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## “IMPACT OF REGIONAL TRADE AGREEMENT OF INDIAN EXPORT”

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### Abstract.

The gravity model is used in this study to assess the impact of selected RTAs on India's export from 2017 to 2021. The goal of this paper was to examine the impact of regional trade agreements on Indian exports using gravity variables. Regional trade agreements serves as a catalyst for the reduction of tariff and non-tariff barriers, thereby increasing trade between partners and leveraging common complementary sectors.

The empirical findings suggest that the number of regional trade agreements has steadily increased over the last two decades and the coefficients obtained in findings have significant positive impact on India's total export value and India's trading partners market size also has a significant positive impact on India's total export value. The findings show that COMCOL and CONTING factors are ambiguously related to RTAs, but Language was found to be negatively related to RTA production.

All other agreements, with the exception of CECPA and Chile, are statistically significant, demonstrating that RTAs improve India's technical export efficiency. The statistical significance of ASEAN agreements is 40%, while SAFTA and APTA are 43% and 70%, respectively.

And at 10% and 21% respectively, the India-Sri Lanka Free Trade Agreement (FTA) and the CECA are statistically significant. Our findings may aid in better understanding the function of various gravitational factors in the formation of regional trade agreements.

Key words: India; RTA; free trade; regional trade; FTA; PTA; trade agreements; export efficiency; gravity model;

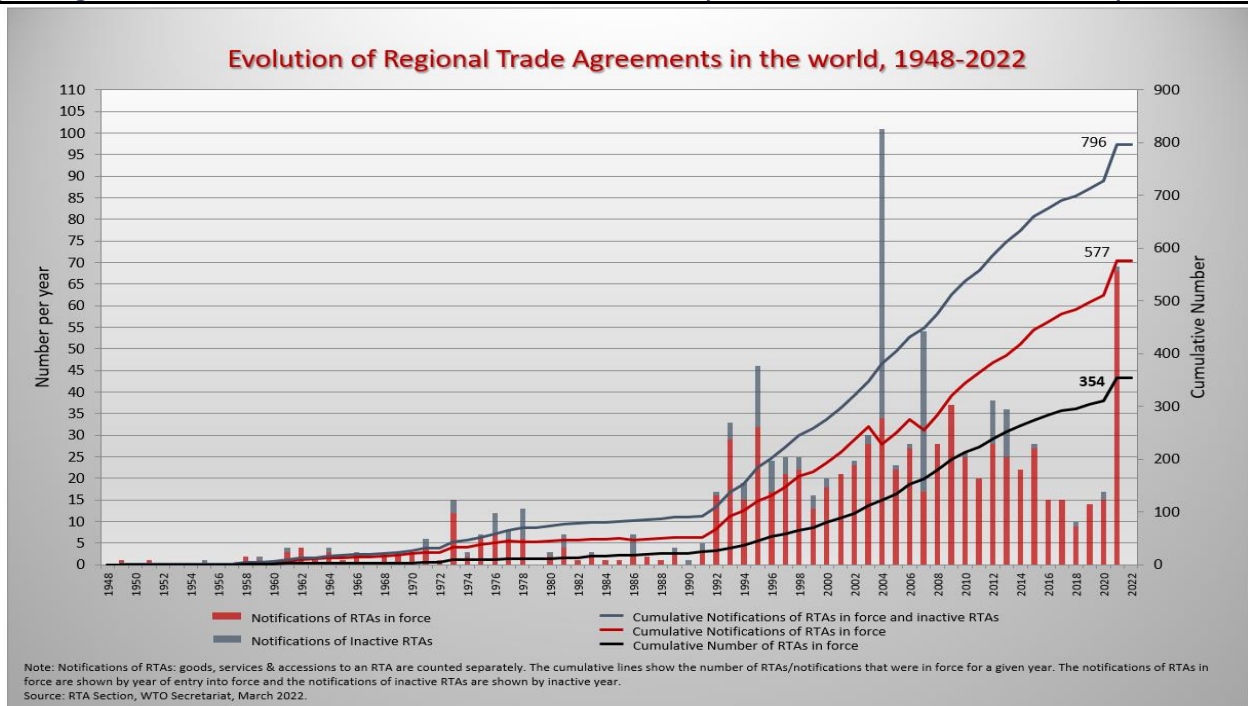
### 1. Introduction

A regional trade agreement is a trade agreement between various countries in a specific geographic area. The agreement is usually about the elimination of trade barriers between these countries. Such agreements can take various forms, ranging from the simplest such as the free trade area to the most complex, an economic union, or a monetary union. The agreements usually include various internal rules, which apply only to member

countries. When dealing with non-member countries, they may apply uniform rules. Or, members may have different trade policies with non-member countries, as in free trade area agreements. It depends on what stage they reach an agreement. There exist different choices of instruments to alter the quantum of trade and trade direction such as export subsidies, tariffs, non-tariff barriers viz import licensing, quota shares, product-specific quotas, labeling conditions, product standards, etc. Regional Trade Agreement (RTA) is another type of instrument to influence the trade pattern of an economy. According to WTO Regional Trade Agreements (RTAs) are defined as reciprocal trade agreements amongst two or more partners, including free trade agreements and customs unions. Free trade agreements and partial scope agreements account for around 90% of the total RTAs, while customs unions account for 10%. When it comes to the effects of regional trade agreements on trade the empirical results are mixed for different rates. India has been talking about free trade agreements with several partners – both bilateral and regional – over the past two years in a bid to boost export-oriented domestic manufacturing. New Delhi has set an ambitious export shipment target of US\$450-\$500 billion by FY23, against US\$291 billion in FY21. This explains why early harvest deals and full free trade agreements (FTAs) have assumed newfound importance to an otherwise trade-conservative regime. Indian exports touched US\$197.89 billion in the period from April to September 2021, up 57 percent from the same period in the previous year. So, if designed efficiently, the agreement can increase trade traffic, and investment, and promote economic growth, and social welfare. World Bank research shows that regional trade agreements increase trade in goods by more than 35% and trade in services by more than 15%.

Regional trade agreements (RTAs) have risen in number and reach over the years, including a notable increase in large plurilateral agreements. Non-discrimination among trading partners is one of the core principles of the WTO; however, RTAs, which are reciprocal preferential trade agreements between two or more partners, constitute one of the derogations and are authorized under the WTO, subject to a set of rules. Information on RTAs notified to the WTO is available in the RTA Database. Evolution of RTAs, 1948-2022

The following chart shows all RTAs notified to the GATT/WTO (1948-2022), including inactive RTAs, by year of entry into force. The following chart shows all RTAs notified



(Source: DGCIS)

A few instances of re-routing of goods through the countries with which India has FTAs/RTAs have come to notice. To address this issue, the Government has issued Customs (Administration of Rules of Origin under Trade Agreements) Rules, 2020 (CAROTAR, 2020) with effect from September 21, 2020, to supplement the procedures prescribed under different FTAs. These rules also cast responsibility on the importers to conduct due diligence for ensuring that the goods meet the prescribed rules of origin. The newly introduced provisions act as a deterrent against misuse of trade agreements. In addition, an FTA monitoring committee has been constituted with representation from government departments, and trade and industry bodies to identify issues relating to misuse of FTA provisions and recommend action.

The value of India’s trade with FTA/RTA partner countries in the last five years is as below:

(Figures in US \$ Million)

Export/Import	2016-17	2017-18	2018-19	2019-20	2020-21
India's exports	59152.29	67576.95	73550.13	63515.49	63105.49
India's imports	65789.08	77692.17	93287.57	87327.72	74538.07

(Source: DGCIS)



According to the findings, India's exports to its regional trading partners are far below the potential frontier.

## 2.Literature review

RTAs are thought to improve intra-regional commerce in general (Ngepah & Udeagha, 2018). According to Kumar and Prabhakar (2017), between 2000 and 2014, India's chosen bilateral agreements and the ASEAN Free Trade Agreement have effectively increased bilateral trade efficiency between India and the member countries. RTAs typically enhance bilateral commerce between small developing member nations (Freckleton & Whitely, 2020). Due to trade complementarity among the Economic Community of West African States (ECOWAS) and service trade in the Nordic area, RTAs have considerably increased bilateral commerce (Nordas, 2018). The trade gravity model is one of the most extensively utilised techniques in current econometrics. The gravity model has a long distinguished history of applications across disciplines and high experimental value from its first introduction by Ravenstein (1885) in the nineteenth century to describe migratory movements (Kabir et al., 2017; Morland et al., 2020). Tinbergen (1962) explicitly proposed the gravity model to empirically evaluate international commerce at the macro level in the early 1960s. According to the standard model, bilateral commerce between two countries is proportionate to their respective sizes, as measured by GDP, and inversely related to geographic distance, which serves as a proxy for transportation cost. Additionally, the conventional gravity model has been supplemented with a variety of factors such as currency rates, income, and TAs and shifting demand patterns to test their relevance in influencing trade (Osabuohien et al., 2019). ASEAN-India Free Trade Agreement (AIFTA) on agricultural trade among 50 nations from 2005 to 2014. Data from 50 nations with five significant FTAs was used to estimate the effect of AIFTA, MERCOSUR, and the EU-15 on trade creation effects. Results suggest that the agricultural sector can be encouraged to fight for increased trade liberalization in FTAs, as indicated by the time and country fixed effect model. (Jagdambe, Subhash, and Elumalai (2020): 100212.). The factors that influence regional trade agreements (RTAs) across a large worldwide sample. The findings showed that colonial variables and RTAs have ambiguous relationships, making it difficult to clearly identify the contribution of colonial interactions to the development of RTAs. It

was also discovered that language is inversely correlated with RTAs, indicating that nations with diverse languages are likely to have more trade. Finally, it was discovered that regional trade deals are not much influenced by geographical indications, and that gravity models can be used to analyze the Factors that influence RTAs.(Jámbor, Attila, Péter Gál, and Áron Török (2020). India's trade connections with the EU, NAFTA, and ASEAN's key trading partners are affected by factors such as distance, tariffs, per capita GDP, and GDP (Income). The multi-level mixed effect model using linear regression and ML method of estimation is used to analyze the panel data. The results show that while distance had a theoretically predicted negative impact on trade flow for the EU and NAFTA, it had a practically predicted beneficial impact for AASEAN. The trade flow is being affected, with GDP having a negative and negligible impact on Trade between India and Africa, but its negative and large impact on Asia and the EU.(Studnicka, Zuzanna, Wouter Thierie, and Jan Van Hove.(2019)..Reciprocal trade agreements (PTAs) on bilateral trade volume and trade promotion in 189 nations from 1990 to 2015 using the EORA multi-regional input-output (MRIO) and the World Trade Organization (WTO) preferential trade agreements. Results show that countries with reciprocal PTAs may boost trade volume, but the product-based coverage index of PTAs only significantly affects trade promotion if the member countries are low- and middle-income countries. (Yao X, Zhang Y, Yasmeen R, Cai(2021).European regional trade agreements have a positive effect on European export patterns, with the extensive margin being positively affected by trade agreements. Trade-related aspects of the trade agreement can deepen the effective trade integration between the European Union and its trading partners. However, when using a composite indicator capturing the intensity of trade integration across twelve current European trade agreements, it cannot be concluded that more comprehensive trade agreements enhance export.(Studnicka, Zuzanna, Wouter Thierry, and Jan Van Hove.(2019). Impact of Regional Trade Agreements (RTAs) on the protection of agricultural producers in excluded countries. It looks at the relationship between regional trade agreements, domestic policy reform, stronger market access from a major trading partner, links between trade agreements and enhanced security agreements, and the use of regional bargaining as a threat to advance multilateral negotiations. The article finds that a one-percentage-point increase in an average trading partner's preferential import share decreases excluded countries' NRA by 0.298 percentage points, with larger impacts for net-importing countries and reducing protection for producers who are more protected and get subsidies. These findings suggest that it is important to provide farmers in developing countries with complementary mitigation strategies to counteract the reduced protect result from their partners' RTA formation. (American Journal of Agricultural Economics,2021)

The impact of regional trade agreements (RTAs) on bilateral travel and tourism flows, using the panelgravity dataset. Results show that RTAs have a positive and significant impact on bilateral tourist flows, with the overall RTA index representing the cumulative impact of all forms of RTA on bilateral tourism flows. This suggests the importance of economic integration in facilitating global tourism flows and measures to improve economic integration with other countries will help facilitate international tourism flow. Customs unions, common markets are also positively and significantly affected by RTAs.(Usman Khalid, Luke Emeka Oka for & Katarzyna Burzynska,2021)The results of the study showed a negative and economic significant causal relationship between regional trade agreements (RTAs) and primary education completion in developing

countries. The participants who participated in the RTA reduced their primary completion rate by 0.757 percentage points between 1980 and 2016. The results were robust to the inclusion of tampering and placebo tests, and the equal propensity assumption holds. This suggests that increased opportunity costs in households where adult members tend to be immature and poor are likely a result of the regression. (Alberto Chong & Carla Srebot,2022) The European Union and India are negotiating a bilateral free trade agreement (FTA) and investment framework, but the future of India is being debated. This article examines the potential benefits of the agreement, including barriers to trade in goods and services, and the need for mutually acceptable timeframes to complete negotiations based on the interests of the partners.(Sangeeta Khorana and Nicholas Perdikis December 2020)India's economic history has seen a massive expansion of world trade since the 1950s. The Indian government launched reforms in 1991 to liberalize and globalize the economy, and has pursued a liberalization program since 1991. International trade has been an important strategic tool for India's economic success, allowing it to become a global economic superpower. (Ratna & Kallummal,2013). (Alok Bhatt, 2021)

### 3.Research Methodology

The rationale for the study is to identify the impact of the regional trade agreement on Indian exports. Over the last two decades, the Indian economy has undergone a large number of structural and economic changes. Simultaneously, there have been efforts on the global front to liberalize and strengthen cross-trade through regional economic integrations among nations. Therefore, it is imperative to look at the impact of existing RTAs on India's export.

In this research, a Descriptive research design along with gravity model is being used to analyze the impact of RTA on Indian export and to fulfill the research objective. The gravity model was developed by economists Walter Isard and Merton Peck in 1954 to study the influence of country size and location on international commerce. Jan Tinbergen, a Dutch economist, later combined Isard and Peck's ideas into a model in 1962. Tinbergen's concept is based on two key assumptions. The first assumption is that larger nations would attract more trade, much as Newton's law of gravity states that an item of greater mass will attract those of lesser mass. The second assumption is that location, and the geographic distance between two countries, will have an impact on the level of trade between those nations.

Tinbergen's main equation can be written as follows:

Equation No.1

$$T_{ij} = \frac{GDP_i^\alpha GDP_j^\beta}{D_{ij}^\theta}$$

In the equation above,  $T_{ij}$  represents the bilateral trade between country  $i$  and country  $j$ ,  $GDP$  represents the domestic production for both countries  $i$  and  $j$ , and  $D_{ij}$  represents the geographical distance between the two countries. Instead of assuming that trade is directly proportional to the GDP of both countries and inversely proportional to the distance between trading partners, the alpha, beta, and theta variables show that the weight (or size) of the GDPs and distance must be considered in the final equation. Several regressions are conducted

to test for the determinants of regional trade agreements, as indicated by our requirements. The dependent variable in our scenario is the presence of bilateral regional trade agreements, which measures whether a regional trade agreement exists between a reporter (J) and partner (I) countries from 2017 to 2021.

This information comes from the WTO RTA database, which covers 48 nations.

The great majority of these agreements are bilateral, with a few exceptions, such as those involving the European Union as a single entity. Data were made bilateral in these circumstances, assuming that each nation of an entity had the same agreement as the entity itself. Finally, data cleaning was executed in order to eliminate possible duplications. Based on the theoretical and empirical literature, the following hypotheses are tested.

H1: Culturally similar countries have more RTAs.

Reduced costs associated with trade restrictions encourage commerce (Bacchetta et al., 2015). As trade barriers are often lower between nations with comparable cultural values, more RTAs are anticipated to be signed. With the use of four distinct dummy variables, this hypothesis is examined. COLONY tells if trading partners have ever had a colonial connection; CURCOL shows whether partners are now in a colonial relationship; and SMCTRY shows whether trading partners were or are the same nation. COMCOL indicates whether trading partners have had a common coloniser after 1945. The CEPII database is where the data are sourced. Although many prior studies using gravity-based models have discovered positive connections, a favourable result is anticipated for all factors in relation to RTAs. (e.g.: C. Carrere & Masood, 2018).

H2: Common language fosters the establishment of RTAs.

It is evident that being familiar with a language facilitates trade in general (in many gravity models, common language is also taken into account as a factor of cultural closeness). The COMLANG dummy variable, which denotes whether the two nations have a common language or not, is used in this instance to test this assumption. Once again, data from the CEPII database is being used, and a favourable correlation is expected, especially for nations with similar cultures (e.g.: MacDermott & Mornah, 2016).

H3: The number of RTAs will be greater the closer the countries are geographically

In concept, the distance between trading partners should reflect transportation costs with lower costs being associated with shorter distances. This phenomena will be measured using two variables in the study. DIST, which is measured as a difference in kilometres between the capital cities of the reporter and the partner nations, first denotes the physical distance between the two. Second, the CONTIG dummy variable determines if the two nations are contiguous (neighbours). Once again, the CEPII database provides the source of the data. According to prior research, agreements have a favourable influence on trade flows, but their impact is greatly diminished by geographic distance. (e.g.: Freeman & Pienknagura, 2019). Therefore, a negative relationship is expected for DIST, while a positive for CONTIG

H4:- Regional trade agreements have a positive impact on the exports of the country.

Economists frequently disagree, but the value of RTAs over "protection" is mostly unarguable (Rodrik, 2018). Agreements act as a catalyst in lowering tariff and non-tariff barriers to increase trade between partners and leverage common complementary sectors (Paul, 2017).

Paul, B. R. (2017). Members of a regional agreement may have varying levels of development; yet, by participating in the agreement, economies can use comparative advantage to boost economic growth (Gharleghi

& Shafiqhi, 2020). The notion of comparative advantage and trade benefits are key economic foundations; hence, practically universal support for RTAs, whether free or preferential in nature, is justified. FTAs typically eliminate or decrease tariff and nontariff obstacles to significant commerce between partner nations.

Our cross-sectional dataset consists of 48 country pairs and the variables above, resulting in 339 observations. Data were accessed in Jan 2023. Table 1 provides an overview of the description of variables and related hypotheses.

Based on the literature, the following equation is estimated to our sample:

Equation No.2

$$\text{EXPORT}_{jit} = \alpha + \beta_1 \text{GDP}_{it} + \beta_2 \text{GDP}_{jt} + \beta_3 \text{DistCap}_{ji} + \beta_4 \text{POP}_{it} + \beta_5 \text{POP}_{jt} + \beta_6 \text{CONTIG}_{it} + \beta_7 \text{COMLANG}_{it} + \beta_8 \text{COMCOL}_{it}$$

where  $\ln$  denotes the natural logarithm

$\text{EXPORTS}_{jit}$ :- denotes the total exports from country  $j$  (India) to country  $i$  for the time period  $t$

$\text{GDP}_{it}$  is the Nominal GDP of the importing country  $i$  during the time period

$\text{GDP}_{jt}$  is the Nominal GDP of the exporting country  $j$  during the time period  $t$

$\text{DistCap}_{jit}$  is the straight-line distance between the capitals of country  $j$  & country  $i$

$\text{POP}_{it}$  is the Population of the importing country  $i$  during the time period

$\text{POP}_{jt}$  is the Population of the exporting country (India)  $i$  during the time period

$\text{COMCOL}$  is a dummy variable that is assigned a value of 1 if India has an active common colonizer with country  $i$  during the time period  $t$

$\text{COMLANG}$  is a dummy variable that is assigned a value of 1 if India sharing the same language with country  $i$  during the time period  $t$

$\text{CONTIG}$  is a dummy variable that is assigned a value of 1 if India sharing contiguous (neighbours, having common borders) with country  $i$  during the time period  $t$

$i$  is the importing country,  $j$  is the exporting country India and  $t$  is the time indicator (annual)

Bilateral agreements (active), ASEAN-India FTA, India-MERCOSUR PTA, Asia Pacific Trade Agreement (APTA) PTA, and South Asia Free Trade Area are the agreements under consideration for the analysis (SAFTA). In 2010, India concluded a commodities FTA with ASEAN, which was expanded in 2014 to cover services.

Both services and investments are available. It seeks to reduce tariffs on commercial products and services among ASEAN member countries. In 1975, India, Bangladesh, China, South Korea, and Sri Lanka signed the APTA. The Bangkok Accord was reached in 1975, and APTA was renamed in 2005. Mongolia will become the organization's seventh member in 2020.

SAFTA entered into force in 2006, when India and seven other neighbouring countries signed the agreement, which was seen as the successor to the 1993 SAARC PTA. In 2004, India signed the MERCOSUR Partnership Treaty with the MERCOSUR economic bloc, which includes Brazil, Argentina, Uruguay, and Paraguay. The deal, which entered into force in 2009, sought to enhance commerce between India and the bloc through reciprocal tariff advantages, with the ultimate goal of free trade. The GDP of importing and exporting countries



is used as a metric of economic size in the research. The increased economic scale of the partner economy is projected to have a favourable impact on Indian exports since it provides a vast market with substantial trade possibilities for India. The GDP of an importing country also shows the country's demand tendency, whereas the GDP of an exporting country indicates the country's supply proclivity it signifies its ability to supply (Kabir et al., 2017). Some academics have observed a negative relationship between distance and trade flows when developing the gravity model. The distance variable is thought to be a good proxy for transportation costs. Larger geographical distances raise export prices, demonstrating an inverse relationship between distance and trade volumes (Jan & Shah, 2019). Glaeser and Kohlhase (2004) discovered that 80% of shipments take place in industries where transportation costs less than 4% of the entire value. Yet, the influence of distance may also be seen in cultural differences and unfamiliarity between two distant nations (Ghosh et al., 2017). Carrère et al. (2020) confirm that the UK's exports tend to diminish with distance when they investigate the UK's export pattern. Nevertheless, Nords (2018) discovered that the distance had no effect Nordic nations service trade such as computer services, financial services, insurance.

According to the research, utilising real GDP data instead of nominal GDP results in biases due to a single common national currency when nation pair-specific numeraires are required yet unavailable. Using nominal GDP in conjunction with temporal effects, on the other hand, overcomes this issue (Baldwin & Taglioni, 2006; Shepherd et al., 2019). As a result, in the current gravity formulation, the study examines nominal GDP as an explanatory variable.

The expanding GDP of India is projected to boost external exports to partner countries.

#### 4. Empirical findings & discussion

The study attempts to understand the effect of regional trade agreements on India's export. As was shown in the previous section. The gravity models' findings are presented. The gravity model has evolved since its inception. Although empirical literature shows that the gravity model is universally accepted for explaining bilateral trade in terms of Newtonian gravitational force and masses, there is significant variation in its regression setting.

To analyze international trade flows between countries and the impact of trade agreements on international trade flows, a cross-sectional methodology with a single year database was primarily used. The cross-sectional gravity model usually looks like this:

Equation No.3

$$X_{ij} = \beta_0 Y_i^{\beta_1} N_i^{\beta_2} Y_j^{\beta_3} N_j^{\beta_4} D_{ij}^{\beta_5} A_{ij}^{\beta_6} P_{ij} u_{ij}$$

where  $X_{ij}$  is the volume of exports from country  $i$  to  $j$ ,

$Y$  is the GDP of  $i$  and  $j$ ,

$N$  is the population of  $i$  and  $j$ ,

$D_{ij}$  is the distance between  $i$  and  $j$ ,

$A_{ij}$  is the adjacency dummy,

$P_{ij}$  is the preference relationship that stimulates bilateral trade, and  $u_{ij}$  is the normally distributed error term.

Because the above-mentioned cross-sectional methodology has some inherent flaws, many authors, including Matyas (1997, 1998), Egger (2000), Egger and Pfaffermayr (2003), and Baltagi et al. (2003), recommended

panel data analysis. Panel data, according to these authors, has some advantages over cross-sectional methodology, such as a larger sample size and the ability to evaluate changes in the nature of trade blocs over time. Furthermore, panel data allows for the inclusion of time fixed effects as well as separate country fixed effects for importers and exporters. Time fixed effects capture cyclical influences in this case, whereas exporter and importer fixed effects account for time-invariant characteristics. Egger and Pfaffermayr (2003) suggested that the panel gravity's proper econometric specification. Along with importer, exporter, and time effects, the model should include bilateral interaction effects. Again, there is significant variation in the estimation technique. Feenstra (2002)

It has been argued that the fixed effects (FE) method is a consistent and simple method for estimating the gravity equation. Polak (1996) criticised the direct use of trade bloc dummies, despite the fact that many authors included RTA dummy variables alongside the main gravity variables in a single equation. As a result, recent applications of the gravity model rely on two step regressions to avoid using RTA dummies directly. Kandogan (2008) argued that bilateral interaction effects, along with time, exporter, and importer fixed effects.

**Table No 1:**

Dependent Variable: EXPORTS <sub>ijt</sub>
Method: Panel Least Squares Date: 02/02/23 Time: 19:44
Sample: 2017 2021
Periods included: 5
Cross-sections included: 48
Total panel (unbalanced) observations: 339

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP <sub>ijt</sub>	0.005633	0.000897	6.283151	0.0000
GDP <sub>it</sub>	0.000493	0.000157	3.136518	0.0019
POP <sub>ijt</sub>	0.023375	9.195174	0.002542	0.013
POP <sub>it</sub>	-2.010532	1.756986	-1.144308	0.2537
DistCap <sub>ijt</sub>	-24250.6	28775	-0.842766	0.4003
CONTIG <sub>ijt</sub>	3.99E+08	4.60E+08	0.867709	0.0005
COMLANG <sub>ijt</sub>	-1.95E+08	3.71E+08	-0.524902	0.0004
COMCOL <sub>ijt</sub>	3.71E+08	3.45E+08	1.076284	0.0002
C	-1.54E+10	1.11E+10	-1.385658	0.1673
R-squared	0.360392	Mean dependent var	5.87E+08	
Adjusted R-squared	0.337134	S.D. dependent var	2.30E+09	
S.E. of regression	1.87E+09	Akaike info criterion	45.57748	
Sum squared resid	7.71E+20	Schwarz criterion	45.71243	
Log likelihood	-5209.622	Hannan-Quinn criter.	45.63193	
F-statistic	15.49509	Durbin-Watson stat	1.444011	
Prob(F-statistic)	0.0000			

From the obtained coefficients, the study concurs that the market size of India's trading partners has a significant positive impact on India's total export value. The coefficient of India's GDP is also statistically significant, providing evidence that economic size significantly impacts bilateral trade. A similar hypothesis is proved by Žmuk and Jošić (2021) and Das et al. (2018).

Findings suggest that an overall impact of a percentage increase in the partner economy's GDP on India's exports (~0.5%) is more compared to a percentage increase in India's GDP (~0.04%). Despite the consistent increase of India's total share in global exports, the value of goods and services consumed within the domestic economy has also gone up significantly, over 13% in the last decade (BCG Report, 2019).

The distance variable is found to be negative but insignificant. This indicates that distance is not a significant determinant of India's trade efficiency with partner nations. Over the last decade, Indian exports nearly doubled from \$59152 Million (2017) to \$63105 Million (2021), comprising 94% growth in merchandise and 66% growth in service exports. It could be inferred that since services do not entail physical trades and rely more on external demand, human capital, openness and information communication infrastructure, distance has an insignificant influence on the value of services (Malik & Velan, 2020).

In further detail, proxies for cultural factors appear to provide Alike findings. On the one hand, COMCOL was shown to be strongly and positively connected to RTAs, implying that nations t Those who shared a common coloniser have more RTAs than those who do not have a common coloniser. This protects prior predictions and is intriguing, given colonial ties have historically played a significant role in the formation of bilateral trade agreements. But, keep in mind that these factors only measure modern colonization,' with no prior historical ties. This conclusion is consistent with some research claiming that colonial trade links deteriorate after independence, implying a depreciation of some type of commercial capital (Head, Mayer, & Ries, 2010).

Hypothesis 1 cannot be rejected.

For the second hypothesis, COMLANG is strongly and negatively connected to RTAs in all models, suggesting that nations speaking different languages cause more RTAs than countries speaking the same language. This is also contrary to early predictions, since the function of language was supposed to facilitate trade restrictions. One probable reason for this phenomena is that regional trade agreements are made up of multiple bilateral agreements involving a variety of different

trading-partners; hence, the greater the number of these agreements, the more likely we are to encounter nations speaking different languages. Consider relatively small geographical regions with a very big number of nations, such as Central and Eastern Europe. When it comes to hypothesis testing, Hypothesis 2 can be rejected.

Nonetheless, the association between distance and RTAs is rather evident. Distance as measured by DIST is negatively and significantly connected to RTAs, implying that the greater the geographical distance, the lower the likelihood of a regional trade agreement. The distance proxied by CONTIG reveals a positive link, meaning that if nations are contiguous, the likelihood of developing RTAs is higher than for countries further apart. Overall, these results were predicted and are consistent with the majority of the commercial literature. As a result,

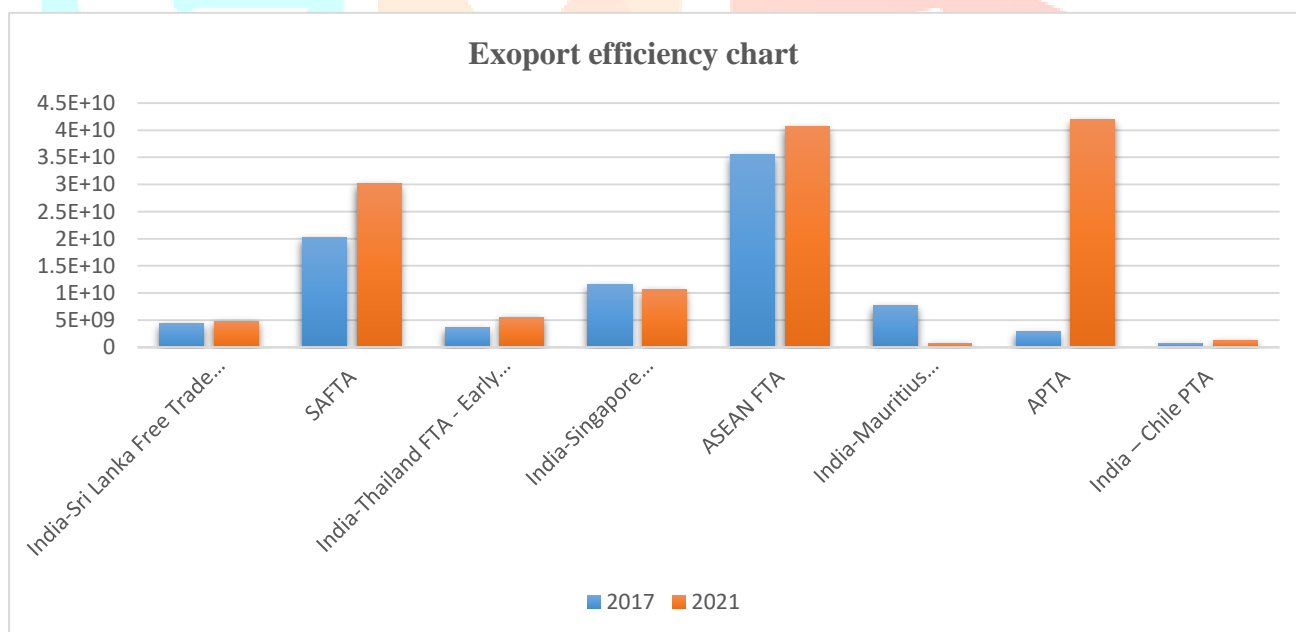
Hypothesis 3 cannot be rejected.

When compared to the population of importing nations, the population of the exporting country (India) has a

relatively beneficial influence on a regional trade agreement. The findings reveal that the population of importing countries has a positive relationship, implying that if exporting nations have a larger population, the odds of creating RTAs are greater than for importing countries.

Table No. 2

Estimation of Export Efficiency	
Trade Agreement	Mean value
India-Sri Lanka Free Trade Agreement (FTA)	9.633
SAFTA	43.141
India-Thailand FTA - Early Harvest Scheme (EHS)	11.072
India-Singapore Comprehensive Economic Cooperation Agreement (CECA)	21.382
ASEAN FTA	40.812
India-Mauritius Comprehensive Economic Cooperation and Partnership Agreement (CECPA)	1.496
APTA	70.176
India – Chile PTA	2.266



Analyzing the impact of RTAs on India's export efficiency, we find that, with the exception of CECPA & Chile, joining the RTAs included in the study, APTA, SAFTA technically improves India's export efficiency. Results indicate that India has effectively increased exports to member countries, with the exception of CECPA & Chile nations, where the trade imbalance has dramatically widened in favour of other member countries, with imports overwhelming exports (PHD Report, 2018). All other agreements, with the exception of CECPA & Chile, are statistically significant, showing that RTAs boost India's technical export efficiency. ASEAN agreements are statistically significant at 40%, whereas SAFTA and APTA are statistically significant at 43% and 70%.

India-Sri Lanka Free Trade Agreement (FTA) & (CECA) are statistically significant at 9% and 21%.

Hypothesis 4 cannot be rejected.

## 5. Conclusion:

The gravity model is used in this research to assess the influence of selected RTAs in influencing India's export from 2017 to 2021. According to the empirical findings, India's exports to its regional trading partners are far below the potential frontier. ASEAN join the RTAs covered in the analysis, and ASEAN technically increases India's export efficiency. With the exception of CECPA and Chile, all other agreements are statistically significant, demonstrating that RTAs increase India's technical export efficiency. ASEAN agreements are 40% statistically significant, whereas SAFTA and APTA are 43% and 70%, respectively. The India-Sri Lanka Free Trade Agreement (FTA) and the CECA are statistically significant at 10% and 21%, respectively.

The objective of this paper was to examine the impact of regional trade agreements using gravity variables on a worldwide sample. As a consequence, we acquired a lot of findings. First, it was discovered that the number of regional trade agreements has steadily increased over the last two decades, but the type and substance of connected agreements have changed. Second, the findings indicate that COMCOL and CONTING factors are ambiguously connected to RTAs, Yet, it appears that relatively lengthy history associations matter in this regard, Language was discovered to be negatively connected to RTA production, implying that nations speaking various languages likely to generate more RTAs, which goes against original predictions. Fourth, the association between distance and RTAs was discovered to be quite straightforward: higher distance suggests fewer regional trade ties, consistent with prior studies. Our findings may aid in better understanding the function of various gravitational factors in the formation of regional trade agreements.

## 6. References

<https://rtais.wto.org/>

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