects regression model in Table 03 explains 7.20% of the variance in BDC exports to the US, with a low but common R-squared value in international trade analysis due to its complexity. The coefficient for combined GDPs (LnGDP02) is -1.066023, indicating a 1% increase in combined GDP is linked to a 1.066023% decrease in BDC exports, contradicting the gravity model's assumption. This mirrors the findings of Guan and Sheong (2020) regarding African exports to China.

Table 06
Fixed-effects Regression result for the first hypothesis

Fixed-effects (within) regression			Number of obs =	750	
Group variable: ID			Number of groups =	75	
R-squared:			Obs per group:		
Within = 0.0720			min =	10	
Between = 0.4066			avg =	10.0	
Overall = 0.3875			max =	10	
		F(2,673) =	26.12		
corr(u_i, Xb) = -0.2171			Prob > F =	0.0000	
LnExports	Coefficient	Std. err.	t	P>t	[95% conf. interval]
LnGDP02	-1.066023	0.2366696	-4.5	0.000	-1.5307 - 0.601324
LnRemoteDi~e	1.145912	0.1860635	6.16	0.000	.780578 1.511247
_cons	52.68421	7.26261	7.25	0.000	38.4241 66.94431
		sigma_u	2.2777425		
		sigma_e	.71368405		
		rho	.91060134 (fraction of variance due to u_i)		
F test that all u_i=0: F(74, 673) = 97.05				Prob > F = 0.0000	

The fixed-effects regression model in Table 02 explains 7.20% of the variance in BDC exports to the US, with a low but common R-squared value in international trade analysis due to its complexity. The coefficient for combined GDPs (LnGDP02) is -1.066023, indicating a 1% increase in combined GDP is linked to a 1.066023% decrease in BDC exports, contradicting the gravity model's assumption. This mirrors the findings of Guan and Sheong (2020) regarding African exports to China.

The study examines BDC exports under the US GSP program, where economic growth is a graduation criterion, potentially leading to reduced exports as countries graduate due to exceeding competitive need limitations (U.S. Trade Representative, 2020). Other factors like comparative advantage or consumer preferences may also impact export volumes.

Two trade theories suggest larger economies like the US may trade less with developing countries such as BDCs. The Heckscher-Ohlin model highlights differences in factor endowments driving trade, while the New Trade Theory suggests economies of scale and product differentiation lead to less trade between larger and developing economies (Leamer, 1995; Markusen & Venables, 1998).

Similarly, the distance variable negatively influences BDC exports to the US, contradicting the gravity model's prediction. This may be due to advancements in transportation and communication technology reducing distance-related barriers (Wu, 2015).

The study introduces a new variable to address the time-invariant nature of the distance variable, which changes the impact of distance on exports (Trotignon, 2010). The positive impact of distance on BDC exports may be explained by improving market access and information availability from trade agreements and preference arrangements (Markusen & Venables, 1998).

In modern trade, products exempted from tariff barriers in the US GSP program, including raw materials or intermediary products in GVCs, may see a positive impact from longer distances (Linders, 2005; Borchert & Yotov, 2017).

Data limitations and the model's simplification of trade flows may explain the unexpected results, as the gravity model may not fully capture the dynamics and complexity of trade relationships (Wu, 2015).

H2: The Unilateral Trade Policy of the U.S has a significant effect on the trade creation of beneficiary developing countries.

Table 04 of the fixed-effect regression model fit indicates an R-squared value of 0.0903, explaining 9.03% of the variance in BDC exports to the US. The coefficient of the combined GDP (LnGDP02) is -1.282574, statistically significant at the 0.05 level, implying that a 1% increase in combined GDP is linked with a 1.282574% decrease in exports of BDCs similar to the findings of (Guan & Sheong, 2020; Markusen & Venables, 1998; and Leamer, 1995).

Table 07
Fixed-effects Regression results for the 2nd hypothesis

Fixed-effects (within) regression			Number of obs =	750	
Group variable: ID			Number of groups =	75	
R-squared:			Obs per group:		
Within = 0.0903			min =	10	
Between = 0.4093			avg =	10.0	
Overall = 0.3910			max =	10	
		F(3,672) =	22.24		
corr(u_i, Xb) = -0.2096			Prob > F =	0.0000	
LnExports	Coefficient	Std. err.	t	P>t	[95% conf. interval]
LnGDP02	-1.282574	0.241797	-5.30	0.000	-1.75734 .807805
LnRemoteDi~e	1.063265	0.185727	5.72	0.000	.6985895 1.42794
LnGspImports	0.0561728	0.01529	3.67	0.000	.026159 .086195
_cons	58.54043	7.370542	7.94	0.000	44.0683 73.0125
		sigma_u	2.268839		
		sigma_e	.70714872		
		rho	.91145772 (fraction of variance due to u_i)		
F test that all u_i=0: F(74, 672) = 98.41			Prob > F = 0.0000		

As discussed above, the distance variable impacts BDC exports negatively, with a coefficient of 1.063. whch is aligning with findings from various studies (Brun et al., 2005; Markusen & Venables, 1998; Linders, 2005; Borchert & Yotov, 2017).

The coefficient for (LnGSPImp) in the fixed-effect regression model is 0.0596944, which is statistically significant at the 0.05 level ($p < 0.000$). This result indicates that a 1% increase in GSP imports to the US is associated with a 0.0596944% increase in BDC exports, holding other factors constant. This finding is consistent with previous studies (Seyoum, 2005; Islam and Maruf, 2014; Brown, 1987), suggesting that the US unilateral trade preference policy has a positive and significant impact on BDC exports. Accepting the null

hypothesis, we conclude that there is a statistically significant relationship between GSP imports and BDC exports

H3: The extended preferential margin of AGOA for sub-Saharan beneficiary developing countries has a significant negative impact on the Exports of all BDCs to the US.

The third hypothesis examines the impact of the US GSP specialized preference program for least developed countries, known as the African Growth and Opportunity Act (AGOA). The study uses a random-effects regression model because the AGOA dummy variable is time-invariant, leading to its omission in the fixed-effect regression model.

Table 08
Random-effects GLS Regression results for the 3rd hypothesis

Random-effects GLS regression Number of obs = 750					
Group variable: ID Number of groups = 75					
R-squared:				Obs per group:	
Within = 0.0894				min = 10	
Between = 0.4436				avg = 10	
Overall = 0.4235				max = 10	
Wald chi2(4) = 123.36					
corr(u_i, X) = 0 (assumed) 0					
LnExports	Coefficient	Std. err.	t	P>t	[95% conf. interval]
LnGDP02	-1.27237	0.24053	-5.29	0.000	-1.743806 -0.8009285
LnRemoteDi~e	0.888426	0.10508	8.45	0.000	0.6824689 1.094383
LnGspImp	0.060517	0.01506	4.02	0.000	0.0309855 0.0900476
DAGOA	-1.1098	0.52266	-2.12	0.034	-2.134185 -0.0854111
_cons	58.33525	7.31906	7.97	0.000	43.99015 72.68036
sigma_u 2.1614051					
sigma_e .70714872					
rho .90330911 (fraction of variance due to u_i)					

The impact of combined GDP ($LnGDP_{02}$) in this model is -1.338, statistically significant at the 0.05 level. The distance variable has a coefficient of 0.8487436, also statistically significant at the 0.05 level. The coefficient for (LnGSPImp) is 0.0643324, statistically significant at the 0.05 level ($p < 0.000$), indicating that a 1% increase in standard GSP imports in the US is associated with a 0.0643324% increase in BDC exports, holding other factors constant. This suggests that the US GSP program has a significant positive impact on BDCs exports as discussed above.

The hypothesis focuses on the impact of the AGOA program on BDC exports, with the dummy variable (DAGOA) showing a coefficient of -1.109798 in the random effect regression, statistically significant at the 0.05 level ($p < 0.000$). This suggests that a 1% increase in AGOA countries' exports leads to a -1.109798% decrease in BDC exports to the US, holding other factors constant. This result was expected, as AGOA beneficiary countries enjoy extended preferential margins, making their products more competitive in the US market. The extended preferential margin for sub-Saharan AGOA beneficiary countries has a significant export-creating effect. Therefore, the null hypothesis is accepted.

H4: The standard GSP program for beneficiary developing countries has significant trade creating effect than the AGOA, LDC & landlocked countries.

The analysis of the fourth hypothesis includes multiple dummy variables representing AGOA extended preference programs, landlocked developing countries, and those categorized as least developing countries. These variables are incorporated in Table 06 to assess their relative impact on the exports of BDCs. The results of the model are as follows:

Table 09
Random-effects GLS Regression Results for the 4th hypothesis

Random-effects GLS regression				Number of obs =	750
Group variable: ID				Number of groups =	75
R-squared:				Obs per group:	
Within = 0.0894				min =	10
Between = 0.4499				avg =	10.0
Overall = 0.4294				max =	10
Wald chi2(6) = 123.50					
corr(u_i, X) = 0 (assumed)				Prob > chi2 =	0.0000
LnExports	Coefficient	Std. err.	t	P>t	[95% conf. interval]
LnGDP02	-1.273001	0.240723	-5.29	0.000	-1.74481 -.8011927
LnRemoteDi~e	0.8924405	0.107843	8.28	0.000	0.6810723 1.103809
LnGspImp	0.0605225	0.015112	4.00	0.000	0.0309034 .0901416
DAGOA	-1.144569	0.59199	-1.93	0.053	-2.304848 .0157093
Dlandlock	-0.509955	0.555212	-0.92	0.358	-1.59815 .57824
DLDC	0.1550983	0.631641	0.25	0.806	-1.082895 1.393092
_cons	58.48105	7.324291	7.98	0.000	44.12571 72.8364
sigma_u | 2.174031					
sigma_e | .70714872					
rho | .90432179 (fraction of variance due to u_i)					

The coefficient for LnGDP02 is -1.340385, indicating that a 1% increase in GDP results in a -1.340385% decrease in exports. For LnRemoteDistance, the coefficient is 0.8924405, suggesting that a 1% increase in distance leads to a 0.8924405% increase in exports. However, the coefficient for LnGspImports is 0.0605225, indicating that a 1% increase in GSP imports results in a 0.0605225% increase in exports, which aligns with the hypothesis and is statistically significant.

The coefficient for DAGOA is -1.144569, indicating that being part of the AGOA program is associated with a -1.144569% change in exports of all BDCs. Although marginally significant at the 0.05 level (p=0.053) in this model due to a change in the number of observations, it is considered a significant result based on its previous impact. The coefficient for DLandlock (Landlocked) is -0.509955, and for DLDC (Least Developed Countries) is 0.1550983, but they are not statistically significant. This suggests that being a landlocked or least developed country is not significantly associated with a change in exports.

Overall, the model explains a moderate amount of the variation in exports, as indicated by the R-squared values. Hence, we accept the null hypothesis, indicating that GSP imports in the US have a significant trade creation effect on BDC exports compared to the AGOA program, LDC status, and being a landlocked country.

H5: Logistics performance of a country has a significant impact on trade creation than the Preference Margin under the GSP scheme.

To evaluate this hypothesis and assess the relative impact of the US GSP program (LnGspImp) and the Logistic Performance Index on BDC exports (LnExports).

Table 10
Fixed-effects Regression Results for the 5th hypothesis

Fixed-effects (within) regression		Number of obs =	610
Group variable: ID		Number of groups =	61
R-squared:		Obs per group:	

Within = 0.0964			min = 10		
Between = 0.3642			avg = 10.0		
Overall = 0.3496			max = 10		
F(4,545) = 14.53					
corr(u_i, Xb) = -0.0874			Prob > F = 0.0000		
LnExports	Coefficient	Std. err.	t	P>t	[95% conf. interval]
LnGDP02	-1.425636	0.2788473	-5.11	0.000	-1.973383 -.8778889
LnRemoteDi~e	0.8811661	0.2064933	4.27	0.000	0.4755459 1.286786
LnGspImp	0.0547226	0.0166644	3.28	0.001	0.0219883 .0874569
LnLPI	0.5340158	0.1760894	3.03	0.003	0.1881187 .8799129
_cons	61.21273	8.531224	7.18	0.000	44.45462 77.97084
sigma_u | 2.4427807					
sigma_e | .72953381					
rho | .91811247 (fraction of variance due to u_i)					
F test that all u_i=0: F(60, 545) = 109.46 Prob > F = 0.0000					

The coefficient for ($LnGDP_{02}$) is -1.43, and the coefficient for (LnRemote Distance), is 0.8811.. Similarly, the coefficient for (LnGSPImp), , shows that a 1% increase in imports under the US GSP program is associated with a 0.055% increase in exports.

The coefficient for (LPI), representing the Logistic performance of the exporting country, suggests that a one-unit increase in the logistic performance index is associated with an increase in exports by approximately 0.53 percent. This implies that BDCs with better logistical infrastructure and efficiency tend to have higher exports to the US, aligning with the idea that efficient logistics facilitate international trade.

Overall, these results highlight that the LPI has a relatively higher impact on the exports of BDCs than the US GSP program. Therefore, we accept the null hypothesis

H6: The innovation Level of a country has a significant impact on trade creation than the Preference margin Under the GSP scheme.

This hypothesis incorporates Global Innovation Index in the model in table 12 to check its relative impact on the exports of BDC. The result of the model are as under:

Table 11
Fixed-effects Regression Results for the 6th hypothesis

Fixed-effects (within) regression			Number of obs = 510		
Group variable: ID			Number of groups = 51		
R-squared:			Obs per group:		
Within = 0.0628			min = 10		
Between = 0.3585			avg = 10.0		
Overall = 0.3430			max = 10		
F(4,455) = 7.63					
corr(u_i, Xb) = 0.0858			Prob > F = 0.0000		
LnExports	Coefficient	Std. err.	t	P>t	[95% conf. interval]
LnGDPij02	-1.069107	0.303588	-3.52	0.000	-1.665715 -.4724981
LnRemoteDi~e	0.8356816	0.2183	3.83	0.000	0.4066803 1.264683
LnGspImports	0.0298248	0.017476	1.71	0.089	-0.0045189 .0641686
LnGII	0.0212282	0.015777	1.35	0.179	-0.0097764 .0522327
_cons	51.14743	9.401119	5.44	0.000	32.67243 69.62243
sigma_u 2.2720401					
sigma_e .67295429					
rho .91934732 (fraction of variance due to u_i)					
F test that all u_i=0: F(50, 455) = 111.44 Prob > F = 0.0000					

The coefficient for ($LnGDP_{02}$) is -1.06910 and for (LnRemote Distance) it is 0.836 , similarly , the coefficient for (LnGSPImp) is 0.0298248, showing that a 1% increase in GSP imports leads to a 0.0298% increase in exports. However, this variable's impact is relatively

small compared to the others in the study. The coefficient for GSP imports is marginally insignificant in this model due to limitation of data availability on innovation's impact on BDC exports. With more observations, the coefficient may change.

The coefficient for the Global Innovation Index is 0.0212282, suggesting that a 1% increase in the Global Innovation Index leads to a 0.0212282% increase in exports, holding other variables constant. This indicates that countries with higher innovation levels tend to export more, aligning with the idea that innovation drives competitiveness and export performance.

However, the results in this model are not significant, as the p-value is above the normal range. Since the results of GSP import also depict insignificance results, we can argue that the coefficient of the innovation variable may also be non-significant due to the limitation of data on the Global Innovation Index for developing countries. Therefore, we reject the null hypothesis in this study, as the results of the innovation variable are not statistically significant.

H7: Product concentration of a country has a significant impact on trade creation than preference margin under the GSP scheme.

This hypothesis incorporates concentration index in the model to check its relative impact on the exports of the BDCs. The fixed-effects regression results in Table 14 are as under:

Table 12
Fixed-effects Regression Results for the 7th hypothesis

Fixed-effects (within) regression				Number of obs =	770
Group variable: ID				Number of groups =	77
R-squared:				Obs per group:	
Within = 0.1002				min =	10
Between = 0.3668				avg =	10.0
Overall = 0.3504				max =	10
			F(4,689) =		19.17
corr(u_i, Xb) = -0.2547				Prob > F =	0.0000

LnExports	Coefficient	Std. err.	t	P>t	[95% conf. interval]
LnGDP02	-1.34512	0.236678	-5.68	0.000	-1.809817 -.8804227
LnRemoteDi~e	1.065801	0.183978	5.79	0.000	0.7045765 1.427025
LnGspImports	0.0583095	0.014461	4.03	0.000	0.0299176 .0867014
LnCon	-0.0799024	0.482883	-0.17	0.869	-1.028002 .868197
_cons	60.53245	7.212678	8.39	0.000	46.37098 74.69391
sigma_u 2.3137182					
sigma_e .70846957					
rho .91427665 (fraction of variance due to u_i)					
F test that all u_i=0: F(76, 689) = 97.41				Prob > F = 0.0000	

The coefficient for ($LnGDP_{02}$) is 1.3451. and (LnRemotedistance) it is 1.066. Whereas for (LnGSPImp) the coefficient is .05830 suggests that a 1% increase in GSP imports increases BDC exports by approximately 0.0583095 percent. Finally, the coefficient for the concentration index is approximately 0.0799024 but it is not statistically significant as (p = 0.869).

Therefore, we reject the null hypothesis, which suggests that the product concentration index of a country has a more significant impact on trade creation than the preference margin under the GSP scheme.

H8: Human Developing of a country has a significant impact on trade creation than preference margin under the GSP scheme.

This hypothesis incorporates (HDI) in the model to check its relative impact on the exports of the BDCs. The Random-effects regression results in Table 16 are as under:

Table 13
Random-effects GLS Regression Results for the 8th hypothesis

Random-effects GLS regression			Number of obs	= 750	
Group variable: ID			Number of groups	= 75	
R-squared:			Obs per group:		
Within	= 0.0918		min	= 10	
Between	= 0.4341		avg	= 10	
Overall	= 0.4147		max	= 10	
Wald chi2(4)		= 121.77			
corr(u_i, X) = 0 (assumed)			Prob > chi2	= 0	
LnExports	Coefficient	Std. err.	t	P>t	[95% conf. interval]
LnGDP02	-1.702624	0.313033	5.44	0.000	-2.316157 -1.08909
LnRemoteDi~e	0.8567328	0.1087252	7.88	0.000	0.6436354 1.06983
LnGspImports	0.0572853	0.0148736	3.85	0.000	0.0281336 0.0864371
LnHDI	2.138007	0.9610828	2.22	0.026	0.2543189 4.021694
_cons	72.06493	9.809748	7.35	0.000	52.83818 91.29168
sigma_u	2.2187238				
sigma_e	.70687237				
rho	.9078511	(fraction variance due to u_i)			

The coefficient for ($LnGDP_{02}$) is -1.702624% and for (LnRemote distance) it is 0.8567328. Additionally, the coefficient for (LnGSPImp) is 0.0572853 in this model indicating that higher imports under GSP by the US are associated with increased exports from the BDCs.

However the coefficient for (LnHDI) is 2.138007, indicating that a 1% increase in the developing country's HDI leads to a 2.14% increase in BDCs exports to the US, holding other variables constant. This positive coefficient suggests that higher levels of human development of the developing country are associated with increased export performance.

Therefore, we accept the null hypothesis, which states that Human Developing of a country has a significant impact on trade creation than preference margin under the GSP scheme. The estimated results shows that there is positive and significant impact of the HDI, which is more than all the other variables employed in this study.

Conclusion

This study provides insights into the factors affecting the exports of beneficiary developing countries (BDCs) to the US market. Contrary to the gravity model's expectations, an increase in trading partners' combined GDP is associated with a decrease in BDC exports, indicating the influence of non-GDP factors. The positive impact of distance on exports suggests that improved market access due to trade agreements may outweigh traditional distance-related barriers. Imports under the US GSP program positively affect BDC exports, emphasizing the importance of preferential treatment. Countries with efficient logistic systems export more, as indicated by the Logistic Performance Index. Additionally, the Human Development Index (HDI) of developing countries positively influences their exports, highlighting the role of human development.

The Concentration Index of a country does not have a significant effect on exports, suggesting that product concentration may not be a major factor in trade creation. These findings underscore the importance of considering various factors, such as GDP, distance, trade agreements, logistic performance, and human development, when designing trade policies. The study concludes that while the US unilateral trade policy has a positive impact,

addressing the North-South divide requires interventions from developed countries to improve human capital and infrastructure in developing nations. Preferential tariffs alone are not sufficient to bring about significant change

Recommendations

- Researchers should further explore the impact of non-traditional factors on trade patterns, as observed in this study, to enhance the understanding of international trade dynamics.
- Investigate the role of logistics performance in trade, as it emerged as a significant factor influencing exports in this study.
- Advocate for policies that address non-tariff barriers to trade, which have been identified as significant obstacles for developing countries.
- Governments should focus on enhancing human development and infrastructure to exploit export potential, as highlighted by the study's findings.
- Developing countries should prioritize investments in human capital and infrastructure to improve export competitiveness and capitalize on trade opportunities.
- Utilize trade agreements and preferential schemes, such as the US GSP program, to enhance market access and export growth.
- Academia should explore the potential of the Global Innovation Index for future research on exports, recognizing its limitations in this study.

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