6 Policy brief
November 2023

CHAIR
Globalization

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How Deep Trade Agreement Impact Firm's Exports

In this policy brief, Gianluca Orefice, Matteo Neri Lainé and Michele Ruta study the importance of the depth of preferential trade agreements signed by developing countries on the export performance of their companies. The authors point out that the impact varies greatly between companies depending on their size and their insertion in global value chains.

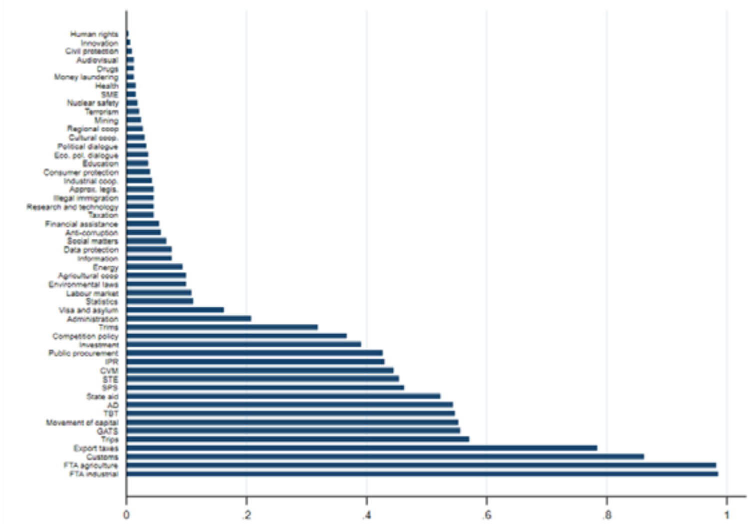
Many developing countries have signed deep Preferential Trade Agreements (PTAs) over the past two decades with the aim of better integrating their economies and improving the export performance of their firms. While the positive impact of these agreements on trade flows is well established in the literature (Mattoo *et al.*, 2022), the question remains as to how these agreements affect firm-level performance, and in particular whether these effects are homogenous or not across firms with different characteristics. Our analysis (Neri-Lainé, Orefice and Ruta, 2023) shows that the depth of PTAs signed by developing countries affects the export performance of their firms, but this effect differs widely between companies, depending on their size and insertion in global value chains. Large firms and firms involved in global value chains (GVC) benefit the most from the enforcement of deep trade agreements, while small firms suffer from increased competition at destination (i.e. *pro-competitive effect*). The increased degree of competition induced by deep PTAs can push small, low-productivity firms out of the export market (i.e. *selection effect*). These effects imply that deep trade agreements can have significant welfare consequences for signatory countries that have been neglected by existing literature.

The deepening of developing countries' trade agreements

The nature of Preferential Trade Agreements (PTAs) has evolved substantially during the last decades. While 'old generation' PTAs merely reduced tariffs among members, 'new generation' agreements go much further, including a wide and growing range of trade and non-trade related provisions (Mattoo et al., 2020). This latter category of trade agreements is also referred to as *deep* PTAs as they aim for deep economic integration between members.

Deep PTAs typically regulate not only trade in goods and services (through provisions such as tariff reduction, harmonization or mutual recognition of technical and phytosanitary standards), but also numerous business-related policies, such as the movement of capital between member countries, competition policy, the protection of intellectual property rights, etc. *Figure 1* shows the most frequent provisions of deep PTAs. Not surprisingly, tariff cut in industrial and agriculture sectors (FTA industrial and FTA agriculture) are included in almost all Preferential Trade Agreements, but provisions regulating customs and export taxes among signatory countries are also very frequent in recent PTAs.

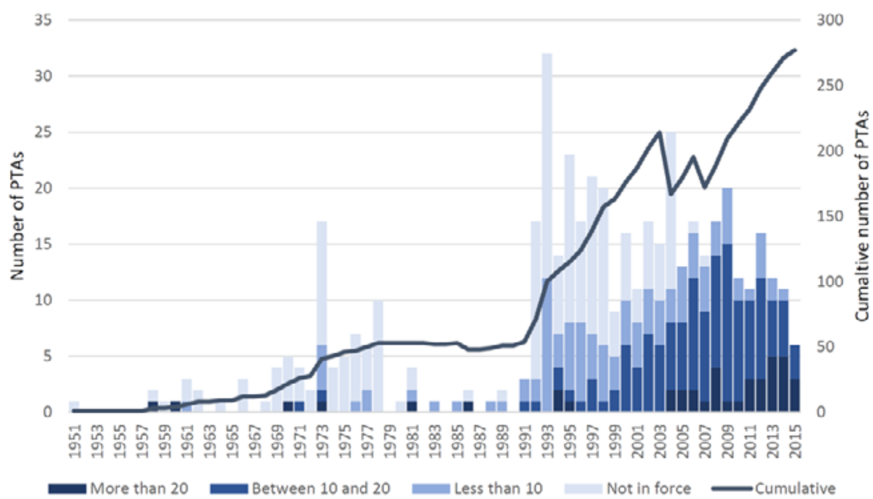
Figure 1.
Frequency of legally enforceable provisions in PTAs



Note: Provisions are ranked according to the probability of being present in an agreement, from least to most frequent.

Figure 2 shows how the content of PTAs has evolved over time: Deep PTAs (i.e. those with more than 10 provisions identified by dark and medium-dark bars) are becoming increasingly frequent over the last twenty years.

Figure 2.
Number of Trade Agreements over time and their depth (number of provisions included)



Source: Hofmann *et al.* (2017).

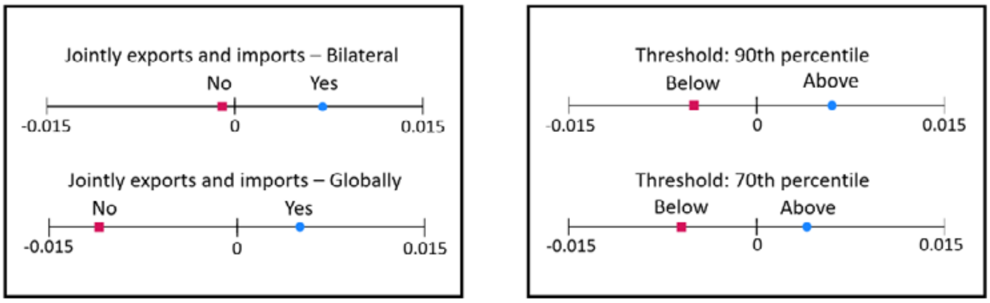
Effects of deepening agreements at firm level

To investigate the effects of deep PTAs on firm exports, we combine firm-level export data for 31 developing countries for the period 2000-2020 from the World Bank's Exporter Dynamics database (Fernandes et al., 2016) with detailed information on the content of more than 300 PTAs from the World Bank's Deep Trade Agreements database (Hofmann *et al.*, 2017). We adapt the standard gravity model for trade (Head and Mayer, 2014) to a firm-level analysis in which we include a variable capturing the depth of PTAs. We construct several indicators of PTA depth based on the policy areas covered by the agreements and their legal enforceability (i.e. the total number of legally enforceable provisions, provisions within the current WTO mandate and those that go beyond). Our preferred measure is the total number of legally enforceable provisions (i.e. whose implementation is supported by strong legal language and the availability of a dispute settlement mechanism). We apply a standard difference-in-difference approach, controlling for other important drivers of firms' export performance through fixed effects by firm-year, destination-year and origin-destination pair. Our empirical strategy to study the trade effect of deep trade agreements bases on the *changes* in the depth (i.e. number of provisions) of PTAs between origin and destination countries (i.e. newly signed preferential trade agreements or modification of pre-existing agreements). Specifically, we compare a given firm's exports to destinations for which the depth of PTA has changed with those to destinations for which the depth of PTA remained the same (conditional on any firm- and destination-specific shock).

Results: Different firms, different effects

Baseline results, which use the number of legally enforceable provisions in PTAs as a proxy of their depth, show that an additional legally enforceable policy area in PTAs increases firm exports by 0.3% on average. Moving from a *shallow* PTA (those with only tariff reduction provisions) to a deep PTA (those with a number of provisions above the 75th percentile) corresponds to a 3.6% increase in firm exports. The average effect of deep PTAs on the export performance of firms may hide significant heterogeneity depending on firms' characteristics. *Figure 3* summarizes the results, highlighting the key role of insertion in global value chains and size respectively. The observed heterogeneity is consistent with predictions of models of trade with heterogeneous firms and pricing behavior (Melitz, 2003; Atkeson and Burstein, 2008). Panel (a) of *Figure 3* shows that the impact from an additional legally enforceable provision in PTAs is positive for firms involved in global value chains, but negative for others. GVC firms are identified by the fact that they are both exporters and importers. Results are presented for two different proxies for GVC firms: one considers import flows from the specific trade partner, the other bases on whether the firm imports from no matter which trade partner. Panel (b) of *Figure 3* shows that the positive effects of deep PTAs are limited to the sub-group of large firms. These are identified by the fact that the value of their total exports in the initial year exceeds a threshold, respectively the top decile and the top quartile in the distribution of exports in our data. Large and highly productive firms benefit while small and less productive firms suffer from deep PTAs (*pro-competitive effect*). On average, including an additional legally enforceable provision in PTAs stimulates large firms' exports by 0.4-0.6% and reduces small firms' exports by 0.5-0.6%.

Figure 3.
The heterogeneous trade effect of deep PTA by firm characteristics



(a) Distinction By GVC (b) Distinction By Size

Note: Regressions includes firm-year, destination-year and origin-destination fixed effects. We control for tariffs. Standard errors are clustered by origin-destination-year.

Welfare consequences

The *pro-competitive effect* of deep trade agreements that we uncover underscores the importance of using firm-level data to understand the welfare implications of PTAs. Specifically, by improving the export performance of large, high-productivity, GVC firms, and reducing that of smaller, less productive and less connected firms, deep PTAs lead to a reallocation of resources from the latter to the former. The result is an overall increase in the average productivity of firms in the exporting country, and a reduction in the average price of imported varieties in the importing country (a welfare gain for developing countries signatory to the dee trade agreement). However, this reallocation process also entails adjustment costs: the **exit of small firms** due to increased competition at destination. Deep trade agreements reduce the number of firms that survive in the export market. More precisely, the transition from a shallow to a deep PTA corresponds to a 5% reduction in the number of firms surviving on the export market (see Neri-Lainé, Orefice and Ruta 2023, section 5.2). The lack of firm-level employment data prevents us from directly testing the employment consequences of deep PTAs, but as large firms (i.e. those benefiting the most from deep trade agreements) account for the largest share of employment across all countries, we can infer an overall positive net employment effect of deep trade agreements for member countries.

Dynamic effects

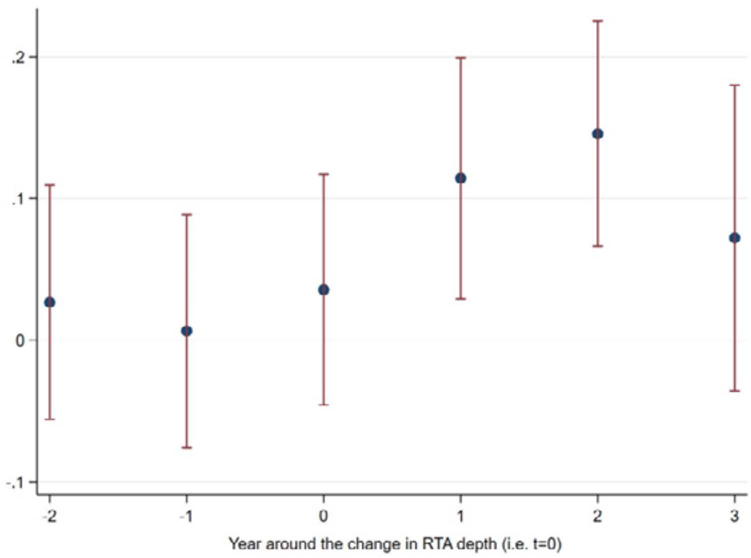
An interesting question is how free trade agreements affect the export dynamics of firms. To answer this question, we use an event-study approach. In *Figure 4*, we show the effect of PTA deepening on treated firms (i.e. firms exporting to a destination where the depth of PTA has changed) around the year in which this change occurred (indicated by t0 in *Figure 4*). The reference year is three years prior the change (t=-3). Two important conclusions emerge from the event study.

→ First, before the change in PTAs' depth, *treated* and *untreated* firms (i.e. respectively those that *experienced* and *did not experience* a change in the depth of PTA at destination) do not differ in their export performance. The absence of a pre-trend corroborates the finding that it is really the deep PTA (and not some other unobserved causes) that triggers the trade effects.

→ Second, after the change in the depth of PTAs, treated firms export more into destinations that have signed a deep PTA with the country of origin. Such a positive effect is strong but vanishes after three years.

Consistently with previous studies (e.g. Lee et al. 2023), the transitory nature of the dynamic effects of deep PTAs has two main potential explanations. The increasing number of PTAs in the world, as shown in *Figure 2*, gives preferential market access towards a wider set of destinations, makes the existing trade agreements less "unique" and hence reduces their effectiveness in boosting bilateral trade. Moreover, some provisions in deep trade agreements are non-discriminatory, that is they apply to both member and non-member countries. Exporters located in non-member countries thus benefit from the deep trade agreement, reducing the preferential nature of PTAs and, consequently, the extent of trade flows between signatory countries.

Figure 4.
Firm Exports Event Study.



Note: The figure plots event time dummies for targeted firms relative to untargeted firms. Regression includes firm-year, destination-year and origin-destination fixed effects. Reference year t=-3. Standard errors are clustered by origin-destination-year. Error bars show 90% confidence intervals.

Final remarks

Our study highlights important welfare and policy implications of deep trade agreements signed by developing countries. The agreements promote trade differently across firms, boosting exports by larger, more productive and more connected firms, and undermining the export performance of others. This pro-competitive effect implies that resources are reallocated to the first group of firms, and that the welfare of member countries increases thanks to higher average productivity and lower prices. However, the negative impact on exports of smaller, less productive and less connected firms also points to the presence of a costly adjustment process that national policies must take into account to ensure that the gains of deep PTAs are widely shared.

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