# CHAPTER 5

# Global value chains and deep integration

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The post-1990 period has seen a proliferation of preferential trade agreements (PTAs). Some 700 PTAs are currently in force, compared to a little more than 100 PTAs before 1990. Both developed and developing countries have been and are deeply involved in preferential trade liberalisation. While tariff reductions on a preferential basis are a central feature of all trade agreements, the inclusion of provisions that do not pertain directly to merchandise trade policies – e.g. provisions protecting foreign investment (FDI) and liberalising access to markets for services – has become increasingly common in PTAs. As a result, many PTAs regulate trade-related issues more extensively and more stringently than the WTO. Simply put, preferential liberalisation has become the main instrument of trade policy cooperation.

The academic literature in economics and international political economy has shown that the expansion of PTAs moves hand in hand with growth in FDI flows, offshoring, and global value chain (GVC) production (Baccini et al. 2017, Blanchard 2007 and 2010, Blanchard et al. 2017, Bown et al. 2020, Chase 2003, Manger 2009). There is growing consensus that the activities of multinational enterprises, which splinter economic activity across countries, drive the formation of deep PTAs (Antràs and Staiger 2012, Baldwin 2011, Mattli 1999, Rodrik 2018). Recent studies show that corporations involved in global production lobby in favour of deep PTA negotiations and outspend import-competing industries to sway trade policy decisions (Baccini et al. 2019, Blanga-Gubbay et al. 2020, Bombardini 2008, Osgood 2018, Rönnbäck 2015).

There are several reasons why PTAs appeal to economic actors involved in GVCs. Preferential liberalisation cuts tariffs on trade in intermediate goods between signatory countries, which is a core feature of GVCs (Blanchard and Matschke 2015, Chase 2003). Trade in intermediates is often intra-firm trade, driven by vertical foreign direct investment, which makes investment provisions that protect multinational enterprises' assets in host markets a desirable feature of PTAs. PTA provisions that liberalise trade in services facilitate intra-firm movement of data, technology, and personnel. As important

are effective dispute-settlement mechanisms that enhance the credibility of deep-integration commitments, given that multinational enterprises face high risks of direct and indirect expropriation (Kim 2012).

## METHODOLOGY AND DATA

Empirical analysis has struggled to identify a clear-cut causal effect of GVC trade on the depth and design of PTAs. In a recent paper, we attempt to fill this gap (Baccini et al. 2021) using detailed information on the content of PTAs and measures of the GVC intensity of gross exports.

Empirically estimating the effect of trade on trade policy (in our case, the design/depth of PTAs) confronts a serious endogeneity problem as trade policy is very likely to have an effect on trade. Possible reverse causality makes identification of the causal impact of GVCs on PTA design a challenging task. In our paper, we propose a novel instrument for trade flows based on Altomonte et al. (2018). The identification strategy exploits a recent transportation shock: the sharp increase in the maximum size of container ships, which has more than tripled during our sample period. The key variation in our instrument hinges on the fact that only deep-water ports can accommodate new larger ships and therefore, as larger ships become available, countries export relatively more towards partner countries that are more endowed with deep-water ports.

We construct our instrument by predicting trade flows from gravity estimations that include the interaction between the time-varying transportation shock (the maximum size of container ships), the country-level presence of deep-water ports, and bilateral exogenous dyadic variables such as geographical distance between two trading partners. Identification of the causal effect of trade on trade policy rests on the following assumption: conditional on controls and allowing for heterogeneity across country pairs based on bilateral characteristics, the variation in trade flows that is triggered by the presence of deep-water ports in partner countries – combined with the increase in the size of container ships – only affects trade policy formation through its effect on observed trade. Our strategy is flexible enough to generate excludable instruments for different value-added components of exports. This allows us to assess how the design of PTAs is affected by gross exports as well as by trade through GVCs, as captured by indicators of trade in domestic and foreign value added.

Armed with this identification strategy, we estimate the causal effects of gross exports and value-added trade on a synthetic indicator of PTA depth and on different dimensions of PTA design, including services liberalisation, investment provisions, and the presence of binding dispute-settlement mechanisms. We build outcome variables capturing whether PTAs include 'WTO-PLUS' or 'WTO-EXTRA' provisions that go beyond what is regulated in WTO multilateral agreements. To build a broad and comprehensive portfolio of outcome variables, we merge two key datasets with information on the content of trade

agreements: the DESTA database (Dür et al. 2014), which includes synthetic indicators of PTA depth, and the recent World Bank Deep Trade Agreements database, which contains information on a broader set of specific provisions in PTAs.

We focus on the pre-crisis period 1995–2007, which witnessed a rapid expansion of GVCs, and on the 40 countries covered by the World Input-Output Database from which we source the trade data for the analysis. Given this sample, the information used to construct our dependent variables comes from PTAs signed up to 2007, where at least two signatories belong to the sample of 40 countries included in the World Input-Output Database. These encompass 160 agreements in the DESTA database and 24 PTAs in the World Bank database.

## RESULTS

We find that GVC trade and in particular the foreign value-added component of exports increases PTAs' depth. The size of our estimated causal effect is substantial. When we take our most conservative estimate, moving the foreign value-added component of bilateral exports in any sector by two standard deviations increases the level of depth in the bilateral trade policy relationship by 35% of the average depth in our sample. This effect roughly corresponds to going from the level of depth of the EC-Jordan Euro-Med Association Agreement (at the 67th percentile in the unconditional distribution of depth considering all agreements coded in DESTA) to that of the EC Europe Agreements with Estonia, Latvia and Lithuania (between the 78th and 81st percentile). These agreements have all been signed during the second half of the nineties but the difference between them is significant: Europe Agreements are notably very deep and comprehensive, as they pave the way for accession to the EU, while the EC-Jordan Association Agreement does not cover regulatory areas and does not address important issues such as government procurement nor introduce any significant level of commitment in services and investment liberalisation (Hoekman and Djankov 1997).

Our results also show that trade and trade through GVCs have heterogeneous effects on the probability of including broadly identified chapters across different issue areas. However, we find that trade through GVCs systematically increases the probability that a number of narrowly defined 'WTO-PLUS' and 'WTO-EXTRA' provisions are included. These results provide empirical evidence that more intense GVC activities between two countries tend to increase the probability that deep PTA-based integration between them goes further than the WTO regime. Finally, we show that when looking at specific PTA provisions, the effect of GVC trade tends to be larger than the effect of gross exports, which also include activities unrelated to global production.

## CONCLUSION

PTAs have become deeper and deeper over time, a trend that appeared for a while impossible to reverse or even to stop. However, our findings show that – for the period under analysis – this trend has been affected by the expansion of GVCs. Protectionist policies implemented by populist parties and the COVID-19 pandemic are likely to contract GVCs, at least for the near future. If this is the case, the GVC-related incentives to design deep trade cooperation might be reduced in the next stage of globalisation.

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# CHAPTER 6

# Pro-competitive provisions in deep trade agreements

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Two of the oldest ideas in international trade are that trade increases competition and that while preferential trade agreements (PTAs) may generate benefits for members through expanded trade, they might also introduce losses for non-members through trade diversion. Over time, a number of important methodological contributions, including Egger (2000), Anderson and VanWincoop (2003), Baier and Bergstrand (2007), Romalis (2007), Egger et al. (2011) and Baier et al. (2014), have advanced our understanding of how to quantify changes in the value of trade among PTA partners, as well as between PTA members and outsiders.

With the rise of non-tariff barriers and the deepening of PTAs, the latest generation of trade agreement studies have shifted focus to explore which commitments in PTAs generate the largest increases in trade (Dhingra et al. 2018) and whether specific commitments made in PTAs generate broad non-discriminatory increases in trade or feature trade diversion away from non-members (Mattoo et al. 2017). At the same time, recent work shows that PTAs and exchange rates affect the market power, prices, and markups of both member and non-member countries (Chang and Winters 2002, Corsetti et al. 2018, Corsetti et al. 2019).

In a new paper (Crowley et al. 2021), we investigate the direct and indirect effects of deep trade agreements on product-level exports, prices, and markups of firms. To do so, we introduce the use of trade-weighted policy measures, which summarise a destination's trade policy towards third countries, in structural gravity equations. These variables act as proxies to capture the indirect effect of the competition intensity in the destination on sales and pricing decisions of exporting firms. Our unique approach not only quantifies the direct impact of PTAs and their associated tariff changes on exporters in partner countries, but also measures the indirect, third-country competition effects arising from the existence of PTAs between a destination and other, third-country origins. This allows us to assess whether PTAs lead to less destination-specific market power for firms.

Our analysis is based on 27.5 million firm-product-origin-destination-year observations, encompassing 640 thousand firms located in 13 low- and middle-income countries, and 257 deep trade agreements. The latter are sourced from the World Bank Deep Trade Agreements database and allow us to evaluate the effects of detailed commitments to

specific policies and institutions embedded in the deep trade agreement provisions. We apply bilateral origin-destination fixed effects to control for underlying time-invariant structural factors that drive trade, firm-product-origin-time fixed effects to control for time-varying supply shocks at the level of a product within a firm, and product-destination-time fixed effects to control for time-varying product-demand shocks in an importing country. Our analysis thus captures partial PTA effects because PTA-induced changes in the competitive environment in origin and destination countries are absorbed in time-varying multilateral resistance terms (as in Anderson and van Wincoop 2003, Feenstra 2004, Redding and Venables 2004, Baier and Bergstrand 2007, Head and Mayer 2014, Baier et al. 2014, and Mattoo et al. 2017).

## TRADE STRUCTURE AND THIRD-COUNTRY COMPETITION

We find that exports are impacted directly by a country's own PTAs as well as indirectly by the PTAs signed by its competitors. Tariff reductions are an important component in the PTAs of developing and emerging countries; we begin with the direct and indirect impacts of tariff cuts under PTAs. See the leftmost panel of Figure 6.1. The first bar reveals that – after controlling for the existence of a PTA, time-invariant factors between each origin and destination, and time-varying origin and destination factors – the direct effect of a 1% reduction in tariffs under a PTA is to increase firms' export sales by 1.3%. To examine how PTAs interact with global value chains, we quantify the impact of a 1% reduction in tariffs on exports of final consumption goods and intermediate inputs. The second bar shows that a 1% tariff cut increases exports of final consumption goods by 1.6%. The positive impact on intermediates is considerably smaller, an increase of only 0.5%. This suggests that the introduction of a PTA impacts the export structure of the countries in our study, apparently shifting them toward assembly of final goods.

Interestingly, for our group of emerging and developing countries, we find substantial indirect effects arising from the tariff cuts in the PTAs signed by their competitors. See the rightmost panel of Figure 6.1. If 50% of a firm's competitors enjoy a 1% tariff cut through a PTA, this reduces exports from firms in non-member origin countries by 1.6%. Breaking this result down by the end use of a product, we find quantitatively similar results for final goods and intermediates. The story that emerges is that tariff cuts under PTAs expand bilateral trade among PTA members, but also have indirect effects on the trade of non-members.

**FIGURE 6.1      IMPACT OF TARIFFS ON EXPORT VALUES BY PRODUCT END-USE CATEGORY**
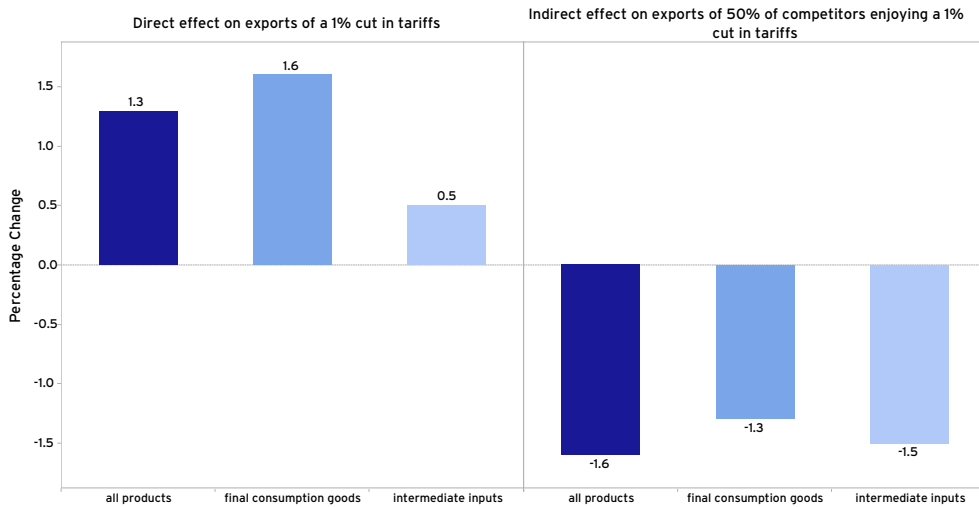


Notes: Bar height represents average percentage change in export values from a 1% increase in bilateral tariffs for 13 origin countries after controlling for firm-origin-product-year, destination-product-year and origin-destination fixed effects (left panel) and average percentage change in export values when 50% of one's competitors experience a 1% increase in bilateral tariffs in the destination (right panel) based on estimates from Table 3 (column 3, rows 2 and 4) and Table 7 (columns 1 and 2, rows 2 and 4) in Crowley et al. (2021).

## MARKUPS UNDER PTAS

Turning to markups, we find suggestive evidence of a pro-competitive effect of PTAs. A firm's product-level markup in a destination tends to decline when its origin country participates in a PTA with this destination. The leftmost panel of Figure 6.2 shows that the reduction in markups associated with joining a PTA are quantitatively similar in magnitude for all goods (-3%), final consumption goods (-3%), and intermediate inputs (-2%). We also observe that trade agreements signed by competitors lead to markup reductions. If 50% of one's competitors sign a PTA with a destination, an origin's markups fall by 2.5% for all goods and for final consumption goods. The effect on markups of intermediates is smaller and statistically indistinguishable from zero.

**FIGURE 6.2    IMPACT OF PTAS ON EXPORT MARKUPS BY PRODUCT END-USE CATEGORY**
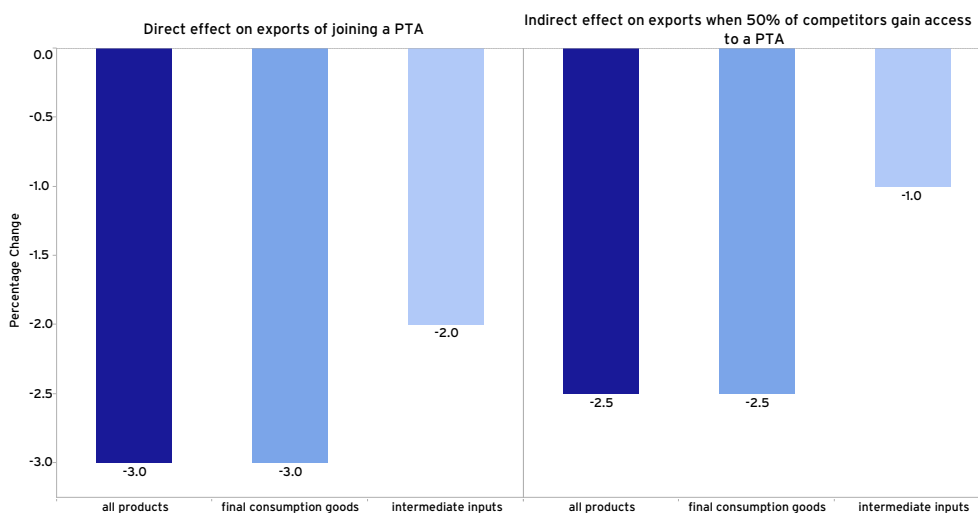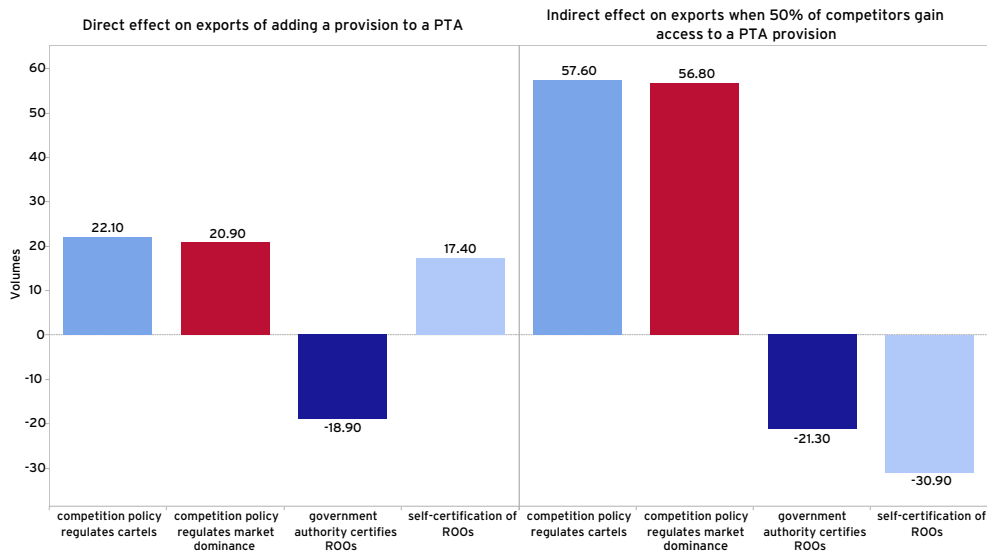


Notes: Bar height represents average percentage change in export markups from joining a PTA for 13 origin countries after controlling for firm-origin-product-year, destination-product-year and origin-destination fixed effects (left panel) and average percentage change in export markups when 50% of one's competitors gain access to a PTA with the destination (right panel) based on estimates from Table 3 (column 6, rows 1 and 3) and Table 8 (columns 1 and 2, rows 1 and 3) in Crowley et al. (2021).

## SPECIFIC PROVISIONS OF DEEP TRADE AGREEMENTS BOOST OR RETARD TRADE

Specific provisions of PTAs have a sizeable impact on the volume of trade. We augment the preceding analysis to include dummy variables related to precisely defined commitments in areas including competition policy and rules of origin.

We find that substantive commitments that prohibit or regulate anticompetitive behaviours are associated with higher trade volumes. See Figure 6.3. Commitments over competition policy capture whether or not an agreement prohibits or regulates (i) cartels or concerted practices and (ii) the abuse of market dominance. Inclusion of these commitments in a PTA increases the volume of trade by 22% and 21%, respectively (left panel of Figure 6.3). Further, when competing countries in a destination have committed to prohibiting cartels or regulating market dominance in their PTAs with the destination, this expands trade from non-member origins. If 50% of competitors have PTAs that include these commitments, export volumes from non-member origins grow an astounding 58% and 57%, respectively (right panel of Figure 6.3). In other words, the general practice of making a substantive commitment to competition policies is associated with higher trade volumes from all destinations.

**FIGURE 6.3    IMPACT OF PTA PROVISIONS ON EXPORT VOLUMES**



Notes: Bar height represents average percentage change in export volumes from adding a given provision to a PTA for 13 origin countries after controlling for firm-origin-product-year, destination- product-year and origin-destination fixed effects (left panel) and average percentage change in export volumes when 50% of one's competitors gain access to a PTA provision (right panel) based on estimates from Table 10 (columns 1 and 4) and Table 13 (columns 5 and 6) in Crowley et al.(2021)

To receive preferential, duty-free treatment under a PTA, an exporting firm must prove that its exported merchandise meets the agreement's rules of origin ('ROOs' in Figure 6.3). These rules typically require that a specific fraction of a product's value-added be produced within the member countries of a PTA or that a product undergo a 'substantial transformation' within the PTA's area. We focus on two distinct and mutually exclusive provisions regarding proof of origin. First, we analyse the impact of a provision under which only a government authority can provide documentation that proves origin. Second, we examine the impact of a less burdensome provision that allows a firm to self-certify that its exported goods meet the trade agreement's rules of origin.

When an exporter must have a government authority provide the necessary documents to prove that it meets a PTA's rules of origin, this reduces the volume of exports by 19% (see the third bar in the left panel of Figure 6.3). In contrast, permitting firms to self-certify the origin of their merchandise increases the volume of exports by 17% (see the leftmost panel of Figure 6.3). Most importantly, both rules-of-origin provisions are associated with reduced exports from non-members. When PTA members must obtain proof of origin from a government authority, the volume of exports from non-members declines by 21%. When the PTA offers privileged rules-of-origin tariff status through self-certification of origin, this reduces the volume of exports from non-member origins by an even larger amount – 31%. The difference between the indirect impacts of competition-policy provisions and rules-of-origin provisions could not be more stark – the exclusive

nature of rules-of-origin provisions depresses third-country trade. In sharp contrast, substantive commitments to competition seem to enhance economic integration by expanding the volume of trade from all countries.

## PRO-COMPETITIVE IMPACTS OF DEEP TRADE AGREEMENT PROVISIONS ON MARKUPS

While PTAs appear to be associated with lower markups overall, the picture gets more complicated when we turn to specific provisions related to competition policy and rules of origin. The inclusion of substantial commitments to prohibit or regulate anticompetitive practices yields real reductions in markups of 4%, regardless of whether the commitment is to limit cartels or market dominance (see the leftmost panel of Figure 6.4). A provision requiring that a government authority provide proof of origin is associated with a 7% higher markup, in line with the finding in Figure 6.3 that this provision reduces trade volumes. Interestingly, the third-country effects of rules-of-origin regimes with self-certification appear to be pro-competitive. See the rightmost panel of Figure 6.4. When 50% of competitors in a destination have a rules-of-origin provision allowing them easier market access via self-certification, this leads to a 3% reduction in markups from non-member origins. Altogether, these findings present a complex picture which highlights the important role of PTA provisions in facilitating or retarding competition.

**FIGURE 6.4      IMPACT OF PTA PROVISIONS ON EXPORT MARKUPS**
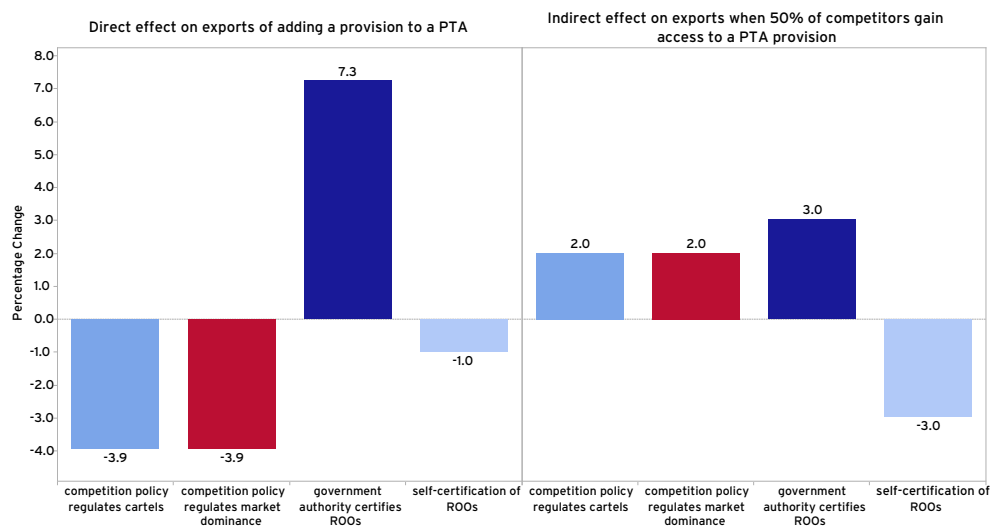


Notes: Bar height represents average percentage change in export volumes from adding a given provision to a PTA for 13 origin countries after controlling for firm-origin-product-year, destination- product-year and origin-destination fixed effects (left panel) and average percentage change in export volumes when 50% of one's competitors gain access to a PTA provision (right panel) based on estimates from Table 10 (columns 1 and 4) and Table 13 (columns 5 and 6) in Crowley et al.(2021)

## CONCLUSION

Our new study breaks ground by showing that pooling large, administrative datasets of firms' trade can generate new insights into the pro-competitive impact of deep trade agreements. Delving into the detailed trade policy commitments of all countries that have formed PTAs with a destination facilitates a better understanding of how these agreements stimulate or retard competition, thus leading to better guidance for future policy.

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# PROTECTIONISM AT THE BORDER AND BEYOND