

Core provisions and Global value chains

Abstract

1. Introduction

International trade has become of vital importance in the current globalized world. All the members of WTO are part of at least one of the Preferential trade agreements (PTAs). Engaging in PTAs help countries to streamline their exports and imports preference and formulate trade policies accordingly. However, since 1990s, global trade has witnessed two major changes. Firstly, on production side, de-nationalization of production structure. Now, production is shifted from the notion of “made in particular country” to “made in world.” This gave to rise to the concept of Global value chains (GVCs). On the other hand, from the policy perspective, rise in the number of PTAs and change in its content (Ruta, 2017). Currently, number of PTAs has surged from 50 in 1990s to approximately 300 in 2019 (Matto et al. 2020). Likewise, average number of provisions in trade agreements increased from roughly 8 in 1950s to 17 in recent years. This increase in number of provisions encompasses domains that are beyond the framework of WTO regulations. Some of it includes provisions related to competition policy, movement of capital, environmental laws, and nuclear safety. Broadly referred to as ‘deep’ trade agreements, opened new debate in the world of international trade to discuss the potential economic effects of these agreements.

Against this backdrop, the study tries to empirically examine the impact of deep trade agreements on GVCs. The study uses dataset developed by World bank which covers all PTAs and eighteen policy areas most often covered in PTAs. Our study differs from previous studies on following grounds; (a) quantify the relationship between deep trade agreement and GVCs using econometric estimation technique and machine learning; (b) disentangling which set of provisions matters most for countries to participate in GVCs.

Theoretically relation between trade agreements and GVCs is being explored in the works of Antràs & Staiger (2012) and **Bickwit, Ornelas and Turner (2017)**. Some of the studies have examined the relation from empirical point of view. (Choi, 2020) tests the impact of deeper trade agreements on the GVCs by especially considering regional clusters consist of Asia, Europe, and America. The study found that deep trade agreements have a significant impact on GVCs however it varies across regional clusters. Particularly, deep trade agreements with Asian countries have a more pronounced impact on GVCs followed by the American and the European partner countries.

Laget et al. (2020) estimated the impact of deep trade agreements on GVCs by using the world bank dataset on deep trade agreements and, data on trade in value-added and parts and components. Structural gravity equations are used to quantify the above effects. The study elucidates the importance of deep trade agreements as a factor affecting GVCs driven by value-added in intermediate trade. Further, it identifies the impact of various provisions of WTO (WTO+ and WTO-X) on trade between North-South, North-North, South-North trade. Likewise, Orefice & Rocha (2014) and Ruta (2017) also investigate the same relation. While former uses the gravity equation model and later uses time-series methodology to study the relation.

However, in recent times, there has been numerous difficulties arise in signing trade agreements. First, it becomes difficult to formulate multi-lateral trade agreements through WTO negotiations (Breinlich et al., 2021). Second, changing nature of trade due to rise of global production fragmentation or Global value chains. Final, inclusion of provisions beyond trade-related as a result of change in nature and typology of trade agreements.

2. Methodology

2.1. The Gravity model

The study examines the impact of **trade agreements** on GVC integration, using Poisson Pseudo Maximum Likelihood (PPML) estimator on gravity model. PPML approach is justified on the following grounds; (a) it produces consistent estimates in the presence of heteroscedasticity (**Santos Silva and Tenreyo, 2006**), (b) estimator deals with the presence of zero trade flows in the dependent variable. The baseline gravity model in the multiplicative form is given as:

Where y_{ijt} represents value added between country i and j at time t , x_{ijt} represents the covariates of interests, i.e., Core depth and PTAs. CoreDepth_{ijt} is defined as sum of number of core provisions, i.e., at time t . PTA_{ijt} is a dummy variable that takes value 1 if trade agreement is there between country i and j , otherwise 0 at time t . π_{it} , γ_{jt} and δ_{ij} are importer-time, exporter-time and country-pair fixed effects respectively.

The estimates might suffer from problem of endogeneity. The probable source of endogeneity might be omitted variables bias or simultaneous bias. Omitted variable bias arise due to exclusion of relevant explanatory variables. These variables most likely to be correlated with error term as a result of which estimators are biased. In our model, certain country-specific factors like country's trade policy might affect both GVC participation and signing for deep provisions at the same time. The set of exporter and importer time fixed effects caters this time invariant country-specific factors. On the other hand, inclusion of country-pair fixed effects considers endogeneity of trade policy variables and the effect of time-invariant unobserved bilateral trade costs. Another econometric issue is of simultaneously bias or more specific reverse causality. Reverse causality may be due to the fact firms participating in GVCs might compel policy makers to sign trade agreements with partner countries in order to enhance its market access (Laget et al., 2020).

Considering all these details, still PPML approach has its limitations. Traditionally, dichotomous variable is being used to denote the presence of trade agreement. But agreements are becoming in 'deeper' in content. Thereby, there exists in heterogeneity in agreements whose effect could not be captured by simply incorporating dummy variable. Even if studies use dummies one for each trade agreement, it will lead to weak estimates. The reason might be that unless a country does not have plurilateral trade agreements consisting of some common members, there would be less variation in the "RHS dummy variables" (Baier et al., 2018). Baier et al. (2014) took cognizance of this issue and classified various types of PTAs. It includes dummy variable accounting one-way PTAs, two-way PTAs, FTAs, and dummy for more deeper PTAs inclusive of customs unions and economic unions. However, this approach still fails to account to examine the role of provisions included in trade agreements. As agreements gets exhaustive in nature,

number of provisions increases. Accounting these provisions through dummy variable approach poses two big problems, namely, multicollinearity and overfitting in the model. Multicollinearity makes it difficult to disentangle the impact of individual provisions on GVCs. Similarly, overfitting leads to poor predictive power of the estimated model. Several studies (Baier, Bergstrand, & Feng, 2014; Baier et al., 2018) measure the differential impact of trade agreements using multichotomous index constructed by Scott Baier and Jeffrey Bergstrand. It

2.2. Regularized linearized regression: Lasso

The idea behind using Least Absolute Shrinkage and Selection Operator (Lasso) approach to identify which provisions have significant impact on GVC participation. From the methodological point of view, our study uses penalized regression approach. This approach adds penalty term in the original Poisson pseudo-likelihood used to estimate gravity model. Penalty term “shrinks” the estimated coefficients towards zero and minimize

Where

3. Data sources

4. Results and Discussion

5. Conclusion

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