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ECONOMIC INTEGRATION AGREEMENTS AND EXTENSIVE MARGIN OF EXPORT: AN EMPIRICAL STUDY OF INDIA

Nivedita Mullick
Areej A. Siddiqui

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WPS No. EC-21-55

Economic Integration Agreements and Extensive Margin of Export: An Empirical Study of India

Nivedita Mullick* & Areej A. Siddiqui**

ABSTRACT

Changes in trade costs are an intended consequence of formation & participation in Economic Integration Agreements (EIAs). This paper attempts to examine the ex-post effects (owing to the reduced trade costs) of the agreements that India has been a part of, on the extensive margin of export. Additionally, the present study examines if deeper agreements impact extensive export margin by a greater degree than shallower agreements. The time period spanning from 2012 to 2018 used for our study, together with the trading country pairs makes for a panel dataset which helps in accounting for unobserved heterogeneity. Inclusion of separate dummy for economic integration agreements of varying depth, allows for heterogeneity across EIAs and inclusion of fixed effects in our gravity model framework helps to account for the factors that would have otherwise been neglected. The results of our study show that One-way Preferential Trade Agreement, Two-way Preferential Trade Agreement & Free Trade Agreement, all have significant impact on the extensive export margin with deeper agreements (Free Trade Agreements and Two-Way Preferential Trade Agreement) having a larger impact than the shallower agreements (One-Way Preferential Trade Agreement).

JEL Classification: F13, F14, F15

Keywords: Economic Integration Agreements, Trade Margins, Gravity Model

*Doctoral Scholar, Indian Institute of Foreign Trade, New Delhi, Email nivedita_phd2019@iift.edu

** Assistant Professor, Indian Institute of Foreign Trade, New Delhi, Email areej@iift.edu

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ECONOMIC INTEGRATION AGREEMENTS AND EXTENSIVE MARGIN OF EXPORT: AN EMPIRICAL STUDY OF INDIA

1. INTRODUCTION

Economic Integration Agreements refer broadly to One-Way Preferential Trade Agreements, Two-Way Preferential Trade Agreements, Free Trade Agreements, Customs Union, Common Markets & Economic Union. (Baier et al., 2014). Ranging from Small margins of preference in tariffs to economic integration of full scale, trading systems cover a wide range of arrangements with Preferential trading agreements being the shallow form of arrangement where partial preferences are granted to a set of trading partners. In case of one–way concessions being granted for example when an industrialized nation grants concession to less developed nations, it is referred to as Preferential Trading Agreement[1] and when the concessions are reciprocal, it is termed as Preferential Trading Area[2] (Frankel, 1997). Economic Literature has only recently started to focus on EIAs and all its components together in studies for a comprehensive analysis (Baier et al.,2014, 2018). It is rather replete with studies focusing on Regional Trade Agreements, Preferential Trade Agreements, Free Trade Agreements etc only. (Vicard, 2011; Baier & Bergstrand, 2004,2007).

Since our study concerns with EIAs & trade margins, it becomes imperative to mention that when it comes to export diversification, its importance in literature has been emphasized as an integral aspect of export-led growth. It is also perceived as a shift from export of traditional to non-traditional goods in case of developing countries as a consequence of which, export earnings start to become more stabilized (Acemoglu et al., 1997; Gutiérrez de Piñeres et al., 1997). The emphasis on differentiation between extensive and intensive margin is a newer approach to study the microeconomic foundation of trade diversification.

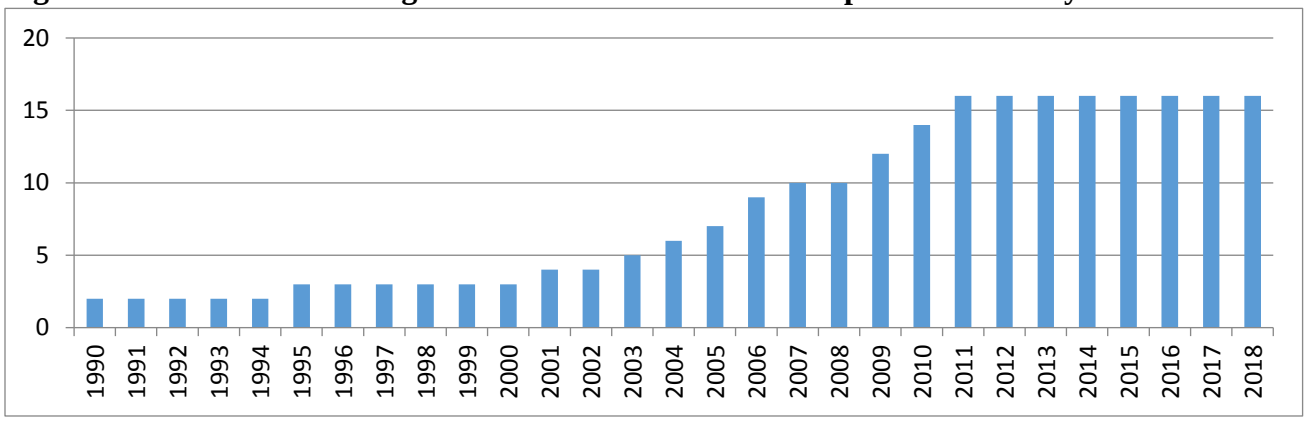
Trade growth can be decomposed into two components: more units of a good being traded (intensive margin) and the number of varieties of goods traded has risen (extensive margin). A methodology proposed by Hummels and Klenow (2005) to decompose trade growth into its aforementioned components has been the most adopted methodology by researchers in the recent past. (Baier et al., 2014,2018; Dutt et al. 2011; Ferto, 2018)

India, since the episode of trade reforms has entered into quite a few trade agreements (Figure 1) and we aim to study if these trade agreements are serving the purpose that they intend to or the purpose of signing the trade agreement is being defeated. Hence, our paper delves deeper into this to examine if these trade agreements of varying depths (One Way Preferential Trade Agreement, Two Way Preferential Trade Agreement, Free Trade Agreement) have any impact on extensive margin of export i.e increase in the variety of goods exported by India to its trading partners & if

[1] Referred to as One-Way Preferential Trade Agreement in our study
[2] Referred to as Two-Way Preferential Trade Agreement in our study

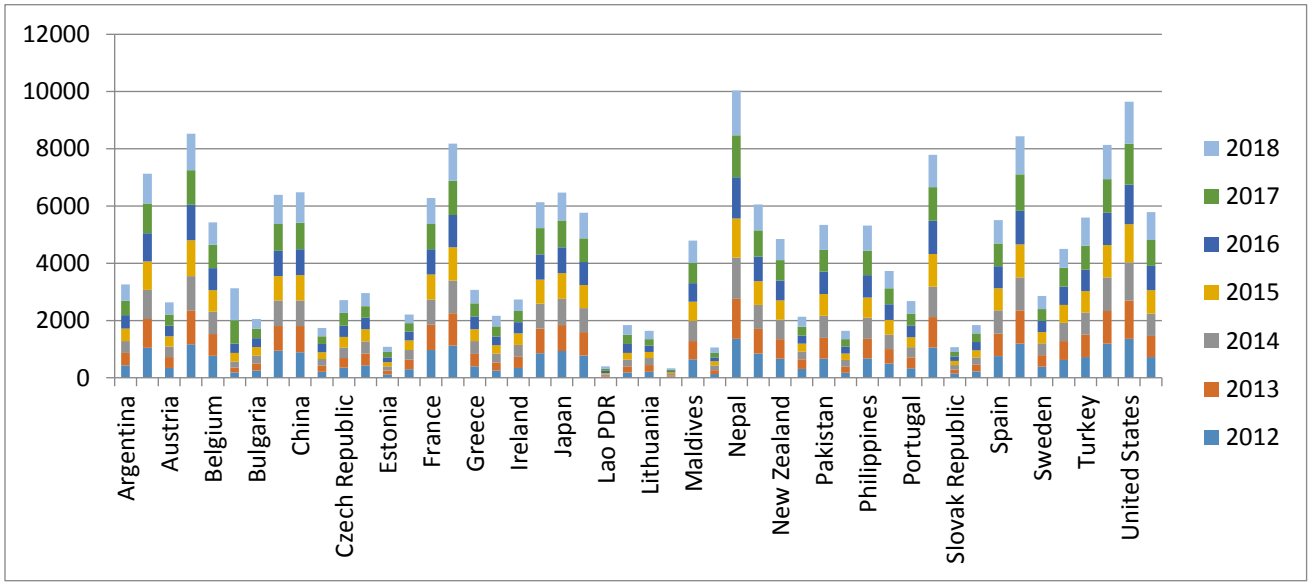
they do, then are deeper agreements impacting extensive export in a different way than the relatively shallower ones as suggested by the empirical evidence of the studies in the domain.

Figure1: Number of Trade Agreements that India has been a part of over the years



Source: World Trade Organisation

Figure 2: Value of Trade Flows(1000 USD) to major export destinations of India



Source: Data extracted from WITS

2. LITERATURE REVIEW

2.1 Empirical Literature

Recently trade margins have been delved into by researchers, and the impact integration agreements have on these margins is a recent addition to the growing body of literature of trade margins. Melitz (2003) explains that trade liberalization doesn't provide a level-playing field for all the firms to engage in exporting activities. It is the presence of market entry sunk cost that leads

to engagement of only the most productive firms (consequence of firm heterogeneity), in exporting activities. According to the model, lowered variable export costs leads to increase in the extensive and intensive margins as new and less productive firms can now enter the market and the existing players can increase their exports respectively. Additionally, the less efficient firms entering the market as a result of the decline in the variable and fixed export costs, both implies a fall in the average sales per firm, hence a decline in the intensive margin.

This understanding laid the foundation of the literature, both theoretical and empirical, pertaining to trade margins. Hummels and Klenow(2005) analysed if the large economies exported more, owing to greater quantities of a certain good(intensive margin) or a greater variety of goods(extensive margin). The findings imply that for larger economies, almost 60% of export growth is attributed to extensive margin. This result was corroborated by Bernard et al. (2007), Evenett and Venables (2002)**,** Mukerji (2009) and also Kehoe and Ruhl(2013). Some studies, through their findings also point to intensive margin being the driving force of the export growth (Amiti et al., 2010; Besedeš et al., 2011; Eaton et al., 2008**;** Helpman et al., 2008).

The reduction in the trade costs as a consequence of economy's integration with the world has served as a motivation for researchers to also assess its impact on the trade flows decomposed into trade margins. Klenow and Rodriguez Clare(1997) in their study of the impact of liberalization of Costa Rica for the time period spanning from 1986 to 1992, show that liberalization resulted in increase in the variety of goods imported. They found that a percent decrease in tariffs prevailing in Costa Rica caused an increase in the variety of goods imported by 0.5 percent. A similar study done by Feenstra and Kee (2007) on the import variety of goods, imported from Mexico by U.S. and this study echoes the findings of the aforementioned study. They find evidence in favour of the hypothesis that tariff liberalization as a consequence of NAFTA is leading to increase in export variety from Mexico to the U.S.

Yi (2003) and Ruhl (2008) have advocated the importance of extensive margin as the driver of increased trade flows due to tariff reductions, post-World War II. Debaere et al. (2010) found that although tariffs have a significant impact on the increase in extensive margin, it is rather a small effect with tariffs explaining only 5% increase in the extensive margin for the period spanning from 1989–1999 and correspondingly 12% for 1996– 2006.

The impact of WTO membership was examined by Dutt et al. (2011) which found that while extensive export margin was positively impacted by the membership, the intensive margin fared negatively. However, the results of Rishav(2015) don't corroborate these findings since no positive impact on either trade margins was observed between WTO member country-pairs. Although, after accounting for the level of development of the countries, the results suggest that the developing member countries of WTO experience an increase in extensive margin for the trade flows from the industrial members and vice versa.

Baier et al.(2014) intended to comprehensively analyze the dynamics and hence in their study to understand the impact of varying depth of Economic Integration Agreements(EIAs) on the trade margins they used a separate dummy for each of the different type of economic integration agreement namely, one-way preferential trade agreements (OWPTAs), two-way preferential trade agreements (TWPTAs), free trade agreements (FTAs), and a variable for customs unions, common markets and economic unions (CUCMECUs). Also, country-pair, importer year and exporter year

fixed effects were included to address the problem of endogeneity that had arisen due to the self-selection of country pairs into the agreement. To decompose trade volumes into intensive and extensive margin, this paper has employed the methodology in Hummels and Klenow(2005) which essentially is the most adopted methodology. This study by Baier et al. (2014) is the first one to have found statistically significant coefficients of the impact of EIAs on both extensive and intensive margin for a study of large number of years, country pairs and EIAs.

Soete et al. (2017) corroborates the findings of Baier et al. (2014) with EIAs impacting the extensive margin positively and observes that EIAs are an excellent tool to increase product differentiation and thus in turn leading to increase in the trade flows/ international trade. Additionally, FTAs and CUs have a larger impact on the extensive margin than the PTAs hinting at greater degree of integration having a greater impact on the extensive margin than the shallower ones, hence validating the empirical evidence of Baier et al.(2014)

India, after its trade policy liberalization signed a number of bilateral and regional integration agreements. The bilateral trade deal profile of the country comprises of CECA/ CEPA/ FTA/ PTA with around 18 blocs or countries (Misra and Choudhry, 2019). Studies have been done to analyse how these trade deals have fared(ex-post) or would fare (ex-ante) if they come into being. Sikdar and Nag (2011) and Ahmed (2010) did an ex–ante analysis for the India-ASEAN FTA and the arrived at the conclusion that while the terms of trade effect would deteriorate and remain negative, the allocative efficiency would report an increase. This trade deal was also analysed for its trade creation effects (an ex-post analysis) and concluded that imports of ASEAN from India reported a significant increase and the maximum gains to India were from Vietnam, Thailand, Lao People's Democratic Republic, Philippines, Cambodia and Malaysia. Seshadri (2015) on India-Korea trade deal imply that overall exports to Korea did not show any increase, rather it was only certain sectors that reported increased growth in exports. Taneja et al. (2002), Weerakoon et al. (2006) and Joshi (2012) concluded that the India-Sri Lanka agreement benefitted both countries in terms of diversification of the exports of both the signatories along with a slight increase in the trade flows. Saraswat et al. (2018) pointed towards underutilization of the trade deals by the Indian exporters owing to lack of information on the TAs, administrative costs associated with the rules of origin and low margins of preference. Veeramani et al.(2018) is the only study that examines the performance of India's exports along trade margins. It analysed the export growth along trade margins in manufactured products of India during the years spanning from 2000-2015, contrasted and compared it with the performance of Chinese exports. The results suggest that India lags behind China in terms of intensive margin and poor market penetration by Indian exports was cited as the reason for its dismal performance. Over the years, while the extensive margin gap narrowed, the intensive margin gap widened. Additionally, the study observed that the gap pertaining to intensive margin was pronounced for the network products and the unskilled labor-intensive products and that the dynamics of exports are biased in favour of technology and human capital intensive products which is an unexpected finding, given labor abundance and prevalence of low wages in the country. It was also suggested that India's participation in vertically integrated global supply chains is imperative and increased attention towards specialization of labor-intensive processes would help the country expand along intensive margin.

In conclusion, the Indian case unanimously doesn't imply growth in trade flows as a rule of thumb of being a part of an integration agreement, it would rather be accurate to describe it as ambiguous, depending on country-pair specific characteristics. Additionally, since literature pertaining to India's trade agreements is essentially centered around trade creation/diversion, the present paper's novel proposition is to analyze the impact of varying depth of EIAs on its extensive export margin.

2.2 Theoretical Literature

The underlining theory of the present paper rests on the Gravity Model and is similar to the one used in Baier et al. (2014) since the objectives of the studies intersect in terms of analyzing the impact of EIAs on extensive margin of export.

The Model

$$X_{ijt}^{m} = N_{it}^{m} Y_{jt}^{m} \left(\frac{(a_{Lit}^{m})^{-\gamma^{m}} w_{it}^{-\gamma^{m}} \tau_{ijt}^{-\gamma^{m}} f_{ijt}^{-[\gamma^{m}/(\sigma^{m}-1)-1]}}{\sum_{k=1}^{K} N_{kt}^{m} (a_{Lkt}^{m})^{-\gamma^{m}} w_{kt}^{-\gamma^{m}} \tau_{kjt}^{-\gamma^{m}} f_{kjt}^{-[\gamma^{m}/(\sigma^{m}-1)-1]}} \right)$$

X_{ijt}^{m} : Trade Flow from country i to country j in good 'm'

N_{it}^{m} : Firms in country i that produce that produce good 'm'

Y_{jt}^{m} : Expenditure on good 'm' in country j

a^{m}_{Lit} : It is the lower bound of the Pareto distribution of productivities in good 'm' in country i , defined as unit input requirements of labour

γ^{m} : Index of heterogeneity of productivity among firms in good 'm'

w_{it} : Wage rate in country i

τ_{ijt} : Represents variable trade costs of exporting goods from country i to country j

f_{ijt} : Fixed export costs from country i to j

σ^{m} : Elasticity of substitution in consumption

As mentioned in Baier et al. (2014), according to the models of Melitz (2003), Chaney (2008), Redding (2011) and Arkolakis et al. (2012) variable trade costs (τ_{ijt}) affect X_{ijt}^{m} through extensive and intensive margins. Hence, formation of an EIA alters the variable trade cost and thus bears an impact on the trade margins. This theoretical understanding lays the foundation of the objective of the study which intends to empirically ascertain the extent of the impact. Baier et al. (2014) explains the trade margin elasticity of variable trade costs using the expression given by Chaney

(2008) in the Melitz- type model. According to it, $\gamma^m = (\sigma^m - 1) + [\gamma^m - (\sigma^m - 1)]$ where the intensive margin elasticity of variable trade costs is represented by $\sigma^m - 1$ and the extensive margin elasticity of variable trade costs is $\gamma^m - (\sigma^m - 1)$.

3. METHODOLOGY AND VARIABLES

3.1 Trade Margins decomposition methodology

To decompose the bilateral export flows into extensive & intensive margins using disaggregated trade data, the methodology proposed by Hummels and Klenow (2005) has been adopted. Product categories at six-digit level of disaggregation (HS Codes) for the calculations have been used. Although the study by Hummels and Klenow(2005) conducts the analysis for a single year(1995), the present paper, like Baier et al. (2014,2018), Soete et al. (2017) to name a few, consider panel data of nations which import from India and have done the decomposition of the trade flows for each of the country-pair for years spanning from 2000-2018 as stated in equation 1.

$$EM_{ijt} = \sum_{m \varepsilon M_{ijt}} X^m_{Wjt} / \sum_{m \varepsilon M_{Wjt}} X^m_{Wjt} \quad ---(1)$$

where X^m_{Wjt} is the value of j's imports from the world in product m in year t, products exported by the world to country j in year t is denoted by M_{Wjt}, and subset of all the products exported from country i to country j in year t is represented as M_{ijt}. Therefore, EM_{ijt} represents the fraction of the products that are exported from country i to country j in year t, where each product is weighted by the importance that product in world exports to county j in year t as stated in equation 2.

$$IM_{ijt} = \sum_{m \varepsilon M_{ijt}} X^m_{ijt} / \sum_{m \varepsilon M_{ijt}} X^m_{Wjt} \quad ---(2)$$

where X^m_{ijt} is the value of i's exports to country j in product m in year t. Therefore, IM_{ijt} is the market share of country i in country j's imports from the world within the set of products that country i exports to country j in year t.

An advantage of this methodology of decomposition over count measure of trade margins is that that the weighted average method has the inherent property of accounting the differences in importance of the various product groups, which makes the HK methodology the most widely adopted approach.

3.2 Gravity Model, its Specification & Econometric Aspects

Tinbergen (1962) introduced the gravity model for analyzing trade flows, which in its simplest form shows that trade flows between a country pair depend on the distance between the pair(inversely) and the mass of each country (positively).

Use of gravity equation has been emphasized to study the partial i.e direct effects of the trade costs on bilateral trade flows. In the context of our study, being a part of the Economic Integration Agreements alters the trade costs and hence it is imperative that we use gravity equation to analyze the impact on bilateral trade flows.

Since its introduction, this has been used extensively in literature as an analytical framework for studies pertaining to trade flows. Arkolakis et al. (2012) have in their work, maintained that gravity equation essentially helps in estimating the trade elasticity and hence, a common estimator of gains from trade, irrespective of the different micro-level predictions of different quantitative trade models**.** According to them, a trade model broadly qualifies as a gravity equation if the trade flows between a given pair of countries (bilateral flows) can be decomposed in the following manner:

$$\ln X_{ijt} = A_{it} + B_{jt} + \gamma \ln \tau_{ijt} + \mu_{ijt} \text{ ---(3)}$$

where i(exporting country), j(importing country) ranges from 1 to n; X_{ijt} denotes bilateral trade flows between country i and country j at time t; A_{it} denotes the characteristics of country i at time t; B_{jt} denotes the characteristics of country j at time t; γ denotes the partial elasticity of bilateral imports with respect to variable trade costs; τ_{ijt} denotes variable trade costs and μ_{ijt} denotes parameters that are country pair-specific, but different from variable costs.

This paper puts to use a panel gravity model, with fixed effects. The model used includes dummy variable for each degree of EIA (for India) i.e OWPTA (One Way Preferential Trade Agreement), TWPTA(Two way Preferential Trade Agreement) & FTA(Free Trade Agreement) and takes the form as follows:

$$X_{ijt} = \beta_0 + \beta_1 OWPTA_{ijt} + \beta_2 TWPTA_{ijt} + \beta_3 FTA_{ijt} + \delta_t + \varepsilon_{ijt} \text{ ---(4)}$$

$$EXM_{ijt} = \beta_0 + \beta_1 OWPTA_{ijt} + \beta_2 TWPTA_{ijt} + \beta_3 FTA_{ijt} + \delta_t + \varepsilon_{ijt} \text{ ---(5)}$$

These can take up a value of either 1 or 0 depending if the country has either OWPTA, TWPTA or FTA signed among themselves. EXM_{ijt} is the extensive margin of export between exporter 'i', destination 'j' at time t, δ_t is the time fixed effect,

The set of fixed effects used in the study (country-pair fixed effects & time fixed effects) differs from the set used in Baier et al. (2014) and Soete et al. (2017) as these studies employ exporter & importer time fixed effects and country-pair fixed effects while the present paper includes time fixed effects owing to the difference in the structure of the panel data used. Since India is the only exporter in the study, inclusion of exporter-time fixed effects is not feasible and inclusion of importer-time fixed effects led to dropping of a number of variables and observations due to the collinearity issues prevalent with fixed effects inclusion. Inclusion of country-pair fixed effects is rather econometrically motivated to control for pair-specific variables otherwise not included in the model. Also, since the study is done only for a single exporter, the country-pair fixed effect would be the same as importer fixed effect. Time fixed effects control for any shock/significant event that happened in a particular year and thus impacted both importer and exporter, making its inclusion imperative. Estimation of the model has been done using Poisson Pseudo Maximum Likelihood Estimator (PPML). Silva and Tenreyro (2006) in their study, emphasize on the presence of heteroskedasticity in case of trade data and estimation using OLS without taking it into account leads to misleading results. Hence, it is suggested that PPML, which would estimate the gravity model multiplicatively should rather be used as it would absorb the fixed effects also as would the conventional techniques but yield better results. Researchers usually negate the possibility of using PPML for estimation in case of large number of fixed effects due to

convergence issues. To circumvent this problem, this study employs a user-written command in Stata, which absorbs such large number of fixed effects as in the present study.
Hornok (2011) gives a plausible explanation by showing how country-time fixed effects absorb most of the information thus leading to the inability to identify the heterogeneous policy effects since the policy dummies and the country-time dummies are perfectly collinear.

With regards to the econometric specification aspect of the hypothesis, there are some papers which delve deep to correct for those aspects which have been overlooked. It was through the findings of the study done by Trefler(1993) which brought to the surface the aspect of endogeneity that the previous studies have not been taking into account. He showed that estimates of the effect on imports of tariff liberalizations was found to be underestimated due to the presence of endogenity bias. Study done by Lee et al. (1997) corroborates the findings of the aforementioned study. Baier and Bergstrand (2007) in their work showed that ex-post estimation of Economic Integration agreements suffered from the problem of endogeneity bias because of self-selection of the countries in trade agreements. They conclude that using panel techniques leads to more precise and larger (as compared to previous studies) estimates of the effects of the integration agreements on the trade margins as it helps in taking into account the unobserved heterogeneity. Anderson et al. (2011) in their study corroborated the benefit of using panel data and the problems it alleviates. Bernard et al. (2009) using firm –level data showed that extensive margin explains the majority of the variation in trade flows across country pairs.

The panel data structure of the present paper is such that we don't include the non-trading country pairs and since we are only interested in the impact of EIAs on the treated group and believe that the non-trading country-pairs would never form an EIA, it would not be an issue. Additionally, in an attempt to account for the heterogeneous effects of the different integration agreements, some studies like Eicher and Henn (2011) perform PTA-specific analysis but the disadvantage of the approach is the resultant small PTA sample bias. To circumvent this problem, Baier et al. (2014) consider common classification (OWPTAs, TWPTAs, FTAs, CUs and CUCMECUs) for analysing the impacts and found larger impacts for deeper EIAs. (Limao, 2016)

The present study employs a panel dataset with India as the exporter, for a time period spanning from 2012-2018 because India after its episode of trade reforms had actively started to sign EIAs around the same time. The bilateral export flows with product category disaggregated at HS 6-digit level were extracted from UN COMTRADE via World Integrated Trade Solution (WITS).
Unlike Rose(2004), the present approach doesn't include a single dummy for the presence of an EIA, rather it employ multichotomous indexes to indicate varying degree of liberalization which has been collated by Scott Baier and Jeffrey Bergstrand and is available on Jeffrey Bergstrand's website, https://sites.nd.edu/jeffrey-bergstrand/database-on-economic-integration-agreements/. It represents absence of an EIA with a 0, One Way Preferential Trade Agreement denoted as 1, Two Way Preferential Trade Agreement as 2, Free Trade Agreement as 3 , Custom Union, Common Market & Economic Market as 4(due to rarity of these EIAs of higher depth, they have been clubbed as a single dummy).The aforementioned database covers EIAs only till 2012, thus the data has been augmented from the official website of Ministry of Commerce, India. Also, since the

present study focuses on India, it deals with only No EIAs, One Way Preferential Trade Agreement (OWPTA), Two Way Preferential Trade Agreement(TWPTA) or Free Trade Agreement(FTA).

4. RESULTS AND DISCUSSION

Table 1 depicts the value of the coefficients that were ascertained empirically by regressing Equation (4) and (5). The trade margins are essentially decomposition of the trade flows, therefore it is intuitive to analyze the dynamics for Overall Export Flows in addition to that for the Extensive Export Margin.

Table 1 :

Independent Variables	Exports	Extensive Margin
OWPTA	-1.150***	0.245***
	(0.042)	(0.018)
TWPTA	0.944***	0.390***
	(0.257)	(0.034)
FTA	1.618***	0.509***
	(0.148)	(0.030)

*** corresponds to $p < 0.001$

After controlling for time fixed effect, it is observed that all categories of EIAs have statistically significant impact on Exports while the direction/ sign of the impact varies. OWPTA impacts i negatively while TWPTA and FTA bear a positive impact on Exports. While the impact of all categories of EIAs is statistically significant for Extensive Margin, the value of the coefficients imply that the impact is larger for deeper agreements which is a corroboration of the results of Soete et al. (2017) and Baier et al. (2014). Such homogeneous pattern is not observed in case of Exports if quantification of impact is to be considered. Therefore, as the depth of the EIA increases, the variety of goods traded increases.

5. CONCLUSION

The motive of our work was to examine the ex-post effects of India's various Economic Integration Agreements with the rest of the world i.e. essentially studying the impact of EIAs(Economic Integration Agreements) of varying depths i.e. One -way Preferential Trade Agreement, Two-way Preferential Trade Agreement & Free Trade Agreements on the extensive margin of export which basically measures the export diversification of a nation. The hypothesis extends to find if the empirical evidence of studies in the domain suggesting that deeper trade agreements have a greater

impact on the extensive margin of exports holds good for India's dynamics. To conduct the analysis, we construct the database using the highly disaggregated data in terms of products traded(HS 6 digit) available at UN COMTRADE and combining this with the data extracted from the official website of Jeffrey Bergstrand (https://sites.nd.edu/jeffrey-bergstrand/database-on-economic-integration-agreements/) for the various trade agreements signed by India bifurcated according to its varying depth, we thus arrive at a panel dataset for the years spanning from 2012-2018 & for the 186 trading partners of India.

In the context of India's integration agreements, literature is replete with studies analyzing these for trade creation/ diversion effects. However, trade margins being a relatively newer addition to the literature have not been explored much for the country's dynamics. Hence, the objective of our study would offer insights not just for India's exports and related dynamics but in general context too and has policy implications of anticipating the effects of the integration agreements (ex-ante) and also help in choosing the depth of the integration agreement in order to get intended results.

The gravity model framework lays the foundation for our econometric analysis. By inclusion of time fixed effects helps in accounting for the factors that change each year and thus common for each trading country-pair included in the dataset and allowing for heterogeneity across EIAs by including separate dummy variable for each of One -way Preferential Trade Agreement, Two -way Preferential Trade Agreement & Free Trade Agreements the augmented gravity model employed in the present study was constructed.

The analysis done using gravity model in the present paper differed in terms of the set of fixed effects included in the regression equations. Inclusion of country-time and country-pair fixed effects rendered the variables insignificant, hence defeating the purpose. Hornok(2011) explained collinearity as the reason of the problem that arose and explained that since the country-time fixed effects absorb majority of the information, it becomes impossible to study the impact on the variables with this set of fixed effects included. Additionally, the presence of a single exporter was the reason behind the inability to include exporter-time fixed effect. Hence, the study incorporated country-pair and time fixed effects.

According to the results, the impact of the presence of an EIA is not the same across each type of integration agreement. It suggests that although the volume of trade flows increase for FTA and TWPTA, all the categories of EIAs lead to an increase in the extensive margin of export with deeper integration agreements i.e. FTAs having a larger significant impact than TWPTAs and OWPTAs with OWPTAs having the least impact. Hence, after analyzing the ex-post effects of the trade agreements, we can comment that it would be India's favor with the perspective of exporting increased variety of goods if we engage in deeper agreements. We are able to do this ex-ante analysis of the impact of integration agreements since the econometric approach adopted doesn't employ the dummy variable of a specific agreement, rather it a general approach is adopted where the dummy variable represents

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APPENDIX

LIST OF COUNTRIES INCLUDED

Afghanistan	Bhutan	Cook Island	Finland	Indonesia	Libya	Myanmar
Albania	Bolivia	Costa Rica	Fm Sudan	Iran	Lithuania	Namibia
Algeria	Bosnia	Cote d' Ivore	France	Iraq	Luxembourg	Nepal
Andorra	Botswana	Croatia	French Polynesia	Ireland	Macao	Netherlands
Angola	Brazil	Cuba	Gabon	Israel	Macedonia	Netherlands Antilles
Antigua and Barbuda	Brunei Darussalam	Cyprus	Gambia	Italy	Madagascar	New Caledonia
Argentina	Bulgaria	Czech Republic	Georgia	Ivory Coast	Malawi	New Zealand
Armenia	Burkina Faso	Denmark	Germany	Jamaica	Malaysia	Nicargua
Aruba	Burundi	Djibouti	Ghana	Japan	Maldives	Niger
Australia	Cambodia	Dominican Republic	Greece	Jordon	Mali	Nigeria
Austria	Cameroon	Dominicia	Greenland	Kazakhstan	Malta	Norway
Azerbaijan	Canada	East Timor	Grenada	Kenya	Marshall Islands	Occ.Pal.Terr
Bahamas	Cape Verde	Ecuador	Guatemala	Kiribati	Mauritania	Oman
Bahrain	Cayman Islands	Egypt	Guinea	Korea	Mauritius	Pakistan
Bangladesh	CAF	El Salvador	Guinea Bissau	Kuwait	Micronesia	Palau
Barbados	Chad	Equatorial Guinea	Guyana	Kyrgyzstan	Moldova	Panama
Belarus	Chile	Eritrea	Haiti	Laos	Mongolia	Papua New Guinea
Belgium	China	Estonia	Hondurus	Latvia	Montenegro	Paraguay
Belize	Colombia	Ethiopia	Hong Kong	Lebanon	Montserrat	Peru
Benin	Comoros	Faeroe Islands	Hungary	Lesotho	Morocco	Philippines
Bermuda	Congo Republic	Fiji	Iceland	Liberia	Mozambique	Poland
Portugal	Saint Vincet	Sierra Leone	Spain	Syria	Tonga	Uganda
Qatar	Samoa	Singapore	Sri Lanka	Taiwan	Trinidad and Tobago	UK
Romania	San Marino	Slovak Republic	Sudan	Tajikistan	Tunisia	Ukraine
Russia	Sao Tome	Slovenia	Suriname	Tanzania	Turkey	Uruguay
Rwanda	Saudi Arabia	Solomon Islands	Swaziland	Thailand	Turkmenistan	USA
Saint Kitts	Senegal	Somalia	Sweden	Timor Leste	Turks and Caicos Isl.	Uzbekistan
Saint Lucia	Seychelles	South Africa	Switzerland	Togo	UAE	Vanuatu
Venezuela	Vietnam	Yemen	Zambia	Zimbabwe		

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