Determinants and barriers to bilateral trade A study on developing economies

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ABSTRACT

World trade has grown rapidly. Several factors are highlighted by literature as a driving force behind the growth of world trade. Reduction in barriers to trade is one of them. A comprehensive empirical investigation is carried to ascertain the trade reducing and increasing effect of barriers to trade which are also known determinants of trade. The modified gravity model developed in this study analyses the effect of GDP, distance, remittances, FDI, transportation cost, exchange rate, inflation, population, import and export on trade flows. The study revealed that the population, import and transportation cost, distance, Tariff imposed by trading partner, FDI and Population of trading country are the determinants and significantly affect exports of developing economies. The study also ascertain that transportation cost, distance, population of trading partner, FDI of both trading countries and remittances of trading partner are the determinants that have major impact on import of developing nations

.**Introduction**

From the past few years focus has been shifted to trade liberalization because of negative effect of barriers to trade on the growth and development of the Economy. Trade has a quantitatively large, robust, positive, significant and evident impact on income (Frankel and Romer, 1996). Since 2003, trade improvement has generated economic growth and trade surplus (United Nations, 2008).

The Main aim of this study is to analyze the determinants of bilateral trade and to find the affect of determinants and barriers on trade with the use of gravity model, which takes into account the affect of them simultaneously on exports and imports. In this study the gravity model is applied on 31 developing countries for the three-year sub-periods between 2005 and 2007. The model developed in this study analyses the affect of GDP, distance, remittances, foreign direct investment, transportation cost, exchange rate, inflation, population, import and export on trade flows.

Research Problem:

Growth in the volume of trade is seen in almost every industry and in all the economies, particularly in developed and least developed economies. There is an argument against what is the reason behind the growth of world trade. Various reasons have been highlighted in literature. This research analyzes the factors that positively or negatively influence trade of developing economies.

General Objective:

The underlying principle for this study is to analyze in greater detail the role of factors act as determinant or facilitators or barriers to bilateral trade by taking into consideration 31 developing countries.

Specific Objective:

A comprehensive empirical investigation is carried to find out the answers of the following questions:

What are the determinants of bilateral trade?
Is there any relationship between tariff, non tariff barriers and trade flows?
Does theory of offer curve applies on developing nations?
What are the trade barriers which are affecting individual countries in developing nations?

Scope and Justification for the Research:

The finding of this study is applicable to the developing nations, though the results may be interpreted for other nations with suitable amendments in data with respect to the factors and data of the country. This can be a very helpful tool for the development and growth of the economy. Factors having positive relationship to trade can be improved for increasing trade and factors having negative affect can be avoided to uplift the trade.

Delimitation of the Research:

Following were the limitation of the study:

Research is only limited to developing nation and is not extended to the developed and under developed nation.
This research cannot be generalized to other countries or to the rest of the world without further analysis and amendments.
The study is limited to certain factors that affect trade negatively or positively. Other variables are not included in this study because the data for them is not accessible, so the result couldn't be generalized for other variables not included in the study without further exploration.
The data is limited to 31 developing countries.
The study is conducted on 3 years data because most of the countries facts and figures are not available or updated.

Literature Review

"From 1950–2004, world trade grew at a rapid average rate of 5.9 percent per Annum" (Hummels, 2007, p. 131). As stated in World Trade Report "Robust expansion and growth in trade is witnessed in case of for both developed and least developed economies" (World Trade Report, 2007, p. 1). According to world trade report in the year 2006 world economy has witnessed robust growth and vigorous trade expansion (World Trade Report, 2007). Exports of world merchandise grew in real terms by 8.0 % (World Trade Report, 2007). In 2006 World commercial services exports incre ased by 11 % to $2.7 trillion (World Trade Report, 2007).

Why has World Trade Grown?

According to Krugman (2002) answer to the fundamental query ''Why has world trade grow n?'' is still uncertain (Baier and Bergstrand, 2001). Several reasons have been hi ghlighted by literature against the growth of world trade . According to Feenstra (1998) there are four possible factors to explain the growth of world trade 1) trade liberalization 2) falling transportation costs 3) third possible explanation is that trade has grown because economies have converged in economic size 4) and A fourth possibility is increased outsourcing; as the production process 'disintegrates' internationally and multinational firms become more vertically specialized, intermediate goods cros s borders multiple times increasing world trade relative to output (Baier & Bergstrand, 2001).

Krugman (2002) also noted that trade liberalization and falling transportation cost have affected the growth of world trade positively. Hummels and Levi nsohn (1995) and Helpman (1987) suggested that economies have converged in economic size is the main reason behind the growth of world trade. According to Baier and Bergstrand (2001), the variables those have none trivially contributed to the real growth of world trade are income growth, tariff rate reduction s, and transport-cost declines.

It can be concluded that, trade liberalization, falling transportation costs, tariff rate reductions, technology and globalizations are the key factors that have contributed in the growth of world trade.

Trade Liberalization and Its Impact on Trade and Growth of World Trade :

Studies have shown that Liberalization of is positively and significantly affecting the growth and development of nations. It helps in r eduction of poverty. According to Feenstra (1998) there are several factors that explain the growth of world trade. Trade liberalization is one of them.   Krugman (1995), Feenstra (1992) and Romer (1994) research showed that trade liberalization increases t he volume of trade and protectionism against trade reduces the import of goods.

On the other hand some other researches contradicted theses studies by saying that there is little or no impact of trade liberalization on the growth of world trade. A ccording to Lai and Zhu, (2004) the affect of trade liberalization on overall world trade is not large. Some other studies has also shown that trade liberalization has disappointing impact on trade flows (Hansberg, 2005). Empirical result of studies conducted by Baldwin & Lewis (1978), Cline, Kawanabe, Kronsjo & Williams (1978), Ray (1981), Deardorff & Stem (1986), Bhagwati (1988), and Leamer (1990) reported that there is comparatively small affect of trade liberalization on imports.

Recent studies done by Leamer (1990), Harrigan (1993), and Trefler (1993) suggested that trade liberalization has considerably larger, significant and robust impact on trade and world trade has grown because of trade liberalization.

Barriers and Determinants of Bilateral to Trade:

According to Gonzales, Bailes and Amano (1991) International Trade barriers can be dived into three parts i.e. Tariff Barriers, Institutional Barriers and Non Tariff barriers.

"Tariffs are the most common tool for regulating impo rts. They are used to protect domestic industries from foreign competition, to protect balances of payments, or to raise revenues" (United Nations, 2008, p. 73). "The effective tariff does not measure protection to domestic primary resources vis -a-vis those of the rest of the world. All that is considered is the difference in value -added contributed by domestic primary resources with and without a tariff structure" (Waters, 1970, p. 1013). Tariff measures are used to raise fiscal revenue or to defend domes tic industry from foreign competition .When a product crosses the boundary or custom area Tariff measures are applicable. It raises the import price of the product by a fixed quantity or a fixed proportion. The increase in price depends on the value and quantity of the product (United Nations, 2008).

Institutional Barrier**s**: These are usually political in origin. It is a form of relationship or agreement such as general agreements on tariff and trade (GAAT) between two countries or among a number of countries that are intended to encourage and protect trade among those who are included in the agreements often to the exclusion of others.

In addition to tariffs, Non tariff barriers (NTBs) are often used to control imports. According to Hillman (1991) NTB's are all limitations, except traditional customs duties which distort international trade. Any governmental tool or practice except tariff which directly hinders the entrance of imports into an economy and which discriminates imports, but are applicable with equal and same force on domestic production or distribution (Beghin & Bureau, 2001). Typical non -tariff measures include quantity control measures such as licensing, quotas and prohibitions, as well as price control measures, health and safety measures (United Nations, 2008). Non tariff barriers also constitute of regulatory barrier, cultural barrier, and industry barrier. Some of the studies have categorized barriers into artificial and natural barriers. Artificial barriers are self creat ed barriers and natural barriers are not self created (Balassa, 1965 & 1982; Basevi, 1966; Corden, 1966 & 1971).

Gravity Model:

Gravity model has been exceptionally popular and accepted. It applies the gravitational force theory as an analogy to explain the volume of trade, migration, capital flows, and product differentiation. According to Deardorff (1998) it is explained as a "fact of life" since it has significant explanatory power.

The theory of gravity is originated in physics, referring to Ne world trade organization Newton's law of gravity (Kristjánsdóttir, 2005). Gravity Model is derived by the NeWorld Trade Report's "Law of Universal Gravitation" which explicates the attractive force between two objects. Gravity model merged Neworld trade organization Newton's law with trade according to the law attraction of two countries' masses, weakened by barriers between them and enforced by trade agreements these economies belong to.

The gravity model when applied in economics or international trade it assumes that import and exports are the gravity force whereas determinants of trad e are "economic mass". The model is used to explain the driving forces of trade, in economics i.e. what forces one country to trade with another.

Tinbergen (1962) and Poyhonen (1963) were the pioneers who applied the idea of gravity model to international trade flows. It is "workhorse for empirical studies of the pattern trade" and the "standard empirical framework used to predict how countries match up in int ernational trade" (Bayoumi & Eichengreen, 1997; Irwin, 1997; Rauch, 1999, p. 10).

According to Tinbergen (1962) the gravity equations of bilateral trade signify: Total potential supply of the exporting country on the world market, Total potential deman d of the importing country on the world market; and barrier to trade between the two countries concerned. Many studies have revealed that the gravity equation is persistent with many standard models of international trade or it can be transformed into gravity like equations under certain assumptions (Beghin and Bureau, 2001).

The standard gravity model is upgraded with several variables to test whether these variables are significant in explaining trade or not. Gravity model, in its basic form, ass umes that trade between countries can be compared to the gravitational force between two objects: it is directly related to countries' size and are inversely or negatively related to the distance between them (Krugman, 1995).

According to Deardorff (1984), the empirical success of the gravity equation is due to the fact that it can explain some real phenomena which the conventional factor endowment theory of international trade cannot such as the trade between industrialized countries, the intra in dustry trade and the lack of dramatic reallocations of resources when trade liberalization processes have taken place (Sanso, Cuairan & Sanz, 1993).

Research Methods

Basic Model:

For Export:

$$X = f \ (M \ , FDI \ , INF \ , REM \ , TCX \ , GDP \ , ER \ , POP) + \varepsilon \qquad (a)$$

Where, X is total volume of export, M is total import, INF is the rate of inflation, REM is the remittances inflow, TCX stands for transportation cost for export, GDP is gross domestic product, ER represent Exchange rate, POP refers to population ,T stands for t ariff rate and ε is Error. The model (a) holds the following regressions form:

$$X = \alpha + \beta_1 \ M + \beta_2 \ FDI - \beta_3 \ INF + \beta_4 \ REM - \beta_5 \ TCX + \beta_6 \ GDP - \beta_7 \ ER - \beta_8 \ POP + \varepsilon \quad (b)$$

In model (b) export is dependent variable and import, inflation, foreign direct investment , remittances, transportation cost export, GDP, and population and exchange rate are independent variable. Export may vary and change when there is change in any of the independent variable.

For Import:

$$M = f \ (X \ , FDI \ , INF \ , REM \ , TCM \ , GDP \ , ER \ , POP, \ T) + \varepsilon \qquad (c)$$

Where, previous definitions hold. The model (c) described above holds the following regression form:

$$M = \alpha + \beta_1 \ X + \beta_2 \ FDI - \beta_3 \ INF + \beta_4 \ REM - \beta_5 \ TCM + \beta_6 \ GDP - \beta_7 \ ER - \beta_8 \ POP - \beta_9 T + \varepsilon \ (d)$$

In model (d) import is a dependent variab le and export, inflation, foreign direct investment, remittances, transportation cost export, and GDP, exchange rate, tariff and population are independent variable.

Bilateral Trade Model:

The affects of trade barriers on the bilateral trade can be an alyzed with the help of bilateral trade model. For the analysis of Export following function is used:

$$X_{ij} = f\ (POP_i,\ POP_j,\ GDP_i,\ GDP_j,\ FDI_i,\ FDI_j,\ INF_i,\ INF_j,\ REM_i,\ REM_j,\ ER_i,\ ER_j,\ TCX_{ij},\ DIS_{ij},\ T_{ji},\ M_{ij}) + \varepsilon \qquad (e)$$

Where X_{ij} is the value of total export form country i to j, POP_i is the population of the supplying country and POP_j is the population of the demanding country, GDP_i and GDP_j are the GDP of exporting and importing countries i and j resp ectively, FDI_i and FDI_j are the Foreign Direct investment level in country i and j respectively, INF_i is the inflation rate prevailing in country i whereas INF_j is the inflation rate prevailing in country j, REM_i is the amount of remittances received in co untry i and REM_j is the amount of remittances received in country j, ER_i and ER_j stands for the exchange rate of country i and j respectively, TCX_{ij} is the transportation cost for export, D_{ij} measures the distance between the two trading partners i and j, T_{ji} is tariff rate imposed by country j on i and M_{ij} is the total value of import from country j to i.

The model shows that export from country i to j is the function of population, GDP, foreign direct investment, inflation, remittances and ex change rate of both importing and the exporting country, Transportation cost for export, Distance between the trading countries, tariff imposed by j that is importing country and the import form country j to i. The model (e) holds the following regression form:

$$X_{ij} = \alpha - \beta_1\ POP_i - \beta_2\ POP_j + \beta_3\ GDP_i + \beta_4 GDP_j + \beta_5 FDI_i + \beta_6\ FDI_j - \beta_7 INF_i - \beta_8 INF_j + \beta_9 REM_i + \beta_{10} REM_j, - \beta_{11} ER_i - \beta_{12} ER_j - \beta_{13} TCX_{ij} - \beta_{14} DIS_{ij} + \beta_{15} M_{ij} - \beta_{16} T_{ji} + \varepsilon \qquad (f)$$

According to equation (f) export from i to j is a dependent vari able. It is a function of importing and exporting country's population, GDP of both supplying and demanding country, FDI of both importing and exporting country, inflation rate prevailing in importing and exporting country, remittances, exchange rate of bo th trading partners, transportation cost for export, distance between the trading countries, and tariff imposed by importing country. Population of both trading partners, inflation rate in both trading countries, Exchange rate between trading partners, tra nsportation cost for export and distance between the countries is negatively or inversely related to trade. On the other hand population of importing and exporting country, GDP of both the economies, FDI by both the countries and remittances inflows in bot h countries has positive effect on trade.

For Import following function is used:

$$M_{ij} = f\ (POP_i,\ POP_j,\ GDP_i,\ GDP_j,\ FDI_i,\ FDI_j,\ INF_i,\ INF_j,\ REM_i,\ REM_j,\ ER_i,\ ER_j,\ TCM_{ij},\ DIS_{ij},\ X_{ij},\ T_{ij}) + \varepsilon \qquad (g)$$

Where previous definitions holds, TCM_{ij} is the transportation cost for import for importing good and services from j to I and T_{ij} is the tariff imposed by i on import form j.The model demonstrate that import of country i from exporting country j is the function of Population, GDP, FDI, inflation, Remittances and Exchange rate of both importing and the exporting country; Transportation cost for import, Distance between the trading partners, tariff imposed by country i on import form co untry j to i. The model (g) holds the following regression form:

$$M_{ij} = \alpha - \beta_1 POP_i - \beta_2 POP_j + \beta_3 GDPi + \beta_4 GDP_j + \beta_5 FDI_i + \beta_6 FDI_j - \beta_7 INF_i - \beta_8 INF_j + \beta_9 REM_i + \beta_{10} REM_j, - \beta_{11} ER_i - \beta_{12} ER_j - \beta_{13} TCM_{ij} - \beta_{14} DIS_{ij} + \beta_{15} X_{ij} - \beta_{16} T_{ji} + \varepsilon \qquad (h)$$

According to equation (h) import from country i to country j is a de pends on the population, GDP, FDI, inflation, remittances, exchange rate of demanding and supplying country, distance between the countries, Transportation cost for import, tariff rate imposed by importing country i, and export from country i to j. Population, Inflation, Exchange rate, transportation cost for import and distance is expected to have negative or inverse relation with import whereas GDP, FDI, remittances complements trade.

Hypotheses:

The research proposed the following Hypotheses for Basic and Bilateral Model.

H-1) Import of the country is positively related to its export.

H-2) Export of the country is positively related to its import.

H-3) Population of the country is negatively related to its export.

H-4) Population of the country is negatively related to its import.

H-5) Exchange rate is negatively related to country's export.

H-6) Exchange rate is negatively related to country's import.

H-7) Transportation cost is negatively related to the export of a country.

H-8) Transportation cost is negatively related to the import of a country.

H-9) GDP of the country is positively related to its export.

H-10) GDP of the country is positively related to its import.

H-11) Foreign direct investment is related to the export of the country.

H-12) Foreign direct investment is related to the import of the country.

H-13) Remittances inflow is positively related to the exports of the country.

H-14) Remittances inflow is positively related to the import of the country.

H-15) Inflation rate is negatively related to the export of the country.

H-16) Inflation rate is negatively related to the import of the country.

H-17) Tariff rate is negatively related to the import of the country.

Following hypothesis are tested on the bilateral model.

H18) Tariff imposed by the trading partner has a negative effect on the export of a country.

H19) Distance between trading partners is negatively related to export.

H20) Distance between trading partners is negatively related to import.

H-21) Population of the trading partner has negative effect on a country's export.

H-22) Population of the trading partner has negative effect on a country's import.

H-23) Exchange rate of trading partner is negatively related to a country's export.

H-24) Exchange rate of trading partner is negatively related to a country's import.

H-25) GDP of trading partner has positive effect on export.

H-26) GDP of trading partner has positive effect on import.

H-27) Foreign direct investment done by trading partner is positively related to the country's export.

H-28) Foreign direct investment done by trading partner is positively related to the country's import.

H-29) The inflow of remittances in trading country has a positive effect on export.

H-30) The inflow of remittances in trading country has a positive effect on import.

H-31) Inflation rate of trading partner has a negative effect on the export of a country.

H-32) Inflation rate of trading partner has a negative effect on the import of a country.

Sample Size:

A sample of 93 observations has been taken that is 31 developing countries for a period of three years 2005, 2006 and 2007.Namely are Argentina, Brazil, Burkina Faso, Cameroon, Chile, Costa Rica, Colombia, Cote d'Ivoire, Dominican Republic, Egypt, El Salvador, Ecuador, Gabon, Gambia, Ghana, Guyana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritius, Morocco, Panama, Peru, Rwanda, Saint Vincent and the Grenadines, Tunisia, Uganda, Uruguay, and Zambia.

Data Analysis Technique and Method of Data Analysis:

The data analysis technique that is used for the analysis of the data is "Regression". Data is analysed in two parts: **(1) Analysis of basic model:** First the analysis for all three year is done separately. To check the trend in each year data for the years 2005, 2006 and 2007 is analyzed independently **(2) Analysis of Bilateral Model:** Analysis of each country's bilateral trade gravity model is done. The analysis of bilateral trade of 10 countries namely Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Kenya, Morocco, Peru, Uruguay with other developing nations is done individually.

Results

Output Summary of Models:

The following tables are the model summary of output (import and export). The R value indicates the multiple correlation coefficients between all the predicted independent va riables and the dependent variable. The "R Square" value in the Model Summary table shows the amount of variance or change in the dependent variable that can be explained or influenced by the independent variables. Whereas The "Adjusted R Square" gives the idea that how well the model generalizes. It is an ideal situation when the value of R Square and Adjusted R Square is same or close to each other. The "Std. Error of the Estimate" is a measure of the variability of the multiple correlations.

SUMMARY OUTPUT								
	EXPORT				IMPORT			
MODEL	R	R Square	Adjusted R Square	Std. Error of the Estimate	R	R Square	Adjusted R Square	Std. Error of the Estimate
OVERALL	0.980	0.960	0.959	5451263248	0.985	0.970	0.969	3449182283
2005	0.978	0.957	0.954	4855985044	0.988	0.976	0.974	2449085598
2006	0.981	0.963	0.961	5318980869	0.987	0.973	0.971	3147096473
2007	0.993	0.986	0.984	3804925538	0.987	0.974	0.972	3931858713
ARGENTINA	0.963	0.928	0.922	469652.34	0.941	0.886	0.879	784310.44
BRAZIL	0.992	0.984	0.983	295380.15	0.991	0.983	0.982	210350.94
CHILE	0.942	0.887	0.88	180832.8	0.863	0.746	0.734	572422.31
COLOMBIA	0.999	0.997	0.997	438397493	0.999	0.997	0.997	334009639
COSTA RICA	0.621	0.386	0.372	48019.57	0.922	0.849	0.842	37110.75
ECUADOR	0.708	0.501	0.478	1.87628E+11	0.952	0.906	0.900	99890.7
KENYA	0.520	0.271	0.254	78654.81	0.707	0.500	0.447	18845.28
MOROCCO	0.915	0.837	0.830	26110.63	0.86	0.739	0.730	57262.04
PERU	0.781	0.609	0.596	192568.84	0.834	0.696	0.682	234993.85
URUGUAY	0.985	0.969	0.968	21949.1	0.972	0.945	0.943	63890.01

"F" Value of the Model and Significance of the Predictors :

"F" VALUE AND SIGNIFICANCE				
Model	EXPORT		IMPORT	
	F	Sig	F	Sig
OVERALL	716.776	0.000	1450.710	0.000
2005	309.650	0.000	564.873	0.000
2006	366.775	0.000	509.810	0.000
2007	457.598	0.000	516.329	0.000
ARGENTINA	177.158	0.000	130.044	0.000
BRAZIL	1294.797	0.000	1231.436	0.000
CHILE	131.476	0.000	62.280	0.000
COLOMBIA	34511.808	0.000	34511.808	0.000
COSTA RICA	18.874	0.000	119.681	0.000
ECUADOR	21.357	0.000	161.419	0.000
KENYA	16.163	0.000	21.254	0.000
MOROCCO	109.478	0.000	0.860	0.000
PERU	44.706	0.000	48.705	0.000
URUGUAY	906.497	0.000	498.839	0.000

It can be seen from the Table that Sig. (p value) = 0.000, as $p < 0.05$, for all the regression models of import and ex port. It can be stated that predictors are very significant as expected by chance. The model given for all the countries showed that there is a deviation in the dependent variable which is caused by the independent variables. The regression line predicted by the independent variables explains a significant amount of the deviation in the dependent variable. For all the Regression models (other than Morocco model for Import the value of F) is greater than one that is F > 1 which shows that the improvement aft er fitting the model is greater than the incorrectness within the model.

Hypotheses Summary for Bilateral Model

Hypotheses Summary for Basic Model

s. no.	Hypotheses	Overall			2005			2006			2007		
		P	Relation	Result	p	Relation	Result	p	Relation	Result	p	Relation	Result
H-1	Import of the country is positively related to its export.	0.000	positive	accepted	0.000	positive	accepted	0.000	positive	accepted	0.000	positive	accepted
H-2	Export of the country is positively related to its import.	0.000	positive	accepted	0.000	positive	accepted	0.000	positive	accepted	0.000	positive	accepted
H-3	Population of the country is negatively related to its export.	0.039	negative	accepted	0.124	no-relation	rejected	0.169	no-relation	rejected	0.023	negative	accepted
H-4	Population of the country is negatively related to its import.	0.112	no-relation	rejected	0.386	no-relation	rejected	0.552	no-relation	rejected	0.340	no-relation	rejected
H-5	Exchange rate is negatively related to country's export.	0.237	no-relation	rejected	0.826	no-relation	rejected	0.512	no-relation	rejected	0.446	no-relation	rejected
H-6	Exchange rate is negatively related to country's import.	0.137	no-relation	rejected	0.225	no-relation	rejected	0.306	no-relation	rejected	0.357	no-relation	rejected
H-7	Transportation cost is negatively related to the export of a country.	0.000	negative	accepted	0.018	negative	accepted	0.048	negative	accepted	0.000	negative	accepted
H-8	Transportation cost is negatively related to the import of a country.	0.000	positive	rejected	0.000	positive	rejected	0.386	no-relation	rejected	0.000	positive	rejected
H-9	GDP of the country is positively related to its export.	0.755	no-relation	rejected	0.675	no-relation	rejected	0.769	no-relation	rejected	0.815	no-relation	rejected
H-10	GDP of the country is positively related to its import.	0.826	no-relation	rejected	0.911	no-relation	rejected	0.698	no-relation	rejected	0.890	no-relation	rejected
H-11	Foreign direct investment is related to the export of the country.	0.669	no-relation	rejected	0.531	no-relation	rejected	0.366	no-relation	rejected	0.001	positive	accepted
H-12	Foreign direct investment is related to the import of the country.	0.143	no-relation	rejected	0.700	no-relation	rejected	0.000	positive	accepted	0.961	no-relation	rejected
H-13	Remittances inflow is positively related to the exports of the country.	0.252	no-relation	rejected	0.126	no-relation	rejected	0.268	no-relation	rejected	0.615	no-relation	rejected
H-14	Remittances inflow is positively related to the import of the country.	0.440	no-relation	rejected	0.172	no-relation	rejected	0.753	no-relation	rejected	0.831	no-relation	rejected
H-15	Inflation rate is negatively related to the export of the country.	0.232	no-relation	Rejected	0.524	no-relation	rejected	0.224	no-relation	rejected	0.265	no-relation	rejected
H-16	Inflation rate is negatively related to the import of the country.	0.063	no-relation	Rejected	0.456	no-relation	rejected	0.378	no-relation	rejected	0.273	no-relation	rejected
H-17	Tariff rate is negatively related to the import of the country.	0.218	no-relation	Rejected	0.690	no-relation	rejected	0.432	no-relation	rejected	0.390	no-relation	rejected

p= Significance value.

(p <.05)= Significant.

s. no.	Hypotheses	Argentina			Brazil			Chile			Colombia		
		p	Relation	Result	p	Relation	Result	p	Relation	Result	p	Relation	Result
H-1	Import of the country is positively related to its export.	0.000	Positive	accepted	0.000	positive	accepted	0.000	positive	accepted	0.000	Positive	accepted
H-2	Export of the country is positively related to its import.	0.000	Positive	accepted	0.000	positive	accepted	0.000	positive	accepted	0.000	Positive	accepted
H-3	Population of the country is negatively related to its export.	0.317	no-relation	rejected	0.137	no-relation	rejected	0.875	no-relation	rejected	0.111	no-relation	rejected
H-4	Population of the country is negatively related to its import.	0.597	no-relation	rejected	0.092	no-relation	rejected	0.676	no-relation	rejected	0.910	no-relation	rejected
H-5	Exchange rate is negatively related to country's export.	0.504	no-relation	rejected	0.144	no-relation	rejected	0.636	no-relation	rejected	c	no-relation	rejected
H-6	Exchange rate is negatively related to country's import.	0.548	no-relation	rejected	0.097	no-relation	rejected	0.809	no-relation	rejected	c	no-relation	rejected
H-7	Transportation cost is negatively related to the export of a country.	0.329	no-relation	rejected	0.147	no-relation	rejected	0.862	no-relation	rejected	0.096	no-relation	rejected
H-8	Transportation cost is negatively related to the import of a country.	0.747	no-relation	rejected	0.101	no-relation	rejected	0.681	no-relation	rejected	0.291	no-relation	rejected
H-9	GDP of the country is positively related to its export.	0.308	no-relation	rejected	0.165	no-relation	rejected	0.738	no-relation	rejected	0.135	no-relation	rejected
H-10	GDP of the country is positively related to its import.	0.603	no-relation	rejected	0.115	no-relation	rejected	0.742	no-relation	rejected	0.131	no-relation	rejected
H-11	Foreign direct investment is related to the export of the country.	0.242	no-relation	rejected	0.135	no-relation	rejected	0.806	no-relation	rejected	0.952	no-relation	rejected
H-12	Foreign direct investment is related to the import of the country.	0.670	no-relation	rejected	0.090	no-relation	rejected	0.584	no-relation	rejected	0.978	no-relation	rejected
H-13	Remittances inflow is positively related to the exports of the country.	0.317	no-relation	rejected	0.272	no-relation	rejected	0.559	no-relation	rejected	0.093	no-relation	rejected
H-14	Remittances inflow is positively related to the import of the country.	0.636	no-relation	rejected	0.098	no-relation	rejected	0.874	no-relation	rejected	0.091	no-relation	rejected
H-15	Inflation rate is negatively related to the export of the country.	0.652	no-relation	rejected	0.177	no-relation	rejected	0.136	no-relation	rejected	0.190	no-relation	rejected
H-16	Inflation rate is negatively related to the import of the country.	0.543	no-relation	rejected	0.125	no-relation	rejected	0.594	no-relation	rejected	0.187	no-relation	rejected
H-17	Tariff rate is negatively related to the import of the country.	C	no-relation	rejected	c	no-relation	rejected	c	no-relation	rejected	c	no-relation	rejected
H-18	Tariff imposed by the trading partner has a negative effect on the export of a country.	0.004	Negative	accepted	0.015	positive	rejected	0.020	negative	accepted	0.787	no-relation	rejected
H-19	Distance between trading partners is negatively related to export.	0.000	Negative	accepted	0.912	no-relation	rejected	0.000	negative	accepted	0.875	no-relation	rejected
H-20	Distance between trading partners is negatively related to import.	0.000	Positive	rejected	0.763	no-relation	rejected	0.001	negative	accepted	0.910	no-relation	rejected
H-21	Population of the trading partner has negative effect on a country's export	0.005	negative	accepted	0.000	positive	rejected	0.014	negative	accepted	0.909	no-relation	rejected
H-22	Population of the trading partner has negative effect on a country's import.	0.353	no-relation	rejected	0.000	negative	accepted	0.187	no-relation	rejected	0.108	no-relation	rejected
H-23	Exchange rate of trading partner is negatively related to a country's export.	0.069	no-relation	rejected	0.016	no-relation	rejected	0.186	no-relation	rejected	0.910	no-relation	rejected
H-24	Exchange rate of trading partner is negatively related to a country's import.	0.007	positive	rejected	0.005	negative	accepted	0.709	no-relation	rejected	0.928	no-relation	rejected
H-25	GDP of trading partner has positive effect on export.	0.090	no-relation	rejected	0.458	no-relation	rejected	0.479	no-relation	rejected	0.135	no-relation	rejected
H-26	GDP of trading partner has positive effect on import.	0.048	positive	accepted	0.859	no-relation	rejected	0.077	no-relation	rejected	0.131	no-relation	rejected
H-27	FDI done by trading partner is positively related to the country's export.	0.000	positive	accepted	0.019	positive	accepted	0.000	positive	accepted	0.970	no-relation	rejected
H-28	FDI done by trading partner is positively related to the country's import.	0.675	no-relation	rejected	0.008	negative	rejected	0.555	no-relation	rejected	0.954	no-relation	rejected
H-29	The inflow of remittances in trading country has a positive effect on export.	0.037	negative	rejected	0.134	no-relation	rejected	0.408	no-relation	rejected	0.876	no-relation	rejected
H-30	The inflow of remittances in trading country has a positive effect on import.	0.000	positive	accepted	0.289	no-relation	rejected	0.018	positive	accepted	0.758	no-relation	rejected
H-31	Inflation rate of trading partner has a negative effect on the export of a country.	0.386	no-relation	rejected	0.485	no-relation	rejected	0.481	no-relation	rejected	0.873	no-relation	rejected
H-32	Inflation rate of trading partner has a negative effect on the import of a country.	0.324	no-relation	rejected	0.724	no-relation	rejected	0.020	positive	rejected	0.784	no-relation	rejected

p= Significance value.

(p <.05)= Significant.

C= shows that variables has constant values so there is no affect of variable on dependent variable.

Hypotheses Summary for Bilateral Model

s. no.	Hypotheses	Costa Rica			Ecuador			Kenya			Morocco		
		p	Relation	Result	p	Relation	Result	p	Relation	Result	p	Relation	Result
H-1	Import of the country is positively related to its export.	0.112	no-relation	rejected	0.000	positive	accepted	0.000	positive	accepted	0.000	positive	accepted
H-2	Export of the country is positively related to its import.	0.000	positive	accepted	0.000	positive	accepted	0.000	no-relation	rejected	0.000	positive	accepted
H-3	Population of the country is negatively related to its export.	0.495	no-relation	rejected	0.603	no-relation	rejected	0.683	no-relation	rejected	0.639	no-relation	rejected
H-4	Population of the country is negatively related to its import.	0.224	no-relation	rejected	0.386	no-relation	rejected	0.618	no-relation	rejected	0.986	no-relation	rejected
H-5	Exchange rate is negatively related to country's export.	0.617	no-relation	rejected	c	no-relation	rejected	0.689	no-relation	rejected	0.391	no-relation	rejected
H-6	Exchange rate is negatively related to country's import.	0.376	no-relation	rejected	c	no-relation	rejected	0.602	no-relation	rejected	0.819	no-relation	rejected
H-7	Transportation cost is negatively related to the export of a country.	c	no-relation	rejected	0.547	no-relation	rejected	0.750	no-relation	rejected	0.419	no-relation	rejected
H-8	Transportation cost is negatively related to the import of a country.	0.172	no-relation	rejected	0.656	no-relation	rejected	0.628	no-relation	rejected	0.712	no-relation	rejected
H-9	GDP of the country is positively related to its export.	0.497	no-relation	rejected	0.569	no-relation	rejected	0.675	no-relation	rejected	0.448	no-relation	rejected
H-10	GDP of the country is positively related to its import.	0.226	no-relation	rejected	0.319	no-relation	rejected	0.658	no-relation	rejected	0.883	no-relation	rejected
H-11	Foreign direct investment is related to the export of the country.	0.517	no-relation	rejected	0.637	no-relation	rejected	0.743	no-relation	rejected	0.582	no-relation	rejected
H-12	Foreign direct investment is related to the import of the country.	0.248	no-relation	rejected	0.456	no-relation	rejected	0.585	no-relation	rejected	0.981	no-relation	rejected
H-13	Remittances inflow is positively related to the exports of the country.	0.520	no-relation	rejected	0.542	no-relation	rejected	0.667	no-relation	rejected	0.388	no-relation	rejected
H-14	Remittances inflow is positively related to the import of the country.	0.252	no-relation	rejected	0.262	no-relation	rejected	0.718	no-relation	rejected	0.815	no-relation	rejected
H-15	Inflation rate is negatively related to the export of the country.	0.445	no-relation	rejected	0.531	no-relation	rejected	0.937	no-relation	rejected	0.448	no-relation	rejected
H-16	Inflation rate is negatively related to the import of the country.	0.172	no-relation	rejected	0.220	no-relation	rejected	0.743	no-relation	rejected	0.883	no-relation	rejected
H-17	Tariff rate is negatively related to the import of the country.	c	no-relation	rejected	0.656	no-relation	rejected	c	no-relation	rejected	c	no-relation	rejected
H-18	Tariff imposed by the trading partner has a negative effect on the export of a country.	0.918	no-relation	rejected	0.301	no-relation	rejected	0.283	no-relation	rejected	0.090	no-relation	rejected
H-19	Distance between trading partners is negatively related to export.	0.000	negative	accepted	0.049	negative	accepted	0.001	negative	accepted	0.000	negative	accepted
H-20	Distance between trading partners is negatively related to import.	0.304	no-relation	rejected	0.002	negative	accepted	0.037	negative	accepted	0.302	no-relation	rejected
H-21	Population of the trading partner has negative effect on a country's export	0.705	no-relation	rejected	0.009	negative	accepted	0.423	no-relation	rejected	0.000	negative	accepted
H-22	Population of the trading partner has negative effect on a country's import.	0.000	positive	rejected	0.000	positive	rejected	0.019	negative	accepted	0.175	no-relation	rejected
H-23	Exchange rate of trading partner is negatively related to a country's export.	0.001	positive	rejected	0.903	no-relation	rejected	0.747	no-relation	rejected	0.056	no-relation	rejected
H-24	Exchange rate of trading partner is negatively related to a country's import.	0.380	no-relation	rejected	0.410	no-relation	rejected	0.498	no-relation	rejected	0.342	no-relation	rejected
H-25	GDP of trading partner has positive effect on export.	0.236	no-relation	rejected	0.195	no-relation	rejected	0.855	no-relation	rejected	0.748	no-relation	rejected
H-26	GDP of trading partner has positive effect on import.	0.841	no-relation	rejected	0.224	no-relation	rejected	0.789	no-relation	rejected	0.775	no-relation	rejected
H-27	FDI done by trading partner is positively related to the country's export.	0.310	no-relation	rejected	0.098	no-relation	rejected	0.051	no-relation	rejected	0.000	positive	accepted
H-28	FDI done by trading partner is positively related to the country's import.	0.000	positive	accepted	0.000	positive	accepted	0.000	positive	accepted	0.035	positive	accepted
H-29	The inflow of remittances in trading country has a positive effect on export.	0.435	no-relation	rejected	0.000	negative	rejected	0.066	no-relation	rejected	0.088	no-relation	rejected
H-30	The inflow of remittances in trading country has a positive effect on import.	0.000	positive	accepted	0.001	positive	accepted	0.158	no-relation	rejected	0.018	positive	accepted
H-31	Inflation rate of trading partner has a negative effect on the export of a country.	0.285	no-relation	rejected	0.486	no-relation	rejected	0.593	no-relation	rejected	0.223	no-relation	rejected
H-32	Inflation rate of trading partner has a negative effect on the import of a country.	0.623	no-relation	rejected	0.531	no-relation	rejected	0.160	no-relation	rejected	0.060	no-relation	rejected

p= Significance value.

(p <.05)= Significant.

C= shows that variables has constant values so there is no affect of variable on dependent variable.

Hypotheses Summary for Bilateral Model

s. no.	Hypotheses	Peru			Uruguay		
		p	Relation	Result	p	Relation	Result
H-1	Import of the country is positively related to its export.	0.000	positive	accepted	0.000	positive	accepted
H-2	Export of the country is positively related to its import.	0.000	positive	accepted	0.000	positive	accepted
H-3	Population of the country is negatively related to its export.	0.832	no-relation	rejected	0.208	no-relation	rejected
H-4	Population of the country is negatively related to its import.	0.840	no-relation	rejected	0.332	no-relation	rejected
H-5	Exchange rate is negatively related to country's export.	0.722	no-relation	rejected	0.209	no-relation	rejected
H-6	Exchange rate is negatively related to country's import.	0.155	no-relation	rejected	0.332	no-relation	rejected
H-7	Transportation cost is negatively related to the export of a country.	c	no-relation	rejected	c	no-relation	rejected
H-8	Transportation cost is negatively related to the import of a country.	0.893	no-relation	rejected	0.368	no-relation	rejected
H-9	GDP of the country is positively related to its export.	0.968	no-relation	rejected	0.212	no-relation	rejected
H-10	GDP of the country is positively related to its import.	0.823	no-relation	rejected	0.333	no-relation	rejected
H-11	Foreign direct investment is related to the export of the country.	0.783	no-relation	rejected	0.805	no-relation	rejected
H-12	Foreign direct investment is related to the import of the country.	0.853	no-relation	rejected	0.931	no-relation	rejected
H-13	Remittances inflow is positively related to the exports of the country.	0.837	no-relation	rejected	0.219	no-relation	rejected
H-14	Remittances inflow is positively related to the import of the country.	0.839	no-relation	rejected	0.336	no-relation	rejected
H-15	Inflation rate is negatively related to the export of the country.	0.494	no-relation	rejected	0.277	no-relation	rejected
H-16	Inflation rate is negatively related to the import of the country.	0.961	no-relation	rejected	0.379	no-relation	rejected
H-17	Tariff rate is negatively related to the import of the country.	c	no-relation	rejected	c	no-relation	rejected
H-18	Tariff imposed by the trading partner has a negative effect on the export of a country.	0.972	no-relation	rejected	0.262	no-relation	rejected
H-19	Distance between trading partners is negatively related to export.	0.125	no-relation	rejected	0.105	no-relation	rejected
H-20	Distance between trading partners is negatively related to import.	0.001	negative	accepted	0.801	no-relation	rejected
H-21	Population of the trading partner has negative effect on a country's export	0.354	no-relation	rejected	0.000	negative	accepted
H-22	Population of the trading partner has negative effect on a country's import.	0.101	no-relation	rejected	0.028	positive	rejected
H-23	Exchange rate of trading partner is negatively related to a country's export.	0.418	no-relation	rejected	0.562	no-relation	rejected
H-24	Exchange rate of trading partner is negatively related to a country's import.	0.093	no-relation	rejected	0.332	no-relation	rejected
H-25	GDP of trading partner has positive effect on export.	0.746	no-relation	rejected	0.939	no-relation	rejected
H-26	GDP of trading partner has positive effect on import.	0.160	no-relation	rejected	0.951	no-relation	rejected
H-27	FDI done by trading partner is positively related to the country's export.	0.000	Positive	accepted	0.000	positive	accepted
H-28	FDI done by trading partner is positively related to the country's import.	0.002	Positive	accepted	0.000	negative	rejected
H-29	The inflow of remittances in trading country has a positive effect on export.	0.000	Negative	rejected	0.609	no-relation	rejected
H-30	The inflow of remittances in trading country has a positive effect on import.	0.017	Positive	accepted	0.294	no-relation	rejected
H-31	Inflation rate of trading partner has a negative effect on the export of a country.	0.497	no-relation	rejected	0.477	no-relation	rejected
H-32	Inflation rate of trading partner has a negative effect on the import of a country.	0.240	no-relation	rejected	1.830	no-relation	rejected

p= Significance value.

(p <.05)= Significant.

C= shows that variables has constant values so there is no affect of variable on dependent variable.

Summary of the Result:

Overall Result of general analysis shows that there is a high impact of population, import and transportation cost export on export where as there is high impact of export and transportation cost import on import. In the separate analysis of years the result is almost same but an Impact of FDI is seen on the import in 2006 and on export in 2007.

The analysis of 10 countries bilateral model has shown very diverse result. The export model for all the countries shows that import of that country is positively affecting the export of the countries hence these findings are validating the theory of trade offer curve ; FDI of trading partner is affecting the export of most of the countries positively other than Costa Rica which have negat ive effect of FDI on the export means the FDI is a trade barrier for costa rica while for the most of the courtiers it is a trade facilitator whereas, Export of Colombia, Ecuador and Kenya has no relation with FDI. Population of trading partner is found to have negative impact on the export of half of the countries conversely Brazil export was found to have positive relation with population of tradin g partner. Remittances inflow has negative relation with the export of Argentina, Ecuador and Peru whereas rests of the countries have no relation with remittances. Tariff imposed by trading partner has positive impact on Brazil and negative impact on Argentina and Chile and hence the imposition of tariff by the trading partner is a trade barrier for Argentina and Chile but its not a trade barrier for Brazil. Other than positive effect on Brazil Trading partner exchange rate is found to have no affect on ex port of a country.

Import model of all the ten countries revealed that export of all the countries have positive effect on the import of that countries. FDI of trading partner is found to have positive relationship with half of the countries. Brazil and Uruguay are affected by FDI of trading partner negatively. Colombia, Chile and Argentina were found to have no relation with FDI of trading partner. Chile, Ecuador, Kenya and Peru are affected by distance negatively where as Argentina has positive im pact of distance on the export. A remittance of trading partner is positively associated with all the countries other than Brazil, Colombia, Kenya and Uruguay. Population of trading partner is positively affecting import of Costa Rica, Ecuador and Uruguay. Inverse relation was found with import of Brazil and Kenya. Argentina is positively and Brazil is negatively affected by the exchange rate of trading partner. GDP of trading partner was only affecting Argentina and inflation rate prevailing in trading pa rtner's economy was only affecting Chile. Tariff imposed by trading partner is positively affecting Brazil and negatively affecting Argentina and Chile.

Conclusion

This research tries to find out, the determinants of bilateral trade, is there any relatio nship between barriers to trade and trade flows, Does theory of offer curve applies on developing nations with the help of gravity model. The result of the empirical study of 31 developing nations, done with the help of classical linear regression analysis indicates that the population, import and transportation cost export, distance, Tariff imposed by trading partner, FDI of trading partner and Population of trading country are the determinants that have significant impact on export where as export, FDI, t ransportation cost import, distance, population of trading country, FDI of trading country and remittances of trading country are the determinants that have major impact on import. Exchange rate, and inflation were found insignificant with no effect on trade flows. The study also proves that that theory offer curve is applicable on developing nations.

Implication:

The study is very useful for the developing nation as it has identified the factors that can decrease or increase the volume of trade flows Fact ors having positive association to trade can be improved to raise

trade and factors having negative result can be evade or lessen. To avoid import in a country factors having positive impact on import should be avoided and factors having negative impact should be adopted. On the other hand to enhance export factors having positive impact on export should be adopted and factors having negative effect on export should be avoided. Thus this is a very helpful instrument for the development and growth of the economy.

Future work:

The impact of other factors such as technology, infrastructure, quota, subsidie s etc.can also be tested .This study can help as a baseline to check the impact of those variables on the volume of trade which have not been tested before. With suitable amendments in the data this study can be applied to other nations such as developed and least developed nations. This study can help in finding out the impact of the barriers and determinants of bilateral trade on developed and least devel oped economies.

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