Theoretical and Applied Economics
Volume XXXI (2024), No. 2(639), Summer, pp. 325-340

Regional trade agreements between regional comprehensive economic partnership and one belt one road nations: A critical analysis

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Abstract. *This study estimates the influence of three significant concepts on the international trade flows between countries participating in the One Belt One Road (OBOR) initiative and Regional Comprehensive Economic Partnership (RCEP). These concepts, which have been previously examined individually in literature, include the effects of intranational trade, international borders and more importantly, regional trade agreements, on international trade flows. This study employs the structural gravity model with data for various variables such as international trade, intranational trade and regional trade agreements (RTAs) ranging between 1999 and 2019. The approach used in this study produces econometrically robust estimates of the impact of RTAs on trade among OBOR member countries, while various sensitivity analyses including phasing-in effect of the RTAs, endogeneity, reverse causality, and multilateral trade resistances. The findings of this study indicate that the impact of RTAs on trade between OBOR and RCEP countries becomes insignificant when the effects of globalization are isolated. Additionally, the declining influence of international borders on trade flows between OBOR and RCEP countries suggests that trade is facilitated to a greater extent between open economies.*

Keywords: regional trade agreements, one belt one road, regional comprehensive economic partnership, gravity model, international trade.

JEL Classification: F1, F6, F15.

1. Introduction

The world has witnessed an unprecedented increase in economic integration agreements, primarily in the form of Regional Trade Agreements (RTAs) to facilitate the international trade. During the last two decades, the number of RTAs notified with World Trade Organisation (WTO) has increased by nearly four times to over 450 agreements. International trade is defined as an engine for inclusive economic growth and poverty reduction that promotes sustainable development (Dupuy & Agarwala, 2014). The impact of policies such as economic integration among various countries has widely been accepted to positively impact their development and economic growth. The economic implications of trade liberalisation differ across the individual economies (Baier et al., 2015). However, this variation among the trade partners in response to trade policies is mainly due to different economic backgrounds (Baier et al., 2017). The evidence of trade integration promoting the welfare of the economies highlights that there needs to be continuous support for economic integration among the various countries (Margalit, 2012; Manzoor & Mir, 2023). The trade policies that remove barriers to international trade also help a country's economic growth through improved infrastructure and better productivity. The barriers limit the abilities of various economies to reap the benefits of economic integration and globalisation (Cole & Tenreyo, 2021).

Working together on economic cooperation is crucial in today's uncertain global environment. The world is still dealing with the effects of a past financial crisis, and it is important for countries, especially in Asia, to resume the process of development that started after World War II. Besides, trade tensions exist between big countries like China and the Unites States (US) (Vines, 2018). This has led to events hinting towards a gradual shift in the world order from unipolar to multipolar. With the development of China's One Belt One Road project, followed by the Regional Comprehensive Economic Partnership (RCEP), the US has turned its attention to developing competitive routes such as the Quad and the India-Middle East-Europe Economic Corridor (IMEC) to boost its trade and gain more prosperity. However, with the OBOR having a head start of about a decade and tensions rising in the Middle East, IMEC can hardly challenge the growth of OBOR and RCEP (Inamdar, 2023).

Pertinent to this, economic integration initiatives such as the OBOR and RCEP have emerged to boost the trade of Asia and neighbouring economies. Therefore, this study explores if the trade policy of presence of RTAs between OBOR and RCEP member countries, could be beneficial for countries to work together and improve their economic status. The RCEP is a big regional cooperation agreement covering a significant part of the global economy. The RCEP was finalised during a tough time due to the COVID-19 pandemic, bringing together China, Japan, South Korea, Australia, New Zealand and the ten ASEAN member states of Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam for free trade. OBOR, which is one of the largest economic integration efforts initiated and driven by China - One Belt One Road (OBOR) includes a number of transportation and infrastructure projects under this initiative, categorised under two pillars of: (i) the Silk Road Economic Belt which connects China with Central and South Asia and further to Europe, and (ii) the 21st Century Maritime Silk Road which connects China with the countries of Southeast Asia, the Gulf, East and North Africa and Europe (Baniya et al., 2019)

China has invested huge sums of money in the OBOR member countries, not just in building infrastructure but also in other areas, such as technology and connectivity (Du & Zhang, 2018). This study aims to determine if this investment would help the member countries bring economic welfare. In simpler terms, this research looks at how member countries' trade would be affected by joining the two major initiatives – the RCEP and the China-led OBOR also known as Belt and Road Initiative (BRI) (Yu et al., 2019). This study contributes to discussions on a potential shift in the world order from unipolar to multipolar, driven by the developments of China's OBOR and the RCEP and their implications for global trade dynamics. It specifically focuses on the impact of RTAs on international trade flow between seventy-two OBOR member countries and fifteen RCEP countries from 1999 to 2019 using structural gravity model.

The study findings can have implications for policymakers shaping international economic policies. Understanding the outcomes and intricacies of regional trade agreements and large-scale infrastructure initiatives can guide policymakers in making informed decisions that foster economic development and cooperation. This information can guide countries in the initiative to optimise their collaboration and make the most of foreign investments for sustainable economic growth. This research provides a comprehensive analysis of the multifaceted implications of international trade policies, economic integration initiatives, and major global economic projects, offering valuable insights for academics, policymakers, and practitioners alike.

The remainder of this paper is organized as follows. Section 2 offers a brief review of literature followed by discussion of data and methodology used in the paper in section 3. The results of various econometric specifications are reported in section 4. Section 5 concludes with brief discussion of our findings, and Section 6 includes conclusion, implications, and possible directions of future research.

2. Literature Review

Often referred to as the work horse in trade policy analysis, the study has used gravity model to estimate the impact of RTAs on trade flows between seventy-two participating countries of OBOR (Belt, 2018) and fifteen RCEP nations. The gravity model is traditionally used to estimate the impact of countries' gross domestic product, bilateral distance and various dummy variables such as common official language, contiguous borders, colonial ties and RTA on the trade flows between country pairs. One of the first econometric studies by Tinbergen (1962) employing gravity framework in international trade modelling also included estimating the impact of RTA as an independent regressor. The following studies have yielded varied results since then. Such as, Aitken (1973) has found positive and significant RTA effects for eight estimates while seventeen estimates have rendered negative and insignificant RTA effects on trade flows among European Community (EC). Bergstand (1985), Breuss and Egger (1999), Bun and Klaassen (2002) have found positive and statistically significant impact of EC on trade flows among the member nations. Fontoura et al. (2008) have found negative and statistically insignificant RTA effect on trade flows among European Union (EU) members.

Brada and Mendez (1985) have found positive and significant RTA effects on trade among OECD countries. Agostino et al. (2007) have found positive and significant RTA effects among six estimates while negative and insignificant RTA effects among three estimates on trade flows among Least Developing Countries (LDCs) and Organisation for Economic Cooperation and Development (OECD) Countries. Siliverstovs and Schumacher (2009) have found positive and significant effect for fifty estimates of RTAs on trade among twenty-two OECD nations while twenty estimates have been negative and statistically significant.

Endoh (1999) has found positive and significant effect of Association of Southeast Asian Nations (ASEAN) on trade flows for forty-eight estimates while negative and insignificant effect for two estimates among the member countries. Blomqvist (2004) has found positive and statistically insignificant RTA effect on trade flows among member countries of ASEAN and Developed Countries. Elliot and Ikemoto (2004) have found positive and statistically significant RTA effects on trade flows among the member nations belonging to ASEAN, EC and North Atlantic Free Trade Agreement (NAFTA).

Ghosh and Yamarik (2004) employing extreme – bounds analysis have tested the robustness of coefficient estimates of RTA dummy for a period of twenty-six years from year 1970 to 1995. The study revealed that the RTA average treatment effects (ATE) are fragile. Based on earlier studies spanning from 1962 to 2007, Cipollina and Salvatici (2010) have also found high variability in the RTA estimates on international trade flows among various member nations. Thus, it can be concluded that unbiased and more precise estimates of the RTA effects on trade flows among member countries have not been ascertained in the recent past. However, recent studies have addressed various econometric and estimation challenges that render more robust and precise estimates of RTA on trade flows among sample countries.

Accounting for the endogenity of RTAs, Baier and Bergstrand (2007) used panel data and the Ordinary Least Square (OLS) estimation technique to deduce a five-fold increase in the effect of RTAs on trade among the member nations as compared to the atheoretical gravity estimations for a period of forty years from 1960 to 2000. For the same purpose, the traditional gravity equation is augmented to include country pair fixed effects besides the country specific fixed effects. Using the specifications from Baier and Bergstrand (2007), Anderson et al. (2011) employed the Poisson Pseudo Maximum Likelihood (PPML) estimation technique instead of OLS and also found consistent and economically plausible results. Both of these studies focussed on addressing the issues of unobserved heterogeneity in time fixed country pair influences and time varying multilateral effects of importing and exporting nations. However, unobservable time-varying country pair effects such as technology and innovation that reduces the effect of country pair variables on international relative to domestic or intra-national trade have not been accounted in both of the studies. This misspecification may have led to upward biased estimates of RTA effects.

Furthermore, it has now become inevitable to include intra-national or domestic trade data in the gravity equations. Dai et al. (2014) has concluded that augmenting structural gravity framework with intra-national trade data ensures outcomes that are consistent with gravity theory wherein the consumers are free to choose and consume between foreign and local varieties. Its inclusion also leads to the identification of the country pair trade policy effects that are again consistent with gravity theory. Heid et al. (2015) has noted that the inclusion of intra-national trade flows transforms the non-discriminatory variables from country-specific to bilateral in nature and thus enabling their identification and estimation in the gravity setting. Yotov (2012) highlighted that the inclusion of intra-national trade eliminates the distance puzzle by a relative measure of distance effects on international trade vis-à-vis the distance effects on intra-national trade. Bergstrand et al. (2015) has further advocated that the presence of intra-national trade in gravity trade data captures the globalisation effects such as technological innovation on international trade and to obtain unbiased estimates of the impact of RTAs on trade. In this paper, all these econometric challenges are addressed to estimate the impact of RTAs on trade among OBOR nations and thus ascertain statistically significant elasticities that are robust to various sensitivity analyses such as employing different estimation techniques, phasing effects of RTAs, reverse causality, trade diversion and accounting for globalization effects and country heterogeneity.

Trade policies such as RTAs, nowadays include the agenda of protecting environment and acting sustainable manner. The Sustainable Development Goals (SDGs) defined by the UN provide a holistic approach towards the agenda of international affairs. International trade presents challenges to the developing nations besides benefiting them (Brandi, 2017). The contribution of least developed countries to the world trade is still around one per cent. Therefore, the policymakers of these countries need proactive measures to channelize trade in such a manner that it has least social and environmental impacts.

To the best knowledge of the researcher, the literature lacks a thorough study of partial equilibrium effects of RTAs on trade between OBOR and RCEP countries. Therefore, this study analyzes the partial equilibrium effects using structural gravity for a robust trade policy analysis besides estimating the effect of other gravity variables between the countries belonging to OBOR and RCEP. The method used by Yotov et al. (2016) is used to in this paper to investigate the partial equilibrium effects on trade flow among the member countries.

3. Data and Methodology

A straightforward empirical model for examining bilateral trade flows between geographical entities is the gravity equation. The Newtonian physics function that characterises the force of gravity is basis of the gravity model for trade. According to the model, trade between two nations is inversely related to their distance from one another and proportional to their economic mass (national income). The gravity model equation was defined as follows by Tinbergen (1962) and Pöyhönen (1963):

$$Trade_{ij} = \alpha \times \frac{GDP_i . GDP_j}{Distance_{ij}} \quad [A]$$

where GDP_i and GDP_j are the respective national incomes of countries i and j. $Trade_{ij}$ is the value of bilateral trade between countries *i* and *j*. The bilateral distance between the two countries is measured by $Distance_{ij}$, and α is a proportionality constant.

The linear form of the model and the accompanying estimating equation are obtained by taking logarithms of the gravity model equation in [B] as follows:

$$log\ (Trade_{ij}) = \alpha + \beta_1 log\big(GDP_i . GDP_j\big) + \beta_2 log\big(Distance_{ij}\big) + \mu_{ij} \quad [B]$$

where α, β_1, and β_2 are to be estimated coefficients. The error term includes any further shocks and unforeseen circumstances that might have an impact on bilateral trade between the two nations. The core gravity model equation (equation B) predicts that bilateral trade will be a positive function of income and a negative function of distance.

Anderson and van Wincoop (2003) present an augmented version of Anderson's (1979) gravity model which includes addition of multilateral resistance terms for the exporter and importer that proxy for the existence of undetected trade barriers. The discussion of multilateral resistance matters for heteroscedasticity considerations (Singh et al., 2022), a topic not addressed by many trade models, makes gravity model intriguing overall. Using the Poisson Pseudo Maximum Likelihood (PPML) technique with the gravity model in this study also solves the issue of zero trade flows and heteroscedasticity.

DATA

All the gravity specifications in our study have been estimated with a variety of country-specific and country pair variables as determinants of bilateral trade flows. Our data on trade and other traditional gravity variables for seventy-member countries of OBOR covers a period from 1999 to 2019. Traditionally, gravity modeling has been mostly performed with aggregate data. The data on aggregated bilateral trade flows comes from the International Monetary Fund (IMF)'s Direction of Trade Statistics (DOTS). One of the key features of our study is the inclusion of intra-national trade flows in our data which has been taken from the International Trade and Production Database for Estimation (ITPD-E) of United States International Trade Commission (UNSITC) and the database constructed by Yotov et al. (2016). The data on regional trade agreements (RTAs) are taken from Mario Larch's Regional Trade Agreements Database while data on standard gravity variables such as bilateral distance, contiguous borders, colonial ties and common official language are taken from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) Geo Dist Database.

Econometric Specifications:

RTA effects:

We employ different econometric specifications starting with a basic Ordinary Least Square (OLS) framework derived from equation [B]:

$$lnX_{ij,t} = \pi_{i,t} + \varphi_{j,t} + \beta_1 lnDIST_{ij} + \beta_2 CNTG_{ij} + \beta_3 LANG_{ij} + \beta_4 CLNY_{ij} + \beta_5 RTA_{ij,t} + \varepsilon_{ij,t} \quad [1]$$

The variable $lnX_{ij,t}$ as standard in the literature is the logarithm of international trade flows from exporter i to importer j at time t. $\pi_{i,t}$ denotes the exporter time fixed effects controlling for the unobservable outward multilateral resistances (OMR) and similarly $\varphi_{j,t}$ denotes the importer time fixed effects and controls for the unobservable inward multilateral resistances (IMR) (Feenstra, 2015). The main difference between the traditional and theory consistent applications of the gravity model is the proper accounting for the multilateral influences (Anderson & Van Wincoop, 2003). $lnDIST_{ij}$ is the logarithm of distance between trading partners i and j, $CNTG_{ij}$ is a dummy variable with a value of 1 if the trading partners i and j share the same border and 0 otherwise. $LANG_{ij}$ is a dummy variable capturing the presence of a common official language between trading partners i and j, and $CLNY_{ij}$ represents a dummy variable indicating the presence of colonial ties between the country pairs. Finally, the covariate $RTA_{ij,t}$ is a dummy variable which takes a value equal to 1 if both the countries i and j participate in the same RTA at time t and zero otherwise. For the purpose of this study, the multilateral resistances (inward and outward) are of utmost importance as any bilateral trade cost change due to the formation of RTAs between any two partners does not only affect the parties to the RTA but will affect all other countries of the world.

The gravity specification [1] is augmented to multiplicative form by the application of PPML estimation technique to the same set of sample (i.e. for $i \neq j$). This re-estimation is done in order to account for the heteroskedasticity which often leads to plagued trade data (Silva & Tenreyro, 2006). The PPML estimator also accounts for the zero trade flows information contained in the data. The additive property of PPML estimation technique also ensures that the country specific time-varying fixed effects are representative of their corresponding structural terms (Arvis & Sepherd, 2013; Fally, 2015).

$$X_{ij,t} = exp\left[\pi_{i,t} + \varphi_{j,t} + \beta_1 lnDIST_{ij} + \beta_2 CNTG_{ij} + \beta_3 LANG_{ij} + \beta_4 CLNY_{ij} + \beta_5 RTA_{ij,t}\right] \times \varepsilon_{ij,t} \quad [2]$$

Trade policy variables such as RTA dummies not being exogenous random variables can potentially plague the data in gravity specifications with endogeneity issues (Baier & Bergstrand, 2007). Consequently, the gravity specification [2] is augmented with country pair fixed effects, μ_{ij} to account for potential endogeneity (Baier & Bergstrand, 2007). The inclusion of country pair fixed effects does not allow the estimation of time invariant standard gravity variables such as contiguity, bilateral distance, colonial ties, and common official language.

$$X_{ij,t} = exp\left[\pi_{i,t} + \varphi_{j,t} + \mu_{ij} + \beta_5 RTA_{ij,t}\right] \times \varepsilon_{ij,t} \quad [3]$$

For the purpose of testing whether potential reverse causality between RTAs and trade has been properly accounted in the specification [3] through country pair fixed effects, a new lead covariate, $RTA_{ij,t+4}$ is added to capture the future values of RTAs. The exogeneity of the RTAs is again assessed by the addition of this new lead variable (Baier et al., 2017; Woolridge, 2010):

$$X_{ij,t} = exp\left[\pi_{i,t} + \varphi_{j,t} + \mu_{ij} + \beta_5 RTA_{ij,t} + \beta_6 RTA_{ij,t+4}\right] \times \varepsilon_{ij,t} \quad [4]$$

In order to account for the nonlinear and phasing effects (Anderson & Yotov, 2016) of RTAs over time, the previous specification is reformulated for the inclusion of several lags up to twelve years of covariate RTA:

$$X_{ij,t} = exp\big[\pi_{i,t} + \varphi_{j,t} + \mu_{ij} + \beta_5 RTA_{ij,t} + \beta_6 RTA_{ij,t-4} + \beta_7 RTA_{ij,t-8} + \beta_8 RTA_{ij,t-12}\big] \times \varepsilon_{ij,t}$$

[5]

Finally, we augment specification [5] with a set of new dummy variables $CR\_BRDR\_(T)_{ij}$ that capture the existence of international borders between each country pair *i* and *j* for each year *T* (Bergstrand et al., 2015). The same will account for any possible upward biased estimates of RTAs as they also absorb the unobservable globalization influences such as technological innovation.

$$X_{ij,t} = exp\big[\pi_{i,t} + \varphi_{j,t} + \mu_{ij} + \beta_5 RTA_{ij,t} + \beta_6 RTA_{ij,t-4} + \beta_7 RTA_{ij,t-8} + \beta_8 RTA_{ij,t-12}\big] \times exp\left[\sum_{T=1999}^{2015} \beta_T CR\_BRDR\_(T)_{ij}\right] \times \varepsilon_{ij,t}$$

[6]

This new dummy covariate takes the value of 1 for all bilateral trade flows and 0 otherwise for each year *T*. The $CR\_BRDR\_(T)_{ij}$ dummy for the year 2019 is omitted from the specification [6] as it may have a perfect collinear relationship with the rest of fixed effects included in the specifications. Consequently, all the border dummies $CR\_BRDR\_(T)_{ij}$ for the years $T \in$ (1999, 2003, 2007, 2011, 2015), should be relatively interpreted with the corresponding estimates for 2019.

4. Results

We analyze our data with a 4-year interval in all the estimation techniques as pooled data over consecutive years has been criticized on the grounds that trade flows do not instantaneously adjust to the trade policy changes ((Anderson & Yotov, 2016). We present our results using specifications [1] to [6] in column (1) to (6) of Table 1.

a) Traditional RTA estimates: To estimate the effects of RTAs on bilateral trade between the countries of OBOR and RCEP, the analysis begins with a basic ordinary least square (OLS) framework:

$$lnX_{ij,t} = \pi_{i,t} + \varphi_{j,t} + \beta_1 lnDIST_{ij} + \beta_2 CNTG_{ij} + \beta_3 LANG_{ij} + \beta_4 CLNY_{ij} + \beta_5 RTA_{ij,t} + \varepsilon_{ij,t}$$

[1]

The main findings from OLS specifications reported in column (1) of Table 1 are overall consistent with the theory. The elasticities of all the standard gravity variables including RTA are statistically significant with expected signs as per literature. The estimate of the impact of bilateral distance on trade matches with the estimates in previous literature (Disdier & Head, 2008; Head & Mayer, 2014). This confirms that distance acts as a significant barrier to bilateral trade. The impact of other country pair time-invariant variables such as common official language, contiguity and colonial relationship on international trade flows are statistically insignificant while that of the RTA has significant and positive estimate. It implies that RTA acts as a facilitator to international trade with exception of distance which acts as a barrier.

b) Estimates of RTAs using PPML: Next the results from gravity specification [2] as reported in column (2) of Table 1 has been estimated for the same set of data used in specification [1] but with a different estimator, PPML.

$$X_{ij,t} = exp\left[\pi_{i,t} + \varphi_{j,t} + \beta_1 lnDIST_{ij} + \beta_2 CNTG_{ij} + \beta_3 LANG_{ij} + \beta_4 CLNY_{ij} + \beta_5 RTA_{ij,t}\right] \times \varepsilon_{ij,t} \qquad [2]$$

The elasticities of $lnDIST_{ij}$ and $CLNY_{ij}$ are statistically significant and have expected signs as per the literature (Melitz & Toubal, 2014). The exceptions are $CNTG_{ij}$, and $LANG_{ij}$ and $RTA_{ij,t}$ variables with statistically insignificant estimates. A possible reason for this can be the inadequacy of previous specification to take into consideration the potential endogeneity of RTAs.

c) Addressing potential endogeneity of RTAs by adding country pair fixed effects:

$$X_{ij,t} = exp\left[\pi_{i,t} + \varphi_{j,t} + \mu_{ij} + \beta_5 RTA_{ij,t}\right] \times \varepsilon_{ij,t} \qquad [3]$$

Column (3) of Table 1 reports results using PPML estimation technique with pair fixed effects (μ_{ij}). The estimates of all bilateral fixed effects, μ_{ij} although not reported in column (4) for brevity are negative with values smaller than -1 indicating that the country pair fixed effects, μ_{ij} have affectively absorbed all bilateral trade costs. The estimates of pair fixed effects also reflect that the intra-national trade costs are smaller than the international trade costs. Notably, the coefficient of the $RTA_{ij,t}$ being positive and statistically significant is larger ($\beta_5 = 0.454$) than the values obtained in previous specifications. Hence in conformity with the predictions of Baier and Bergstrand (2007) that the impact of RTA estimates on trade obtained without properly addressing the issue of endogeneity are biased downwards.

d) Testing for potential reverse causality between trade and RTAs by adding lead variable of RTA:

$$X_{ij,t} = exp\left[\pi_{i,t} + \varphi_{j,t} + \mu_{ij} + \beta_5 RTA_{ij,t} + \beta_6 RTA_{ij,t+4}\right] \times \varepsilon_{ij,t} \qquad [4]$$

In order to ensure that the specification [4] has ensured proper accounting for any possible reverse causality the coefficient β_6 of lead variable $RTA_{ij,t+4}$ should not have any positive value. The column (4) of Table 1 shows that the estimate of lead variable $RTA_{ij,t+4}$ is not positive and thus confirming the absence of reverse causality in this previous gravity specification.

e) Allowing for potential non-linear and phasing-in effects of RTAs: In order to account for the nonlinear and phasing effects of RTAs over time, the previous specification is reformulated for the inclusion of several lags up to twelve years of covariate RTA:

$$X_{ij,t} = exp\big[\pi_{i,t} + \varphi_{j,t} + \mu_{ij} + \beta_5 RTA_{ij,t} + \beta_6 RTA_{ij,t-4} + \beta_7 RTA_{ij,t-8} + \beta_8 RTA_{ij,t-12}\big] \times \varepsilon_{ij,t} \quad [5]$$

In column (5) of Table 1, the coefficients estimated for three lagged variables of RTAs up to 12 years highlight strong non-monotonic phasing-in effects of RTAs being consistent with related literature (Baier & Bergstrand, 2007). The results show that that impact of RTAs on trade between the member countries during the first four years of the sample period is slightly smaller than the corresponding estimates in the second four year period. Interestingly, the estimated coefficient of RTAs after twelve years decreases significantly as compared to their peak value. Furthermore, the coefficient β_8 being statistically insignificant signifies that the effect of RTAs diminishes after twelve years of their implementation.

f) Addressing globalization effects

$$X_{ij,t} = exp\big[\pi_{i,t} + \varphi_{j,t} + \mu_{ij} + \beta_5 RTA_{ij,t} + \beta_6 RTA_{ij,t-4} + \beta_7 RTA_{ij,t-8} + \beta_8 RTA_{ij,t-12}\big] \times exp\left[\sum_{T=1999}^{2015} \beta_T CR\_BRDR\_(T)_{ij}\right] \times \varepsilon_{ij,t} \quad [6]$$

Column (6) of Table 1 further reports the impact of globalization effects are possibly absorbed by the RTA effects in the previous specifications (Bergstrand et al., 2015). The estimates of all the lagged RTA variables remain statistically significant and positive (with an exception of the coefficient of variable $RTA_{ij,t-12}$ which is negative and statistically insignificant) even though they decrease in magnitude. The decreased estimates of $RTA_{ij,t}$ and other RTA variables further confirm the decreasing estimated impact of RTAs on trade facilitation in presence of globalization advances such as technology and innovation. The decreasing RTA estimates suggest that in the presence of globalization forces, the impact of RTA on trade takes time to manifest in the data and phases-in faster, explaining the drastic decrease in the total estimated effects of RTA in column (6) of Table 1. The international border dummies estimates in column (6) of Table 1 are statistically significant, with a significant decrease over time. These estimates are interpreted as deviations from the reference group, which is international border effect in 2019. Therefore, the estimated coefficient of the CR_BRDR(1999) dummy variable suggests that the border effects in 1999 were up by exp (3.349) = 28 times than the border effects in year 2019. A trend similar to that reported by Bergstrand et al. (2015) is seen in the estimates of international border dummy variables, confirming a strong and consistent effect of globalization on international trade over time.

5. Discussion

Using panel data with exporter-time and importer-time fixed effects in gravity equation specifications, our paper attempted to obtain theory consistent, econometrically plausible, and precise estimates of the partial equilibrium effects of noteworthy concepts related to international trade flows. The inclusion of intranational trade data besides the international trade data allowed us to estimate the domestic trade diversion. The usage of country-pair fixed effects and future level of RTAs allowed us to account for the possible endogeniety and reverse causality of the RTAs respectively. Also, the approach of using lagged values of RTAs and the international border dummies allowed us to estimate precisely the decreasing effect of RTAs and international borders on trade respectively. While previous literature has evidence of trade facilitating effect of RTAs, this paper empirically proves that the effect of RTAs on international trade among the OBOR countries declines with the inclusion of border effect suggesting that the effect of RTAs on trade reported in previous studies is upward biased. This implies that factors other than RTAs, such as social, political, technological play a vital role in facilitating the trade between OBOR countries and it may thus prove beneficial for the participating countries. It also gives a chance to the non-participating countries to consider and open up their economies to OBOR initiative.

The international trade via OBOR route which is supported by various international bodies acts as a powerful tool for job creation (SDG8: Decent Work and Economic Growth) (Halkos & Gkampoura, 2021). It fosters efficient and sustainable utilization of resources, promotes entrepreneurship and mitigates poverty (SDG1: No Poverty) (Halkos & Gkampoura, 2021). This in turn leads to achievement of SDG 9 (Industry, Innovation and Infrastructure) by development and industrialization. However along with benefits, there are certain challenges for the least developed and developing participating countries. The OBOR initiative involves connectivity improvement via digital and physical infrastructure networks. Therefore, the policymakers and stakeholders are required to act proactively to channel investments and trade into sectors and activities that mitigate social and environmental impacts while achieving economic benefits at the same time.

6. Conclusion

The study results present an econometric analysis of the effects of regional trade agreements (RTAs) on bilateral trade between countries of the One Belt One Road (OBOR) and the Regional Comprehensive Economic Partnership (RCEP). The study uses the gravity model framework and estimates the effects of distance, common official language, contiguity, colonial relationship, and RTAs on trade flows. The results show that the negative effect of distance on trade has decreased over time, and RTAs have a positive impact on trade. The study also addresses potential endogeneity and reverse causality issues in the estimation of RTA effects. However, the results suggest that the impact of RTAs on trade takes time to manifest in the data and phases-in faster in the presence of globalization forces such as technology and innovation. The study highlights the importance of considering country-specific fixed effects and international border effects in the analysis of RTAs. The international border dummy variable used in this paper captures the average globalization effects. Subsequent analyses can consider taking into account the estimates of specific globalization effects such as infrastructure, technology, and innovation. Furthermore, improving the specification by accounting for time-varying unobservable country pair fixed effects may reveal varied results. Also, the estimation of general equilibrium effects with disaggregated data on international trade can form an important element of the future studies.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

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Appendix

Table 1. *Estimating the Effects of Regional Trade Agreements*

	(1) OLS	(2) PPML	(3) PAIRFE	(4) LEAD	(5) PHSNG	(6) GLOB
ln_DIST	-1.819	-0.478				
	(0.116)**	(0.153)**				
CNTG	-0.013	0.269				
	(0.327)	(0.315)				
LANG	-0.107	-0.040				
	(0.305)	(0.180)				
CLNY	0.157	1.714				
	(0.755)	(0.423)**				
RTA	0.941	0.188	0.454	0.361	0.429	0.351
	(0.197)**	(0.183)	(0.093)**	(0.093)**	(0.091)**	(0.071)**
RTAlead4				-0.255		
				(0.068)**		
RTAlag4					0.152	0.149
					(0.062)*	(0.063)*
RTAlag8					0.337	0.323
					(0.076)**	(0.075)**
RTAlag12					-0.133	-0.168
					(0.128)	(0.128)
INTL_BRDR_1999						-3.349
						(0.561)**
INTL_BRDR_2003						-2.970
						(0.455)**
INTL_BRDR_2007						-2.893
						(0.504)**
INTL_BRDR_2011						-2.741
						(0.496)**
INTL_BRDR_2015						-0.109
						(0.379)
Constant	25.961	14.361	12.649			6.463
	(1.118)**	(1.473)**	(0.438)**			(0.802)**
Number of observations	4379	5699	5412	5408	5400	5400
R^2	0.770	0.947	0.997	0.997	0.997	0.998

Note: The estimates are obtained with data for the years 1999, 2003, 2007, 2011, and 2015. The estimates use exporter-time and importer-time fixed effects which are omitted for brevity. Standard errors, clustered by country pair are reported in parentheses. The p-values read as follows: + p < 0.10; * p < 0.05; and ** p < 0.01.
Source: The Author.