India's Trade Relations with SAARC Countries in the Pre and Post SAFTA Periods : An Evaluation of Trade Flows by Using Multiple Regression Model

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Abstract

International trade is an integral part of sustainable economic development of the nation. To foster international trade, the role of regional economic integration has become a significant feature of economic development. Many countries of the world have moved to regional economic integration with the twin objectives to promote economic development and standard of living of citizens. The significance of higher level of economic integration motivated the SAARC countries to sign free trade agreement in 2004. The study sought to examine India's trade potential with SAARC countries during the pre and post SAFTA periods. An annual time series panel data pertaining to SAARC countries from 1990-91 to 2016-2017 was used and transformed into natural logarithm form to reduce the impact of multicollinearity and to make the data comparable. To check the stationarity of the data, Augmented Dickey Fuller and Phillips - Perron tests were applied. Descriptive statistics, ANOVA, and post-hoc tests were used to analyze India's trade with SAARC countries in the pre and post SAFTA periods. Furthermore, the OLS multiple regression model was used to analyze the impact of independent variables on India's trade with SAARC countries.

Keywords: **SAFTA, gross domestic product, terms of trade, trade openness, multiple regression model**

JEL Classification: F10, F13, F14

Paper Submission Date : October 18, 2018 ; Paper sent back for Revision : December 18, 2018 ; Paper Acceptance Date : December 25, 2018

The concept of international trade has emerged as a consequence of the trade pursued by the early civilization. Many countries have moved to regional integration to foster their economic development and improve the standard of living of the people through liberalizing their economies. The NAFTA, the EU, and the ASEAN are examples of successful regional economic integration. The significance of regional economic integration has motivated the South Asian countries for formulation of SAARC and consequently, they signed the South Asian Free Trade Agreement (Akhter & Ghani, 2010). In terms of economy, South Asia is one of the poorest regions of the world, with poverty, disease, malnutrition, illiteracy, lack of health and educational facilities, unemployment, lack of infrastructure, and terrorism being the deep-seated challenges (Singh, 2012). It is also the least integrated region in the world with less than 6% intra-regional trade among South Asian countries (Kaur & Nanda, 2007). To counter these challenges, the economic development of the whole region is a master key.

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While trade has been present throughout history, but its economic, social, political, and strategic importance has been on the rise in the recent centuries, specifically after World War II (Jain, 2012). It is based on the assumption that countries differ in their resource endowments, their preferences, technologies, scale of economies, economic institutions, and their capacities for growth (Todaro & Smith, 2007). In the theory of international trade, many thinkers advocated the benefits of international trade for the countries party to it. Adam Smith remarked that "every man lives by exchanging". It means nobody has had everything to meet out all their needs, and hence, trade is inevitable. Alfred Marshall also remarked that, "the causes which determine the economic progress of nations belong to the study of international trade". Irving Kravis pointed out that international trade arises as a result of the availability and non-availability of factors of endowment. In the globalized market economy, everyone demands best products at the best prices, therefore, international trade takes place due to the differences in the comparative costs of production between countries as demonstrated by David Ricardo (Cherunilam, 1984).

Regional economic integration arrangements are mainly the outcome of necessity felt by nation-states to integrate their economies in order to achieve robust economic growth. The efforts for South Asian economic integration were initiated in 1977, which were materialized on December 8, 1985 with the formation of SAARC at a summit in Dhaka, Bangladesh with seven founder members. Afghanistan was the eighth country to join SAARC in 2007 during the 14th SAARC summit held in New Delhi (Sharma, 2014). The SAARC region consists of near about 24% of the world population and 15% of the world's arable land, but receives less than 1% of global foreign investment and tourism revenue and only 2% of global GDP. In order to move towards higher levels of economic integration, SAFTA as an agreement was signed on January 6, 2004 at the 12th SAARC summit in Islamabad, Pakistan, which came into force on January 1, 2006 (Katti, Natraj, & Acharya, 2008).

SAARC is an India centric regional economic organization. India is the largest country of the region with its size, population, resources, economic development, democracy, scientific and technological advancements, and military strength, which are quite disproportionate in comparison to other countries of the region. The significant feature of SAARC is that India shares border with all other SAARC countries except Maldives, while no other member country, except Pakistan, shares a border with any other country except India. Nepal and Bhutan are landlocked dependent on India for their access to the sea. Bangladesh has access to sea, but is surrounded by India on all other sides. Hence, SAARC countries are neighbours due to India's location (Bhatia, 2011). This Indo-centric nature of the region has been a major source of dissonance and fear. The Indo-centricity of SAARC has given way to the development of a psychological feeling of insecurity among the other countries. India's initiatives are not only misunderstood, but are often coined as Indian hegemony by the ruling elite so as to promote their own vested interests. As a result, the member countries could not develop the feelings of regionalism in South Asia (Upreti, 2008). Another reason responsible for lack of regional feeling is diverse ethnic groups.

Review of Literature

In the proposed research work, the review of all possible academic literature available in the domain of India's trade relation with SAARC countries has been made, which facilitated the development of new insights to explore the various facets of the problem.

Ahuja (1998) highlighted the importance of joint venture for promoting industrial cooperation among SAARC countries and India's contribution in this direction. Indeed, Indian technology offers a comparative advantage and better terms of trade in joint ventures, and it was suitable for capital scarce and labour surplus economies of SAARC countries. Cheema (1999) revealed that the idea of SAARC was conceived on the lines similar to ASEAN and EEC, but comparatively, SAARC's passage was not smooth due to many constraints, which required revisiting. Prasad (1999) identified the problems and prospects involved in South Asia's march

from conflict to cooperation. There had been a feeling among the elite of most of the members of SAARC that the cooperation in trade, industry, and finance will mainly benefit India only. Shrimali (2004) discussed the role of SAARC in stimulating the economic growth of the region. The inherent potential of synergic growth has been marred by tension, distrust, and apprehensions leading to self-detrimental non-cooperation, but signing of SAFTA could reintegrate the region economically and accelerate the pace of development. Ambrose (2006) examined the trade problems and prospects in South Asia and classified the study in various sections such as the emergence of SAARC as a regional cooperation; emergence of SAPTA; gains from SAFTA; and finally, it was concluded that attempts should be made at all level to resolve various issues, which slow down the process of regional cooperation.

Kaur and Nanda (2007) studied the complementarities in trade among SAARC countries and intra-regional SAARC countries' trade in pre-WTO period and post-WTO period. The findings showed that intra-regional trade of SAARC was less than 6% of their total trade, which was due to high level tariff, non-tariff barriers, discriminating policies of the respective governments, low level of skill, and technology profile of exports. Doddamani (2008) investigated the entire gamut of issues related to SAARC and the level of commitment of SAARC members in fulfilling objectives of peace, cooperation, prosperity, and stability in the region. Akhter and Ghani (2010) evaluated the benefits of SAFTA to assess the trade creation and trade potential with SAARC countries and non- SAARC countries by applying the gravity model with pooled data. In order to minimize the effect of trade diversion under the SAFTA regime, SAARC countries should foster trade liberalization and industrialization process in the region.

Saez (2011) reported a balanced view of SAARC's failures and achievements in his work, such as the creation of SAARC; the expansion of SAARC with the inclusion of Afghanistan; improvements in regional security and economic cooperation; dimensions of regional collaboration in South Asia ; and described the various obstacles in the way of SAARC. Singh (2012) argued that the dynamics of intra-SAARC economic relation and constrains retarded the smooth functioning and rapid growth of the SAARC. To overcome these constraints, India and Pakistan have to play a crucial role for the success of regional economic integration.

Shaheen (2013) pointed out that the main purpose behind SAARC's formation was the implementation of common vision for development by using the region's potential and interdependence. Hafiz, Ciddikie, and Khan (2014) explained the profile and macro-economic overview of SAFTA countries in the backdrop of India's trade with SAARC countries. SAPTA was an initial step in the evolution of SAFTA. Maheswararao (2015) empirically analyzed growth and structure of India's bilateral trade relations with SAARC countries as well as India's intra - SAARC trade. Saxena (2016) depicted the performance of India's trade with SAARC countries with the objectives to examine the economic performance of SAARC countries. In Asia, there are various trading blocs such as ASEAN, SAARC, BIMSTEC, SCO, and GCC, which play a significant role for the growth of Asian nations (Kaur & Dhami, 2016).

Statement of the Problem

The above mentioned review of literature covers the wide range of India's trade relations with SAARC countries, but there remain some unexplored areas, which are required to be investigated with further study.

Objectives of the Study

The objectives spell out the basic philosophy of the whole study. In the present study, the following objectives have been undertaken :

(1) To study the socioeconomic and demographic profile of SAARC countries.

(2) To analyze India's trade relations with SAARC countries in pre and post SAFTA period.

(3) To investigate the impact of independent variables such as GDP of India, GDP of SAARC countries, trade openness of India, trade openness of SAARC countries, terms of trade, landlocked country, religion, language, and common border on dependent variable that is India's trade with SAARC countries with panel data approach.

Hypotheses of the Study

In accordance with the objectives of the study, the following hypotheses have been formulated :

- $H_{a(1)}$: There is no significant difference in India's trade with SAARC countries in the pre - SAFTA period.
- $H_{a(2)}$: There is no significant difference in India's trade with SAARC countries in the post - SAFTA period.
- $H_{a(3)}$: A linear relationship does not exist between the dependent and independent variables. There is no significant impact of independent variables on the dependent variable.

Research Methodology

The methodological framework of the present study is elaborated as under :

The data used for the present study are basically annual time series panel data. The variables used in the study are dependent, independent, and dummy variables. The dependent variable is India's trade with SAARC countries; whereas, independent variables include SAARC countries' gross domestic product, India's gross domestic product, terms of trade, trade openness and dummy variables: Landlocked, language, religion, and common border.

All variables except dummy variables were taken in natural log form in multiple regression analysis, so that they come to a comparative level, minimize the effect of multicollinearity, and improve the model fit. The independent variables such as trade openness of SAARC countries, population of India, population of SAARC countries, exchange rates, and inflation rates were also used, but they were removed from the study due to the problem of high multicollinearity.

(1) Sources of Data : The study is purely based on secondary sources of information, and the data were collected from various sources such as publications of Government of India, annual reports of Reserve Bank of India, CIA World Factbook, SAARC Secretariat website, various issues of World Trade Organization, UN COMTRADE database. Data for all dummy variables except for religion is taken from CEPII - www.cepii.fr and for religion, it is taken from www.graphicmaps.com. Various journals, various business magazines, and many other authentic online sources were also used.

(2) Period of Study : The study covers the period of 27 years starting from 1990 - 91 to 2016 - 17. Further, for empirical analysis point of view, the period has been divided into two parts such pre-SAFTA period from 1990-91 to 2004-05 and post-SAFTA period from 2005-06 to 2016-17.

(3) Data Analysis : The collected information were edited, classified, tabulated, analyzed, and inferences have been arrived at on the basis of statistical analysis. Data processing and analysis have been executed both manually and by using computer software namely, SPSS. The statistical techniques used in the analysis include mean,

standard deviation, skewness, kurtosis, ANOVA, and Tukey test. Multiple linear regression model was used to investigate the impact of independent variables on the dependent variable.

(4) Scope of the Study : The scope of the present study is to analyze India's trade relations with eight SAARC countries, namely Sri Lanka, Pakistan, Bangladesh, Bhutan, Maldives, Nepal, and Afghanistan during the pre and post SAFTA period. The study is confined to study volume of trade, socioeconomic and demographic profiles, and evaluation of impact of independent variables on the dependent variable.

(5) Multiple Linear Regression Model : Multiple linear regression model was used to evaluate the impact of independent and dummy variables on India's trade relations with SAARC countries. The model specification is reported as under :

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + U_t$$

where,

Y = Dependent variable; $b_0 \ldots b_9$ = Coefficients ; $X_1 \ldots X_9$ = Independent variables ; U_t = error term.

$T_{is} = F(GDP_s, GDP_i, TOT_i, TOP_s, TOP_i, Landlocked, Language, Religion, Common\ Border)$

$LogTrade_{is} = a + b_1 \text{Log } GDP_s + b_2 \text{Log } GDP_i + b_3 \text{Log } TOT_i + b_4 \text{Log } TOP_s + b_5 \text{Log } TOP_i + b_6\ Landlocked + b_7\ Language + b_8\ Religion + b_9\ Common\ Border + U_t\ error\ term.$

where,

$LogTrade_{is}$: India's trade with SAARC countries, which is taken as dependent variable.

GDP_s: Gross domestic product of SAARC countries. The GDP represents the proxy of economy size and purchasing power of partners. GDP is expected to have a positive sign.

GDP_i : India's gross domestic product. Gross domestic product of trading is expected to show a positive sign.

TOT_i : Term of trade refers to the relative price of imports in terms of exports and is defined as the ratio of export prices to import prices. Terms of trade is expected to have a positive sign.

TOP : Trade openness as an independent variable measures the degree of India's trade openness with the rest of the world. This variable is also expected to show a positive sign.

$$TOP = \frac{\text{Exports + Imports}}{\text{GDP}}$$

Landlocked: Landlocked is taken as an independent variable which is used to measure the impact of transportation cost of landlocked. 1 is for non-landlocked country and 0 is for landlocked country.

Language: 1 for Hindi or English (official or commercial) and 0 for others. Language variable is expected to show a positive sign.

Religion: Religion is a qualitative variable which represents the majority of the country's population. The value is set to 1 if the country's religion is one of the religions having closeness to India's culture - Hinduism, Buddhism, Jainism ; set to 0 for remaining countries. The culture variable is expected to show a positive sign.

Common Border: 1 is for common border and 0 is for others. Common border variable is expected to show a positive sign.

(6) Explanation of Dummy Independent Variables: As India's trade with SAARC countries is specified in logarithmic form; so, the coefficient of dummy is interpreted by taking the exponent. The interpretation of

dummy variables has been made with the help of the following mathematical technique :

In absolute terms = [exp (value of coefficient)] = ($e^{\text{valueofcoefficient}}$) = Value of coefficient × log e.
Value of coefficient × log 2.718. Anti log of value is so calculated. [Where, e = 2.718, Log 2.718 = 0.4333] = explained in terms of time.
In relative terms = [exp (value of coefficient) -1] ×100 = ($e^{\text{value of coefficient}}$ - 1) ×100 = [Value of coefficient × log$e$ – 1] ×100. [Value of coefficient × log 2.718 -1] ×100. [Where, e = 2.718, Log 2.718 = 0.4333] = explained in terms of percentage.

(7) Diagnostic Tests : Some diagnostic tests were used to examine the time series properties of the data. Augmented Dickey Fuller and Philips - Perron tests were applied to check the stationarity of the data. The hypotheses were formulated as under :

- **Null Hypothesis :** There is unit root or time series is non-stationary.
- **Alternative Hypothesis :** There is unit root or time series is stationary.

Table 1. Augmented Dickey Fuller Test

	At Level		At First Difference		Remark
Variable	***t*-value**	***p*-value**	***t*-value**	***p*-value**	**Stationary at first difference.**
Trade	-3.200126	0.0216	-13.77122	0.000*	Stationary at first difference.
SAARC (GDP)	-1.839143	0.3606	-13.50680	0.000*	Stationary at first difference.
India (GDP)	-3.911358	0.0024	-13.79689	0.000*	Stationary at first difference.
TOT	-4.158689	0.0010	-12.42190	0.000*	Stationary at first difference.
TOP	-1.625410	0.4675	-12.76677	0.000*	Stationary at first difference.

Note. * Denotes rejection of null hypothesis at the 5% level of significance.

Table 2. Phillips - Perron Test

	At Level		At First Difference		Remark
Variable	***t*-value**	***p*-value**	***t*-value**	***p*-value**	**Stationary at first difference.**
Trade	-3.229932	0.0199	-14.00414	0.000*	Stationary at level.
SAARC (GDP)	-1.839243	0.3604	-13.50810	0.000*	Stationary at first difference.
India (GDP)	-4.113690	0.0012	-13.80775	0.000*	Stationary at level.
TOT	-4.158689	0.0010	-17.66774	0.000*	Stationary at level.
TOP	-1.941581	0.3127	-15.54700	0.000*	Stationary at first difference.

Note. * Denotes rejection of null hypothesis at the 5% level of significance.

The results of Table 1 and Table 2 reveal that the null hypothesis of unit root for each variable is rejected at the first difference. This indicates that all variables are non-stationary at level and stationary at first difference. Hence, all variables are integrated in the same order. With these results, the multiple regression model was applied.

Analysis and Results

In this section, the data have been analyzed and interpreted with statistical tools and techniques in order to test the

Table 3. Socioeconomic and Demographic Profile of SAARC Countries

Country	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Area (sq.km)	6,52, 230	1,48, 460	38,394	32,87,590	298	1,47,181	7,96,095	65,610
Arable Land (%)	58.1	59.00	2.6	52.8	10	15.1	27.6	43.5
Population(millions)	33.33	156.18	0.75	1293.05	0.39	29.03	201.99	20.27
Population Growth Rate (%)	2.34	1.05	1.09	1.19	-0.07	1.24	1.45	0.8
Urban Population (%)	26.7	34.3	38.6	32.7	45.5	18.6	38.8	18.4
Life Expectancy at Birth (%)	51.3	73.2	70.1	68.5	75.6	70.7	67.7	76.8
Literacy rate (%)	32.8	61.5	64.9	74.04	99.3	64.7	56.4	92.6
GDP Per Capita (PPP $ US)	1900	3600	8200	6200	14900	2500	5000	10, 600
GDP Real Growth Rate (%)	1.5	6.4	7.7	7.3	1.9	3.4	4.2	5.2
Population below the poverty line (%)	35.8	31.5	12	29.8	3.8	25.2	22.3	8.9
Exports Billion$	2.679	29.93	0.375	287.6	3.009	9.242	23.67	11.281
Imports Billion $	12.19	38.22	0.965	432.3	1.993	8.56	45.83	20.141

Source: Compiled from http//www.indexmundi.com and UNESCO data.

hypothesis to arrive at logical inferences. The analysis and interpretation of India's trade with SAARC countries has been presented as under :

(1) Socioeconomic and Demographic Profile of SAARC Countries : SAARC is geographically one of the world's biggest regional groups and markets with its geographical area of 5,135,858 sq. km and 1.735 billion population. The Table 3 presents the socioeconomic and demographic factors of SAARC countries which help in ascertaining their profiles. It is evident from the Table 3 that India is a dominating country of the region with a large area, population, and maximum volume of foreign trade. Due to these characteristics, it can be concluded that SAARC is an India centric regional organization.

(2) Pre - SAFTA Period Trade Analysis : The Table 4 presents the information relating to India's trade with SAARC countries in the pre-SAFTA period. The CAGR of trade is highest with Bhutan followed by Afghanistan, Sri Lanka, Nepal, Maldives, Pakistan, and Bangladesh.

↳ **Analysis of India's Trade with SAARC Countries in the Pre - SAFTA Period :** The Table 4(a) highlights the descriptive statistics of India's trade with SAARC countries in the pre-SAFTA period. The analysis reveals that India's average trade was maximum with Bangladesh followed by Sri Lanka, Pakistan, Bhutan, Nepal, Afghanistan, and Maldives, respectively. It is evident from the value of kurtosis that India's trade with all SAARC countries is depicting leptokurtic distribution except with Bangladesh.

The Table 4 (b) reports the ANOVA results of trade among SAARC countries. It is evident from the table that the null hypothesis $H_{0(1)}$ is rejected at the 1 % level of significance, which indicates that there is a significant difference in India's trade with SAARC countries in the pre-SAFTA period.

The Table 4(c) shows the post-hoc results of India's trade with SAARC countries in the pre-SAFTA period. It is evident from the table that so far as India's trade with SAARC countries is concerned in the pre-SAFTA period, it is significant in case of Sri Lanka and Pakistan, Sri Lanka and Bhutan, Sri Lanka and Maldives, Sri Lanka and Afghanistan, Pakistan and Bangladesh, Bangladesh and Bhutan, Bangladesh and Maldives, Bangladesh and Nepal, Bangladesh and Afghanistan, Bhutan and Nepal, and Maldives and Nepal.

Table 4. India's Trade with SAARC Countries in the Pre-SAFTA Period

Years	Sri Lanka	Pakistan	Bangladesh	Bhutan	Maldives	Nepal	Afghanistan
1990-91	151.40	88.10	322.50	3.00	5.90	93.70	--
1991-92	185.60	126.00	329.70	1.70	4.90	105.60	--
1992-93	261.80	180.50	363.00	3.40	7.80	97.30	--
1993-94	308.00	107.70	448.10	12.90	8.20	127.00	--
1994-95	397.30	109.90	682.90	29.40	15.60	156.70	--
1995-96	443.10	121.90	1135.30	51.90	15.90	209.10	--
1996-97	522.60	193.40	931.20	55.80	10.60	229.80	25.90
1997-98	519.40	187.60	837.30	26.70	8.90	265.20	31.90
1998-99	474.80	320.50	1058.00	15.70	8.50	267.30	40.90
1999-00	543.50	161.10	714.50	25.60	7.70	339.80	54.30
2000-01	685.10	250.80	1015.40	22.20	24.80	395.9	52.50
2001-02	698.30	208.80	1061.30	31.50	27.30	570.40	42.00
2002-03	1011.80	251.00	1238.10	71.20	31.90	632.20	79.30
2003-04	1513.90	344.50	1818.30	141.90	42.70	955.40	186.00
2004-05	1791.60	616.10	1690.50	155.60	48.20	1088.90	211.40
CAGR	19.30	14.90	12.56	32.58	16.19	19.15	30.01

Note. CAGR: compound annual growth rate.

Source: Compiled from Reserve Bank of India (2017)

Table 4 (a). Descriptive Statistical Analysis of India's Trade with SAARC Countries in the Pre-SAFTA Period

Countries	*N*	Mean	Standard Deviation	Skewness	Kurtosis
Sri Lanka	15	633.88	470.11	1.564	1.961
Pakistan	15	217.86	134.12	2.037	5.148
Bangladesh	15	909.74	458.14	0.516	-0.179
Bhutan	15	43.23	47.31	1.659	2.037
Maldives	15	17.93	13.91	1.158	0.225
Nepal	15	368.95	311.93	1.383	1.060
Afghanistan	9	80.47	69.04	1.458	0.594
Total	99	339.37	423.82	1.775	2.817

Table 4 (b). ANOVA Results of Trade Among SAARC Countries in the Pre- SAFTA Period

Trade	Sum of Square	*df*	Mean Square	*F*	*p* - value
Between Groups	9884088.51	6	1647348.09	19.64	0.00
Within Group	7718801.10	92	83900.01		
Total	17602889.61	98			

(3) Post - SAFTA Period Trade Analysis : The Table 5 presents the analysis of India's trade with SAARC countries in the post-SAFTA period. The CAGR of trade is highest in case of Nepal followed by Bhutan, Bangladesh, Afghanistan, Maldives, Pakistan, and Sri Lanka. The analysis reveals that CAGR is depicting a down trend in the post-SAFTA period as compared to the pre-SAFTA period.

Table 4 (c). Post - Hoc Results of Trade Among SAARC Countries in the Pre - SAFTA Period

Countries	Sri Lanka	Pakistan	Bangladesh	Bhutan	Maldives	Nepal	Afghanistan
Sri Lanka	--	416.02*	- 275.86	590.65*	615.95*	264.93	553.41*
Pakistan	-416.02*	--	-691.88*	174.63	199.93	-151.09	137.39
Bangladesh	275.86	691.88*	---	866.51*	891.81*	540.79*	829.27*
Bhutan	-590.65*	-174.63	-866.51*	---	25.31	-325.72*	-37.23
Maldives	-615.95*	-199.93	-891.81*	-25.31	---	-351.03*	-62.54
Nepal	-264.93	151.09	-540.79*	325.72*	351.03*	---	288.49
Afghanistan	-553.41*	-137.39	-829.27*	37.23	62.54	-288.49	---

Note. * denotes significant difference at the 5% level.

Table 5. India's Trade with SAARC Countries in the Post - SAFTA Period

Years	Sri Lanka	Pakistan	Bangladesh	Bhutan	Maldives	Nepal	Afghanistan
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
2005-06	2602.40	868.8	1791.4	188.0	69.6	1239.9	201.1
2006-07	2726.20	1672.9	1856.4	198.9	71.8	1234.5	216.2
2007-08	3456.30	2232	3173.8	281.0	93.7	2133.8	358.1
2008-09	2721.50	1783.1	2769.3	260.2	132.2	2045.8	525.3
2009-10	2558.70	1847.6	2678.3	270.6	83.4	1980.8	588.9
2010-11	4473.50	2641.5	3971	358.1	137.9	2608.5	534.1
2011-12	5088.80	954.4	4419.4	433.9	143.9	3290.7	636.6
2012-13	4611.70	2605.5	5780.3	396.9	128.7	3632.4	630.4
2013-14	5201.40	2701.3	6651.6	507.8	110.1	4122.3	683.2
2014-15	7459.90	2354.5	7071.3	483.8	156.7	5213.8	684.5
2015-16	6053.50	2612.2	6762	750.3	183.4	4373.3	834.5
2016-17	4515.40	2276.4	7521.8	817.1	207	5898.7	799.2
CAGR	**5.14**	**9.15**	**13.93**	**14.29**	**10.42**	**15.23**	**13.36**

Source: Reserve Bank of India (2017)

↳ **Analysis of India's Trade with SAARC Countries in the Post - SAFTA Period:** The Table 5(a) explains the descriptive statistics of India's trade with SAARC countries in the post - SAFTA period. Analysis reveals that India's average trade is maximum with Bangladesh followed by Sri Lanka, Pakistan, Bhutan, Nepal, Afghanistan, and Maldives. Though the compound annual growth rate is depicting a down trend, yet India's average trade with SAARC countries is revealing an increased trend when a comparison between pre and post SAFTA period is made. This average increase in India's trade with SAARC countries is highest in case of Bhutan by Pakistan, Nepal, Maldives, Afghanistan, Sri Lanka, and Bangladesh. Not only this, even India's trade with SAARC countries increased by 6.36 times. The important feature which this analysis indicates that in spite of hostile relations between India and Pakistan, the average trade increased by 9.40 times. The value of kurtosis shows that India's trade with all SAARC countries is a platykurtic distribution except with Bhutan.

The Table 5 (b) describes the ANOVA results of trade among SAARC countries in the post-SAFTA period. It is evident from the analysis that the null hypothesis $H_{0(2)}$ is rejected at the 1% level of significance. Therefore, it can be concluded that there is a significant difference in India's trade with SAARC countries in the post-SAFTA period.

Table 5 (a). Descriptive Statistical Analysis of India's Trade with SAARC Countries in the Post-SAFTA Period

Countries	*N*	Mean	Standard Deviation	Skewness	Kurtosis	Average Increase in Trade*
Sri Lanka	12	4289.11	1545.11	0.605	-0.123	6.77
Pakistan	12	2045.85	634.29	-0.902	-0.248	9.40
Bangladesh	12	4537.22	2127.65	0.120	-1.717	4.99
Bhutan	12	412.22	202.77	1.001	0.244	9.54
Maldives	12	126.53	43.20	0.366	-0.528	7.06
Nepal	12	3147.88	1529.67	0.440	-0.873	8.53
Afghanistan	12	557.68	205.49	-0.665	-0.392	6.93
Total	84	2159.50	2077.77	0.978	-0.014	6.36

Note. * Average Increase in Trade = $\frac{\text{Average Trade in Post - SAFTA}}{\text{Average Trade in Pre - SAFTA}}$

Table 5(b). ANOVA Results of Trade among SAARC Countries in the Post- SAFTA Period

Trade	Sum of Squares	*Df*	Mean Square	*F*	*p* - value
Between Groups	251164386.105	6	41860731.017	30.080	0.000
Within Groups	107158210.224	77	1391665.068		
Total	358322596.329	83			

Table 5(c). Post - Hoc Results of Trade among SAARC Countries in the Post - SAFTA Period

Countries	Sri Lanka	Pakistan	Bangladesh	Bhutan	Maldives	Nepal	Afghanistan
Sri Lanka	--	2243.25*	-248.10	3876.89*	4162.57*	1141.23*	3731.43*
Pakistan	-2243.25*	--	-2491.36*	1633.63*	1919.31*	-1102.02*	1488.17*
Bangladesh	248.10	2491.36*	--	4125.00*	4410.68*	1389.34*	3979.54*
Bhutan	-3876.89*	-1633.63*	-4125.00*	--	285.68	-2735.65*	-145.45
Maldives	-4162.57*	-1919.31*	-4410.68*	-285.68	--	-3021.34*	-431.14
Nepal	-1141.23*	1102.02*	-1389.34*	2735.65*	3021.34*	--	2590.20*
Afghanistan	-3731.43*	-1488.17*	-3979.54*	145.45	431.14	-2590.20*	--

Note. * denotes significant difference at 5% level.

The Table 5 (c) depicts the post- hoc results of India's trade with SAARC countries in the post SAFTA period. It is revealed from the table that it is significant in case of Sri Lanka and Pakistan, Sri Lanka and Bhutan, Sri Lanka and Maldives, Sri Lanka and Nepal, Sri Lanka and Afghanistan, Pakistan and Bangladesh, Pakistan and Bhutan, Pakistan and Maldives, Pakistan and Nepal, Pakistan and Afghanistan, Bangladesh and Bhutan, Bangladesh and Maldives, Bangladesh and Nepal, Bangladesh and Afghanistan, Maldives and Nepal, and Nepal and Afghanistan.

(4) Evaluation of Impact of Independent Variables: The impact of various independent variables such as GDP of SAARC countries, GDP of India, terms of trade, trade openness, dummy variables - landlocked, language, religion, and common border on India's trade with SAARC countries have been described as under :

The Table 6(a) presents the descriptive statistics relating to dependent, independent, and dummy variables. The Table 6(b) is related to the correlation matrix, which presents all possible correlations between any pairs of two variables. The correlation between all two pairs of independent variables is less than 0.75 (Gujarati, Porter, &

Table 6 (a). Descriptive Statistics

	Mean	Standard Deviation
Trade	5.94	1.894
SAARC GDP	9.27	1.965
India' GDP	13.61	0.741
TOT	1.61	1.313
TOP	0.69	0.046
Landlocked	0.60	0.491
Language	0.30	0.460
Religion	0.45	0.499
Border	0.60	0.491

Table 6(b). Correlation Matrix

	Trade	GDP(S)	GDP(I)	TOT	TOP	Landlocked	Language	Religion	Border
Trade	1.000								
GDP(S)	0.823	1.000							
GDP (I)	0.596	0.351	1.000						
TOT	-0.029	0.098	-0.033	1.000					
TOP	-0.101	-0.079	-0.116	-0.015	1.000				
Landlocked	0.113	0.450	-0.073	0.623	0.060	1.000			
Language	0.500	0.468	-0.039	0.380	-0.112	0.533	1.000		
Religion	0.107	-0.303	-0.054	-0.393	-0.084	-0.502	0.063	1.000	
Border	0.219	0.210	-0.073	-0.425	0.093	-0.261	-0.139	0.118	1.000

Table 6(c). Model Summary

Model	*R*	*R* Square	Adjusted *R* Square	Std Error of the Estimate	Change Statistics					Dublin Watson
					R Square Change	*F* Change	*df*1	*df*2	*F* - value	
1	.978[2]	.957	.955	.401	.957	476.126	8	170	.000	.811

a. Predicator (Constant): TOT, TOP, SAARC countries' GDP, India's GDP, Landlocked, Language, Religion, Border.

b.Dependent Variable: India's trade with SAARC countries.

Gunasekar, 2017), which indicates that there is no presence of multicollinearity in the analysis. Further, Table 6 (e) shows that the variance inflation factor (VIF) index is less than 10 in case of all independent variables. Hence, the analysis of multicollinearity indicates that the assumption of multicollinearity is satisfied in the present multiple regression analysis.

The Table 6(c) presents the model summary relating to multiple regression statistics. The value of the regression coefficient, as computed, is 0.978 and the value of coefficient of determination (R^2) is 0.957. The value of coefficient of determination (R^2) explains that 96% variation in India's trade with SAARC countries can be explained by the independent variables ; whereas, only 5% variation in trade is explained by other factors. The standard error is computed as 0.401, which is relatively very low and indicates the strong predictor regression model. The high value of R^2 and low value of standard error provides a foundation of a good regression model. The Durbin - Watson statistics is also obtained to examine the assumption of independence. The value of

Table 6 (d). ANOVA

Model	Sum of Square	*Df*	Mean Square	*F* - value	Sig
Regression	611.007	8	76.376	476.126	.000
Residual	27.270	170	160		
Total	638.277	178			

a.Dependent variable: India's trade with SAARC countries.

b.Predicator (Constant): SAARC countries' GDP, India's GDP, TOT, TOP Landlocked, Language, Religion and Border.

Table 6(e). Impact of Independent Variables on Dependent Variables

Model	Unstandardized Coefficients		Standardized Coefficients	*t*-value	*p*-value	Collinearity Statistics	
	B	Std error	Beta			Tolerance	VIF
(constant)	-14.164	0.802	------	-17.664	.000	-----	------
SAARC GDP*	0.714	0.025	0.740	28.416	.000	0.370	2.702
India's GDP*	0.897	0.049	0.351	18.316	.000	0.685	1.460
TOT	0.130	0.033	0.090	3.918	.000	0.475	2.105
TOP	1.126	0.664	0.028	1.697	.092	0.952	1.050
Landlocked**	-0.989	0.107	-0.256	-9.278	.000	0.330	3.032
Language**	1.097	0.101	0.267	10.893	.000	0.419	2.385
Religion**	0.889	0.085	0.234	10.441	.000	0.499	2.003
Border**	0.261	0.076	0.068	3.455	.001	0.655	1.528

a. Dependent variable: India's trade with SAARC countries.

b. Predicator (Constant): SAARC countries' GDP, India's GDP, TOT, TOP, Landlocked, Language, Religion, and Border.

Source: Compiled from *http://www.tradingeconomics.com. ** http://www.graphicsmap.com

Durbin - Watson is 0.811, which is close to 1 and indicates that there is no problem of autocorrelation. This simply means that the variables that belong to the model are not included in the error term. In other words, there is no specification error in the model.

In the multiple regression analysis, the *F*-test is used to determine the overall significance or validity of the model. This test determines that at least one of the regression coefficients is different from zero. It is evident from the Table 6 (d) that the null hypothesis is rejected at the 1% level of significance, which indicates that the overall regression model is significant or valid for further analysis.

Regression Equation

The following regression equation has been developed with the help of analysis of the Table 6(e) :

India's Trade with SAARC Countries = -14.164 + 0.714 *SAARC GDP* + 0.897 *India's GDP* + 0.130 *TOT* + 1.126 *TOP* – 0.989 *Landlocked* + 1.097 *Language* + 0.889 *Religion* + 0.261 *Border*

The Table 6(e) presents the output relating to the significant linear relationship between individual independent

variables and the dependent variable. The standardized beta coefficient shows the relative contribution or importance of each independent variable in predicting the value of the dependent variable. It is observed from the given values of standardized beta coefficient that SAARC countries' GDP is the most important variable in predicting the value of India's trade with SAARC countries, followed by India's GDP, language, religion, trade openness, border, and TOP ; whereas, the other independent variables such as landlocked have an inverse impact on India's trade with SAARC countries.

It is evident from the Table 6 (e) that the regression coefficient of SAARC GDP is 0.714, which indicates that a 1% increase in the SAARC countries' GDP by holding other variables constant will lead to 0.714% increase in India's trade with SAARC countries, and the corresponding *p*-value is statistically significant. This shows that there is a positive and significant relationship between India's trade with SAARC countries and GDP of SAARC countries. Similarly, the analysis of India's GDP also shows that it has a positive impact on India's trade with SAARC countries. The coefficient of India's GDP is 0.897, which reveals that holding other factors constant, a 1% increase in GDP will lead to an increase of 0.897% in India's trade with SAARC countries. The *p* - value of 0.000 indicates that India's GDP is statistically significant. However, in both the cases, the increase is less than a proportionate increase in GDP.

The degree of trade openness is expected to have a positive impact on bilateral trade. It is argued that trade openness brings many economic benefits like increased technology transfer, transfer of skills, increased labour and factor productivity, and overall economic development (Economics Online n.d.a., n.d.b.). The coefficient of trade openness is 1.126, which is positive and significant at the 10% level of significance. This indicates that a 1% increase in trade openness will enhance India's trade with SAARC countries by 1.126%, which is more than proportionate. The given results are in line with the existing studies that trade openness would experience more growth in trade as compared to closed economies. Hence, the liberalization of trade barriers from both sides is essential to enhance intra - SAARC trade.

The terms of trade measure a country's export prices in relation to import prices. The improved terms of trade indicate that for every unit of exports sold, it can buy more units of imported goods. So, a rise in the terms of trade creates a benefit in terms of how many goods are required to be exported to buy a given amount of imports. It can also have a positive effect on domestic cost - push inflation as an improvement in terms of trade indicates falling import prices relative to export prices (Economics Online, n.d.a., n.d.b.). The coefficient of terms of trade (0.130) indicates that India's terms of trade with SAARC countries have a positive and significant impact on India's trade with SAARC countries. The analysis of terms of trade shows that a 1% increase in terms of trade will enhance India's trade with SAARC countries by 0.130%, which is less than proportionate.

The inclusion of dummy variables has become a common practice to identify the qualitative aspect of a trade-related phenomenon. Hence, the present study also considers some dummy variables such as landlocked, language, religion, and common border to capture their impact on India's trade with SAARC countries.

Among the SAARC countries, Nepal, Bhutan, and Afghanistan are landlocked countries. The effect of landlockedness is considered as a proxy of transportation costs. The regression coefficient of locked is -0.989, which is negative and significant at the 1% level of significance. Hence, the study indicates that India's trade with SAARC countries tends to decrease by 0.37 times [exp (-0.989)] or by 63% [exp (-0.989- 1)] × 100 just because of poor infrastructure, tough terrain, unsafe trading environment, and non-connectivity with sea route.

The efficiency in communication facilitates the trade flow between countries. If the trading partner shares a common language (official or commercial), the transaction costs of trading are expected to be reduced as speaking the same language facilitates trade negotiation (Melitz, 2008). The language barriers between the countries are expected to cause hindrances in business communication and consequently, reduce the chances of trading. Therefore, a positive sign is expected for the estimated coefficient for this variable. The value of this coefficient is 1.097, which is positive and significant at the 1% level of confidence, which indicates that India's

trade with SAARC countries tends to increase by 2.987 times [exp (1.097)] or by 1.987% [exp (1.097 - 1)] × 100 due to common official or commercial language.

If two countries share a common border, they will have more trade due to stronger social and economic relations at the public level. The common border variable is expected to have a positive sign. The value of this coefficient is 0.261, which is positive and significant at the 1% level of confidence. Hence, the study indicates that India's trade with SAARC countries tends to increase by 1.297 times [exp (0.261)] or by 129.7% [exp (0.261 - 1)] × 100 just because of the common border.

The dummy variable religion explains the extent of cultural similarity between India and SAARC countries. Religion is taken as either state religion or religion of majority. This variable is expected to predict a positive sign. The coefficient value of religion variable is 0.889, which is positive and significant at the 1% level of significance. Hence, the study indicates that India's trade with SAARC countries tends to increase by 2.428 times [exp (0.889)] or by 142.8% [exp (0.889 - 1)] × 100 just because of similarity in religion.

Conclusion and Policy Implications

The main objective behind the formation of SAARC was to accelerate overall economic development through meaningful interaction in the areas of mutual interest, but till date, SAARC remains an insignificant trading block in the world due to inherent political factors. In spite of many efforts made by the SAARC countries to boost intra-regional trade, the future of SAARC still hangs on the political relationship between India and Pakistan. This is evidenced from the fact that the 19th SAARC summit, which was originally scheduled to be held in Pakistan on 15-19 November 2016, could not be held due to a bitter relationship between India and Pakistan. In this context, India has conveyed to the current SAARC chair Nepal that increasing cross-border terrorist attacks and interference in the internal affairs of India by Pakistan has created an environment that is not conducive to successful holding of the SAARC summit. India also claimed that under the prevailing circumstances, it was unable to participate in the proposed summit as terrorism and cooperation cannot go together. Since the success of SAARC mostly depends on the better relationship between India and Pakistan ; hence, the policy makers of SAARC countries should strive to reconcile the dispute between India and Pakistan. Otherwise, India should think for the regional economic integration except Pakistan but by including Myanmar.

The hypotheses $H_{a(1)}$ and $H_{a(2)}$ relating to the analysis of India's trade with SAARC countries during pre-SAFTA and post-SAFTA periods are rejected in both the cases, which indicate that there is a significant difference in India's trade with SAARC countries. The analysis of compound annual growth rate indicates that India's trade with least developing SAARC countries such as Bangladesh, Bhutan, Nepal, Maldives, and Afghanistan is higher in pre and post SAFTA periods, but the post SAFTA period registered a decline in compound annual growth rate in case of all least developing SAARC countries except Bangladesh ; whereas, the compound annual growth rate in case of non-least developing SAARC countries such as Sri Lanka and Pakistan declined sharply in the post SAFTA period. Therefore, it can be concluded that the formation of SAFTA has no positive impact on India's trade with SAARC countries except Bangladesh.

The analysis indicates that India's average trade with SAARC countries is depicting an upward trend when a comparison between pre and post SAFTA periods is made. This average increase in India's trade with SAARC countries is highest in case of Bhutan followed by Pakistan, Nepal, Maldives, Afghanistan, Sri Lanka, and Bangladesh. The important feature of this analysis is that in spite of hostile relations between India and Pakistan, the average trade of India with Pakistan increased by 9.40 times. It can be concluded from this study that improved political and economic relations between India and Pakistan are key to the success of SAARC. Therefore, the SAARC countries should work for meaningful dialogue and cooperation.

The empirical results of multiple regression analysis relating to the rejection of hypothesis $H_{a(3)}$ reveal that

there is a significant impact of independent variables on India's trade with SAARC countries. The GDP of India and SAARC countries has a positive and significant impact on India's trade with SAARC countries, which is in the line with the existing studies. Similarly, trade openness of India with SAARC countries and terms of trade have a positive and significant impact on India's trade with SAARC countries. However, the findings regarding the degree of trade openness implies that policy makers should adopt more policies on trade liberalization with SAARC countries like reducing non-tariff barriers, reducing tariff barriers, and minimizing the quota restriction that will enable the economy to grow.

The study shows that dummy variables such as language (official or commercial), religion, and border have a positive and significant impact on India's trade with SAARC countries ; whereas, the results with respect to landlocked position of countries like Bhutan, Nepal, and Afghanistan are negative and significant. This indicates that landlockedness may add to transportation costs just because of poor infrastructure, tough terrain, unsafe trading environment, and absence of sea connectivity. The finding with respect to landlockedness suggests that policy makers should formulate the policies for the development of infrastructure in and around the landlocked countries and also enter into agreement for infrastructural development.

Limitations of the Study and Scope for Further Research

The followings are the limitations of the study :

- The present study is based on secondary sources of information.
- The present study covers the time period from 1991 to 2017.
- The study is based on dependent, independent, and dummy variables.
- India's trade with SAARC countries is taken as a dependent variable.
- The study uses the limited construct and independent variables like SAARC countries' gross domestic product, India's gross domestic product, terms of trade, and trade openness.
- The dummy variable consists of landlocked countries, language (official or commercial), religion, and common border.
- The study is confined to analyze India's trade with SAARC countries only.

The present research work is a droplet in the ocean of research. The study relating to Indo-SAARC trade relations has wide scope. The prospective areas of research on this topic may include India's trade relations with SAARC countries with trade intensity index approach; augmented gravity model approach; revealed comparative advantages index ; trade potential index ; trade complementarities index ; impact of SAPTA and SAFTA on intra-SAARC imports, exports, and balance of trade ; commodity wise and sector wise study ; impact of foreign direct investment on trade; and so on. Hence, these dimensions require more in-depth analysis with wider coverage of time, variables, opinion of experts, and statistical analysis.

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