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Institutions, Regional Integration and Bilateral Trade in South Asia: PPML Based Evidence

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This paper empirically investigates the role of institutional framework in promoting bilateral trade through a regional trade agreement (RTA), namely the South Asian Free Trade Area (SAFTA), using an institutions-augmented gravity model. Poisson Pseudo Maximum Likelihood (PPML) estimation technique is used (performed) for a panel of 11 countries over the period 1996-2015. The initial estimation results suggest that this RTA is not effective in promoting regional trade in South Asia. Further empirical analysis reveals that SAFTA contributes significantly to bilateral trade when the impact of institutions is controlled for. The key policy lesson emerging from the analysis is that, given weak institutional structure, a regional agreement may not produce the desired results. Successful trade reforms depend on the institutional framework of the countries involved. Therefore, government should develop institutions to reap the potential benefits of RTAs.

Keywords: Institutions, Regional Integration, Bilateral Trade, South Asia, PPML

1. INTRODUCTION

Recent debate emphasises institutional reforms and regional integration as a means to achieve long term sustainable development. Appropriate institutions can lead to higher development by promoting investment in human and physical capital, and also by inducing innovations through trade (Nawaz, 2015). Regional integration is often considered an effective strategy to stimulate intra-regional trade and economic development. It creates larger markets and new business opportunities for producers and generates a greater level of domestic and foreign investment. It is a way to support the reallocation of resources and the development of regional production networks, which in turn support regional connectivity (Islam, Salim, & Bloch, 2016; Jouanjean, te Velde, Balchin, Calabrese, & Lemma, 2016). It allows free access to regional markets, ensures reduction of tariff and non-tariff barriers, promotes intra-regional trade and investment, and hence, economic development (Akhter & Ghani, 2010; Iqbal & Nawaz, 2017; Jaumotte, 2004; Kubny, Mölders, & Nunnenkamp, 2011).

These arguments have created an exponential increase in regional trade agreements (RTAs) in recent decades.[1] According to the World Trade Organisation

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[1]RTAs are reciprocal trade agreements between two or more partners. They include partial scope agreements (PSAs), free trade agreements (FTAs) and customs unions (CUs).

(WTO), around 459 RTAs are notified and implemented across the world as of August 2018.[2] The most successful RTAs are the European Union (EU), the Association of Southeast Asian Nations (ASEAN) and the North American Free Trade Agreement (NAFTA). These regions have shown a significant increase in intra-regional trade after signing these agreements. For example, a 25 percent increase in intra-regional trade among the ASEAN countries, and a 60 percent increase within the EU, is noted.[3] These successful RTAs provide a basis for recommending regional integration in developing regions like South Asia.

South Asian economies established a platform for regional cooperation, called South Asian Association for Regional Cooperation (SAARC), to promote regional prosperity and trade.[4] The SAARC members signed South Asian Free Trade Area (SAFTA) in 2004, enforced in 2006, to boost bilateral trade. Apart from SAFTA, numerous bilateral trade agreements have been signed among member countries. However, it is evident that South Asia fails to reap the potential benefits of regional integration, despite signing multilateral and bilateral trade agreements. South Asia, with 21 percent of the world population, is the least economically integrated part of the world, despite shared history, culture, and trade potential. Intra-regional trade here constitutes less than 5 percent of total trade volume compared to East Asia's 35 percent and Europe's 60 percent, while intra-regional investment is smaller than 1 percent of overall investment (Kathuria & Shahid, 2017). Recent studies have also shown that SAFTA failed to create any significant increase in regional trade in the South Asian region (Dembatapitiya & Weerahewa, 2015; Iqbal & Nawaz, 2017). This begs the question "What are the underlying factors that make SAFTA ineffective?"

Recent literature shows that political differences and weak regulatory framework have had a negative impact on intra-regional trade in South Asia (Kathuria & Shahid, 2017). Iqbal and Nawaz (2017) argue that regional integration becomes effective if and only if RTAs are supported by democratic institutions. This also highlights the role of institutions in ensuring the effectiveness of free trade policies.

Institutions can promote trade and development through multiple channels. Good quality institutions induce specialisation, competitiveness, market expansion and technological advancement through reduced transaction costs. Transaction costs are incurred by the entrepreneur in terms of time, effort, and resources to define, protect and enforce agreements and property rights (Nawaz & Khawaja, 2018; North, 1990). Lack of information is an obstacle to establishing and expanding businesses. Well defined institutions ensure the accessibility of relevant information. Better quality institutions, such as contract enforcement and law and order, lead to lower transaction costs, hence more economic development and better trade opportunities through specialisation and competitiveness. Lower transaction costs provide a conducive environment for business expansions through innovation and adoption of new technologies.

This study argues that institutional framework is the main factor which defines the effectiveness of regional/bilateral trade agreements. These factors lead to greater trade

[2]http://rtais.wto.org/UI/Charts.aspx

[3]http://www.worldbank.org/en/news/infographic/2016/05/24/the-potential-of-intra-regional-trade-for-south-asia

[4]Member states are: (i) Afghanistan, (ii) Bangladesh, (iii) Bhutan, (iv) India, (v) Maldives, (vi) Nepal, (vii) Pakistan and (viii) Sri Lanka.

and development. Intra-regional trade is limited due to mistrust, political tension, and cross-border conflicts; hence, an integrated institutional framework is required to boost trade stemming from regional economic cooperation and integration. However, the scope of that study is relatively limited in that only democratic institutions are considered. Existing literature suggests that a variety of institutions may support trade and development (Nawaz, 2015).

A detailed study is therefore required to examine the role of different institutions in promoting bilateral trade. The available literature primarily uses ordinary least square (OLS) with fixed effects to estimate gravity models. However, recent literature has argued that standard OLS technique may produce upward-biased estimates, while the Poisson Pseudo Maximum Likelihood (PPML) estimation technique may produce more reliable and robust results (Silva & Tenreyro, 2006, 2010, 2011).

To fill the gaps in existing literature, the present study investigates the role of the institutional framework in promoting bilateral trade within SAFTA, using an institutions-augmented gravity model. This study extends the standard gravity model by incorporating institutions as well as the presence/absence of SAFTA in an augmented gravity model. Different types of institutions are used to explain the nexus between regional trade agreements and bilateral trade. The empirical analysis is performed using the PPML estimation technique for a panel of 11 countries over the period 1996-2015. The PPML estimation technique produces reliable and robust results compared to OLS with fixed effects (Afesorgbor, 2017; Silva & Tenreyro, 2006).

The paper is presented as follows:

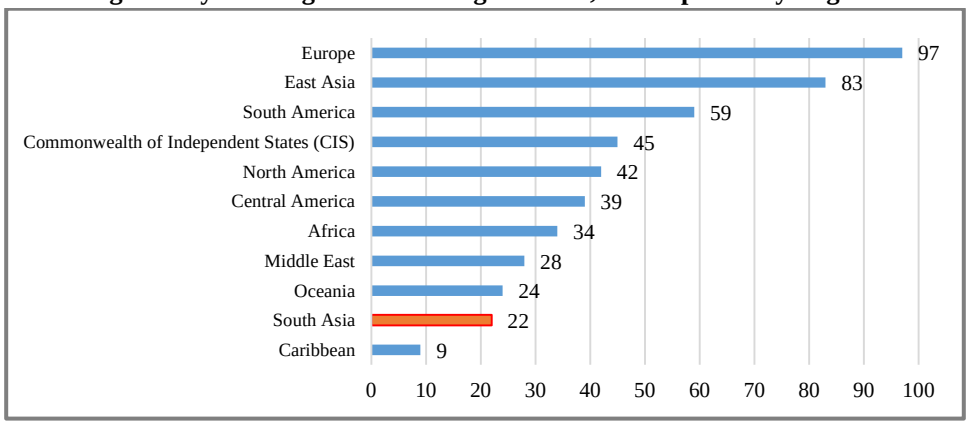
Section 2: Stylised facts
Section 3: A brief overview of existing literature
Section 4: The modelling framework
Section 5: Data and estimation procedure
Section 6: Empirical results and discussion
Section 7: Conclusion with policy recommendations.

2. REGIONAL INTEGRATION AND INSTITUTIONAL FRAMEWORK: STYLISED FACTS

This section provides a comparative analysis of regional trade and institutional framework. According to the WTO, out of 673 RTAs signed as of August 2018, around 459 RTAs are notified and implemented. The WTO counts RTAs based on notification rather than on the physical number of RTAs. For an RTA that includes both goods and services, WTO counts two notifications, i.e. one for goods, and one for services, despite it being physically one RTA.

Around 287 “physical” RTAs are signed and implemented. The notion “Physical” RTA regroups them according to which goods and services aspects are notified separately. This includes both active RTAs—those still in force, and inactive RTAs–those that concluded in the past and are no longer in force. Figure 1 shows that every region in the world has signed physical RTAs. South Asian countries have signed 22 physical RTAs with different countries and regions.

Fig. 1. Physical Regional Trade Agreements, Participation by Region[5]



Source: (WTO, 2018).

We find that intra-regional trade is high among East Asia & Pacific countries (50.2 percent exports and 50.3 percent imports), Europe & Central Asia (69.8 percent exports and 67.1 percent imports), and North America (30.7 percent exports and 18.7 percent imports). The overall intra-regional trade volume in South Asia, however, remains very low in spite of signing SAFTA. The region remains relatively un-integrated compared to other regions of the world despite shared history, culture, and borders. The regional trade share is very low, falling from 3 percent to 5 percent of total trade. Table 1 indicates that bilateral trade between South Asian countries remains low. India's exports to South Asia are 6.7 percent only, while Pakistan has 12.8 percent exports. Similarly, imports are very low from other South Asian countries (Table 1). The major export destinations and import sources are located outside the region, comprising of both developed countries and fast-growing countries in East Asia. The USA, UAE, and China are three major export destinations for South Asian countries.

Table 1

Regional Trade Analysis (Within in Region)

Region/Country	Exports	Imports
East Asia & Pacific (EAP)	50.2	50.3
Europe & Central Asia (ECA)	69.8	67.1
Latin America & Caribbean (LAC)	15.6	13.9
Middle East & North Africa (MENA)	13.0	10.0
North America	30.7	18.7
Sub-Saharan Africa (SSA)	29.6	16.7
Others	0.4	3.0
South Asia	7.0	2.4
Trade in South Asia		
India	6.5	0.7
Pakistan	12.8	4.6
Afghanistan	70.8	11.5
Sri Lanka	9.9	21.8
Maldives	11.5	19.7

Source: (World Bank, 2018a).

[5]For composition of regions, see http://rtais.wto.org/userguide/User%20Guide_Eng.pdf. RTAs involving countries/territories in two (or more) regions are counted more than once.

Why have South Asian economies failed to develop bilateral trade despite shared history, culture, borders and regional integration initiatives? Apart from tariff and non-tariff barriers, an unsatisfactory institutional framework may be a major hurdle to boosting trade. Table 2 shows how various regions and the individual South Asian countries rank among all the countries in the world according to several governance indicators. The highest rank is 100 indicating the highest quality, while the lowest is zero indicating the lowest quality. It is evident that South Asian economies ranked very low as compared to other regions of the world, especially East Asia & Pacific, North America, and Europe & Central Asia.

Table 2

Worldwide Governance Indicators [Percentile Rank (0-100)]

Region	Voice and Accountability	Political Stability and Absence of Violence	Government Effectiveness	Regulatory Quality	Rule of Law	Control of Corruption
EAP	66	65	53	51	57	56
ECA	54	60	69	70	66	64
LAC	66	60	54	55	50	54
MENA	25	27	44	42	44	44
North America	90	79	92	88	89	91
SSA	33	32	26	28	30	31
South Asia	36	30	37	29	36	34
Afghanistan	21	1	10	7	4	3
Bangladesh	31	10	25	22	31	21
Bhutan	45	83	70	27	68	83
India	59	14	57	41	52	47
Maldives	26	60	41	35	36	29
Nepal	39	19	20	24	20	24
Pakistan	29	1	29	27	20	19
Sri Lanka	43	50	45	51	54	48

Source: (World Bank, 2018b).

This discussion reveals the possibility that institutional bottlenecks may be the source of low trade volumes among South Asian countries despite their having numerous bilateral and multilateral trade agreements. These bottlenecks undermine the trade potential and divert trade to other regions and countries.

3. AN OVERVIEW OF EXISTING LITERATURE

In this section, we provide a snapshot of existing literature discussing the relationship between institutions, RTAs, and bilateral trade with reference to the South Asia region, especially SAFTA. Numerous studies have investigated the welfare gains and trade creation under RTA regimes for different parts of the world.

Kurihara (2011) investigated the impact of RTAs on bilateral trade for OECD and non-OECD countries. This study finds that RTAs are more effective in OECD countries, as compared to non-OECD countries, in promoting trade. This study further argues that the potential effects of RTAs on bilateral trade vary among different regions and depend on the institutional arrangements of the participating economies.

Bureau and Jean (2013) argue that bilateral trade can increase considerably through RTAs. This study finds that RTAs have a significant impact on pre-existing trade flows as well as on new trade flows. Carrere (2006) examined the impact of RTAs on

trade using a gravity model for 130 economies (developed and developing) for the period 1962-1996 and found positive associations between RTAs and bilateral trade.

Baier and Bergstrand (2007) find that a free trade agreement (FTA) doubles bilateral trade between member countries after a period of 10 years. Recently, Afesorgbor (2017) examined the trade creation effects of African RTAs using meta-data analysis approach based on gravity model. This study concludes that African RTAs have a positive impact of about 27 percent-32 percent on trade.

In the case of South Asia, various studies have shown that regional integration can be beneficial for all countries especially for India and Pakistan (Govindan, 1996; Pigato et al. 1997). Qamar (2005) says that Pakistan can benefit by entering a large market for its exports, while improving reserves significantly, by replacing relatively costly imports from the rest of the world with imports from India, under the Most Favoured Nation (MFN) status.

Various studies argue that SAFTA is instrumental in boosting regional trade (Shaikh & Rahpoto, 2009; Shaikh, Syed, Shah, & Shah, 2012). Shaikh and Rahpoto (2009) show that under the SAFTA arrangement, Pakistan can enjoy consumer surplus in exports of products like food items, cotton garments, dates, and leather. Using Computable General Equilibrium (CGE), Shaikh et al. (2012) also found similar results. Recently a study shows that SAFTA is associated with an increase in bilateral trade flows within its member countries as well as between member and non-member countries (Regmi, Devkota, & Upadhyay, 2017).

On the other hand, some studies have argued that SAFTA is not effective in promoting regional trade. They argue that SAFTA fails to expand regional trade, because SAFTA member economies are comparatively small. Furthermore, non-tariff restrictions among the member countries of SAFTA may cause trade diversion. Member countries are trading with countries that are not part of SAFTA, mainly developed regions like the USA, the EU and the Middle East (Baysan, Panagariya, & Pitigala, 2006).

Akhter and Ghani (2010) find a negative association between SAFTA and bilateral trade using a gavity model approach. This study concludes that SAFTA may not be benefical in the short run but would be beneficial in the long run. Dembatapitiya and Weerahewa (2015) measure the impact of various bilateral and multilateral trade agreements especially SAFTA and EU on bilateral trade using a gravity model. This study finds that SAFTA has an insignificant impact on bilateral trade in contrast with the EU, which has had a significant impact on bilateral trade (Dembatapitiya & Weerahewa, 2015).

Recently, Iqbal and Nawaz (2017) examined MFN and SAFTA on bilateral trade in South Asia. This study is based on a panel of eight countries from South Asia covering the period of 1975-2013. Standard gravity model is estimated using fixed effect model. This study finds that SAFTA and MFN have a positive but insignificant impact on bilateral trade.

As to why RTAs are effective in a developed region like the EU and ineffective in developing regions like South Asia, the literature indirectly points to the ability of institutional arrangements to channel trade among member countries. Poor quality institutions act as a binding constraint on trade volumes. Anderson and Marcouiller (2002) empirically show that well defined institutions significantly increase trade in Latin

American countries. This study shows that high levels of corruption and the weak enforcement of contracts reduces international trade. Inefficient institutions constrain trade as much as tariffs do. Cross-country variations in the effectiveness of institutions offer reasons for disproportionate trade among developed and developing economies.

De Groot, Linders, Rietveld, and Subramanian (2004) analyse the impact of institutions on trade. This study uses a gravity model to assess the impact of institutions on trade and finds that a better quality of formal institutions promotes bilateral trade. The estimates show that an increase in quality of institutions of one standard deviation causes an increase of around 30 percent to 44 percent in bilateral trade among trading partner countries (De Groot et al. 2004).

Dutt and Trace (2010) measure the impact of corruption by the customs officials on bilateral trade using a corruption-augmented gravity model. This study finds a dual role of corruption in term of extortion and evasion and concludes that corruption acts as a hidden tax on trade when customs officials in the importing countries demand bribes from exporters. This so-called extortion effect reduces bilateral trade. On the other hand, if tariffs are high, corruption may induce bilateral trade when corrupt public officials allow exporters to escape tariffs by paying bribes ("evasion effect").

De Jong and Bogmans (2011) examine the relationship between institutions (institutional quality) and bilateral trade using the standard gravity model approach. This study finds that corrupt institutions decrease trade volume. Wu, Li, and Samsell (2012) investigate the effect of a country's governance structure on trade. For this purpose, this study divides countries into three types based on mode of governance: (i) rules-based, (ii) relations-based, and (iii) family-based. This study finds that both rules-based and relations-based modes of governance impact positively on trade volumes, with rules-based governance being the more effective(Wu, Li, & Samsell, 2012).

Naanwaan and Diarrassouba (2013) analyse the impact of institutions, measured using an economic freedom index, on bilateral trade among 33 African countries, using an unbalanced panel and employing an augmented gravity model. The study found that improvement in both exporter and importer economic freedom indexes tends to generate more intra-regional bilateral trade. They argue that economic freedom comprises institutional arrangements that reduce transaction costs associated with international trade. The improvement in the quality of economic institutions helps to remove barriers that hamper intra-regional trade (Naanwaab & Diarrassouba, 2013).

Francois and Manchin (2013) find that good-quality institutions have a significant positive impact on bilateral trade; showing that trade is linked with the institutional framework of the country. de Mendonça, Lirio, Braga, and da Silva (2014) investigate the impact of differences in institutional quality among economies on bilateral trade flows of agricultural products. This study applies the standard gravity model approach to a sample of 59 countries for the period 2005-2010 and concludes that institutions are important in explaining differences in trade volumes (de Mendonça, Lirio, Braga, & da Silva, 2014).

The available literature clearly shows the importance of institutional parameters in promoting bilateral trade. Countries with well-defined and effective institutions can reap the potential benefits of regional integration. This current paper extends the existing literature by studying the role of institutions in a comprehensive way. Various institutional dimensions are used to establish the association between institutions, regional integration and bilateral trade.

4. THE MODEL

The theoretical framework to explain bilateral trade is based on a gravity model. The standard gravity model, introduced by Tinbergen (1962), is used to estimate the impact of economic development measured by GDP, and transaction costs measured by distance, on bilateral trade. The model predicts that bilateral trade among economies is positively linked with GDP (development/growth) and negatively related to costs of trade (Bergstrand, 1989). Anderson and van Wincoop (2003) and Helpman, Melitz, and Rubinstein (2008) provide comprehensive descriptions of the gravity model. The basic gravity model is as follows:

$$X_{ij} = G\frac{Y_i^{\beta_1} Y_j^{\beta_2}}{D_{ij}^{\beta_3}}\eta_{ij} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

where X_{ij} is volume of trade from country i to country j; Y_i and Y_j represent GDP of countries i and j, respectively; D_{ij} denotes the distance in kilometres between the capital cities of two countries and η_{ij} indicates the error term with expectation equal to one. The standard approach of estimation for this equation is to take logs on both sides:

$$\ln(X_{ij}) = \beta_0 + \beta_1 \ln(Y_{it}) + \beta_2 \ln(Y_{jt}) + \beta_3 \ln(D_{ij}) + e_{ijt} \quad \ldots \quad \ldots \quad (2)$$

Apart from D_{ij}, common borders (CB_{ij}), common language (CL_{ij}) and the condition of being landlocked (LL_i) are also used to comprehend trade cost. After adding these factors, the expanded version is as given below:

$$\ln(X_{ijt}) = \beta_0 + \beta_1 \ln(Y_{it}) + \beta_2 \ln(Y_{jt}) + \beta_3 \ln(D_{ij}) + \beta_4 \ln(PCY_{it} - PCY_{jt}) + b_1(CB_{ij}) + b_2(CL_{ij}) + b_3(LL_i) + e_{ijt} \quad \ldots \quad \ldots \quad (4)$$

where $(PCY_{it} - PCY_{jt})$ measures difference in GDP per capita of reporter and partner countries uses to test the existence of the Linder hypothesis, which is also called the "demand-similarity" hypothesis. The Linder hypothesis argues that the more similar the demand structures of countries, the more they will trade with one another (Borkakoti, 1998; Linder, 1961). *CB* is a dummy variable indicating a common border; *CL* is a dummy for common language; and *LL* is a dummy for being landlocked. Following the existing literature, this study incorporates institutions and regional integration in the model to quantify the impact of the institutional framework and regional integration on bilateral trade (Anderson & Marcouiller, 2002; De Groot et al. 2004; De Jong & Bogmans, 2011; de Mendonça et al. 2014; Dutt & Traca, 2010; Francois & Manchin, 2013; Iqbal & Nawaz, 2017; Naanwaab & Diarrassouba, 2013). This study argues that institutions may have direct as well as indirect impact on bilateral trade (Yu, 2010). Literature shows that well defined and enforced institutions can promote trade indirectly by ensuring the implementation of free trade agreements like SAFTA (Iqbal & Nawaz, 2017).

The augmented gravity model is as follows:

$$\ln(X_{ijt}) = \beta_0 + \beta_1 \ln(Y_{it}) + \beta_2 \ln(Y_{jt}) + \beta_3 \ln(D_{ij}) + \beta_4 \ln(PCY_{it} - PCY_{jt}) + b_1(CB_{ij}) + b_2(CL_{ij}) + b_3(LL_i) + \theta_1(RI_{ijt}) + \theta_2 \ln(INS_{it}) + \theta_3 \ln(INS_{jt}) + \varphi_1(RI_{ijt}) * \ln(INS_{it}) + \varphi_2(RI_{ijt}) * \ln(INS_{jt}) + e_{ijt} \quad \ldots \quad \ldots \quad (4)$$

where (RI_{ijt}) is a dummy variable for the existence of a RTA between two countries i.e. reporter i and partner j, namely SAFTA; (INS_{it}) and $\left(INS_{jt}\right)$ measure institutional quality index for the reporter country and the partner country respectively. This proposed model (Equation 4) is used to examine the impact of regional integration after controlling for institutional quality. It is expected that $\forall\theta > 0$ implying that regional integration and institutions have a positive impact on bilateral trade.

To examine the complementarity between regional integration and institutions, an interactive term is also used. The coefficient φ captures the impact of regional integration after interacting with institutions. The Equation 4 shows that the marginal impact of regional integration on bilateral trade now explicitly depends on the value of institutions implying that:

(i) $\Delta\ln(X_{ijt}) = \theta_1 + \varphi_1\ln(INS_{it})$ in case of reporter countries only

(ii) $\Delta\ln(X_{ijt}) = \theta_1 + \varphi_2\ln\left(INS_{jt}\right)$ in case of partner countries only

On the other hand, the impact of institutions on bilateral trade depends on the value of regional integration dummy which can take two forms i.e. $\left(\frac{\partial\ln(X_{ijt})}{\partial(INS)}\middle|RI_{ijt} = 1\right) = \theta + \varphi$ and $\left(\frac{\partial\ln(X_{ijt})}{\partial(INS)}\middle|RI_{ijt} = 0\right) = \theta$; $\forall\theta$ and $\forall\varphi$.

5. DATA DESCRIPTION AND ESTIMATION METHODOLOGY

5.1. Data Description

To estimate the impact of regional integration on bilateral trade, this study uses a panel of eleven countries. The focus of this study is limited to assessing the impact of SAFTA; hence, the choice of countries is primarily limited to SAFTA members and their close trading partners.[6] The data span covers 1996-2015. The data on bilateral trade volumes are taken from the International Monetary Fund (IMF)'s Direction of Trade Statistics (DOTS). Following the literature, data on bilateral trade are taken in current US$ (Carrere, 2006, Iqbal & Nawaz, 2017). The data on the Gross Domestic Product (GDP) at current US$ and GDP per capita in current US$ are retrieved from the World Bank's World Development Indicators (WDI) database available online. The data on distances between countries, common borders, common language and being landlocked are taken from the "*Centre d'Etudes Prospectives et d'Informations Internationales (CEPII)"*[7]. The data for institutional quality are taken from the Worldwide Governance Indicators (WGI).

To measure the impact of regional integration (RI_{ijt}), this study uses dummy variable of SAFTA which is constructed as 1 if both reporting and partner countries are member of SAFAT and otherwise 0. Numerous studies have used similar method to construct regional integration variable (Iqbal & Nawaz, 2017; Jugurnath, Stewart, & Brooks, 2007).

[6]The list of countries, with SAFTA members italicised, includes: (i) *Afghanistan*; (ii) *Bangladesh*; (iii) China; (iv) Indonesia; (v) *India*; (vi) Iran; (vii) *Sri Lanka*; (viii) *Maldives*; (ix) Malaysia; (x) *Nepal*; and (xi) *Pakistan*. Bhutan is excluded due to non-availability of data on bilateral trade.

[7] http://www.cepii.fr/cepii/en/bdd_modele/bdd.asp

The institutional quality index (INS) is developed using the World Governance Indicators (WGI) dataset. This data provides six different dimensions to capture institutional quality. These include: (1) "Control of corruption" (CC); (2) "Government effectiveness" (GE); (3) "Political stability and absence of violence/terrorism" (PA); (4) "Regulatory quality" (RQ); (5) "Rule of law" (RL) and (6) "Voice and accountability" (VA). Each dimension falls within the range of –2.5 and +2.5. Where lower value means weak institutions and vice versa. Two types of institutional quality index are developed with two steps procedure. In first step, each indicator is normalised with range from 0 to 1. In step two, following formula is used to construct final index:

$$INS_S = \frac{1}{6}(\mathrm{CC} + \mathrm{GE} + \mathrm{PA} + \mathrm{RQ} + \mathrm{RL} + \mathrm{VA}) * 100$$

To establish the robustness of results, weighted average series are also used to construct institutional quality index. Weights are calculated using the Principal Component Method (PCM). The first principal component that explains the maximum amount of variation is used to find the weight of each dimension. Following formula is used to construct final weighted institutional quality index:

$$INS_w = [(CC * 0.183) + (GE * 0.185) + (PA * 0.160) + (RQ * 180) + (RL * 0.189) + (VA * 103)] * 100$$

The economic development is measured using Gross Domestic Product (GDP) and GDP per capita in current US$. Differences in GDP per capita in current US $ between reporting and partner countries is used to measure the impact of Linder Hypothesis. The landlocked (LL) is a dummy variable set equal to 1 for landlocked countries otherwise 0. The common border (CB) is a dummy variable indicating 1 for common border otherwise 0. The common language (CL) is a dummy for common language; 1 if both countries have same language, otherwise 0. The distance (D) is defined as the distance in kilometre between the capital cities of two countries. The dependent variable is bilateral trade. It is defined as total bilateral trade volume in current US$. The log transformation is applied on all continuous variables. The descriptive statistics of all variables are reported in Table 3.

Table 3

Summary Statistics

Variables	Mean	Std. dev	Max	Min	Skewness	Kurtosis
$LN(X_{ij})$	18.72	3.34	25.39	4.44	-0.80	4.03
$LN(Y_i)$	25.18	2.22	30.03	19.93	-0.25	2.65
$LN(Y_j)$	25.18	2.22	30.03	19.93	-0.25	2.65
$D(LN(PCY))$	7.14	1.36	9.27	1.09	-0.93	3.85
$LN(D)$	7.93	0.63	8.91	5.93	-1.12	3.91
LL	0.18	0.39	1.00	0.00	1.65	3.72
CL	0.05	0.23	1.00	0.00	3.92	16.39
CB	0.20	0.40	1.00	0.00	1.50	3.25
RI	0.19	0.39	1.00	0.00	1.57	3.47
INS_s	3.58	0.37	4.11	2.05	-1.75	7.31
INS_w	3.59	0.38	4.13	2.05	-1.72	7.14

Source: Author's own calculation.

5.2. Estimation Methodology

To estimate the proposed institutions augmented gravity model, this study has used a panel data estimation method. The use of panel technique in estimating effects is considered an effective procedure as it helps to enhance sample size and control unobservable factors and individual heterogeneity (Iqbal & Daly, 2014; Nawaz, 2015; Nawaz, Iqbal, & Khan, 2014; Nawaz & Khawaja, 2018). The standard method to estimate log-linearized gravity model is ordinary least squares (OLS). However, recent literature argues that interpretation of parameters of log-linearized model estimated by OLS as elasticities can be highly misleading in the presence of heteroscedasticity (Silva & Tenreyro, 2006, 2010, 2011).

This literature proposes Poisson Pseudo Maximum Likelihood (PPML) estimator to estimate robust and reliable estimates of nonlinear gravity model. Based on this, the empirical analysis is performed using the Poisson Pseudo Maximum Likelihood (PPML) estimator. In log-linearised models, the PPML estimator produces more reliable and robust results than OLS with fixed effects; the PPML estimator provides consistent elasticity estimates even in the presence of heteroscedasticity. PPML estimators are robust to heteroscedasticity because the second or higher moment conditions are absent from the estimation procedure. PPML is consistent in the presence of fixed effect dummies and has several advantages over other estimators: it tackles heteroscedasticity, model misspecifications and zeros in data (Prehn, Brümmer, & Glauben, 2016).

The PPML estimator is exactly equivalent to running a type of nonlinear least squares on the original equation, hence produces consistent estimates of the original nonlinear model. Empirical literature confirms that the PPML estimator produces robust estimates, even in the case of over dispersion and when the dependent variable has a large number of zeros (Silva & Tenreyro, 2006).

To meet the Poisson model assumption of the conditional mean being proportional to the conditional variance, it is assumed that weights are proportional to the value of their observations and set $\exp(X\beta)\, X = X$. These weights are attached to the residuals of country pairs. This assumption coincides with the first-order conditions of the Poisson Maximum Likelihood (ML). This shows that there are no distributional assumptions; therefore, the dependent variable does not have to be Poisson distributed. This approach simplifies the first-order conditions to ease estimation and so to approximate the objective, therefore the name "pseudo" (or quasi). The Poisson model is given as:

$$Pr(Y = k|x) = \frac{\exp(-\lambda)}{k!} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5)$$

for $Y \geq 0$. Where $\lambda = exp(X\beta)$. The ML estimation is given as:

$$\hat{\beta} = \underbrace{\arg max}_{\hat{\beta}} \sum[-exp(X\beta) + Y(X\beta) - lnY!] \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

with first-order conditions:

$$\frac{\partial \hat{\beta}}{\partial \beta} = \sum[Y - exp(X\beta)]X = 0 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

These are not the real first order conditions of the log likelihood function, hence are "pseudo", but they easier to calculate as the second factor is simplified. Furthermore, these estimators are consistent and asymptotically normal (Magerman, Studnicka, & Van Hove, 2016).

6. RESULTS AND DISCUSSION

Estimation begins with a basic gravity model that includes only GDP, inter-country distance, and dummies for common border, common language, and being landlocked. This basic gravity model is estimated by applying the PPML method and OLS with and without time and/or cross-section fixed effects. The use of various estimators and model specifications helps to ensure robustness of results. The results of the basic model are reported in Table 4.

Table 4

Basic Gravity Model

	(1)	(2)	(3)	(4)	(5)
Variables	OLS	FE	FE	FE	PPML
$LN(Y_i)$	0.915	1.029	0.260	1.714	0.089
	(0.03)***	(0.03)***	(0.05)***	(0.22)***	(0.01)***
$LN(Y_j)$	1.031	1.119	1.117	1.124	0.060
	(0.02)***	(0.02)***	(0.02)***	(0.02)***	(0.00)***
$D(LN(PCY))$	–0.285	–0.238	–0.688	–0.732	–0.039
	(0.03)***	(0.03)***	(0.04)***	(0.04)***	(0.00)***
$LN(D)$	–1.239	–1.441	–1.925	–1.971	–0.108
	(0.07)***	(0.08)***	(0.08)***	(0.08)***	(0.00)***
LL	–1.970	–1.608	–1.738	–4.390	–0.218
	(0.16)***	(0.15)***	(0.30)***	(0.53)***	(0.03)***
CL	–0.419	–0.569	–1.017	–1.051	–0.064
	(0.20)**	(0.21)***	(0.19)***	(0.19)***	(0.01)***
CB	–0.046	–0.372	–0.287	–0.312	–0.021
	(0.08)	(0.09)***	(0.08)***	(0.08)***	(0.00)***
Constant	–20.279	–23.143	–3.148	–32.411	0.244
	(0.92)***	(0.95)***	(1.29)**	(4.45)***	(0.25)
Observations	1,983	1,983	1,983	1,983	1,983
R-squared	0.754	0.775	0.818	0.823	0.795
Year FE	NO	YES	NO	YES	YES
Country FE	NO	NO	YES	YES	YES

Source: Author's own calculation. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The estimation results reveal that the GDP has a positive and significant effect on bilateral trade among the given panel of countries. This shows that domestic progress i.e. economic development of the country is one of the major determinants of its trade volume. The PPML-estimated coefficients, which are elasticity estimates, are 0.089 and 0.060 for reporting and partner countries, respectively. The estimated coefficients are significant at the 1 percent level (Table 4). The results reveal that a 10 percent increase in GDP of reporting and partner countries would lead to 0.8 percent and 0.6 percent increase in bilateral trade among sample countries, respectively. Various other studies have reported similar outcomes (Dembatapitiya & Weerahewa, 2015; Gul & Yasin, 2011; Iqbal & Nawaz, 2017).

The distance variable has a negative and significant impact on bilateral trade. The PPML-estimated coefficient is –0.108 and is significant at the 1 percent level implying that 10 percent increase in distance between two trading countries would lead to 1 percent reduction in bilateral trade. Numerous studies have reported similar results (Dembatapitiya & Weerahewa, 2015; Gul & Yasin, 2011; Iqbal & Nawaz, 2017). The estimated elasticity is in accordance with existing studies. Disdier and Head (2008), using meta-data analysis approach based on 1,467 estimates from 103 papers, conclude that the size of the distance effect is close to 0.9.

The per capita income differences variable is used to study the comparative existence of the Linder hypothesis with reference to the Heckscher Ohlin proposition. The results show that per capita GDP difference variable has a significant negative impact on bilateral trade. The findings of a negative and statistically significant effect of differences in per capita income provide evidence in favour of the Linder hypothesis. The results indicate that the smaller the difference of per capita income between two countries, the bigger the volume of bilateral trade. Therefore, the more similar the demand structures of countries, the more they will trade with one another. The estimated coefficient indicates that a 10 percent reduction in GDP per capita difference between two countries would lead to 0.39 percent increase in bilateral trade. Numerous studies have supported this finding (Choi, 2002; Rauh, 2010).

Further, the results show that the dummy for landlocked countries (LL) is significant and has a negative sign. This indicates that being landlocked reduces bilateral trade. The estimated coefficients for this dummy variable are statistically significant at 1 percent. The estimated result shows that bilateral trade will be 19 percent [exp (–0.218)-1 = –0.195] lower if a country is landlocked rather than not. The common border (CB) dummy has a significant negative impact on trade. The coefficients are statistically significant at 1 percent. The estimated result shows that the bilateral trade is 2 percent [exp (–0.021) –1 = –0.020] lower than expected among countries having common border.

Apparently, the result seems contradictory to existing literature. For example, Akhter and Ghani (2010) reported that bilateral trade would increase 3.22 time if member countries share a common border. However, by looking at the trading pattern of countries having common border in South Asia, the results can be justified. For example, Pakistan has a common border with India and Afghanistan. However, trade with these countries, especially India, is restricted due to non-tariff barriers due to political conflicts, institutional hurdles, and procedural requirements. Further, much of the border trade between Pakistan and Afghanistan, Pakistan, and India is underground and unrecorded. These factors led to a negative impact of common border on bilateral trade. Gul and Yasin (2011) and Iqbal and Nawaz (2017) also find similar results.

To quantify the impact of regional integration: SAFTA, the gravity model is augmented and re-estimated using both the PPML estimator and OLS with fixed effects. The results are presented in Table 5. The impact of all basic variables including GDP, distance, LL, CB and CL on bilateral trade remain same as shown in Table 4. The empirical analysis now shows that the regional integration has a negative and significant association with bilateral trade among sample countries. This implies that SAFTA, a regional trade agreement among South Asian countries, may not produce the desired

Table 5

Institutions and Regional Integration Augmented Gravity Model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variables	FE	FE	FE	FE	PPML	PPML	PPML
$LN(Y_i)$	0.895	1.044	1.043	1.026	0.056	0.056	0.055
	(0.02)***	(0.03)***	(0.03)***	(0.02)***	(0.00)***	(0.00)***	(0.00)***
$LN(Y_j)$	0.981	1.108	1.108	1.092	0.059	0.059	0.058
	(0.02)***	(0.02)***	(0.02)***	(0.02)***	(0.00)***	(0.00)***	(0.00)***
$D(LN(PCY))$	-0.179	-0.341	-0.355	-0.328	-0.017	-0.017	-0.006
	(0.02)***	(0.03)***	(0.03)***	(0.03)***	(0.00)***	(0.00)***	(0.00)***
$LN(D)$	-1.427	-1.439	-1.455	-1.494	-0.084	-0.085	-0.084
	(0.06)***	(0.08)***	(0.08)***	(0.07)***	(0.00)***	(0.00)***	(0.00)***
LL	-1.517	-1.024	-1.009	-1.038	-0.057	-0.054	-0.074
	(0.12)***	(0.15)***	(0.15)***	(0.14)***	(0.01)***	(0.01)***	(0.01)***
CL	-0.666	-0.543	-0.557	-0.561	-0.038	-0.038	-0.037
	(0.17)***	(0.21)***	(0.21)***	(0.16)***	(0.01)***	(0.01)***	(0.01)***
CB	-0.533	-0.246	-0.251	-0.311	-0.022	-0.022	-0.022
	(0.07)***	(0.08)***	(0.08)***	(0.11)***	(0.00)***	(0.00)***	(0.00)***
RI_SAFTA	-1.006			-0.448	-0.023	-0.192	0.075
	(0.11)***			(0.11)***	(0.01)***	(0.10)*	(0.07)
INS_{SR}		1.690		1.587	0.080	0.072	
		(0.18)***		(0.15)***	(0.01)***	(0.01)***	
INS_{SP}							0.066
							(0.01)***
INS_{WR}			1.749				
			(0.17)***				
$RI * INS_{SR}$						0.048	
						(0.03)*	
$RI * INS_{SR}$							0.029
							(0.02)*
Constant	-16.192	-29.549	-29.627	-27.876	0.445	0.397	0.527
	(0.82)***	(1.14)***	(1.11)***	(1.04)***	(0.08)***	(0.08)***	(0.06)***
Observations	1,983	1,983	1,983	1,983	1,983	1,983	1,983
R-squared	0.743	0.789	0.790	0.791	0.765	0.765	0.763
Year FE	YES	YES	YES	YES	YES	YES	YES

Source: Author's own calculation. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

results i.e. boosting bilateral trade. Some recent studies have also concluded that SAFTA failed to create a significant increase in intra-regional trade in the South Asian region (Dembatapitiya & Weerahewa, 2015; Iqbal & Nawaz, 2017). This shows that South Asia may not be able to reap the potential benefits of economic integration through trade at their full potential. These results are supported by recent studies (Iqbal and Nawaz, 2017).

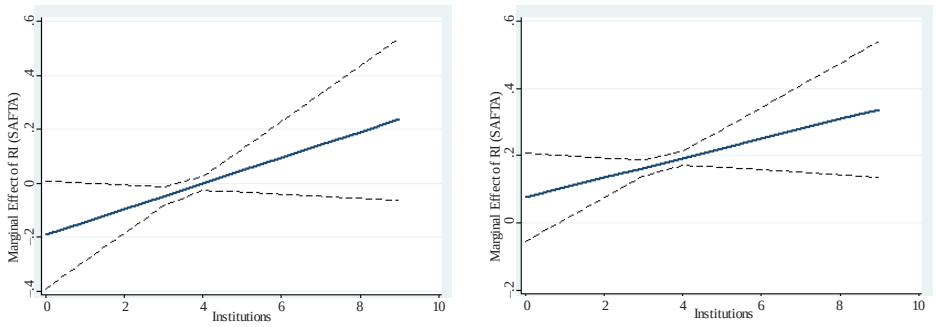
Why has this region failed to achieve the benefits of its trade agreement? Is SAFTA irrelevant? To probe these questions, this study extends the model to control for the quality of the institutional framework. To quantify the role of institutional setup in the country, an institutional quality index (INS) is constructed as explained in section 5. Two types of indices are constructed; one with simple average of all indicators (INS_s) and other with weighted average (INS_w). Furthermore, (INS_s) is incorporated in the model in two ways: (i) institutional quality index for the reporter country (INS_{jt}) and (ii) institutional quality index for the partner country (INS_{jt}).

The institutions augmented gravity model estimation results are reported in columns (2)-(7) of Table 5. The estimation results show that INS have a significant positive direct impact on bilateral trade. The estimated coefficients range from 0.08 to 0.66. This indicates that a 10 percent increase in institutional quality would lead to .8 percent to 0.6 percent increase in bilateral trade in case of PPML estimator. However, estimated coefficients are very high in case of fixed effect (from 1.7 to 1.5). This implies that supportive institutions are necessary to promote bilateral trade. Furthermore, impact of reporter country institutions (INS_{SR}) is relatively higher (0.072) as compared to partner country institutions (INS_{SP}) (0.066).

To assess the complementarity between regional integration and institutions, interactive terms of regional integration and institutions ($RI * INS$) are added in the model. Two different interactions are included; namely $(RI_{ijt}) * \ln(INS_{it})$ and $(RI_{ijt}) * \ln(INS_{jt})$ that capture the interaction of regional integration with reporter country institutions and partner country institutions, respectively. The results are reported in model 6 and 7 in Table 5. The result shows that the interaction term have a positive and significant impact on bilateral trade. This implies that institutional arrangements play an important role in ensuring the effectiveness of regional trade agreements. We know from the estimation result that the coefficient on $(RI_{ijt}) * \ln(INS_{it})$ is positive implying that the reductive effect declines as the quality of institutions increases.

However, Brambor, et al. (2006) shows that it is incorrect to decide on the inclusion of the interactive term simply by looking at the significance of the coefficient of the interactive variable. The marginal effect of SAFTA on bilateral trade should be observed by constructing confidence intervals for the estimates of coefficient of SAFTA and interactive term of SAFTA and institutions over the possible values of the institutions. The solid sloping line in Figure 2 indicates how the marginal effect of SAFTA changes with the increase in institutional quality. The confidence intervals around the line allow us to determine the condition under which institutions have a statistically significant effect on the bilateral trade – they have a statistically significant effect whenever the upper and lower bounds of the confidence interval are both above (or below) the zero line (Brambor et al., 2006).

Fig. 2. Determining the Range of Significance of the Marginal Effect of RI*INS



Note: Author's own formulation based on model 6 & 7 reported in Table 5.
Dashed lines show the 95 percent confidence band.

In Figure 2 the marginal effect of SAFTA on bilateral trade against different value of institutions is shown. It can be observed that significant contribution of SAFTA is only possible when institutional quality is sufficiently high. This implies that the complementary association should be considered with caution as the association yields positive trade only when the quality of institutions become very high. The estimated coefficient of interaction term is small as compared to coefficient of SAFTA.

Well defined institutions provide a pathway to implement required reforms and channelise resources needed for bilateral trade. A well-defined institutional framework helps to implement in practice the agreements reached in principle in an RTA. Iqbal and Nawaz (2017) also provide grounds to argue that "*SAFTA is not effective in promoting trade due to low institutional quality and stringent non-institutional arrangements, including high tariff along with low physical infrastructure. Both SAFTA and MFN can only contribute to bilateral trade significantly, if complemented by institutional framework*".

Apart from the overall institutional quality index, individual indicators of the various dimensions of institutional quality can also be used to gauge the contribution of the institutional framework to bilateral trade volume. The results based on PPML estimator are reported in Tables 6 & 7. The estimation results show that all dimensions of institutional quality have a positive and significant impact on bilateral trade. Control over corruption (CC) and government effectiveness (GE) make a relatively higher contribution to trade volume, whereas rule of law (RL), regulatory quality (RQ) and political stability and absence of violence/terrorism (PA) make a relatively low contribution.

Table 6

Institutions and Regional Integration Augmented Gravity Model: Components of Institutions (PPML Estimator)

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	*INS_CC*	*INS_GE*	*INS_PA*	*INS_RL*	*INS_RQ*	*INS_VA*
$LN(Y_i)$	0.056	0.055	0.057	0.056	0.057	0.055
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
$LN(Y_j)$	0.059	0.060	0.060	0.059	0.059	0.059
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
$D(LN(PCY))$	-0.021	-0.024	-0.016	-0.017	-0.017	-0.012
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
$LN(D)$	-0.086	-0.089	-0.090	-0.082	-0.087	-0.086
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
LL	-0.073	-0.047	-0.071	-0.055	-0.055	-0.076
	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***
CL	-0.044	-0.049	-0.039	-0.040	-0.042	-0.037
	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***
CB	-0.021	-0.021	-0.031	-0.021	-0.025	-0.028
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
RI_SAFTA	-0.168	-0.344	-0.053	-0.154	-0.297	-0.429
	(0.11)	(0.11)***	(0.03)*	(0.09)*	(0.11)***	(0.13)***
INS_{SR}	0.286	0.299	0.085	0.190	0.203	0.009
	(0.03)***	(0.02)***	(0.02)***	(0.02)***	(0.02)***	(0.02)
$RI * INS_{SR}$	0.043	0.093	0.010	0.038	0.075	0.108
	(0.03)	(0.03)***	(0.01)	(0.02)*	(0.03)**	(0.03)***
Constant	0.630	0.642	0.693	0.626	0.621	0.771
	(0.06)***	(0.06)***	(0.06)***	(0.06)***	(0.06)***	(0.07)***
Observations	1,983	1,983	1,873	1,983	1,983	1,983
R-squared	0.770	0.777	0.764	0.766	0.773	0.758
Year FE	YES	YES	YES	YES	YES	YES

Source: Author's own calculation. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7

Institutions and Regional Integration Augmented Gravity Model: Components of Institutions (PPML Estimator)

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	INS_CC	INS_GE	INS_PA	INS_RL	INS_RQ	INS_VA
$LN(Y_i)$	0.056	0.057	0.056	0.055	0.056	0.054
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
$LN(Y_j)$	0.059	0.057	0.060	0.058	0.060	0.059
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
$D(LN(PCY))$	-0.004	0.002	-0.007	-0.005	-0.005	-0.013
	(0.00)**	(0.00)	(0.00)***	(0.00)***	(0.00)***	(0.00)***
$LN(D)$	-0.086	-0.087	-0.090	-0.083	-0.085	-0.080
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
LL	-0.070	-0.060	-0.073	-0.072	-0.072	-0.086
	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***
CL	-0.041	-0.048	-0.036	-0.039	-0.041	-0.033
	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***	(0.01)***
CB	-0.025	-0.022	-0.032	-0.021	-0.024	-0.022
	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***	(0.00)***
RI_SAFTA	-0.104	-0.128	-0.006	0.036	-0.071	0.040
	(0.06)*	(0.08)*	(0.02)	(0.05)	(0.04)*	(0.08)
INS_{SP}	0.214	0.251	0.089	0.184	0.180	0.094
	(0.03)***	(0.02)***	(0.02)***	(0.02)***	(0.02)***	(0.02)***
$RI * INS_{SP}$	0.037	0.032	-0.009	-0.018	0.032	-0.021
	(0.02)*	(0.02)*	(0.01)	(0.01)	(0.02)*	(0.02)
Constant	0.661	0.685	0.719	0.678	0.662	0.717
	(0.06)***	(0.06)***	(0.06)***	(0.06)***	(0.06)***	(0.06)***
Observations	1,983	1,983	1,870	1,983	1,983	1,983
R-squared	0.763	0.772	0.762	0.765	0.768	0.759
Year FE	YES	YES	YES	YES	YES	YES

Source: Author's own calculation. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Interesting findings emerge from the interactive term. We find that government effectiveness, regulatory quality, and accountability dimensions have relatively higher complementary contribution in making regional integration effective. All these dimensions, linked with proper implementation of policy, reform agenda especially agreed during trade agreements. The purpose of regional integration is to facilitate trade by reducing tariff and non-tariff barriers. The reduction in these barriers is only possible when domestic institutions ensure the implementation of policies.

7. CONCLUDING REMARKS

The present study has investigated the role of the institutional framework in explaining the effectiveness of trade agreements to promote bilateral trade in South Asia using an institutions-augmented gravity model. The empirical analysis is performed using OLS with fixed effects and the Poisson Pseudo Maximum Likelihood (PPML) estimation technique for panel of 11 countries over the period 1996-2015.

There are two important findings of the empirical analysis: First, the estimation has confirmed for this panel of South Asian economies, the gravity model's prediction that economic development and trade costs are two key determinants of bilateral trade. There is a natural growth of bilateral trade linked with economic development of the

country. Conversely, in the case of these South Asian economies, the normally positive "common border" effect has not been confirmed, possibly owing to political conflicts, especially those between Pakistan and India, Pakistan and Afghanistan, and India and Nepal. These conflicts undermine the natural trade potential.

Second, the empirical analysis has shown that regional integration is not in itself effective in promoting bilateral trade. The estimated impact of SAFTA—a regional trade agreement of South Asian economies has a negative impact on bilateral trade. To look at the underlying reasons behind the estimated negative impact of SAFTA, this study has investigated the role of institutions. The findings have revealed that institutions have a direct as well as indirect impact on bilateral trade. Institutions, indirectly, complement the regional integration.

The RTA can create regional trade if supported by institutional framework. More specifically, government effectiveness, regulatory quality, and accountability are the key institutions to establish the efficacy of regional trade agreements. Without supportive institutions, the RTA may not produce desired results as evident in the case of SAFTA progress over the last 10 years. Moreover, the complementary association should be considered with caution. The association yields positive trade only when the quality of institutions becomes very high.

Various policy implications emerged from empirical analysis: First, economic development, being the key determinant of bilateral trade, begs continuous investment by the public as well as private sectors to promote bilateral trade. The government should focus on the development of key infrastructures both physical and soft, to reduce trade costs that negatively affect bilateral trade. In recent decades, development of physical infrastructure is the hallmark of geo-spatial transformation to promote bilateral trade. Economic corridors like the China-Pakistan Economic Corridor (CPEC) is the best example to reduce trade cost. The core of CPEC is to reduce trade cost and hence enhance bilateral trade.

Second, institutional reform is essential to reap the potential benefits of regional trade agreements. Based on empirical analysis, it can be argued that regional trade agreements can only be effective when these are supported by a well-defined institutional framework. The success of EU is the best example to support the role of institutions. To conclude, South Asian countries should focus on institutional reforms to reap the benefits of regional trade agreements.

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