

DETERMINING THE TRADE POTENTIAL OF TRADE BETWEEN PAKISTAN AND SAFTA COUNTRIES USING GRAVITY MODEL

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ABSTRACT

The study tried to identify main determinants of exports between Pakistan and SAFTA countries by applying the gravity model of trade. Panel data were used from the period 2003 to 2016. The independent variables include GDP, GDP per capita, distance, border, and inflation to investigate their impact on trade patterns. The Multiple Regression models were applied. The results suggested the gravity model fits into data reasonably well and Pakistan's GDP, distance, and border showed a significant negative relationship with trade patterns of SAFTA countries. Whereas inflation and per capita GDP showed a significant positive relationship with trade patterns between Pakistan and SAFTA countries. This work has tried to apply theoretical concepts and empirical analysis to add to the limited literature already available. The results suggest significant potential in SAFTA regions for Pakistan, which is still untapped. This suggested a development of liberal trade policies, decreasing Non-tariff barriers to increase trade within the region.

Key Words: Trade, gravity model, SAFTA

INTRODUCTION

Globalization had posed many changes at the local and international level, creating windows of opportunities. Economic integration the outcome of trade liberalization, the main pillar of which is the world trade organization (WTO) and international monetary fund (IMF). The modeling of trade patterns had received considerable attention in the research academia. As the emergence of the global market had made it necessary for countries to integrate into international trade. Various models had been identified to explain bilateral trade flows within the regional blocs and individual trading partners, but the most popular model used was gravity model of trade based on Newton's law of gravitation. Tinbergen (1962) used a gravity model to identify the relationship between GDP and trade flows. Later on, Poyhonen (1963) identified that the amount of trade between countries depends upon their distance and incomes which was further investigated by Rasoulinezhad (2016).

An unevenness of the production patterns of different industries in different countries, unlimited production tendencies, international production patterns for availing benefits of low wages and cheap raw material from developing countries is the major reason for the emergence of international trade. Sun and Heshmati (2010) suggested that international trade had significantly impacted the economic growth of China, resulting in expansion and higher economic growth. It will also help in achieving development goals through inclusive and sustainable economic growth, which results in acceleration of job creation, efficient resource utilization, an entrepreneur incentive achievement which ultimately upgrades living standards (UNCAD, 2015). Wani, Dhaniala, and Rehman (2016) suggested that international trade is integral to the economic development of any country.

The trade policy of Pakistan showed many ups and downs, in the beginning, it was restricted, but had to liberalize its policy with the help of the WTO and IMF. This trend was seen in 1980. The open

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open trade policy gave a boost to exports and imports majorly with China, USA, Germany, UK, France, Italy, Spain, and Bangladesh, which comprise almost 50% of the total Pakistani exports. The major importing countries are Germany, India, USA, Kuwait, Malaysia, Japan Saudi Arabia, China and Indonesia. Exports can impact economic development significantly. Pakistan had faced with problem negative balance of payment consistently the exports are decreasing with its neighboring countries and also with the rest of the world. The introduction of the Generalized Scheme of Preference (GSP) has offered window of opportunity for boosting with European countries. Despite many free trade agreements (FTAs) and Preferential Trade Agreements (PTAs), the regional trade is not increasing.

The Second World War ended up with a huge amount of destruction and distress. This marked the start of a new era in which it was recognized that increase in international trade would greatly contribute in the development of weak economies of the world, this framework of increased cooperation rapidly increases international trade. This rapid increase in international trade was the resulting establishment of GATT in 1944. It was actually a multilateral trade agreement between 23 nations, who were agreed to leave protectionist policies of the past and increase cooperation among member countries. GATT was in effect till 1995, after which it was replaced by the WTO in 1995. These both political institutions facilitated world trade by providing procedures for increased cooperation and facilitate trade negotiations. Now many governments are utilizing this multilateral trading system to decrease trade barriers to increase international trade. These multilateral trade agreements rapidly increased at the end of the 20th century. There were 34 new RTAs between 1990 to 1994 notified by the WTO. In 1995 to 2001 their number doubled to 68 and in 2001 to 2005 almost 100 new RTAs were signed. until 2015 406 RTAs are active. Examples of free trade agreements from North-North establishment the European Community in 1957 among Belgium, Germany, Italy, Luxembourg, Netherlands, and France under Rome treaty another example is the establishment of European free trade area among Denmark, Norway, Austria Sweden, Portugal, Switzerland, and UK at Stockholm convention in 1960. Free Trade Areas found in south-south is CACM (Central American Common Market), which was established in 1960, members of this agreement were by Honduras, Guatemala, Costa Rica, El Salvador, and Nicaragua. In 1958 CARICOM (Caribbean Community) among by Suriname, Barbados, Antigua, and Barbuda, Belize, Bahamas, Dominica, Guyana, Haiti, Jamaica, Granada, St. Kitts and Nevis, St. Lucia, St. Vincent, Tobago. and Trinidad. The new wave of regionalism started in the 1980s by featuring developing and developed countries one example is NAFTA (North American Free Trade Area) in this agreement Canada and America was from developed countries and Mexico as a developing country and the EU (European Union) established agreements with countries of Eastern and Central Europe and also with some Mediterranean countries these agreements are EU-Cyprus in 2001, EU-Turkey in 1996 and Euro-Mediterranean Agreements in 1995 and in 1998 EU-Mexico trade agreement. In order to achieve advantages of Regional Trade Agreement (RTA).

South Asian Association for Regional Cooperation (SAARC) was formed among the eight nations of South Asian 1885 these countries- India, Pakistan, Nepal, Sri Lanka, Bangladesh, Maldives, Bhutan, and Afghanistan. Due to many political reasons, this RTA had not resulted in providing considerable gains to member countries and regional integration is very much slow. The recognition of this fact in 1993-member countries signed an agreement named as South Asian Preferential Trading Agreement (SAPTA). This agreement had to be effective in 1995 In this agreement trade concessions were offered to the member countries in the selected list of items. In order to boost the process of integration

member countries continued their negotiations and in 2005 SAFTA was replaced by SAFTA. This agreement was to be operational till 2006 and achieve full integration till 2013. After the signing of these agreements' member countries are struggling to increase regional cooperation by reducing tariffs and quotas and other non-tariff barriers. Pakistan is an emerging economy and export revenue will help and support the country for economic development if they untap their hidden trade potential. The policymakers in Pakistan are trying to adopt trade liberalization policies. The country under the structural adjustment by the international monetary fund reduced or eliminated many tariff and non-tariff barriers and also signed many trade agreements with its trading nation. Pakistan has trapped into a trade deficit problem, which is due to the concentration of international trade in low-value items and restricted toward few trading partners (Abass and Waheed, 2015). Exports are an important driver of economic development, it's very important to identify factors which can help in accelerating exports within the country. Pakistan is facing the problem of deficit balance of trade. Therefore, it's very critical to conduct research on factors which can accelerate exports from Pakistan.

The work will try to explore different factor which is contributing to accelerating trade patterns between Pakistan and SAFTA countries. The current study had tried to use the gravity model for the overview of the bilateral trade between Pakistan and SAFTA countries from the period 2003 to 2016. These countries were selected to have an analysis and checking the outcome the liberalization efforts by South East Asian countries, for the development of the overall region. As, the benefits emerged include more utilization of abundant natural resources available and achievement of economies of scale (Helpman and Krugman, 1985) and specialization, import needed products which cannot be produced domestically, it increases the efficiency of domestic industries due to the international competitive environment. Earn foreign exchange for the country (Chenery & Strout, 1966). It is also an important driver of the economy (Frankel & Romer, 1999).

The main objective of this work is to quantify Pakistan's trade potential with its other regional pattern and to analyze the main determinants of trade flows with its neighboring countries. This work will provide important insight into the direction of trade flows of Pakistan with its SAFTA member countries. This will provide various policy implications for the increasing trade potential of Pakistan. The gravity model is used in finding trade potential of Pakistan with its SAFTA member countries for the period 2004 to 2016.

Research Objectives

- To investigate factors which can accelerate exports of Pakistan with SAFTA Countries by applying the gravity model.
- To investigate factors which can accelerate Pakistani exports to SAFTA countries.

Research Questions

- What are the factors which can accelerate bilateral trade patterns of Pakistan with SAFTA countries?

LITERATURE REVIEW

The role of trade and development is identified by many theoretical and empirical work, several dimensions of trade have been discussed so, but the important question is to find the future options and determinants for country's trade expansion. The gravity model is one of the prominent tools used

for measuring the number of trade flows. Ravenstein (1889) used a gravity model to measure migration patterns in the UK. In 1667, Newton postulated the “Law of Universal Gravitation” which described the attraction between the two forces as the result of the product of the mass of the two bodies divided by the squared distance between the two bodies multiplied by a gravitational constant (Head, 2003).

$$F_{ij} = G * M_i^\alpha * M_j^\beta / D_{ij}^\theta$$

This model was further used by Tinbergen (1962) in his study trade flows. First, they used variables like the size of the country and geographical distance. The fitted model was able to measure variation up to 80-90%. Tinbergen's Old Gravity Model of 1962 was as follows:

The model identified by Tinbergen (1962) was specified as:

$$\ln \text{Exports}_{ij} = \beta_0 + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \text{DIS}_{ij} + \epsilon_{ij}$$

The above equation shows that the exports of the country *I* with country *j* are dependent on the GNP of the country *I* and in the country *j* the value of DIS is taken as a proxy for the transportation cost. His work identified that a direct relationship between bilateral trade flows and economic size and indirect, whereas the indirect relationship with the distance between two trading partners. Linneman (1996) derived gravity model from partial equilibrium model by incorporating three costs including-, time-related cost, physical cost and other cost arising from social and cultural differences. Anderson (1979) derived gravity model from the constant elasticity of substitution (CES). Bergstrand (1985) suggested that gravity model is just a reduced form of demand and supply general equilibrium. Deardorff (1995) derived gravity model from H-O theory of factor endowment and specialization. Frankel and Romer (1999) used cross-sectional data from 63 countries gravity model to identify the impact of international trade on the living standards. Their results suggest a positive relationship between income and trade flows between countries which further increases with increase in geographical, human and physical capital formation. Heckscher –Ohlin theory suggests that trade patterns are based on factors endowment. Countries having some factors in abundance use these factors in their production process. According to Chicago school, this theory has the potential of explaining all the trade-related factors.

But, Ohlin (1913) himself argued that the world is much more dynamic and it cannot solely have explained by comparative advantage theory. Later on, many empirical works have supported his argument. Leontief (1986) worked on the US economy and explained that the US is a capital-intensive industry but, still they export many labor-intensive products. Linder (1961) proposed Linder Hypothesis in which he suggests that when different countries have similar demand patterns they tend to trade more with one another. This was a demand-based theory which was opposite to supply based theories of the past. Linder did not give a proper model for his hypothesis, therefore his findings were tested in different ways by different researchers. Anderson (1979) used a gravity model based on product differentiation. The Tinbergen's ad hoc formula was progressively micro-founded by Anderson (1979), he was of the view that gravity model can be explained by expenditure share model by taking certain assumptions which included maximization of the utility of trade goods which are differentiated and have homothetic preferences (similarity-based preferences).

Deardorff (1998) suggested a model in which he considered differences in factor endowment perfect competition, homogeneous products and homothetic preferences. Helpman (1999) suggested that

gravity models were previously used and have a long history, but these models are different from another model as it tries to ascertain the volume of trade, but does not explain the composition of trade. The gravity model uses an equation to predict bilateral trade between two countries. Eaton and Kortum (2002) presented Ricardian model with the certain assumption in which he took differences in production technology, constant returns to scale and homothetic preferences.

The equation had transformed and various variable were included by different scholars to extend the model, artificial trade resistance and population size was included by Linnemann (1966). income of the countries were included by Frankel (1992) foreign direct investment was included by Pfaffermayr (1994) the trade policy index was introduced by Chen and Wall (1999) in 2010, Nguyen include trade preference and exchange rate. Based upon the above discussion the gravity equation was identified:

$$X_{ij} = \alpha_0 + \alpha_1(Y_i) + \alpha_2(Y_j) + \alpha_3(N_i) + \alpha_4(N_j) + \alpha_5(D_{ij}) + \alpha_6(A_{ij}) + \alpha_7(P_{ij})$$

The role of trade and development is identified by many theoretical and empirical work, several dimensions of trade had been discussed so, but the important question is to find the future options and determinants for country's trade expansion.

Nicholls (1998) used data from Central American Common Wealth (CACM) and applied Compensating and equivalent variation Heckhrrian measures and suggest that for this area RTAs are strictly trade diverting in some selected commodities sectors. Thirlwall (2000) contributed that trade is very beneficial for the country as it contributes in the fuller utilization of resources and this growth is not limited to the home country about expanded to other parts of the globe.

Hassan (2001) used gravity model by using data for SAARC countries and suggest a very low trade that among SAFTA countries as compared to other RTAs. He identified that there are many areas which are not been exploited by member countries, as RTAs have a positive impact on the welfare of member countries so, all member countries should take steps for the increase of regional trade for gaining welfare impact. This requires proper policies for decreasing political tensions, non-tariff barriers, and other tariffs. Ghosh and Yamarik (2004) used extreme bound analysis for measuring trade creation and diversion effect of RTAs and found that very insignificant impact of RTAs on trade creation. The SAARC region is home to an almost one-fifth population of the world, which are mostly below the poverty level, hindering the achievement of the goals of the SAARC. The other reasons are political tensions, Lack of trust and ups and downs in relations between India and its neighboring countries Dahal and Pandey (2005).

A gravity model was used by Carrere and Celine (2006) by using data from 130 countries and found that RTAs can produce a significant impact on trade creation of member countries, but produce a negative impact on non-member countries. Lee and Shin. (2006) used data from East Asia and suggest that geographical proximity and having natural trading partners can be more trade creating join a common RTA. He also added that RTAs will result in welfare for member countries. Hilbun and Dufour (2006) try to find impacts of RTAs in Western Hemisphere related to the agriculture sector by applying the gravity model for 24 Western Hemisphere Nations. Many agreements were analyzed, including NAFTA, AC, MERCOSUR, LAIA, and CACM. The results suggested a positive, but the insignificant effect of trade creation of NAFTA and LAIA. While for AC, MERCOSUR, and CACM they found the negative and insignificant effect of trade creation. The result found the positive significant diversionary effect of NAFTA with other agreements all was negative and significant related to

diversion GDP had positive and distance has a negative relationship with trade flows. They also found that RTAs affect more at the inter-industry trade as compared to intra-industry trade.

Moktan (2009) also used data from SAARC member countries by using pooled data from 1980–2005, and applied to augmented gravity model, suggesting that SAPTA had a positive impact on trade between member countries in the later period of study. As Indian growth can become an important economic driver for the whole region, but unfortunately, the whole region is stuck in the economic trap of poverty, poor infrastructure, income disparity, energy shortages and another environmental issue. Other reasons are internal conflicts between member countries, ranging from high intensity (India- Pakistan) to low intensity (India-Bangladesh) and also India Sri Lanka as the presence of Indian army in Sri Lanka. Additionally, these relations were further worsened by cross-border terrorism, the arms race and hostile propaganda. Rivalry among two nuclear powers- Pakistan and India continue to treat to the region. These all reason had absolutely make SAARC a failure (Thapar, 2011). Sridharan (2008) compared the performance of SAARC and ASEAN for their role in resolving regional conflicts and suggest that ASEAN had contributed a lot in this regard as compared to SAARC. SAFTA was signed to boost free trade between SAARC member countries therefore, it's important to analyze the effectiveness of SAFTA after many years of its operation. Karemera et al. (1990) applied gravity model using pooled data from 1984 to 1993, incorporating GDP, trade flows, inflation, domestic wholesale prices, import and exports values, distance and other geographical values and found all variable significant in case of Pacific Rim.

Lai and Zhu (2004) used cross-sectional and panel data from 34 countries using labor productivity, total factor productivity-adjusted wages. distance, average tariffs, time-varying tariffs, labor and productivity-adjusted wages. the results suggested that that trade liberalization are more beneficial for poor countries as compared to rich countries. Rahman (2005) used panel data from 1972 to 1999m, to analyze trade performance of Bangladesh with NAFTA, ASEAN, SAARC, EEC and Middle East countries. the results follow the theoretical foundation of the gravity model. The results suggest distance, economic size, import demand, and trade opens to be important determinants of Bangladesh trade flows.

Malik and Chaudhry (2012) used gravity model by applying the least square method on panel data from 1996 to 2006. The results suggest an income of trading partners and exchange rate to be important determinants of Pakistan 's import volume. Achakzai (2006) used pooled data from 1337 countries for the year 2005 and applied the standard gravity model to find the trade potential of Pakistan with ECO countries. The result suggests a significant potential for Pakistan, which is not properly explored as bordering countries have greater scope for regional integration. Rahman et al. (2006) used panel data from 51 countries from the period 1991 to 2003, in order to find trade creation and trade diversion of the effect of SAFTA, by applying gravity model. the results suggest that SAFTA had created a trade in the region, but it also caused net trade diversion in the region Ruiz and Butt (2008) identified that Pakistan has a significant trade potential with India, China USA, and Hong Kong by applying Gravity model with the Pseudo maximum likelihood method for 19 Pakistani sectors examined. Khan et al. (2013) used biennial panel data from 1990 to 2010 of Pakistan with its major trading partner countries. Gravity model was applied with distance, GDP, and GDP per capita and found that Pakistan has an untapped trade potential with Malaysia, Turkey, Japan, Iran, and India. Based on the above discussion, the work had identified five independent variables to check their impact on the trade flows of selected SAFTA countries to test the following hypothesis.

Hypothesis:

- H1:** GDP has a significant impact on trade flows between countries
- H2:** Per capita GDP has a significant impact on trade flows between countries
- H3:** border has a significant impact on trade flows between countries
- H4:** RTA has a significant impact on trade flows between countries
- H5:** inflation has a significant impact on trade flows between countries
- H6:** Distance has a significant impact on trade flows between countries

METHODOLOGY

The work had tried to investigate main determinants of trade between SAFTA countries. this section will provide details of main independent and the dependent variable, sample, data sources.

3.1 Data

To evaluate hypotheses of the study the work had relied on Panel data. Data from the SAARC countries was collected, based upon their trade with Pakistan. From all the SAARC countries, India, Bangladesh, Afghanistan and Sri Lanka were selected. Maldives, Nepal, and Bhutan were excluded as they do not have any significant trade with Pakistan. All observations were taken on an annual basis. GNP, GDP, GNP per capita and GDP per capita, inflation, population taxes on international trade, imports, exports, and CPI was extracted from world bank data portal. The data of trade patterns between Pakistan and SAFTA countries was extracted from trade map website. Data on the distance between Karachi and other capitals of the countries included in the sample was obtained from www.indo.com/distance.

3.2 Gravity model

Ravenstein (1889) used a gravity model to measure migration patterns in the UK. In 1667, the Newton postulated the “Law of Universal Gravitation” which described attraction between two forces as the result of the product of the mass of the two bodies divided by the squared distance between the two bodies multiplied by a gravitational constant (Head, 2003).

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the above equation shows that the exports of the country I with country j are dependent on the GNP of the country I and in the country j the value of DIS is taken as a proxy for the transportation cost.

X_{ij} = trade flows from country I to j

Y_i = GDP of country i

Y_j = GDP of country j

N_i = population size of country

The n_j = population size of country j

A_{ij} = any other factor affecting trade between country I and j

The Augmented Gravity Model

$$\text{Log}(\text{trade}_{ij}) = \alpha + \beta_1(\log \text{GDP}_i \text{GDP}_j) + \beta_2 \log(\text{PCGDP}_i \text{PCGDP}_j) + \beta_3 \text{LOG}(\text{Distance}_{ij}) + \beta_4 \log(\text{Border}_{ij}) + \beta_5 (\text{PCGDGDPD}) + \beta_6 \text{LOG}(\text{INFLATION}) + \mu$$

(PCGDGDPD) shows the absolute value of per capita income differentials and dummies for a common border (BORDER) etc., the dummies can take values of units or zeros.

3.3 Variables

3.3.1 Dependent variable

1. Trade would be measured by the total sum of imports and exports between countries

3.3.2 Independent variables

1. GDP

As GDP of the trading nation can be used as a proxy for the economic size of the country, it can be used as a core variable for gravity model. Ehsan (2017) Found a significant positive relationship between GDP and trade flows. Apostolov and Josheski, (2018) also found a significant positive relationship between trade flows and GDP.

2. Capita GDP (PCGDP)

Per Capita GDP Differential - Absolute (PCGDGDPD) It accounts for the effective distance between neighboring countries that are likely to be engaged in mutual trade more frequently.

3. BORDER

A dummy variable is used for borders, which takes the value 1 if countries have common border and 0 otherwise. It is commonly believed that countries which share common border usually share common language traditions culture values customs and similar consumption patterns. So, there is an expectation of positive relationship between border and trade flows. Ehsan (2017) found a contradictory in case of China trade with OPEC countries.

4. EXCHANGE RATE

The exchange rate can be used to find its impact on trade flow. As international trade increase exchange rate risk so it has an impact on trade flows. The depreciation of the currency encourages exports and discourage imports. Ehsan (2017) found an insignificant relationship between trade flows and exchange rate.

5. INFLATION

This variable measures the price levels of the countries. Most of the previous work had found a negative relationship between inflation and trade flows. Rahman (2005), Roy and Rayhan (2011). Found positive, whereas Kaur and Nanda (2010) and Gul and Yasin (2011). Iqbal et al. (2014) and (Apostolov & Josheski, 2018) found a negative relationship between inflation and trade flows.

6. DISTANCE

Distance can use as a proxy for transportation and time-related cost. Ehsan (2017) found a significant negative relationship between distance and trade flows. It shows that increased

distance decreases trade flows between countries as a result of higher transportation cost. The same result was found by Wang et al (2010) in case of 19 OECD countries, by Apostolov and Josheski (2018) in case of Asia Pacific Rim and by Khan et al. (2013) in case of Pakistan.

RESULTS

In order to test the hypotheses related to the relationship between trade flows and GDP, GDP per capita, inflation, distance, border, and exchange rate. A regression model was developed and applied. The Table # 1 shows descriptive statistics of all the independent variables used in the model. The value of kurtosis is less than the absolute value of 2. This shows the normality of the data.

Table 01: Descriptive Statistics

	Mean	Median	Minimum	Maximum	Standard deviation	C.V.	Skewness	Ex. kurtosis
Trade Flows	1.01E+06	7.51E+05	1.26E+05	2.85E+06	7.76E+05	0.763	0.64	-0.95
GDP	4.0E+011	7.38E+010	4.5E+09	2.2E+012	6.6E+011	1.6330	1.63	1.15
GDP per capita	1224.2	904	198.73	3844.9	988.6	0.80760	1.50	1.34
Inflation	7.4742	7.01	-8.2831	30.5	5.3	0.70872	1.39	2
Distance	1746.4	1735.4	1093.6	2421	655.6	0.37545	0.002	-1.99
Border	0.500	0.50	0	1	0.50	1.0090	0	-2
Exchange Rate	0.93	0.81	0.53	1.82	0.368	0.39609	0.92	-0.28

Table 02 shows the correlation matrix of all the independent variables. The results suggest that the data is free from multicollinearity and fit for further analysis.

Table 02: Correlation Matrix

	GDP	GDP PER CAPITA	INFLATION	DISTANCE	BORDER	EXCHANGE
GDP	1	0.0638	0.0067	-0.4934	-0.3469	0.4899
GDP per capita		1	-0.0854	0.4377	0.8358	-0.4217
Inflation			1	0.01585108	0.0444	1.1656
Distance				1	-0.0999	0.529
Border					1	0.7379
Exchange rate						1

Table 03: Regression Results

VARIABLE	COEFFICIENT	STDERROR	T STAT	P-VALUE
Const	1078.08	84.9819	12.686	<0.00001 **
GDP	-0.492635	0.0513077	-9.602	<0.00001 ***

GDP percapit	1.63163	0.136857	11.922	<0.00001 ***
Distance	-136.859	10.8898	-12.568	<0.00001 ***
Border	-104.279	8.40317	-12.409	<0.00001 ***
Inflation	0.0646092	2.853	2.853	0.00638 ***
Unadjusted R-squared = 0.91769 Adjusted R-squared = 0.909116 F-statistic (5, 48) = 107.032 (p-value < 0.00001)				

The Table # 3 shows results of the regression model the coefficient of the GDP is statistically significant and show a negative relationship with trade flows of the counties. GDP per capita shows a significant positive relationship with trade flows. The coefficient of distance shows a negative relationship with trade flows. The coefficient of the border also shows a significant negative relationship with trade flows. The coefficient of inflation shows a positive significant relationship with trade flow. All the variables were significant at 1% significant level. The adjusted R square is 91.7% which suggest that 91.7 % variation in trade bilateral trade flows of Pakistan is due to the independent variables in the model. The value of f-statistic is 107.032 p-value 0.00001m, which suggests that overall model is significant at 1 % significant level.

DISCUSSION AND ANALYSIS

The results suggest that the all the variable identified in the model have a significant impact on the trade patterns n between Pakistan and other SAFTA countries. The GDP was used to measure the size of the economy and shows a negative and significant relationship with trade patterns which does not follow the results of Wang and Badman (2016) which shows a positive relationship, between GDP and trade flows. The reason might be political tensions between member countries, many tariffs and non-tariff barriers, political tensions and extreme poverty levels of SAARC countries. The negative sign of estimated coefficient shows that Linder hypothesis dominates H-O hypothesis which means that those countries usually trade less who has a different factor of the endowment.

The distance shows a negative relationship with trade flows confirming the proposition of the gravity model, as increased transaction cost due to the increased distance of the country will decrease trade flows between countries this follows the results of Wang and Badman (2016) which shows a negative relationship with trade flows. The coefficient of per capita GDP shows a positive and significant relationship with trade flows confirming the results of Wang and Badnam (2016). Abass and Waheed (2015) attempt to investigate Pakistan trade patterns with 40 trading partners from 1991 to 2011, using panel data on augmented gravity model. The study intends to investigate and identify potential trading partners for Pakistan. The results suggest that Pakistani exports are determined by Pakistan's supply capacity and import country's demand potential and additionally by market size, it shows a negative relationship with distance. The relative price shows significant positive, but less elastic impact. The result of export potential shows that Pakistan has higher export potential with India. The coefficient of the border also shows a significant negative relationship with trade flows. Ellahi, Mehmood, and Ahmad (2011) also found a significant impact of trade flows on the economic development of the country and its import for developing countries to adopt liberal trade policies of openness for the development of the standard of living of the people. The coefficient of inflation shows a positive significant relationship with trade flow.

CONCLUSION

The work had tried to find the main determinants of exports in Pakistan with SAFTA countries by applying gravity model. The panel data was used from 2003 to 2016. The major intention was to identify any untapped trade potential for Pakistan in SAFTA area. The major independent variable identified and tested were GDP, GDP per capita, distance, border, inflation, and exchange rate. The workers tried to find the impact of these independent variables on the trade flows between Pakistan and SAFTA countries. The result follows the prediction of gravity model in case of distance and per capita GDP. But, in case of the size of the economy and Border, it does not follow gravity model. The reason might be political tensions between the regional partners and extreme poverty levels of many countries in the region. Therefore its very import for all the SAFTA countries to increase trade liberalization and effective implementation of SAFTA policies.

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