Trans-Pacific Partnership (TPP) Without United States: What Should Do for Bangladesh?

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Abstract: *This study has to assess the dynamic relationships between Bangladesh's trade balances with the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP or TPP-11) countries. Bangladesh could have benefited if it had integrated with the TPP agreement as of 2013 before the USA's pullout decision from the TPP. Bangladesh's merchandise trade with its TPP trading partner countries (with TPP) or without the USA (TPP-11) has used a data range from 2000 to 2018. A dynamic balanced panel data analysis has been used to capture the Unrestricted Error Correction Mechanism (UECM) and Generalized Method of Moments (GMM) estimator. The model has been tested under two different scenarios (with or without integration), and a robustness check of the model has confirmed the validation of the specification. The study has shown that cointegration exists; stable long-run relationships from any short-run deviation and short-run dynamics have also shown convergence. Therefore, empirical results have indicated that, without integrating both scenarios, the value of the coefficient of proxy for the economic integration variable in both cases is 0.21, which is statistically significant as Bangladesh's trade balance is relatively better off without integration than integration with the CPTPP agreement or TPP-11. In other words, this study suggests that Bangladesh should keep its bilateral trade relationships instead of not joining the CPTPP or the TPP-11 mega-regional FTA without the United States.*

Key Words: *Economic Integration, Dynamic Panel Data, TPP, Bangladesh*
JEL classification: *F15, C33, O53*

1. Introduction

1.1 Background of the Study

Economic integration is the process of amalgamating financial plans and policies between several countries through the partial or full elimination of tariffs and non-tariff restraints on trade. Economic integration's primary goal is to increase the welfare level by lowering distributors' and consumers' prices and improving their economic productivity. Instead of free trade options, economic integration is considered the economic theory of the second-best choice, known as free trade, in which there are no trade barriers. Economic integration has been thought of as the "second best" way to improve productivity and welfare in global business. It is one of the main drivers for increasing the global scale of economic integration.

The regional trade agreement has increased to more than 270, which was only 70 in 1990. The multilateral approach to global trade negotiations has terminated after the Doha Development Round (DDR) expiry at the World Trade Organization (WTO) ministerial in Nairobi on December 19, 2015. Consequently, many countries have been moving forward with more integrated trade across the region, such as through the Trans-Pacific Partnership (TPP) agreement. When it comes to economic and geopolitical reasons, the TPP agreement has been thought of as a very important trade deal in history (Bergsten, 2015).

The TPP agreement was signed on February 4, 2016 in Auckland, New Zealand. The combined share of the world's GDP and trade of TPP countries (Australia, Brunei, Chile, Canada, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, Vietnam, and the USA (e.g., until January 23, 2017) is 40 percent and 26 percent, respectively. The primary purpose of this agreement is to accelerate economic growth, create and withhold jobs, boost productivity, competitiveness, and innovation, raise the living standards of the member countries, and promote good governance, transparency, and labor and environmental protection. This agreement set up an Investor-State Dispute Resolution (ISDS) mechanism and called for lower tariffs and barriers to trade.

After finalizing this regional agreement, Asia-Pacific Economic Cooperation (APEC) members have shown their interest in joining TPP. Moreover, South Korea did not reveal its interest in joining TPP in 2006, but four years later, they negotiated with the USA and showed their interest in joining TPP. Similarly, many other countries and regions have shown their interest in joining the TPP membership, consisting of Colombia, the Philippines, and Taiwan as of 2010; Laos and Thailand as of 2012; and Bangladesh, Cambodia, India, and Indonesia as of 2013.

Following the failure of the Doha Round multilateral trade negotiations, preferential trade agreements (PTAs) have played an important role in the global trading system over the last few decades. During the time span of 2000 to 2021, import shares among different PTAs increased significantly. According to the Trading Economics report, the United States' import share in 2018 was 12.97 percent of the global import share, the highest among 174 countries. However, the United States withdrew its name from the TPP agreement by the executive order of Donald Trump on January 23, 2017 and has been a central concern in the global trading system as well as ratification of TPP-11 and trade policies with the non-member countries of TPP (Kuenzel & Sharma, 2021). Following the Donald Trump pullout decision of the USA from the TPP, by comprising all most all provisions of the TPP, a new agreement was signed on March 8, 2018, by

renegotiating with the remaining TPP countries, which is currently known as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP or TPP-11). Even though Bangladesh wished to join the TPP agreement as of 2013, it would not get preferential treatment for its RMG exports to the TPP member countries. Thus, the RMG sector will suffer a lot. In addition, at present, a number of its rival economies, like Vietnam, are members of TPP-11 and enjoy zero-duty benefits among TPP-11 countries, which is awful news for the largest export-earning sector of Bangladesh.

1.2 Objective of the Study

Bangladesh's trade balances have dynamic relationships with the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP or TPP-11) countries. Bangladesh could have benefited if it had integrated with the TPP agreement as of 2013 before the USA's pullout decision from the TPP. The specific objective of the present study is to ascertain whether the policy of Bangladesh should integrate without the USA's TPP-11 mega-regional FTA agreement or not.

The remaining segment of the paper is as follows: Following the introduction, Section 2 presents a review of the literature; Section 3 describes the methodology and data; Section 4 reports the validation of the model; and Section 5 employs results and discussion of the trade balance model. Finally, section 6 provides concluding remarks, recommendations, and limitations of the study.

2. Review of the Literature

The Trans-Pacific Partnership (TPP) is a strategic economic agreement that consists of the economies of the Asia-Pacific region. Many researchers still use customs union theory to assess the trade creation and trade diversion effects of regional integration. Devlin & Ffrench-Davis (1999) demonstrated that the severe problem of static analysis of customs union theory is that it uses only partial competitive equilibrium to reach the overall inference about general equilibrium. Furthermore, the main flaws of testing this model are not trade creation and trade diversion (Winters, 1999). Many researchers have used the CGE model to evaluate the trade gain and welfare impact of the "TPP" mega-regional FTA on different economies. For a wide range of economic and political reasons, the TPP agreement is important for the Asia-Pacific region (Capling & Ravenhill, 2013; Mordechai and Plummer, 2002). Furthermore, the Regional Comprehensive Economic Partnership (RCEP) and TPP-11 are less comparable than an Asia-Pacific Free Trade Area (FTAAP), as ASEAN countries' output expands significantly (Lee & Itakura, 2018).On the contrary, higher investment inflows into the Philippine economy would mean joining the TPP agreement to increase welfare gain; otherwise, a non-participation decision would have adverse effects on the economy (Cororaton & Orden, 2015).

The Trans-Pacific Partnership (TPP) agreement would create a new dimension in the Asia-Pacific region's economic and political perspective (Capling & Ravenhill, 2013). Both economies will gain financial benefits from those involved in the initial negotiations of the TPP agreement. The US economy is interested in maintaining the prevailing bilateral trade agreement with China because it collaborates instead of grudgingly maintaining the unilateral trade agreement. TPP's

scenarios and possible influence will completely change if Canada, Japan, and Mexico participate in the agreement (Mercurio, 2014). Canada and Mexico already have a severe trade relationship with the US because they are both NAFTA's trading partners. Japan's participation in the TPP agreement triples the agreement's economic value because of its trade and investment with TPP negotiating economies with high tariff and non-tariff restrictions. However, to maintain the Japan-US relationship, the voters and candidates of Japan prefer to join the TPP agreement (Kagitani & Harimaya, 2017).

Developing economies' voices would be suffocated if TPP and TTIP created the new trade criterion (Levy, 2014). Furthermore, if all tariffs, non-tariffs, and para-tariffs are completely eliminated under these mega agreements, then the South Asian economies may suffer severe negative consequences (Rahman & Ara, 2015). Besides, the reduction of tariff and non-tariff barriers by the TPP countries will generate ample economic and productivity benefits for Mexico and Australia in the long run (Guadalupe & Hidalgo, 2016). If China joins the TPP, it will be beneficial for the entire Asia-Pacific region (Li & Yao, 2014). In addition, Japan's decision to join TPP will significantly increase its political, legal, and economic externalities in the Asia-Pacific region (Solís & Katada, 2015). Moreover, the GTAP CEG model found that if TPP comes into effect, the apparel and textile exports of China to the USA, Canada, and Japan will decline (Aslan et al., 2015; Lu, 2015). On the other hand, if import demand for apparel and textiles from Asian TPP countries and Vietnam increases, then Chain's apparel and textile exports will also increase. However, if Japan joins the TPP, China's apparel and textile exports will be affected substantially. However, Chen (2014) used a gravity model to assess the effects of the free trade provision of the TPP on five Asia-Pacific countries, including Canada.

The TPP agreement's impact on Turkey's apparel and textile industries under two distinct scenarios is employed in the GTAP database (Özer, 2016). Firstly, Turkey's economy would face a GDP loss of 0.037 percent if the negotiating countries of the TPP agreement eliminated all the non-tariff restrictions on apparel, textiles, and fiber-plant products. On the other hand, if the agreement were to extend and remove all tariffs and customs that consist of quotas and taxes, the estimated loss of Turkey's GDP would be 0.302 percent. Turkey will also experience a 0.30 to 0.77 percent loss in textile manufacturing. On the other hand, without the USA, TPP will negatively affect Vietnam's export value and the trade welfare of the apparel industry (Nguyen & Le, 2021). The Free Trade Area of the Asia-Pacific (FTAAP) with the TPP template (FTAAP1), the FTAAP with the Regional Comprehensive Economic Partnership (RCEP) template (FTAAP2), the TPP, the RCEP, the EU-Vietnam Free Trade Agreement (EVFTA), and the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) increase the real GDP of Vietnam. Thus, the USA pullout decision from TPP will adversely affect the Vietnam economy (Van Ha et al., 2017).

Without the U.S.A and China in the TPP agreement, these two countries' competitiveness in the global value chain will be undermined (Xing et al., 2018). Moreover, if TPP is led by the USA, then China's global value chain will be adversely affected. However, if China comes into the TPP without the USA, it will create greater economic integration in Asia. Besides, if China joins the TPP, it will be beneficial for the entire Asia-Pacific region (Li & Yao, 2014). However, Chinese elites attempted to implement the "new silk road" as a replacement for not joining TPP and RCEP due to mistrust and dissatisfaction with these two competing frameworks (Ye, 2015). On the contrary, TTIP and TPP mega deals eliminate tariffs and are wholly integrated; India and

Bangladesh's economies will face a terrific negative impact on their economies (Faruqui & Ara, 2015). If India and Bangladesh joined the TPP agreement, they would minimize the negative effects of these megadeals and gain significantly in terms of exports, real GDP, and welfare. Due to these consequences, India and Bangladesh should attempt to join the TPP agreement.

Aforementioned, under TPP15, the USA, EU, and rest of the world's net welfare will decline, but China, Japan, and Korea, as well as global welfare as a whole, will increase considerably (Buongiorno & Zhu, 2017). After reviewing the above literature, we have found that a little research work was conducted separately to assess the impact of the CPTPP or TPP-11 on the Bangladesh economy. Therefore, the present research endeavor aims to investigate whether Bangladesh will integrate into the TPP-11 agreement or not. A dynamic panel data analysis has been applied to the conventional trade model but with new economic integration of the trade balance model that was constructed under the gravity model framework on two different scenarios (i.e., TPP-11 and TPP).

3. Methods and Data

3.1 Theoretical Model

Krugman & Baldwin (1987) and Baharumshah (2001) employed the elasticity approach, absorption approach, and monetary approach to construct a trade balance model that captured the effects of the real exchange rate, real domestic income, and real foreign income on trade. The algebraic form of the trade balance model is:

$$TB_{ij} = TB_{ij}\left(Y_i, Y_j, RER_{ij}\right) \tag{1}$$

According to Tinbergen (1962), Poyhonen (1963), Deardorff (1997), and Matyas (1997) they constructed a gravity model of trade that represented both exports and imports as functions of incomes, per capita income, and real exchange rates in cross-country and distance. Therefore, the algebraic form of the trade balance model is:

$$TB_{ij} = \frac{X_{ij}^{s}}{M_{ij}^{d}} = TB_{ij}\left(Y_i, Y_j, y_i, y_j, RER_{ij}, D_{ij}\right) \tag{2}$$

In addition, Bahmani-Oskooee (1991 & 2001) and Anderson & Van Wincoop (2003) construed that the nominal or real trade balance can determine the country's trade imbalance with its leading trade partners. In the new bilateral trade approach, "relative size" is far more weighted than "absolute size" because it determines the export supply and import demand rather than the income and population of the trading partners. The trade balance of a country-i with its partner country-j denoted by the ratio of its exports over imports suggested by Khan and Hossain (2010). In bilateral trade, the trade balance is affected by the country-i's GDP compared with the GDP of the country-j. In international trade, export and import are determined in terms of f.o.b and c.i.f prices, respectively. The transportation cost arises mainly from imported goods. Now, we analyze the

impact of the TPP mega deal on Bangladesh's trade balance. The extended model of the trade balance is given as follows:

$$TB_{ij} = TB_{ij}\left(\frac{Y_i}{Y_j}, \frac{y_i}{y_j}, RER_{ij}, D_{ji}, TARIFF_{ij}\right)$$

$$TB_{ij} = TB_{ij}\left(RGDP_{ij}, RPGNI_{ij}, RER_{ij}, MWD_{ij}, TARIFF_{ij}\right) \quad (3)$$

Notations:

$RGDP_{ij}$ = Relative GDP = $\frac{Y_i}{Y_j} = \frac{GDP_i}{GDP_j}$

$RPGNI_{ij}$ = Relative per capita income = $\frac{y_i}{y_j}$

RER_{ij} = Real exchange rate between country-i and country-j

MWD_{ij} = Import–weighted distance between country-i and country-j

$TARIFF_{ij}$ = Tariff rate of exporter per product HS6 code between country-i and j

3.2 Econometric Model

This study investigates whether Bangladesh will integrate with the "TPP" agreement or not. In bilateral trade, the dynamic performance of the trade balance of Bangladesh (country-i) with its trading partners' TPP (country-j) can be explained by using the following equation (4). The long-run stable relationship between explanatory variables and the bilateral trade balance of Bangladesh with its trading partners' TPP countries and short-run trade dynamic adjustment can be checked by using this equation. In this study, several economic variables show the joint dynamic behavior of trade adjustment. Hence, all explanatory variables consist of lagged values of the endogenous variables. The following equation exhibits a dynamic panel model framework:

$$\ln(TB_{ij})_t = \alpha_0 + \delta \ln\left(TB_{ij}\right)_{t-1} + \beta_1 \ln\left(RGDP_{ij}\right)_t + \beta_2 \ln\left(RPGNI_{ij}\right)_t + \beta_3\left(RER_{ij}\right)_t + \beta_4 \ln(MWD_{ij})_t + \beta_5 (TARIFF_{ij})_t + u_{ij} \quad (4)$$

The above dynamic model constructed in semi-elasticity format to explain the trade balance, TB_{ij}, in this model incorporated the lagged dependent variable this model we incorporated lagged dependent variable $(TB_{ij})_{t-1}$, $RGDP_{ij}, RPGNI_{ij}$, *and* MWD_{ji} in natural log (ln) forms whereas RER_{ij} and $TARIFF_{ij}$ in absolute form because the real exchange rate and tariff rate showed percentage value for each year. The above model can suffer from endogeneity, autocorrelation, and heteroscedasticity in the case of some explanatory variables. In recent times, different

estimation techniques have developed to solve these problems in the case of dynamic panel model analysis. Some of these techniques have been applied in this research study to investigate the dynamic nature of Bangladesh's trade balance with "TPP" countries.

The estimators' signs of the variables should be similar to prior expectations according to the theoretical expectations; otherwise, estimated estimators will provide misleading inference. In this above model, the long-run estimator β_1 and β_2 could be either positive or negative. If the home country $-i's$ GDP is less than the partner countries $-j's$ that will deteriorate the trade balance of the home country and vice versa. On the other hand, if the partner country $-j's$ per capita GNI ($RPGNI_{ij}$) increase, that will lead to demand for her domestic goods relative to the foreign country $-i's$ goods and vice versa (absorption effect). According to the J-curve phenomenon the depreciation of real exchange rate (RER_{ij}) will increase trade balance after few months of depreciation. Therefore, the expected sign of long-run estimator β_3 will be positive. According to the gravity model, import-weighted distance (MWD_{ji}) is used as a proxy variable of transportation cost. If it increases, that will deteriorate trade balance, and the expected sign of long-run estimator β_4 will be negative. Tariff rate of exporter per product has a positive impact on trade balance. Therefore, the expected sign of long-run estimator β_5 will be positive. Econometric software Eviews 10 has been used for the purpose of empirical analysis.

3.3 Data

For conducting econometric analysis on whether Bangladesh will integrate into the "TPP" mega regional trade block or not, we have collected annual data from 2000 to 2018 of different variables from different sources in TPP's countries specifically for TPP's member countries. To calculate the trade balance, we collected exports and imports of goods and services at a constant 2010 US dollar from IMF DOTS statistics. To calculate, we collected Gross Domestic Product (GDP, PPP at constant 2011 international dollar value) and per capita Gross National Income (GNI, PPP at constant 2011 international dollar value) from the *World Development Indicator (WDI)* database of the World Bank (2019). From the *International Financial Statistics (IFS)* database of the IMF (2019), we collected consumer price indexes (CPI at constant 2010 value) and official exchange rates (LCU per US dollar, period average) for exporting and importing countries to calculate *RER*s. To calculate the import-weighted distance, we collected the geographical distance of the capital city of Bangladesh to the capital cities of TPP countries from the World Bank website (www.econ.worldbank.org) and then weighted it by the ratio of bilateral import volume from corresponding countries to the total import volume of Bangladesh. Finally, the tariff rate of exporters per product based on HS6 code was collected from the World Trade Organization (WTO) database (2019).

4. Empirical Results

4.1 Panel Unit Root Tests

Before undertaking the long run and short run regressions, it is obvious to check whether the variables are stationary or not. If variables are non-stationary, then regression will be spurious, and that will provide a misleading inference. Different unit root tests are prevalent to check whether variables are stationary or not, because a single unit root test sometimes does not provide authentic results. The Levin, Lin, and Chu (LLC) test (2002), Breitung t-statistics (2000), Im, Pesaran, and Shin W-statistics (2003), ADF-Fisher Chi-square test, and PP-Fisher Chi-square test (Maddala & Wu, 1999) were used in this study. We have seen that the equation (4) variables are non-stationary at level but stationary at first difference. Appendix A1 and A2 represent these summary statistics.

4.2 Co-integration Tests

To draw a concrete decision about cointegration among variables in the model under consideration, a single cointegration test may not be sufficient (Raihan, 2007). In this research work, we have applied three types of cointegration tests. These are the Pedroni cointegration test (2004), the Kao test (1999), and the combined Johanson-Fischer panel cointegration test (1990). Appendix A3 and A4 represent Pedroni, Kao, and Johanson Fisher panel cointegration test statistics, respectively. We have seen that, except for the Pedroni test, both the Kao and Johanson Fisher panel cointegration tests reject the null hypothesis of no cointegration. Therefore, we conclude that among the variables of equation (4), one exhibits the cointegration relationship.

4.3 Unrestricted Error Correction Model (UECM)

From the cointegration test, we have seen that all the variables are cointegrated in the long run. Therefore, the two-step method of Engle and Granger can be used by UECM. The following panel regression equations give us the first step (Engle & Granger, 1987) fixed effect estimators under two different scenarios.

With Integration:

TPP excludes the USA (TPP-11):

$$\ln TB_{ij,t} = \alpha_{0i} + \beta_1 \ln RGDP_{ij,t} + \beta_2 \ln RPGNI_{ij,t} + \beta_3 RER_{ij,t} + \beta_4 \ln MWD_{ij,t} + u_{it} \quad (5)$$

TPP includes the USA (TPP$_{USA}$):

$$\ln TB_{ij,t} = \gamma_{0i} + \delta_1 \ln RGDP_{ij,t} + \delta_2 \ln RPGNI_{ij,t} + \delta_3 RER_{ij,t} + \delta_4 \ln MWD_{ij,t} + u_{it} \quad (6)$$

Without Integration:

TPP excludes the USA (TPP-11):

$$\ln TB_{ij,t} = \alpha_{0i} + \beta_1 \ln RGDP_{ij,t} + \beta_2 \ln RPGNI_{ij,t} + \beta_3 RER_{ij,t} + \beta_4 \ln MWD_{ij,t} + \beta_5 TARIFF_{ij,t} + u_{it} \quad (7)$$

TPP includes the USA (TPP$_{USA}$):

$$\ln TB_{ij,t} = \gamma_{0i} + \delta_1 \ln RGDP_{ij,t} + \delta_2 \ln RPGNI_{ij,t} + \delta_3 RER_{ij,t} + \delta_4 \ln MWD_{ij,t} + \delta_5 TARIFF_{ij,t} + u_{it} \quad (8)$$

Table-1: Engle-Granger First Step Estimated Regression Results

Dependent Variable: $\ln TB_{ij,t}$				
Explanatory Variable	**With Integration**		**Without Integration**	
	TPP excludes the USA (TPP-11)	**TPP includes the USA (TPP_{USA})**	**TPP excludes the USA (TPP-11)**	**TPP includes the USA (TPP_{USA})**
Intercept term	-0.528*** (-3.856)	-0.466*** (-3.509)	-0.944** (-2.421)	-0.707* (-1.766)
$\ln RGDP_{ij,t}$	-11.094*** (-6.806)	-10.831*** (-6.795)	-10.410*** (-3.137)	-8.817** (-2.608)
$\ln RPGNI_{ij,t}$	9.473*** (6.065)	9.424*** (6.080)	9.313** (2.879)	7.957** (2.398)
$RER_{ij,t}$	0.093*** (13.946)	0.032*** (12.327)	0.016*** (4.030)	0.009** (2.249)
$\ln MWD_{ij,t}$	-1.072*** (-23.803)	-1.003*** (-26.049)	-0.926*** (-18.863)	-0.893*** (-18.076)
$\ln TARIFF_{ij,t}$			0.218*** (13.061)	0.213*** (13.807)
R-squared	0.764	0.786	0.885	0.882
Adj. R-squared	0.757	0.780	0.879	0.876

Notes : 1. Figures in parentheses are t values

2. Asterisk marks *, ** and *** denote the coefficients are significant at 10%, 5% and 1% level of significance respectively.

In the second step, the residuals of estimated equations (5), (6), (7), and (8) are stationary; those are tested by using the panel unit root tests and presented in Appendix A6 and A10, respectively.

Table-2: Engle-Granger Second Step Estimated Regression Results

Dependent Variable: $\Delta \ln TB_{ij,t}$				
Explanatory Variable	**With Integration**		**Without Integration**	
	TPP excludes the USA (TPP-11)	**TPP includes the USA (TPP_{USA})**	**TPP excludes the USA (TPP-11)**	**TPP includes the USA (TPP_{USA})**
Intercept term (short run)	0.071 (1.045)	0.052 (0.749)	0.021 (0.338)	0.001 (0.012)
$\Delta \ln RGDP_{ij,t-n}$	3.366 (0.530)	3.841 (0.617)	9.118* (1.740)	9.674* (1.727)
$\Delta \ln RPGNI_{ij,t-n}$	-1.782 (-0.380)	-1.953 (-0.429)	-7.016** (-2.225)	-7.198** (-2.067)
$\Delta RER_{ij,t-n}$	0.013 (0.897)	0.017 (1.225)	0.041** (2.219)	0.041** (2.271)
$\Delta \ln MWD_{ij,t-n}$	-1.016*** (-22.297)	-1.003*** (-22.723)	-1.039*** (-13.517)	-1.014*** (-13.825)
$\Delta \ln TARIFF_{ij,t-n}$			0.054 (0.995)	0.083** (2.078)
$ECT(\lambda)$	-0.31*** (-3.599)	-0.29*** (-3.604)	-0.62*** (-3.879)	-0.55*** (-3.649)
$\ln TB_{ij,t}$				
Intercept term (long run)	-0.528*** (-3.856)	-0.466*** (-3.509)	-0.944** (-2.412)	-0.707* (1.766)
$\ln RGDP_{ij,t-1}$	-11.094*** (-6.806)	-10.831*** (-6.795)	-10.410*** (-3.137)	-8.817** (-2.608)
$\ln RPGNI_{ij,t-1}$	9.473*** (6.065)	9.424*** (6.080)	9.313** (2.879)	9.957** (2.398)
$RER_{ij,t-1}$	0.039*** (13.946)	0.032*** (13.327)	0.016*** (4.030)	0.009** (2.249)
$\ln MWD_{ij,t-1}$	-1.072*** (-23.803)	-1.003*** (26.049)	-0.962*** (-18.863)	-0.893*** (-18.067)
$\ln TARIFF_{ij,t-1}$			0.218*** (13.061)	0.213*** (13.807)
R-squared (short run)	0.627	0.621	0.728	0.711

Adj. R-squared (short run)	0.614	0.609	0.709	0.693

Notes: (1). Figures in parentheses are t values

2. Asterisk marks *, ** and *** denote the coefficients are significant at 10%, 5% and 1% level of significance respectively

In fewer than two separate scenarios (i.e., with integration and without integration), the estimated Unrestricted Error Correction Model (UECM) of equations (5), (6), (7), and (8) has

respectively shown the trade balance of Bangladesh with TPP countries in the long run and short run. The t-statistics of each coefficient are shown in parentheses. Therefore, with and without integration, in the long run, the signs of coefficients of explanatory variables (i.e., RGDP, RPGNI, RER, and MWD) are adjusted with priori expectation and statistically significant according to |t-2| rule of thumb under two separate scenarios.

Besides, without the integration of two separate scenarios, the sign of the coefficient of "TARIFF" is also adjusted with priori expectation and is highly significant. However, in the short-run, with and without integration of two separate scenarios, the sign of the coefficient of "MWD" is adjusted with priori expectation and is statistically significant. Therefore, we can conclude that proxy variable import-weighted distance (MWD) has a significant impact on Bangladesh's trade balance and it indicates that Bangladesh imports more from TPP countries than exports.

4.4 GMM Estimation

We have used Blundell and Bond (1998) one-step and two-step GMM estimation to check whether the proposed model is correctly specified or not. The analysis of one-step and two-step GMM estimation presented in Appendix A8 and A12 has shown that the results of GMM estimators are consistent with unrestricted error correction model (UECM) estimators. Therefore, the proposed model is valid, and no specification bias exists.

5. Results and Discussion

The distance between Bangladesh and its trading partners in TPP countries increases by 1% if all other things stay the same. This means that the bilateral trade balance of Bangladesh (country-i) with its trading partners in TPP countries (country-j) decreases by 1.016, 0.100, and 0.100% respectively with integration under both scenarios. On the other hand, 1.039, 0.962, and 1.014, 0.893 percent, respectively, without the integration of both scenarios, both in the short-run and long-run, although we have found that "RPGNI" and "RER" have a statistically significant impact on Bangladesh's trade balance in the short run without integrating both scenarios. Besides, "TARIFF" in the short-run without the integration of TPP with the U.S.A also has a significant impact. On the other hand, RGDP, on the other hand, has no significant effect in the short run when integrated, but it has a statistically significant impact at a 10% level of significance when not integrated.

On the contrary, under both scenarios of with and without integration, the long-run coefficients of relative GDP (RGDP) are statistically significant and are negative (-11.094,-10.831, and-10.410, -8.817, respectively). These results have shown that Bangladesh's long-run production and export capacity is lower than those of TPP countries. Therefore, in the long run, Bangladesh imports more rather than exports from TPP countries. As a result, in the long run, the trade balance of Bangladesh deteriorates compared with TPP countries.

Higher relative per capita GNI (RPGNI) indicates a country's higher absorption capacity, which means when a country's relative per capita GNI (RPGNI) increases its imports more than exports. This study found that the long-run coefficients of relative per capita GNI (RPGNI) are statistically significant and positive (9.473, 9.424, and 9.313, 9.957, respectively) under both

scenarios of with and without integration. Therefore, we draw the inference that TPP countries import more from Bangladesh, and due to this consequence, the trade balance of Bangladesh improves significantly in the long run.

We already know that the US dollar is a vehicle currency, accounting for more than 56% of all international transactions. Therefore, a fluctuation in the exchange rate significantly affects international trade. This study found that coefficients of the real exchange rate (RER) under both scenarios are adjusted with priori expectation and are statistically significant and positive in the long run. However, their values are low (i.e., 0.039, 0.032, 0.016, and 0.009, respectively). The positive sign of this variable's coefficient indicates that when Bangladesh depreciates its currency to the TPP countries' currencies, Bangladesh gains a competitive advantage in exports. As a result, the trade balance of Bangladesh improved significantly. Moreover, without the integration of both scenarios, the signs of the long-run coefficients of "TARIFF" are positive (i.e., 0.218 and 0.213, respectively) and highly significant. Therefore, by providing tariffs to the partners (TPP countries) for exporting per product, foreign currency earnings increase, which means capital inflows increase, too. Thus, Bangladesh's trade balance will improve.

The coefficients of the error correction term $\lambda's$ indicate that with and without integration of both scenarios, which are represented in Appendix A6 and A10 as RESID01, RESID03, and RESID02, RESID04, respectively. Those derived from the residuals of long-run equations of (5), (6), (7), and (8), respectively, were adjusted with priori expectation and were statistically significant. The error correction term values are less than one in absolute terms (i.e.,-0.31,-0.29, and -0.62,-0.55 respectively), showing a valid representation of the error correction mechanism and being statistically significant. These coefficients show the adjustment speeds of short-run disequilibrium to the long-run steady-state relationship. Therefore, 0.31%, 0.29%, and 0.62%, 0.55%, respectively, the disequilibrium errors were corrected within one year under both scenarios.

6. Concluding Remarks

Bangladesh's trade balance is also positively affected by the tariff rate of an exporter per product over time. This paper has explored whether Bangladesh should be integrated into the TPP mega-regional FTA or not under two different scenarios (i.e., TPP without the USA (TPP-11) and TPP with the USA (TPP) using dynamic panel data analysis techniques and the extended trade balance model. The results of UECM predict that without the integration of both scenarios, the trade balance of Bangladesh is relatively better off than with the integration of both scenarios. As a result, this study suggests that Bangladesh should not join the TPP mega-regional FTA. Instead, Bangladesh should keep its bilateral trade relationships with TPP countries (Nguyen and Le, 2021).

The estimation of the extended trade balance model with and without the integration of both scenarios has shown that the trade balance of Bangladesh is adversely affected by the relative GDP and import-weighted distance of partner countries. The results have been mostly consistent across estimation techniques and are expected to be similar to those of dynamic panel data estimation. Moreover, the result of the tariff rate exporter per product (HS6) without the integration of both scenarios has some positive impacts on the Bangladesh economy with TPP countries through trade balance (Kuenzel and Sharma, 2021). Whereas it is positively affected by the relative per capita GNI and the real exchange rate of partner countries, which are both statistically significant. This

positive impact on the trade balance is that, by providing tariffs to the exporting countries without an FTA, the export volume increases; consequently, the export earnings increase, indirectly impacting the trade balance. It also turned out that if both scenarios were not integrated, the short-run disequilibrium to long-run equilibrium adjustment times were faster without the integration of both scenarios than with the integration of both scenarios.

From the empirical investigation of this study, we can conclude that Bangladesh's trade balance is relatively better off without integration with TPP countries under both scenarios. So, in order to keep Bangladesh's trade relationship with TPP countries strong, the Bangladesh government should follow these suggestions:

- Bangladesh should liberalize its tariff structure because the average tariff is 55%, which is too high for the country's business openness.
- The government should liberalize the complicated customs formalities and strictly maintain consumer protection laws in the case of imported goods and services.
- The government's authority should increase its competency to bargain with its trading partners to reduce the voluntary export restraints (VERs). To achieve this objective, the government should maintain an excellent bilateral political relationship with its trading partner countries.
- Exporting industries should try to implement anti-dumping policies in order to drive out their competitors from the global market, and then implement monopolistic pricing for their products.
- Through trade policy, the government should increase the share of local content requirements of the final product produced by the local (national) manufacturers to maintain employment.
- The government should impose countervailing duties on goods subject to countervailing measures when the total amount of subsidies on the imported products of a company is greater than 5%.
- The government should reduce public procurement to avoid the heavy tax burden on taxpayers.

Limitations: The above study measures only trade creation and trade diversion, except for welfare effects. Thus, the scope of the next study is to look at the welfare effects that could be predicted by the GTAP model using the CGE.

Declarations:

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Authors' contributions:

NobinKundu participated in the design of the study and performed the statistical analysis.

Md. Shaddam Hossain conceived of the study, and participated in its design and coordination and helped to draft the manuscript.

All authors read and approved the final manuscript.

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Appendices

Table -A1 : Unit Root Tests Statistics of the Variables of the Model at Level

Tests	LN_TB	LN_RGDP	LN_RPGNI	RER	LN_MWD	TARIFF
Levin, Lin & Chu t*						
TPP-11 (TPP excludes the USA)						
With Intercept	0.591 (0.723)	2.676 (0.996)	1.151 (0.875)	3.158 (0.999)	-1.287 (0.099)	0.575 (0.717)
With Intercept & Trend	-2.547 (0.145)	-3.865 (0.000)	-0.994 (0.160)	4.994 (1.000)	-0.501 (0.308)	-2.746 (0.003)
TPP_{USA}(TPP includes the USA)						
With Intercept	0.522 (0.710)	3.023 (0.999)	1.345 (0.911)	3.333 (1.000)	-1.497 (0.067)	0.796 (0.787)
With Intercept & Trend	-3.044 (0.171)	-3.953 (0.000)	-0.959 (0.169)	4.230 (1.000)	-0.571 (0.284)	-2.901 (0.002)
Breitung t-stat						
TPP-11 (TPP excludes the USA)						
With Intercept						
With Intercept and Trend	-0.711 (0.239)	2.010 (0.978)	-0.891 (0.187)	4.912 (1.000)	1.429 (0.924)	3.113 (0.999)
TPP_{USA}(TPP includes the USA)						
With Intercept						
With Intercept and Trend	-0.873 (0.191)	1.983 (0.976)	-0.906 (0.182)	4.782 (1.000)	1.413 (0.921)	3.380 (1.000)
Im, Pesaran and Shin W-stat						
TPP-11(TPP excludes the USA)						
With Intercept	0.859 (0.805)	4.645 (1.000)	3.467 (1.000)	2.474 (0.993)	0.217 (0.586)	2.250 (0.989)
With Intercept and Trend	-0.168 (0.433)	-0.479 (0.316)	0.0796 (0.532)	4.872 (1.000)	0.721 (0.765)	0.705 (0.760)
TPP_{USA}(TPP includes the USA)						
With Intercept	1.092 (0.863)	5.231 (1.000)	3.882 (1.000)	2.895 (0.998)	-0.108 (0.457)	2.606 (0.995)
With Intercept and Trend	-0.3899 (0.348)	-0.547 (0.292)	0.159 (0.563)	4.758 (1.000)	0.570 (0.716)	0.711 (0.762)
ADF - Fisher Chi-square						
TPP-11(TPP excludes the USA)						
With Intercept	14.404 (0.702)	19.315 (0.626)	7.740 (0.998)	9.573 (0.990)	12.083 (0.738)	17.000 (0.763)
With Intercept and Trend	17.421 (0.494)	26.199 (0.243)	18.709 (0.663)	2.376 (1.000)	11.641 (0.768)	17.398 (0.741)
TPP_{USA}(TPP includes the USA)						
With Intercept	14.559 (0.801)	19.324 (0.735)	7.791 (0.999)	9.630 (0.996)	16.042 (0.590)	17.072 (0.846)
With Intercept and Trend	20.704 (0.415)	28.382 (0.244)	19.682 (0.715)	3.418 (1.000)	13.898 (0.736)	18.672 (0.769)
PP - Fisher Chi-square						
TPP-11(TPP excludes the USA)						

With Intercept	20.388 (0.311)	18.164 (0.696)	10.629 (0.980)	11.424 (0.968)	12.781 (0.689)	19.546 (0.611)
With Intercept and Trend	26.373 (0.092)	62.214 (0.000)	19.975 (0.585)	2.334 (1.000)	11.247 (0.794)	22.994 (0.402)
TPP_{USA}(TPP includes the USA)						
With Intercept	21.821 (0.350)	18.185 (0.794)	10.696 (0.991)	11.430 (0.986)	16.586 (0.552)	19.550 (0.722)
With Intercept and Trend	29.229 (0.083)	64.230 (0.000)	21.112 (0.632)	2.873 (1.000)	13.034 (0.790)	23.737 (0.477)

Note: (a) The null hypothesis states that there is unit root.
(b) The critical p-values are reported in parenthesis

Table –A2 : Unit Root Tests Statistics of the Variables of the Model at First Difference

Tests	**LN_TB**	**LN_RGDP**	**LN_RPGNI**	**RER**	**LN_MWD**	**TARIFF**
Levin, Lin & Chu t*						
TPP-11 (TPP excludes the USA)						
With Intercept	-9.374 (0.000)	-6.384 (0.000)	-6.376 (0.000)	-3.252 (0.000)	--5.320 (0.000)	-5.673 (0.000)
With Intercept & Trend	-8.925 (0.000)	-6.680 (0.000)	-5.583 (0.000)	-4.499 (0.000)	-8.614 (0.000)	9.057 (0.000)
TPP_{USA}(TPP includes the USA)						
With Intercept	-10.565 (0.000)	-6.416 (0.000)	-6.509 (0.000)	-4.022 (0.000)	-6.327 (0.000)	-6.009 (0.000)
With Intercept & Trend	-10.088 (0.000)	-6.581 (0.000)	-5.716 (0.000)	-5.124 (0.000)	-9.506 (0.000)	-9.731 (0.000)
Breitung t-stat						
TPP-11(TPP excludes the USA)						
With Intercept						
With Intercept and Trend	-2.482 (0.007)	-2.696 (0.004)	-2.284 (0.011)	-1.880 (0.030)	-2.140 (0.016)	-0.128 (0.449)
TPP_{USA}(TPP includes the USA)						
With Intercept						
With Intercept and Trend	-3.002 (0.001)	-2.880 (0.002)	-2.519 (0.006)	-2.246 (0.012)	-2.683 (0.004)	-0.0702 (0.472)
Im, Pesaran and Shin W-stat						
TPP-11(TPP excludes the USA)						
With Intercept	-6.065 (0.000)	-4.135 (0.000)	-4.153 (0.000)	-1.887 (0.030)	-4.614 (0.000)	-2.627 (0.004)
With Intercept and Trend	-3.737 (0.000)	-3.088 (0.001)	-1.328 (0.092)	-1.022 (0.014)	-3.708 (0.000)	-1.332 (0.091)
TPP_{USA}(TPP includes the USA)						
With Intercept	-6.879 (0.000)	-4.139 (0.000)	-4.140 (0.000)	-2.300 (0.010)	-5.471 (0.000)	-2.876 (0.002)
With Intercept and Trend	-4.485 (0.000)	-2.892 (0.002)	-1.204 (0.014)	-1.306 (0.096)	-4.515 (0.000)	-1.545 (0.061)
ADF - Fisher Chi-square						
TPP-11(TPP excludes the USA)						
With Intercept	71.190 (0.000)	56.293 (0.000)	55.468 (0.000)	33.043 (0.061)	54.037 (0.000)	46.963 (0.002)

With Intercept and Trend	55.185 (0.000)	44.556 (0.003)	28.547 (0.158)	26.427 (0.024)	53.091 (0.000)	42.737 (0.005)
TPP_{USA}(TPP includes the USA)						
With Intercept	83.895 (0.000)	59.136 (0.000)	58.111 (0.000)	39.376 (0.025)	66.267 (0.000)	52.513 (0.001)
With Intercept and Trend	65.658 (0.000)	45.665 (0.005)	29.610 (0.198)	30.862 (0.018)	64.513 (0.000)	49.488 (0.002)
PP - Fisher Chi-square						
TPP-11 (TPP excludes the USA)						
With Intercept	99.648 (0.000)	71.647 (0.000)	69.456 (0.000)	37.069 (0.023)	82.034 (0.000)	55.027 (0.000)
With Intercept and Trend	87.047 (0.000)	66.286 (0.000)	50.694 (0.001)	32.779 (0.065)	73.443 (0.000)	63.945 (0.000)
TPP_{USA}(TPP includes the USA)						
With Intercept	118.068 (0.000)	74.490 (0.000)	71.963 (0.000)	43.807 (0.008)	94.614 (0.000)	60.578 (0.000)
With Intercept and Trend	107.659 (0.000)	67.395 (0.000)	51.675 (0.001)	42.278 (0.012)	88.677 (0.000)	78.958 (0.000)

Note: (a) The null hypothesis states that there is unit root.
(b) The critical p-values are reported in parenthesis

Table –A3: Cointegration Tests: Pedroni and Kao

Alternative Hypothesis Tests: AR Coefs.	**TPP-11 (TPP excludes the USA)**		**TPP_{USA} (TPP includes the USA)**	
	Statistic	***p*-value**	**Statistic**	***p*-value**
Pedroni*v*-statistics				
Within-dimension Statistics				
Without intercept & trends (None)	-2.551	0.995	-2.672	0.996
With intercept & no trend	-2.513	0.994	-2.652	0.996
With both intercept & trend	-2.907	0.998	-3.101	0.999
Within-dimension Weighted Statistics				
Without intercept & trends	-3.064	0.999	-3.171	0.999
With intercept & no trend	-2.943	0.998	-3.083	0.999
With both intercept & trend	-3.673	1.000	-3.907	1.000
Pedroni*ρ-statistics*				
Within-dimension Statistics				
Without intercept & trends	2.297	0.989	2.417	0.992
With intercept & no trend	3.244	0.999	3.426	1.000
With both intercept & trend	3.005	0.999	3.217	0.999
Within-dimension Weighted Statistics				
Without intercept & trends	2.450	0.999	2.604	0.995
With intercept & no trend	3.089	0.999	3.319	1.000
With both intercept & trend	3.237	0.999	3.580	1.000
Between-dimension Statistics				
Without intercept & trends	3.872	1.000	4.154	1.000
With intercept & no trend	4.580	1.000	4.900	1.000
With both intercept & trend	4.263	1.000	4.683	1.000
Pedroni PP-*statistics*				
Within-dimension Statistics				
Without intercept & trends	-3.028	0.001	-3.182	0.001

With intercept & no trend	-3.833	0.000	-4.060	0.000
With both intercept & trend	-9.905	0.000	-10.442	0.000
Within-dimension Weighted Statistics				
Without intercept & trends	-2.590	0.005	-2.778	0.003
With intercept & no trend	-7.522	0.000	-7.883	0.000
With both intercept & trend	-12.910	0.000	-13.055	0.000
Between-dimension Statistics				
Without intercept & trends	-6.947	0.000	-7.351	0.000
With intercept & no trend	-8.746	0.000	-9.174	0.000
With both intercept & trend	-17.296	0.000	-17.173	0.000
Pedroni ADF-*statistics*				
Within-dimension Statistics				
Without intercept & trends	0.892860	0.814	0.847	0.801
With intercept & no trend	-0.172672	0.432	-0.353	0.362
With both intercept & trend	NA	NA	NA	NA
Within-dimension Weighted Statistics				
Without intercept & trends	1.154	0.876	0.913	0.819
With intercept & no trend	-2.542	0.006	-3.355	0.000
With both intercept & trend	NA	NA	NA	NA
Between-dimension Statistics				
Without intercept & trends	0.242	0.596	-0.283	0.389
With intercept & no trend	-3.748	0.000	-5.090	0.000
With both intercept & trend	NA	NA	NA	NA
Kao Test				
ADF- without trend	-2.893	0.002	-3.158	0.002

Table –A4: : Summary of the Johansen Fisher Panel Cointegration Tests

Series: Series: LN_TB, LN_RGDP, LN_RPGNI, RER, LN_MWD, TARIFF.
Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue**)**

Hypothesized No. of CE(s)	**Fisher Stat.* (from λ_{trace} test)**	**Prob.**	**Fisher Stat.* (from $\lambda_{\max}$ test)**	**Prob.**
No deterministic trend				
TPP-11 (TPP excludes the USA)				
None	9.704	0.78	9.70	0.78
At most 1	94.88	0.00	94.88	0.00
At most 2	157.5	0.00	110.1	0.00
At most 3	79.47	0.00	56.28	0.00
At most 4	49.62	0.00	49.62	0.00
TPP_{USA}(TPP includes the USA)				
None	11.09	0.80	11.09	0.80
At most 1	113.3	0.00	113.3	0.00
At most 2	171.7	0.00	123.7	0.00
At most 3	83.02	0.00	58.30	0.00
At most 4	54.39	0.00	54.39	0.00
Linear deterministic trend				
TPP-11 (TPP excludes the USA)				
None	9.70	0.78	9.70	0.78
At most 1	111.9	0.00	111.9	0.00

At most 2	128.9	0.00	128.9	0.00
At most 3	68.89	0.00	61.84	0.00
At most 4	28.99	0.01	28.99	0.01
TPP_{USA}(TPP includes the USA)				
None	11.09	0.80	11.09	0.80
At most 1	113.3	0.00	113.3	0.00
At most 2	147.4	0.00	147.4	0.00
At most 3	83.86	0.00	75.30	0.00
At most 4	34.52	0.00	34.52	0.00

Table –A5: Estimation of the Long-Run Model: With Integration

Method: Panel Least Squares
White cross-section standard errors & covariance (no d.f. correction)
Dependent Variable: LN_TB(-1)

Variable	**TPP-11 (TPP excludes the USA)**			**TPP_{USA} (TPP includes the USA)**		
	Total panel (unbalanced) observations: 154			Total panel (unbalanced) observations: 168		
	Coefficient	**t-Statistic**	**Prob.**	**Coefficient**	**t-Statistic**	**Prob.**
LN_RGDP(-1)	-11.094	-6.804	0.000	-10.831	-6.795	0.000
LN_RPGNI(-1)	9.473	6.065	0.000	9.424	6.080	0.000
RER(-1)	0.039	13.946	0.000	0.032	12.327	0.000
LN_MWD(-1)	-1.072	-23.803	0.000	-1.003	-26.049	0.000
C	-0.528	-3.856	0.000	-0.466	-3.509	0.001
Effects Specification: Cross-section fixed (dummy variables)	R-squared		0.764	R-squared		0.786
	Adjusted R-squared		0.757	Adjusted R-squared		0.780
	Akaike info criterion		2.756	Akaike info criterion		2.718
	Schwarz criterion		2.854	Schwarz criterion		2.811
	Hannan-Quinn criter.		2.796	Hannan-Quinn criter.		2.756
	Durbin-Watson stat		1.813	Durbin-Watson stat		1.716
	Log likelihood		-207.180	Log likelihood		-223.330
	F-statistic		120.272	F-statistic		149.364
	Prob(F-statistic)		0.000	Prob(F-statistic)		0.000

Table –A6: Result of the Residual Unit Root Tests of the Long-Run Model: With Integration

Panel unit root test: Summary
Sample: 2000-2018; Exogenous variables: Individual effects
User-specified lags: 1; Newey-West automatic bandwidth selection and Bartlett kernel

	TPP-11 (TPP excludes the USA)				**TPP_{USA} (TPP includes the USA)**			
	Series: RESID01				**Series: RESID03**			
Method	**Statistic**	**Prob.****	**Cross-sections**	**Obs**	**Statistic**	**Prob.****	**Cross-sections**	**Obs**
Null: Unit root (assumes common unit root process)								
Levin, Lin & Chu t*	-5.201	0.000	11	120	-4.497	0.000	12	132
Null: Unit root (assumes individual unit root process)								
Im, Pesaran and Shin W-stat	-0.269	0.094	11	120	0.122	0.048	12	132
ADF - Fisher Chi-square	35.800	0.002	11	120	35.616	0.060	12	132
PP - Fisher Chi-square	32.820	0.004	11	132	36.823	0.046	12	145

Note: ** Probabilities for Fisher tests computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Table –A7: Unrestricted Error Correction Mechanism for the Model: With Integration

Method: Panel Least Squares
White cross-section standard errors & covariance (no d.f. correction)
Dependent Variable: D(LN_TB)

Variable	**TPP-11(TPP excludes the USA)**			**TPP_{USA}(TPP includes the USA)**		
	Total panel (unbalanced) observations: 148			Total panel (unbalanced) observations: 162		
	Coefficient	**t-Statistic**	**Prob.**	**Coefficient**	**t-Statistic**	**Prob.**
D(LN_RGDP)	3.366	0.530	0.597	3.841	0.617	0.538
D(LN_RPGNI)	-1.782	-0.380	0.704	-1.953	-0.429	0.669
D(RER)	0.013	0.897	0.371	0.017	1.225	0.222
D(LN_MWD)	-1.016	-22.297	0.000	-1.003	-22.723	0.000
RESID01	-0.307	-3.599	0.000	-0.287	-3.604	0.000
C	0.071	1.045	0.298	0.052	0.749	0.455
Effects Specification: Cross-section fixed (dummy variables)	R-squared		0.627	R-squared		0.621
	Adjusted R-squared		0.614	Adjusted R-squared		0.609
	Akaike info criterion		1.967	Akaike info criterion		1.889
	Schwarz criterion		2.088	Schwarz criterion		2.003
	Hannan-Quinn criter.		2.016	Hannan-Quinn criter.		1.935
	Durbin-Watson stat		2.446	Durbin-Watson stat		2.449
	Log likelihood		-139.526	Log likelihood		-146.984
	F-statistic		47.775	F-statistic		51.064
	Prob(F-statistic)		0.000	Prob(F-statistic)		0.000

Table –A8: Summary of the GMM Estimations of the Model: With Integration

Dependent Variable LN_TB; Transformation: First Differences

Explanatory Variables	**TPP -11 (TPP excludes the USA)**		**TPP_{USA}(TPP includes the USA)**	
	One-Step GMM Estimators	**Two-Step GMM Estimators**	**One-Step GMM Estimators**	**Two-Step GMM Estimators**
ΔLN_TB (-1)	0.094** (0.03)	0.153** (0.01)	0.100** (0.02)	0.143** (0.03)
ΔLN_RGDP	9.931*** (0.00)	11.820*** (0.00)	10.112*** (0.00)	10.818** (0.02)
ΔLN_RPGNI	-6.910** (0.04)	-8.664** (0.01)	-7.082** (0.03)	-7.709 (0.25)
ΔRER	0.038*** (0.00)	0.032*** (0.00)	0.046*** (0.00)	0.050*** (0.00)
ΔLN_MWD	-1.132*** (0.00)	-1.193*** (0.00)	-1.125*** (0.00)	-1.202*** (0.00)
Instrument rank *J*-statistics	91 130.02	12 7.07	93 141.10	13 9.81

Note: (a) The critical probabilities reported in parentheses.
(b)*** and ** indicate statistical significance at the 1%, 5% and 10% level respectively.
(c) The instruments set employed include logarithm of variables in the model dated (t-1) and (t-2). Sargan test statistic is a test of over-identifying restrictions for instrument validity.

Table –A9: Estimation of the Long-Run Model: Without Integration

Method: Panel Least Squares

White cross-section standard errors & covariance (no d.f. correction)

Dependent Variable: LN_TB(-1)

Variable	**TPP-11 (TPP excludes the USA)**			**TPP_{USA}(TPP includes the USA)**		
	Total panel (unbalanced) observations: 103			Total panel (unbalanced) observations: 113		
	Coefficient	**t-Statistic**	**Prob.**	**Coefficient**	**t-Statistic**	**Prob.**
LN_RGDP(-1)	-10.410	-3.137	0.002	-8.817	-2.608	0.0104
LN_RPGNI(-1)	9.313	2.879	0.005	7.957	2.398	0.0182
RER(-1)	0.016	4.030	0.000	0.009	2.249	0.0266
LN_MWD(-1)	-0.962	-18.863	0.000	-0.893	-18.076	0.0000
TARIFF(-1)	0.218	13.061	0.000	0.213	13.807	0.0000
C	-0.944	-2.421	0.017	-0.707	-1.766	0.0802
Effects Specification: Cross-section fixed (dummy variables)	R-squared		0.885	R-squared		0.882
	Adjusted R-squared		0.877	Adjusted R-squared		0.876
	Akaike info criterion		2.230	Akaike info criterion		2.271
	Schwarz criterion		2.384	Schwarz criterion		2.415
	Hannan-Quinn criter.		2.292	Hannan-Quinn criter.		2.329
	Durbin-Watson stat		1.784	Durbin-Watson stat		1.826
	Log likelihood		-108.863	Log likelihood		-122.290
	F-statistic		148.695	F-statistic		159.957
	Prob(F-statistic)		0.000	Prob(F-statistic)		0.000

Table –A10: Result of the Residual Unit Root Tests of the Long-Run Model: Without Integration

Panel unit root test: Summary

Sample: 2000-2018; Exogenous variables: Individual effects

User-specified lags: 1; Newey-West automatic bandwidth selection and Bartlett kernel

	TPP-11 (TPP excludes the USA)				**TPP_{USA}(TPP includes the USA)**			
	Series: RESID02				**Series: RESID04**			
Method	**Statistic**	**Prob.****	**Cross-sections**	**Obs**	**Statistic**	**Prob.****	**Cross-sections**	**Obs**
Null: Unit root (assumes common unit root process)								
Levin, Lin & Chu t*	-2.112	0.017	11	91	-1.593	0.056	11	84
Null: Unit root (assumes individual unit root process)								
Im, Pesaran and Shin W-stat	0.192	0.076	11	91	0.683	0.053	11	84
ADF - Fisher Chi-square	19.316	0.026	11	91	19.726	0.060	11	84
PP - Fisher Chi-square	23.088	0.097	11	91	19.080	0.040	11	95

Note: ** Probabilities for Fisher tests computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Table –A11: Unrestricted Error Correction Mechanism for the Model: Without Integration

Method: Panel Least Squares
White cross-section standard errors & covariance (no d.f. correction)
Dependent Variable: D(LN_TB)

Variable	TPP-11 (TPP excludes the USA)			TPP_{USA}(TPP includes the USA)		
	Total panel (unbalanced) observations: 91			Total panel (unbalanced) observations: 100		
	Coefficient	**t-Statistic**	**Prob.**	**Coefficient**	**t-Statistic**	**Prob.**
D(LN_RGDP)	9.118	1.740	0.085	9.674	1.727	0.088
D(LN_RPGNI)	-7.016	-2.226	0.029	-7.198	-2.076	0.041
D(RER)	0.041	2.219	0.029	0.041	2.271	0.026
D(LN_MWD)	-1.039	-13.517	0.000	-1.014	-13.825	0.000
D(TARIFF)	0.054	0.995	0.322	0.083	2.078	0.040
RESID02	-0.621	-3.879	0.000	-0.550	-3.649	0.000
C	0.021	0.338	0.736	0.001	0.012	0.991
Effects Specification: Cross-section fixed (dummy variables)	R-squared		0.728	R-squared		0.711
	Adjusted R-squared		0.709	Adjusted R-squared		0.693
	Akaike info criterion		1.886	Akaike info criterion		1.842
	Schwarz criterion		2.079	Schwarz criterion		2.024
	Hannan-Quinn criter.		1.964	Hannan-Quinn criter.		1.916
	Durbin-Watson stat		2.436	Durbin-Watson stat		2.513
	Log likelihood		-78.806	Log likelihood		-85.100
	F-statistic		37.540	F-statistic		38.188
	Prob(F-statistic)		0.000	Prob(F-statistic)		0.000

Table –A12: Summary of the GMM Estimations of the Model: Without Integration

Dependent Variable LN_TB; Transformation: First Differences

	TPP-11 (TPP excludes the USA)		TPP_{USA}(TPP includes the USA)	
Explanatory Variables	**One-Step GMM Estimators**	**Two-Step GMM Estimators**	**One-Step GMM Estimators**	**Two-Step GMM Estimators**
ΔLN_TB (-1)	0.019** (0.03)	0.003* (0.08)	0.020* (0.06)	-0.003* (0.07)
ΔLN_RGDP	6.721* (0.06)	10.756** (0.02)	7.153** (0.03)	14.518** (0.01)
ΔLN_RPGNI	-4.536** (0.01)	-6.683** (0.04)	-4.743 (0.09)*	-11.181** (0.04)
ΔRER	0.046* (0.08)	0.077** (0.03)	0.044** (0.06)	0.018** (0.04)
ΔLN_MWD	-1.100*** (0.00)	-1.057*** (0.00)	-1.097*** (0.00)	-1.130*** (0.00)
ΔTARIFF	0.150** (0.00)	-0.289** (0.01)	0.13*** (0.00)	0.172** (0.05)
Instrument rank *J*-statistics	76 74.62	11 3.28	77 81.01	12 6.13

Note: (a) The critical probabilities reported in parentheses.
(b)*** and ** indicate statistical significance at the 1%, 5% and 10% level respectively.
(c) The instruments set employed include logarithm of variables in the model dated (t-1) and (t-2). Sargan test statistic is a test of over-identifying restrictions for instrument validity.