Geographical Protections and Trade: Product-level Evidence from EU Agreements

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Abstract

Geographical protections (GPs) are enhanced trademarks based on the regional origins of products. Avid proponents such as the EU argue that foreign producers should not infringe on GPs, but current WTO rules are insufficiently clear to enforce national GPs across borders. While a contested issue in international policy circles, the trade impact of GPs is not fully understood. In this paper, I compile a unique product-level dataset from EU agreements with 31 countries that enforce EU GPs abroad and explore their effects on trade over the period 2005 to 2020. The analysis shows that the EU enjoys a significant boost in exports to its partner countries due to these arrangements, especially in products with higher numbers of negotiated cross-border GPs and low initial EU market shares. Whereas EU GPs do not lower exports of competing third countries, they lead to significant price increases, both for EU and third-country products.

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1 Introduction

Geographical protections (GPs), which identify a good as originating from a specific region, are a contested issue in international policy circles. The EU as the most forceful proponent argues that countries should be able to protect the name and likeness of certain products that are prominently associated with particular areas.[1] Other nations, such as the United States, take a more liberal view and consider many of these product names as generic, which should not be rewarded with any special protection. After failing to clarify the relevant passages in the WTO's TRIPS agreement during the Doha Round, the EU has taken matters into its own hands and negotiated a significant number of bilateral geographical protection agreements. Besides creating a fragmented system for GPs, differences in their treatment are increasingly hindering cooperation on other issues as several recent trade agreement negotiations have been complicated and/or delayed in part due to disagreements over geographical protections.[2] The opposition of the US and other countries is motivated by concerns that GPs will negatively affect their market shares. Moreover, successful EU GP policies could incentivize others to follow the same strategy, implying that an increasing share of world trade could become subject to a web of GP agreements.

Importantly, whereas GPs are contested, their actual impact on international trade patterns is not well understood. Cross-border GPs could increase EU exports, but GP labels might also not necessarily be recognizable to consumers and not change trade patterns at all. In this paper, I use the product-level information from all EU GP agreements to identify the trade effects of cross-border geographical protections. Focusing on HS 6-digit trade flows between 2005 and 2020, my empirical analysis uncovers that GPs have raised EU exports to partner countries, in particular in products with higher numbers of negotiated GPs and low initial EU market shares.[3] Whereas the evidence suggests that third countries have not suffered losses in their exports as a result of these EU agreements, cross-border GPs result in higher prices charged by both EU and non-EU exporters. Overall, these findings support the notion that effectively enforced GPs offer the issuing country a valuable advantage in foreign markets, which explains the EU's efforts to increasingly enshrine them in bilateral agreements outside the purview of the WTO. Intuitively, GPs can signal higher

[1] For instance, in the EU, only hard, granular cheese produced in the Italian provinces of Parma and Reggio Emilia can be called 'Parmesan.'

[2] Beattie (2019) and Collins (2022) provide examples for the EU-US and EU-Australia trade agreement negotiations; section 2 discusses this point in more detail. Josling (2006) analyzes the differences in the EU and US approaches toward GPs, and Peterson (2023) describes how GPs increasingly put a strain on the EU-US trading relationship.

[3] The HS 6-digit classification consists of about 5,000 products.

quality to consumers, leading to increased trade and higher prices for the protected products.[4]

A major challenge to identifying the trade impact of GPs in the past has been the absence of bilateral product-level data on cross-border GPs. Recent contributions have made progress in this regard and the present work builds on them. Raimondi et al. (2020) compile for the first time a complete dataset of the EU's geographical protections at the HS 6-digit level over the period 1996 to 2014. They find that a higher number of registered EU GPs increase exports of the bloc at the HS 6-digit level. However, Raimondi et al. (2020) only focus on the registration date of GPs in the EU, which only indicates the extent of their enforcement within the bloc but not abroad. Curzi and Huysmans (2022) examine the trade impact of GPs in 11 EU trade agreements of one specific product, cheese (HS code 0406). They find no significant increase in EU cheese exports subsequent to these agreements. My approach goes significantly further. I compile a list of all cross-border GPs (except wines) ever established by EU agreements and link this data to HS 6-digit product-level trade flows.[5] These agreements specify by name and EU country of origin the exact product varieties within an HS 6-digit code that are protected and cannot be sold by any other producers in the EU partner countries. My final data includes EU GP agreements with 31 countries.[6]

This paper adds to the existing literature in at least four ways. First, I exploit for the first time the complete product-level information from all bilateral EU GP agreements to date and determine the impact of cross-border GPs on trade flows. Second, I use a state-of-the-art PPML estimation framework that minimizes the risk of spurious estimates by adding a theory-grounded comprehensive set of importer-year-HS6, exporter-year-HS6 and importer-exporter-HS6 fixed effects. Previous studies only employ a subset of this fixed effects structure. Third, I explicitly examine the potential impact of EU GPs on third-country exporters. Lastly, to shed light on the potential heterogeneous GP impacts on EU trade, I explore the importance of the exact EU bloc definition for identifying GP effects on trade. I also trace the sources of EU GP effects on trade by considering distinct types of GPs, initial EU market shares, and industry-level estimates.

More broadly, this paper contributes to the literature that examines the impact of non-tariff

[4] Note that GPs also effectively limit competition as they establish an enhanced trademark in the respective importing countries, which is also in line with the estimated price increases for GP products.

[5] Wine GPs (HS 4-digit code 2204) have to be excluded from the analysis as the EU GP agreements only list region names but not which kind of wine is protected, which prevents matching the set of EU wine GPs to the appropriate HS codes in the trade data.

[6] There are several earlier contributions considering the impact of GPs on trade, but they either focus on (i) much more aggregate trade and GP definitions, (ii) intra-EU trade only, or (iii) specific products or EU members. Examples include Agostino and Trivieri (2014), Duvaleix-Treguer et al. (2021), Leufkens (2017) and Sorgho and Larue (2014, 2018). De Filippis et al. (2022) provide a meta-analysis of existing studies.

measures (NTMs) on trade. In their review of the trade impact of NTMs, Ederington and Ruta (2016) note as one of the biggest challenges that "the data on NTMs are highly incomplete and subject to measurement problems." Beyond considering a uniquely detailed collection of NTM data, the impact of cross-border GPs on trade as examined in this paper differs from existing studies in this area in two important ways. First, most NTMs targeting exports are meant to reduce trade, e.g., export taxes or quotas. The ultimate goal of GPs is to encourage exports, which makes their effects comparable to a (non-monetary) export subsidy. As export subsidies are mostly outlawed under WTO law, GPs offer a rare opportunity to study the effectiveness of an export policy attempting to boost trade. Second, the EU's GP agreements vary widely in product coverage across partners (see Table 1), making it a highly discriminatory policy. Most NTMs, such as product standards or customs procedures, are by definition applied in a non-discriminatory fashion. Hence, the EU GP data makes it possible to examine the implications of a discriminatory export-targeting NTM.

The literature on export promotion in the form of state-provided financial, marketing and technical assistance offers an interesting comparison for the empirical results in this paper. Lederman et al. (2010) find for a cross-country sample of 103 countries that a 10 percent increase in export promotion expenditures, on average, raises exports between .6 to 1 percent. Beyond aggregate trade effects, export promotion also helps firms to enter new markets, boost their sales and increase chances of survival (e.g., Volpe Martincus and Carballo 2008, Volpe Martincus and Carballo 2010, and Van Biesebroeck et al. 2016). But the evidence also suggests that maintaining increased export levels requires ongoing financial support (Cadot et al. 2016). The baseline estimates in this paper suggest that a 10 percent increase in the number of cross-border GPs in the average EU export sector with GPs raises bilateral EU exports by .57 percent at the product level.[7] Hence, the GP trade impact is similar in magnitude to the effects of export promotion. However, one major difference between GPs and more general export promotion policies is that the latter are not product-specific and therefore a less targeted policy instrument.

This paper also relates to the empirical trade literature that increasingly attempts to determine the effects of individual regional trade agreement (RTA) provisions. Breinlich et al. (2022) are first in using machine-learning methods to juxtapose the effects of individual agreement provisions on trade between preferential trading partners. They find that articles related to technical barriers to trade, antidumping, trade facilitation, subsidies and competition policies account for most of the

[7] The average number of GPs in EU export sectors with GPs is 13. Based on the point estimate in Table 5, specification (9) of .0044, a 10 percent increase in GPs boost exports by $10\% \times 13 \times .0044 = .57$ percent.

trade-enhancing effects of RTAs, indicating the importance of reducing NTMs for raising trade flows subsequent to these deals.[8] Studies in this literature generally conclude that agreements with more provisions boost trade by a greater magnitude than shallower trade deals. Importantly, however, none of the papers listed above considers the potential contributions of geographical protections. In the analysis below, I control throughout for RTA and WTO membership, ensuring that any GP impact on trade is in addition to general trade agreement effects.

While RTAs raise imports from partner countries, trade at preferential terms can also lower imports from third-country exporters. Existing studies mostly focus on the impact of tariff reductions on third countries, but non-tariff measures in RTAs are at least as relevant.[9] Mattoo et al. (2022) find that deeper trade agreements can raise exports for third countries as deep RTAs tend to lower certain NTMs for all exporters. Geographical protections in trade agreements are by definition discriminatory and are not likely to fit this pattern. The estimates in this paper suggest that EU GPs mostly lead to more EU exports without affecting third-country trade, but product prices charged by the EU and third countries both increase.

There are relevant policy implications that arise from the analysis. As shown for the EU case, GPs can be used to boost exports. Hence, other countries are incentivized to use similar strategies in the future. Without more clearly defined multilateral regulations the current patchwork of GP policies is likely to spread, with some countries pursuing a strategy similar to the EU and others insisting on having no GPs at all. More broadly, the increasing inclusion of GPs in RTAs raises the question to what extent these deals are compatible with WTO rules. Whereas preferential trade arrangements are compliant with WTO law as long as they eliminate most tariffs, the addition of NTMs such as GPs could lead countries to question the legality of some RTAs in the future. Acknowledging that GPs are an NTM that can change international trade dynamics is a necessary first step for countries to address the issue in the WTO or potentially other policy fora to minimize future conflict.

The next section provides an overview of the EU's geographical protection agreements. Section 3 discusses the empirical model, identification concerns and the necessary data. Section 4 presents the baseline empirical evidence linking product-level GPs to EU exports and examines the robustness of

[8] Other papers considering this question either group or aggregate provisions to circumvent multicollinearity problems. See, for example, Kohl et al. (2016), Mulabdic et al. (2017), Dhingra et al. (2018), Regmi and Baier (2020) and Falvey and Foster-McGregor (2022).

[9] For the impact of RTA tariffs on third countries see, for example, Crivelli (2016), Estevadeordal et al. (2008), Karacaovali and Limão (2008), Kuenzel and Sharma (2021), Limão (2006, 2007), and Saggi et al. (2018).

the results. Section 5 considers several extensions to the baseline framework, which help to identify the EU GP impact on third countries as well as the exact sources of the EU's trade gains due to GPs. Section 6 concludes.

2 EU Geographical Protection Agreements

The general purpose of geographical protections is to establish enhanced property rights for a product based on geographical characteristics. Specifically, the EU system protects products originating from particular regions that have certain qualities or whose reputation is linked to the area of production (European Commission 2022). The EU offers three different kinds of geographical protections: PDO (protected designation of origin) or PGI (protected geographical indication) for food and related products, and GI (geographical indication) for spirit drinks and aromatised wines. PDO requirements are strictest in the sense that every part of the production and preparation process for a product must take place in the specified region. A PGI label usually requires that only one stage in the production and preparation process takes place in the specified region. Whereas spirit drinks and aromatised wines are classified separately, the requirements to obtain a GI label are closer to the PGI category as only one of the stages of the distillation and preparation process needs to take place in the specified region.

Unless otherwise indicated, I use throughout the paper the term 'geographical protection' or 'GP' to refer to the combination of these three groups. Once a geographical protection has been registered with the EU, it applies within the bloc and EU member countries have to enforce that its respective domestic producers offer no products that could be falsely linked to the geographic reputation of the GP at hand. In addition, EU products with a GP carry a standardized label to signal to consumers their special status.

Importantly, EU GPs do not automatically receive special protection in countries outside the EU bloc. Whereas the WTO TRIPS agreement provides a 'standard' level of geographical protection for all goods (Article 22) and a 'higher or enhanced' level of geographical protection for wines and spirits (Article 23), the exact meaning of these definitions is up to debate in the world trading community (World Trade Organization 2022). Reforming and clarifying the TRIPS agreement's GP provisions was originally part of the Doha Round framework, but did not produce any tangible results. As of the end of 2023, GPs have been raised in six WTO disputes. Two of these disputes (DS174, DS290) were filed against the EU by the US and Australia, respectively. The complainants alleged that the GP registration system operated by the EU diminished the legal protection of trademarks and violated the national treatment clause.[10] In both cases, the WTO DSB sided with the complainants but both Australia and the US subsequently stated that the implemented changes in EU regulations were insufficient. The purpose of this paper is to examine whether and how geographical protections beyond the WTO TRIPS codification affect trade flows and product prices.

Without doubt, the European Union is the most forceful proponent of strong geographical protections among WTO members. Given the lack of multilateral progress on common GP standards, the EU has increasingly pursued the recognition of its geographical protections via formal bilateral accords. In fact, in all its recent and current trade agreement negotiations the EU has considered the inclusion of cross-border GPs a red line (Curzi and Huysmans 2022; Huysmans 2020). Moreover, the EU frequently advertises the recognition of its GPs by foreign countries as key success in trade agreement negotiations (European Parliament 2024). Failure to accommodate the EU's requests on GPs have repeatedly slowed down bilateral trade agreements negotiations or contributed to their breakdown. For instance, disagreements over the approach to GPs have been cited as one of the major reasons why TTIP negotiations with the United States stalled after 15 rounds in 2016 (Congressional Research Service 2020). Similarly, as of November 2024, GPs are cited as one of the last sensitive issues in the ongoing trade agreement negotiations between the EU and Australia with some Australian business groups calling GPs a "Trojan horse for European protectionism" (Moens and Lorenzo 2024). Local producers of competing products in EU partner countries also frequently express their disappointment with GP agreement polices as they often require product name changes that could hurt their companies' revenues.[11]

As of the end of 2023, the EU had in place stand-alone GP agreements or geographical protections as part of preferential trade deals with 31 countries (see Table 1).[12] The EU's early GP agreements were limited to alcoholic beverages (aromatised wines, spirits, wines) but the bloc's approach changed in the late 2000s with the breakdown of the Doha Round negotiations. Starting with the interim trade agreement with Montenegro in 2008, the EU has increasingly pursued the inclusion of agricultural products and foodstuffs as part of its GP deals. As shown in Table 1, the EU's GP arrangements now frequently cover more than a 1,000 products distributed across more than 100 HS

[10] The other four disputes (DS435, DS441, DS458, DS467) concerned plain packaging requirements for tobacco products in Australia.

[11] For instance, cheese makers in New Zealand have been very critical of the GP provisions in the EU-New Zealand Trade Agreement that went into force on 1 May 2024 (Marshall 2024).

[12] Note that Table 1 excludes three EU GP agreements that purely focus on wine: South Africa (18/01/2002), USA (10/03/2006) and Australia (09/01/2010).

6-digit categories. Note, however, that some of the more recent EU agreements do not follow this trend and include a more limited number of GP. For instance, the agreements with China (2021), Japan (2019) Singapore (2019) and Vietnam (2020) feature in each case 115 or less EU GPs.

The expansion of the EU GP agreements was accompanied with a substantial rise in EU exports in the HS 6-digit products with cross-border geographical protections: from 2.3bn USD in 2005 to 13.8bn USD in 2020. In addition, Figure 1 shows that the export share of HS 6-digit products with GPs in total EU exports in the respective HS 2-digit sectors with GPs (see Table 2) rose from 3.5 percent to 8.9 percent during the same time frame.[13] This paper sets out to answer the question to what extent the EU's GP agreements are responsible for this rise in EU exports in the affected product categories.

Although there is no comprehensive worldwide database on GPs, the available information suggests that the EU accounts for the vast majority of GPs around the world. In the Lisbon System, which is an international registry of GPs maintained by the World Intellectual Property Organization, 84.4 percent of all entries originate from EU members.[14] There are other countries that have started to employ GPs in trade agreements, but their approach is usually much more limited and does not follow a comprehensive strategy as in the EU case. For instance, the Association of Southeast Asian Nations (ASEAN) has created a registry of GPs in the region. However, these GP protections (i) are not uniformly enforced across ASEAN countries, (ii) frequently are infringed upon, and (iii) lack awareness among producers as well as consumers (Malik 2019). Moreover, there is only a small number of bilateral agreements without EU participation that mutually improve the protection of GPs in the member countries' jurisdictions. The Organization for an International Geographical Indications Network (oriGIn), an NGO promoting GPs, only lists six such bilateral agreements since 2003.[15]

For my analysis below, I obtain data on cross-border EU geographical protections directly from the respective agreement texts.[16] In the vast majority of cases, the agreements contain the specific EU products with their name and country of origin that receive geographical protection

[13] Figure A1 in Appendix A shows the export share of HS 6-digit products with GPs relative to all EU exports. While this share is lower, there is a substantial upward trend from .2 percent in 2005 to .7 percent in 2020. However, trade volumes alone do not always capture the importance assigned to NTMs by policy makers. For instance, over the sample period, only about four percent of EU imports were in HS 6-digit products with at least one anti-dumping tariff in place. Nonetheless, these measures are a much debated policy issue within and beyond the EU.

[14] The Lisbon Express database can be accessed at https://lisbon-express.wipo.int/struct-search?lang=en.

[15] See here for the full list: https://www.origin-gi.com/web_articles/bilateral-plurilateral-agreements/.

[16] For every EU GP agreement, Table B1 in Appendix B includes the link to the agreement text and the relevant page numbers listing the cross-border geographical protections.

status in the respective partner country. In the remaining cases, all of the EU's alcohol (EEA agreement) or food (Montenegro, Serbia) GPs are officially recognized. The empirical analysis below focuses on the impact of EU GPs on trade flows at the HS 6-digit level, which is the most detailed internationally comparable product classification across countries. To match the EU GP products from the agreement texts to HS 6-digit codes, I build on the work of Raimondi et al. (2020) who manually match all registered EU agricultural and food GPs from 1996 to 2014 to the HS classification at the 6-digit level. I expand and improve their database in three ways by (i) adding the corresponding HS 6-digit matches for EU GPs registered between 2015 and 2023, (ii) correcting some mismatches in the existing data, and (iii) including data for aromatised wines and spirits. Note that the updated Raimondi et al. (2020) data only provides information on GPs protected within the EU bloc. The key contribution of this paper is to link this information to EU GP agreement texts. My final dataset contains detailed information on cross-border GPs at the HS-6 digit-level for all EU GP agreements.

Note that EU GPs are generally defined at a more disaggregated level than HS 6-digit product lines, i.e., they are specific varieties of a HS 6-digit product. To match GPs to HS 6-digit codes, I always use the narrowest possible match. For instance, the EU-Japan GP agreement protects Italian 'Asiago' cheese in Japan. 'Asiago' falls under HS code 040690 (Cheese and curd: Other cheese). If various HS 6-digit categorizations are possible depending on the level of processing, I opt for the least processed version of a product. In Appendix B, I explain the GP/HS 6-digit matching procedure in more detail, list additional examples and provide results when using a wider categorization procedure of a GP into multiple HS 6-digit codes if several matches are possible. The estimates are in general very similar in that case, if not statistically more significant. Neither Comtrade nor EU-provided export data specifies what share of exports in a HS 6-digit category is accounted for by GPs. Moreover, it is uncertain how the actual enforcement of EU GPs varies across importers. The estimates below might therefore understate the impact of GPs on trade.

Table 1 shows that the coverage of EU GPs varies substantially across agreements and partner countries, from seven GP products and three HS 6-digit sectors with the United States to 1,545 products and 157 HS 6-digit sectors with Armenia. Table 2 lists the distribution of geographical protections across HS 2-digit industries for all EU GP agreements. In total, the EU agreements include 14,885 cross-border geographical protections. The vast majority of these EU GPs refer to animal products (HS02-HS05) with a count of 4,390, vegetable products (HS06-HS12) with a count of 2,595, animal or vegetable fats (HS15) with a count of 1,185, and prepared foodstuffs and beverages (HS16, HS17, HS19-HS22) with a count of 6,669. A small minority of EU GPs cover mineral products (HS25), chemical products (HS33) and textiles (HS51). Beverages, spirits and vinegar (HS22) is the leading HS 2-digit industry with 5,447 cross-border EU GPs, followed by dairy and other edible products of animal origin (HS04) with 2,424, and meat and edible meat offal (HS02) with 1,735. The analysis below exploits this rich variation of the EU GP agreement data across partner countries and products.

3 Empirical Approach

3.1 Model

The unique product-level EU GP agreement dataset allows me to precisely pinpoint the impact of the EU's cross-border GP policies on its own trade flows to partner countries. Specifically, following the latest theoretical and empirical strategies suggested in the gravity literature, I examine the evolution of EU exports at the product-destination level to countries with a GP agreement in place relative to observations without such an agreement. From a theory perspective, GPs are thought to stimulate demand in destination countries as consumers perceive goods with GPs to be of higher quality. Hence, consumers are willing to buy more of products with GP designations at the same price or a similar amount at higher prices, raising trade flows in either case. In Appendix C, I provide a more detailed discussion of this channel in a structural gravity framework.

To empirically determine the effects of EU GPs on trade, I follow a approach similar to Besedes et al. (2020) and estimate a product-level gravity equation:

$$ln(X_{ijp,t}) = \alpha EUGP_{ijp,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp} + \epsilon_{ijp,t} \quad , \tag{1}$$

where $X_{ijp,t}$ are bilateral exports of HS 6-digit product p from country j to country i in year t.[17] On the right-hand side of equation (1), $EUGP_{ijp,t}$ captures the presence of an EU GP measure for HS 6-digit product p at time t as agreed upon in a GP agreement with importer i when j is the EU. Below I use both (i) a binary measure to capture the extensive margin of the EU GP impact and (ii) a count measure to explore the importance of the intensive margin. Focusing on the binary case, $EUGP_{ijp,t}$ takes the value one if exporter j is the EU and at least one GP has been established via

[17] Yotov (2022) emphasizes the benefits of also including domestic trade flows in gravity estimations. Unfortunately, data on domestic trade flows at the HS 6-digit level are currently not available.

explicit agreement in HS 6-digit product p with importing country i that is in place during year t. Otherwise, either for exporters other than the EU or for EU export products that are not protected by a GP, $EUGP_{ijp,t}$ takes the value zero. The corresponding count measure for $EUGP_{ijp,t}$ captures instead the actual number of GPs in HS 6-digit product p during year t in importing country i when j is the EU. The α parameter in equation (1) then measures the average product-level impact of the EU's GP agreements on its export flows.

Note that in case of single GP agreement across multiple importers with a pure focus on the EU as only exporter, the estimate of α in equation (1) is equivalent to a triple-difference estimator as long as a saturated set of fixed effects is included (importer-post, importer-product, and product-post dummies).[18] Besedes et al. (2020) use this triple-difference approach to estimate the product-level impact of tariff phase-outs in NAFTA on US imports. The empirical specification in equation (1) goes further in several ways. First, I account for the EU's multiple GP agreements over time. That is, α captures the average EU GP effect across products over multiple agreements. Second, to eliminate potential endogeneity concerns, I follow Baier and Bergstrand (2007) and add country-pair-HS6 fixed effects: ϕ_{ijp}. This set of fixed effects ensures that the EU GP effects are not conflated with other country- and product-level factors that could be correlated with EU GPs, such as agricultural productivity or political connections of certain producer groups. Third, the model includes importer-year-HS6 and exporter-year-HS6 fixed effects, $\gamma_{ip,t}$ and $\omega_{jp,t}$, respectively, to account for product-level gravity multilateral resistance (Anderson and van Wincoop 2003). Including these sets of fixed effects requires adding non-EU export flows in the estimation below. Lastly, I examine in the analysis to what extent the EUGP estimate in equation (1) differs between aggregate EU export measures and individual EU country export flows.

In the empirical implementation, I make two adjustments to the model in equation (1). First, I estimate the model using the Poisson Pseudo Maximum Likelihood (PPML) estimator. As shown by Santos Silva and Tenreyro (2006), the PPML approach can account for heteroskedastic trade flows and the presence of zero trade observations. In the PPML context the presence of a large number of fixed effects poses a substantial computational challenge. I therefore use the PPML procedure developed by Correia et al. (2020). Second, to capture anticipatory and delayed responses of trade flows to EU GPs, I account for one-, two-, and three-year lags and leads of the EUGP

[18] Alternatively, α can be interpreted in this case as the difference between the following two difference-in-difference estimators: (1) the change in EU exports of GP products to partner countries versus the change in EU exports of non-GP products to partner countries and (2) the change in EU exports of GP products to non-partner countries versus the change in EU exports of non-GP products to non-partner countries.

measure, which has been suggested as standard practice in the gravity literature (e.g., Egger et al. 2022). For instance, many of the EU GP agreements do not take effect until the second half of the year, implying that the contemporaneous impact on trade flows could be subdued. Similarly, importing countries might already take legislative actions before any GP agreement officially takes effect. Moreover, exporters could already adjust their goods deliveries before any GP agreement start date in order to comply early with the new legally enforceable GP rules.

The full baseline empirical model that I estimate then becomes

$$X_{ijp,t} = exp\left[\alpha EUGP_{ijp,t} + \sum_{s}^{3} \alpha_s EUGP_{ijp,t+s} + \sum_{k}^{3} \beta_k EUGP_{ijp,t-k}\right] \times exp\left[\theta Z_{ij,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp}\right] \times \epsilon_{ijp,t} \quad , \tag{2}$$

where the vector $Z_{ijp,t}$ captures additional control variables that vary at the importer-exporter-year level and could potentially be correlated with the EU GP measures and their effect on trade flows. First, I add the binary variable $RTA_{ij,t}$ that takes the value one if importer i and exporter j have a regional trade agreement in place at time t, and zero otherwise. As many of the EU GP agreements are part of bilateral RTA deals (Table 1 indicates which GP agreements are part of RTAs), the presence of the RTA variable ensures that the GP measures do not pick up any trade effects that are actually due to more general RTA policies. To account for RTA effects potentially varying by product group, I interact the RTA variable with HS2-digit fixed effects. Second, I include the binary measure $bothWTO_{ij,t}$, which takes the value one if importer i and exporter j are both members of the WTO at time t. The WTO's TRIPS agreement provides general protections for GPs and the omission of a WTO membership control could potentially bias the EUGP estimates.

If EU GP agreements serve the purpose of stimulating trade, we should expect that the composite of the α and β parameters in equation (2) is positive, $\alpha + \alpha_1 + \alpha_2 + \alpha_3 + \beta_1 + \beta_2 + \beta_3 > 0$. Otherwise, if GPs are an ineffective strategy to encourage exports, the sum of the α and β parameters should be zero or even negative.

3.2 Data

I estimate the model in equation (2) at three distinct EU aggregation levels to examine if the results differ based on the bloc's member countries. First, I consider an EU aggregate ('EU') that combines the trade flows and GPs of all EU member countries at a given point in time. The second EU definition focuses on the aggregate of the 15 EU countries ('EU15') that have been members since

1995, which has the advantage of keeping the composition of the EU aggregate constant over time. Lastly, I estimate the model by including the trade flows and GPs of the individual EU member countries ('Ind. EU'). The latter approach allows me to distinguish whether any potential GP effects are driven by the actions of individual EU countries or by the influence of the EU bloc as a whole.[19]

Depending on the time frame and country pairs one considers, estimating the empirical model in equation (2) at the HS 6-digit level (about 5,000 products) could easily involve hundreds of millions of observations, which would render the model inestimable for practical purposes, especially in the presence of many fixed effects. I therefore impose two reasonable restrictions on the sample. First, I exclude observations from HS 2-digit industries that have never been included in a EU GP agreement (see Table 2 for the distribution of EU GPs across HS 2-digit industries). Second, I restrict the set of importers to the EU's GP agreement partners (see Table 1) and other important EU export destinations in the affected HS 2-digit industries (Algeria, Australia, Brazil, Egypt, Hong Kong, Israel, Morocco, Nigeria, Russia, Saudi Arabia, Turkey, United Arab Emirates).[20] Overall, these importers account for over 80 percent of EU exports in the HS 2-digit categories included in EU GP agreements. Note that the focus of this paper is to evaluate the effectiveness of GPs on EU exports, and therefore the sample does not include EU import flows. Table A7 in Appendix A shows all countries included in the empirical analysis.

The first EU GP agreement that considers HS codes beyond spirits (and wines) entered into force in 2008. The analysis therefore focuses on trade flows between 2005 and 2020. Moreover, the EU's largest expansion took place in 2004, which added 10 new member countries and could potentially affect the GP estimates of the 'EU' and 'Ind. EU' samples. Restricting the sample to 2005 onward minimizes this possibility.[21] I use the CEPII's BACI HS 6-digit bilateral trade data set (CEPII 2022) in the HS2002 nomenclature, which applies a statistical procedure to give more weight to either importer- or exporter-reported data in Comtrade depending on the estimated reliability of the importer and exporter in question (including adjustments for f.o.b. and c.i.f. differences). Having a systematic procedure to account for mirror data is an advantage for my analysis, which involves a wide variety of countries, including many developing economies. To generate the 'bothWTO' variable, I use information on WTO accession dates from the WTO homepage (www.wto.org). Data

[19] The specifications with individual EU countries below do not include intra-EU trade flows, but the GP estimates are virtually identical when accounting for trade among EU members. These estimates are available upon request.

[20] Table A2 in Appendix A presents the baseline results with an unlimited importer sample. The estimates are very similar to those in Table 4 and Table 5.

[21] In line with Brexit modalities, I treat the United Kingdom as part of the EU's trade bloc until the end of 2020.

on RTA formation dates and member countries for the 'RTA' variable come from Mario Larch's updated Regional Trade Agreements Database used in Egger and Larch (2008).

Table 3 lists definitions and summary statistics for all variables in the three samples based on the respective EU definition: 'EU,' 'EU15,' and 'Ind. EU.' Focusing on the 'EU' sample, 10,637 out of the total 7,839,129 observations at the HS 6-digit are subject to at least one EU GP (.14 percent). The actual number of EU GPs within these products varies widely, which motivates the use of a count measure below to capture the impact of the intensive margin of EU GPs. Figure 2 shows that only 23.7 percent (2,523 out of 10,637) of these HS 6-digit sectors have a single EU GP. The majority of the affected products is subject to between two and 10 EU GPs. The remainder features at least 11 EU GPs, with 790 out of the 10,637 (or 7.4 percent) HS 6-digit sectors having more than 50 EU GPs. The maximum EU GP count in an HS 6-digit sector is 255. With regard to third-country exporters, 2.1 percent of HS 6-digit products in the sample feature a non-EU exporter that has to compete in a sector with EU GPs.

The average HS 6-digit export value in a given year in the 'EU' sample is slightly above 1.2 million USD. However, about 54 percent of all HS 6-digit sectors have zero trade flows, highlighting the importance of using the PPML estimator. 87.6 percent of observations feature importers and exporters that are WTO members, whereas about 39.5 percent are also members of an RTA. The summary statistics are similar for the 'EU15' and 'Ind. EU' samples. Naturally, the GP count and trade measures are slightly smaller in the latter two samples due to the lower number of considered EU members ('EU15') or the focus on individual EU members ('Ind. EU'), respectively.

3.3 Identification

There are two potential issues when attempting to estimate the impact of EU GPs on trade flows. The first major concern is the presence of other policy changes in trade agreements that take effect at the same time as EU GPs and therefore could affect the EUGP coefficients in equation (2) due to omitted variable bias. The inclusion of HS 2-digit specific trade agreement dummies throughout below intends to account for this channel. In addition, I consider in the analysis the robustness of the estimated EU GP effects when controlling for bilateral tariffs, the presence of non-tariff measures and RTA depth. The EU GP estimates remain remarkably stable in all cases.

Second, certain market features could be important determinants of which GPs become subject to an agreement in the first place, leading to reverse causality concerns. Huysmans (2020), for instance, notes that GPs with high overall sales volumes and GPs from Southern EU members are more likely to be included in EU trade agreements. Similarly, the size of destination markets themselves or the extent of existing EU exports of a given product could play a major role for EU members to insist on formal GPs in EU agreements, e.g., due to the presence of lobbying pressures from EU producers. The extensive fixed effects structure, including at the importer-exporter-product level, alleviate these concerns to a large extent. However, I examine below whether markets with higher EU import shares prior to EU GPs taking effect experience greater increases in EU exports subsequent to the implementation of GPs. Larger trade increases in these destinations would indicate potential reverse causality issues. In fact, the estimates suggest the opposite. EU GPs lead to greater increases in EU exports to partners where initial EU market shares are low. In addition, I also show that cross-border EU GPs in products that account for a larger share of the EU's overall exports are not experiencing more substantial trade increases subsequent to GPs relative to less important EU export products. Hence, more important products for EU exporters, as measured by their export share, are neither driving the results.

Lastly, the presence of exporter-year-product fixed effects accounts for the exact registration date of new GP's in the EU's official geographical protections register (eAmbrosia), which offers official protection only within the EU bloc.[22] Therefore, the effects of EU GPs anchored in international agreements on trade will not be confounded with any impact that could purely arise from a product's new GP registration within the EU, e.g., due to new marketing strategies by producers after the successful entry into the official EU registry.

4 Results

In this part, I present the baseline results in two steps. First, I focus on estimates of the model in equation (2) that only consider the 'EUGP' variables to establish the baseline impact of the EU's product-level GP agreements on its exports to partner countries. In the second step, I then examine the robustness of the estimates to controlling for the previously discussed identification concerns. Specifically, I consider whether the (i) importance of a given destination market drives the results or (ii) other policy variables that could be correlated with GPs affect the estimates.

[22] Non-EU GPs can only be registered in Ambrosia if the country of origin has an agreement with the EU that includes the mutual protection of such names. At the same time, the EU only includes GPs of its members in cross-border agreements that can be already found in Ambrosia.

4.1 Baseline Estimates

Table 4 starts out by focusing on the binary 'EUGP' definition. Note that the standard errors are clustered throughout at the importer/exporter/HS 4-digit level and reported in parentheses, which accounts for trade flows and EU GP choices potentially being correlated over time at this aggregation level, respectively.[23] Column (1) first reports results for the 'EU' sample when regressing bilateral imports at the HS 6-digit level on the contemporaneous values of the 'EUGP' measure in addition to the RTA, WTO and fixed effects controls. The 'EUGP' coefficient is positive but not statistically significant at conventional levels. At the same time, in line with expectations, WTO membership has statistically significant (at the one percent level) positive effects on trade. To conserve space, I do not report the RTA/HS2-digit interaction estimates but they are available upon request.[24] Overall, the results are similar when considering the 'EU15' and 'Ind. EU' samples in columns (2) and (3), respectively. Hence, the simple presence of a contemporaneous GP, i.e., the extensive GP margin, does not seem to raise EU trade flows to the affected importers.

Note that columns (1) and (2) consider two distinct GP aggregates for different EU member groups, whereas column (3) only considers the impact of an individual EU member's GPs on its own exports. However, establishing a GP in the importing country could affect EU trade more broadly beyond the region that is producing the product fitting the exact GP characteristics. Existing domestic firms or firms outside the EU that use this product's name are banned from the market. As a result, other firms can fill this void. Since firms from other EU countries are very familiar with the EU GP system, they now also have an opportunity to increase sales as the destination market more closely resembles competition conditions within the EU. Moreover, exports from EU countries with GPs might be routed in some cases through other members. Focusing again on the 'Ind. EU' trade sample, column (4) therefore now includes the 'EU' GP aggregate from column (1) which now takes the value one for each individual EU exporter if any member of the bloc has a protected GP for the HS 6-digit product in the importing country at hand.[25] The estimate in column (4) substantially increases and turns positive compared to specification (3). However, the impact of 'EU' bloc GPs on individual members exports is not statistically significant at conventional levels.[26] More

[23] In the 'Ind. EU' sample, I treat all EU members as a single exporter for clustering purposes. The results are nearly identical when clustering standard errors instead at the exporter level independent of EU membership status. These estimates are available upon request.

[24] Table A1 reports the baseline estimates from Table 4 and Table 5 using a single binary RTA control. The RTA estimates are positive and significant in all specifications. More generally, the results with an aggregate RTA variable are very similar throughout to the estimates reported below.

[25] The results are similar when using instead the 'EU15' GP aggregate from column (2).

broadly, the more positive impact of the 'EU' GP aggregate on individual EU members' exports indicates that the spillover effects of GPs on EU firms producing a similar good but not the actual GP product could be crucial in generating a positive trade response.[27]

As discussed earlier, the gravity literature increasingly emphasizes the importance of accounting for anticipatory and delayed responses of trade flows to policy changes. Columns (5) through (8) in Table 4 therefore follow the same structure as before but add three-, two-, and one-year leads and lags of the respective GP variables as outlined in equation (2). The row 'EUGP Impact' reports the sum of the contemporaneous, lag and lead estimates ($\alpha + \alpha_1 + \alpha_2 + \alpha_3 + \beta_1 + \beta_2 + \beta_3$), and therefore captures the complete effect of EU GPs on trade flows. Two changes emerge relative to the the purely contemporaneous GP estimates in columns (1) through (4). First, once lead and lag effects are taken into account, the GP impact on trade in the 'EU' sample in column (5) becomes substantially more positive and statistically significant at the five percent level. The coefficient of .2281 indicates that EU exports increase, on average, by 25.6 percent ($= e^{.2281} - 1$) in HS 6-digit products due to the presence of one or more cross-border GPs. Second, in column (8), the magnitude and statistical significance of the 'EUGP' measure on individual EU member exports also increases. Taking into account the dynamic effects, an EU-wide GP in an HS 6-digit product raises, on average, exports of any member by 26.2 percent ($= e^{.2329} - 1$). This effect is again statistically significant at the five percent level. However, even when considering dynamic GP impacts, no significant trade effects from EU GP agreements can be detected in the 'EU15' and 'Ind. EU' specifications in columns (6) and (7). The results in specifications (7) and (8) therefore support the notion that GPs of the EU as a whole are more relevant for an individual EU member's exports than their own GPs. Overall, the binary GP estimates in Table 4 offer some evidence that EU GP agreements raise trade flows of the EU as a whole and of its individual member countries. But this result is sensitive to which exact EU definition, in terms of both the trade and GP aggregations, is applied.

Table 1 and Figure 2 show that the distribution of EU GPs varies greatly across partners and within HS 6-digit products. To account for this fact, Table 5 replaces the respective binary EU GP measures by the corresponding EU GP count variables that record the frequency of GPs that the EU (or its individual members) protect via a formal agreement with a specific importer in a given HS 6-digit sector. The count measures have the advantage that they can capture the impact of

[26] The results in column (4) are similar when simultaneously including the 'Ind. EU' GP measure from column (3). These results are available on request.

[27] For example, according to the Consorzio del Prosciutto di Parma (2024), there are only 131 'Parma' ham producers in Italy compared to a total of 60,494 meat processing firms in Europe (IBISWorld 2024).

the intensive GP margin on trade, i.e., the number of EU GPs and not only their presence per se. Following the same structure as in Table 4, column (9) in Table 5 focuses on the 'EU' sample and regresses trade at the HS 6-digit level on the contemporaneous 'EU' GP count variable. The 'EUGP' coefficient is positive and statistically significant at the one percent level. The estimate of .0044 indicates that for each additional cross-border GP the EU's exports in the affected HS 6-digit sector increase by .44 percent ($= e^{.0044} - 1$) to the respective importer. In EU export sectors with GPs the average number of geographical protections is close to 13, which implies an average increase in EU exports due to GPs of $.44 \times 13 = 5.7$ percent. When moving from the 10th percentile in the EU GP count variable (one GP) to the 90th percentile (30 GPs) the increase in sectoral exports for the EU even amounts to: $.44 \times 29 = 12.8$ percent.

Different from Table 4, the GP count variable coefficient is now also positive and statistically significant (at the five percent level) in the 'EU15' sample in column (10) of Table 5. The magnitude of the GP count effect is remarkably similar to the 'EU' sample in specification (9). At the same time, the GP count estimate for the 'Ind. EU' sample in column (11) of Table 5 remains statistically insignificant. In specification (12), I therefore regress again trade in the 'Ind. EU' sample on the 'EU' GP count measure that captures the number of geographical protections for all EU members and not only those of the individual member at hand. Similar to specification (4) in Table 4, the 'EU' GP count measure in column (12) has a substantially more positive effect on individual members' exports compared to the 'Ind. EU' GP estimate in specification (11). Moreover, the 'EU' GP count measure coefficient in column (12) is statistically significant at the one percent level. As the coefficient magnitude is close to the 'EU' and 'EU15' samples in columns (9) and (10), the economic significance of EU GPs is very similar across the different EU bloc definitions. Note that the bothWTO estimates are virtually identical throughout Table 5 compared to Table 4.

To account for anticipatory and delayed effects of EU GPs, specifications (13) to (16) re-estimate again the four earlier specifications in Table 5 by adding the respective three-, two-, and one-year leads and lags of the GP count variable. The results are very similar to the purely contemporaneous results in specifications (9) to (12). Except for column (15), the EU GP count variables together have a statistically significant (at the one percent level) impact on EU exports at the HS 6-digit level in all three samples. The magnitude of the composite EU GP effect from the dynamic specifications is about twice as high than in the pure contemporaneous models, suggesting that the latter underestimate the economic importance of geographical protections. Moreover, in both Table 4 and Table 5, the largest positive GP effects are driven by the 3-year lag terms, indicating that the full trade effects of geographical protections take some time to unfold. Going forward, I therefore include leads and lags of the 'EUGP' variable in all specifications. Importantly, the results in Table 5 show that the intensive margin of geographical protections in bilateral agreements is a major driver of any boost in EU exports due to cross-border GPs.[28]

The results in Table 4 and Table 5 are robust to a number of reasonable alternative specifications. Table A3 in Appendix A shows that separately accounting for EU RTAs and non-EU RTAs (interacted with HS2-digit fixed effects) leaves the results unchanged. Piermartini and Yotov (2016) suggest to estimate gravity models by skipping years to ensure non-spurious results. In Table A4, I present results when only considering data from every second year. The estimates are very similar compared to earlier. Switching to 3-year intervals leads to the same conclusion – these results are available upon request. Lastly, accounting also for leads and lags of the RTA and bothWTO variables in Table A5 does not affect the EU GP effects either.

4.2 Robustness to Identification Concerns

4.2.1 The Role of EU Import Shares

One major concern for interpreting the above EUGP estimates is reverse causality due to pre-existing market conditions in importing countries. Specifically, a substantial import share of EU products prior to the implementation of GPs could indicate that consumers in the destination market were already drawn towards EU products. The positive EU GP estimates could then be due to reverse causality. To examine this possibility, I consider in this part the trade response to EU GPs based on the magnitude of prior EU market shares. For each importer-product pair with a EU GP, I first compute the average EU import share in the three years preceding the year when the EU GP is first observed. I then split the existing EU GP measures (binary and count) into two separate variables: 'EUGP High' and 'EUGP Low.' The original EU GP observations are assigned to the former variable if the three-year average EU import share exceeds the median value across all HS 6-digit sectors with an EU GP. For instance, in the 'EU' sample, the median of the three-year average import share preceding an EU GP is 43.4 percent. If the initial average import share is above this number, the 'EUGP' observations are assigned to the 'EUGP High' category. Similarly, if the preceding average import share is at or below the median value, the 'EUGP' observations are sorted into the 'EUGP Low' category. I then re-run the baseline regressions in Table 4 and Table 5 by replacing the

[28] Comparing the binary and count specifications (5) and (13), the count threshold that results in a similar trade effect as in the binary case is 29 EU GPs: $.256/(e^{.0087} - 1) = 29.3$.

respective EUGP measure with the corresponding 'EUGP High' 'and 'EUGP Low' variables.

Table 6 reports the results when focusing on the dynamic specifications that include three leads, three lags and the contemporaneous value of the respective EUGP variables. Focusing on the binary EUGP measures in columns (17) through (20), two key results emerge. First, the composite impact of the 'EUGP High' measures is statistically indistinguishable from zero in all cases. That is, GPs do not boost EU exports in sectors where the EU or its individual members already account for a substantial share of the import market. Second, EU members experience throughout a highly significant (at least at the one percent level) boost in their exports in sectors with initially low EU import shares when at least one GP is in place. The marginal impact on trade of GPs in sectors with initially low EU import shares is estimated to be between 50.5 ($= e^{.4085} - 1$) and 117.2 ($= e^{.7755} - 1$) percent. The bottom of Table 6 reports the respective p-value for testing the equality of the 'EUGP High' and 'EUGP Low' composite effects. In all four cases, the equality of the 'EUGP High' and 'EUGP Low' estimates is rejected at least at the 10 percent statistical significance level.

Specifications (21) to (24) focus instead on the decomposition of the EUGP count variable in Table 5 into the corresponding 'EUGP High' and 'EUGP Low' count measures. A similar pattern emerges as in the binary specifications in the first four columns. Whereas two out of the four 'EUGP High' count measures have a statistically significant positive impact on EU exports, all four 'EUGP Low' estimates have again a larger magnitude than their 'EUGP High' counterparts. Moreover, in two of the four cases the equality of both sets of estimates can again be rejected at least at the 10 percent level of statistical significance. Hence, both the binary and count EUGP results indicate that EU GPs are substantially more effective in stimulating trade in sectors and countries that initially feature relatively little trade with the EU. The EU GP effects estimated above are therefore not driven by reverse causality due to higher initial EU market shares.

I also investigated whether HS 6-digit products with EU GPs that initially account for a higher share of total EU exports in the product at hand show larger trade effects than their counterparts with initially lower shares of total EU exports. If products with higher initial EU export shares showcase larger EU GP trade effects, the baseline EU GP estimates could be driven by selection bias, e.g., due to lobbying for the inclusion of certain GPs into bilateral agreements from large industry groups. Table A6 in Appendix A shows these results. In all specifications, we cannot reject at conventional statistical significance levels the hypothesis that the trade impact of EU GPs is identical in products with high and low initial EU export shares. Hence, neither larger initial import nor export shares for EU producers are driving the positive EU GP effects on trade.

4.2.2 Controlling for Additional Policy Variables

Another potential issue for identifying the effects of GPs on trade is the omission of other policy variables that could be correlated with the former. In this part, I account for three additional factors that could affect trade flows on their own and might be correlated with the EU GP measure: (i) product-level bilateral tariffs, (ii) product-level NTM stocks and (iii) the depth of countries' RTA agreements. Note, however, that controlling for additional policy variables could introduce bias into the estimation if these regressors suffer from measurement error or selection issues. I obtain bilateral tariffs at the HS 6-digit level from the TRAINS database (UNCTAD 2024b). If bilateral tariffs are not available in TRAINS for a given year, I use tariff data from neighboring years. Any remaining gaps are filled using MFN tariff data if the importer and exporter are WTO members and have no RTA.

To control for the presence of NTMs, I use importer-specific product-level NTM data from the UNCTAD TRAINS Portal (UNCTAD 2024a). The UNCTAD researchers record and classify countries' NTMs into 16 separate categories at the HS 6-digit level and provide in each case a short description. Importantly, the UNCTAD data provides information on when an NTM was first implemented and, if applicable, when it was rescinded. Using the UNCTAD data, I construct a count measures at the importer-HS6-year level that records the numbers of NTMs that a given importer has in place during a given year.

Lastly, while data on product-specific provisions of RTAs are not available, I use an RTA depth measure to control for the breadth of bilateral trade agreements. I obtain detailed data on trade agreement provisions from Hofmann et al. (2017). Their data maps, in a binary fashion, 52 provisions for all RTAs notified to the WTO. I follow the standard approach in the literature (e.g., Mattoo et al. 2022) and simply add up the number of included agreement provisions and divide by 52 to obtain a RTA depth measure at the importer-exporter level. That is, the RTA depth of an agreement can range between 0 and 1, with larger values indicating greater RTA depth. In some cases, when a pair of countries is covered by more than one agreement, I take the maximum depth count among the available agreements. Table 3 provides summary statistics for these additional three variables in the 'EU', 'EU15' and 'Ind. EU' samples.

Table 7 presents result when adding bilateral tariffs ('Tariff'), the importer's product level NTM stock ('NTM Count') and 'RTA Depth' to the baseline regression specifications in Table 4 and Table 5. Note that Table 7 purely focuses on the specifications that account for the dynamic effects of EU GPs. Two key results emerge. First, none of the three newly introduced policy variables have a statistically significant effect on their own on bilateral trade flows. Second, the estimated total EU GP impact on trade remains very similar to the baseline estimates in Table 4 and Table 5, both in terms of magnitude and statistical significance. Hence, the estimates support the notion that the EU GP effect on trade is not due to conflation with other policy measures.

5 Extensions

In this part, I consider four extensions to the baseline analysis. First, I examine the trade effects of cross-border geographical protections for EU products on third-country exporters. Second, I analyze the impact of EU GP agreement provisions on export prices in both EU countries and third countries. Third, I examine how different kinds of geographical protections affect trade flows. Specifically, it has been argued in the literature that PDOs should disrupt trade flows more than other kinds of GPs (e.g., Duvaleix-Treguer et al. 2021). Finally, I provide industry-specific estimates of the EU GP effect on trade.

5.1 Third-country Effects of EU GPs

5.1.1 Trade Effects

To measure the potential trade effects for third-country exporters of products with EU GPs in a given importing country, I modify equation (2) to include a second group of GP variables:

$$
\begin{aligned}
X_{ijp,t} = exp & \left[\alpha EUGP_{ijp,t} + \sum_{s}^{3} \alpha_s EUGP_{ijp,t+s} + \sum_{k}^{3} \beta_k EUGP_{ijp,t-k} \right] \\
\times\ exp & \left[\kappa EUGPthird_{ijp,t} + \sum_{s}^{3} \kappa_s EUGPthird_{ijp,t+s} + \sum_{k}^{3} \lambda_k EUGP_{ijp,t-k} \right] \\
\times\ exp & \left[\theta Z_{ij,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp} \right] \times \epsilon_{ijp,t} \quad ,
\end{aligned}
\tag{3}
$$

where $EUGPthird_{ijp,t}$ captures the impact of EU GPs on non-EU exports in HS 6-digit product p from country j to i in year t. The model also accounts for leads and lags of the 'EUGPthird' measure to capture dynamic effects.

In the binary case, $EUGPthird_{ijp,t}$ takes the value one if the EU and importer i have established at least one geographical protection via an official agreement in product p that is in force during year t. Otherwise, $EUGPthird_{ijp,t}$ takes the value zero. Importantly, I set $EUGPthird_{ijp,t}$ to zero as well if (i) the exporter is the EU or (ii) the third-country exporter has itself a GP agreement in place with the EU for product p during year t. The latter restriction is imposed as countries being already subject to EU GP rules in the same product will face no adjustment costs in exporting to the country with new GP restrictions (as they already comply with EU GP rules). Moreover, this constraint makes it possible to actually identify the 'EUGPthird' impact. Otherwise, the sum of the 'EUGP' and 'EUGPthird' variables would be perfectly collinear with the respective importer-year-product fixed effect for the country that has a GP in said product and year with the EU. The $EUGPthird_{ijp,t}$ variable then captures the trade effects of EU GPs for third countries without domestic exposure to EU GPs relative to countries with EU GPs in their home markets.

Similar to the case of the 'EUGP' measure, I use below both a simple binary 'EUGPthird' variable and a count measure. The latter accounts for the actual number of GPs the EU has established with importer i in product p during year t to capture the impact of the intensive margin of EU GPs on third-country exporters. If EU GPs lower exports of competing third countries, the composite estimate of the κ and λ parameters, $\kappa + \kappa_1 + \kappa_2 + \kappa_3 + \lambda_1 + \lambda_2 + \lambda_3$, will be negative. Otherwise, if EU GPs are not depressing third-country exports, this composite effect will be zero or even positive.

Implementing the model in equation (3), the left panel in Table 8 uses binary 'EUGP' and 'EUGPthird' variables, whereas the right panel presents results using the corresponding count measures. The four specifications in the left panel follow the previous sample structure. Two results emerge. First, EU GPs have mostly statistically insignificant effects on third-country trade flows to EU partner countries. Only the 'Ind. EU' sample and GP aggregate in specification (35) shows a statistically significant (at the one percent level) negative effect for third countries. Hence, third countries without domestic exposure to EU GPs do not seem to fare significantly worse in their exports relative to countries with EU GPs in their home markets. Second, compared to Table 4, the binary EU GP effects for EU exports are not statistically significant anymore in specifications (33) and (36). This change in results is likely due the relatively high correlation of $-.48$ (conditional on the included fixed effects) between the 'EUGP' and 'EUGPthird' variables, which increases the imprecision of the estimates.

When considering the corresponding count specifications in columns (37) to (40) in Table 8, the same pattern emerges for the the third-country trade effects as in the binary case. Only the 'Ind. EU' sample and GP count aggregate in specification (39) show a statistically significant (at the one percent level) negative effect of EU GPs on third-country exports. However, different from the binary specifications, the count specifications still show statistically significant (at least at the 10 percent level) effects of GP counts on EU exports. Overall, the evidence in Table 8 suggests that sales of non-EU exporters are mostly not adversely affected by the EU's push to include more GPs in bilateral agreements. Whereas importers that grant a higher number of formal GP protections to the EU spend more on goods originating in the latter, they mostly avoid doing so at the cost of third-country exporters.

5.1.2 Price Effects

In addition to their impact on trade flows, EU GP agreements could also affect the pricing decisions of EU and non-EU exporters. Specifically, geographical protections could be a potential signal of higher quality to consumers in importing countries and potentially also reduce competition through their significance as an enhanced trademark. As a result, EU exporters with GP protections might be able to sell their products at higher prices than before a GP agreement took effect. At the same time, non-EU exporters could either respond by upgrading the quality of their own products and also increase prices, or by lowering quality and selling their products at lower prices to compete. In this part, I examine to what extent the EU's GP agreements affect these choices.

To measure prices, I use the the available trade flow and quantity information in the CEPII (2022) data to construct unit values. Higher unit values indicate higher-priced products, whereas lower unit values are a proxy for lower prices. Naturally, as unit values are not defined when trade flows are zero, these observations are excluded from the analysis in this part. Given the absence of zero values for the dependent variable (Price), I estimate a log-linear version of the model in (3) using ordinary least squares:

$$
\begin{aligned}
log\left(P_{ijp,t}\right) = {} & \alpha EUGP_{ijp,t} + \sum_{s}^{3} \alpha_s EUGP_{ijp,t+s} + \sum_{k}^{3} \beta_k EUGP_{ijp,t-k} \\
& + \kappa EUGPthird_{ijp,t} + \sum_{s}^{3} \kappa_s EUGPthird_{ijp,t+s} + \sum_{k}^{3} \lambda_k EUGP_{ijp,t-k} \\
& + \theta Z_{ij,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp} + \epsilon_{ijp,t} \quad ,
\end{aligned} \tag{4}
$$

where the dependent variable, $P_{ijp,t}$, is now the unit value of HS 6-digit product p for exports from country j to i in year t. As before, the estimation accounts for RTA (interacted with H2-digit fixed effects) and WTO membership as well as importer-year-HS6, exporter-year-HS6, and importer-exporter-HS6 fixed effects.

Following the same approach as in Table 8, I examine in Table 9 the impact of EU GPs using both binary and count measures for the 'EUGP' and 'EUGPthird' variables. Using the binary variables, specifications (41) and (42) focus on the 'EU' and 'EU15' samples and GP aggregates, respectively. In either case, an EU export sector with at least one GP witnesses a positive and statistically significant boost to its average price between 10.2 percent ($= e^{.0970} - 1 = .1019$) and 11.5 percent ($= e^{.1091} - 1 = .1153$). When considering the 'Ind. EU' sample and GP aggregate in column (43), the magnitude of the composite price effect is less than half of the earlier two estimates and the impact is not statistical significant at conventional levels. An exception to the positive effect on EU members' export prices is the 'Ind. EU' sample in column (44) that uses the aggregate 'EU' GP measure. The reason for the latter result could be that the aggregate EU GP measure does not necessarily imply that the EU member at hand has a product with a GP protection in the relevant HS 6-digit sector. Therefore, not all EU members will benefit, for instance, from a perceived quality upgrade in the eyes of consumers.

Importantly, in all four binary GP specifications, third-country exporters charge higher prices for their products in the presence of at least one EU GP. This effect is statistically significant at least at the 10 percent level in all binary GP specifications except for the 'EU15' bloc third-country impact estimate in column (42), which still has a p-value of .1063. The magnitude of the average price increase for third-country exporters in the four binary GP specifications is estimated to be between 7.9 percent ($= e^{.0763} - 1$) and 12.5 percent ($= e^{.1179} - 1$). Hence, EU GP agreements raise the prices of products throughout in importing countries, independent of the actual identity of the exporter. Coupled with the finding of stable trade flows, the increase in prices for non-EU exporters indicates that the quantities they export actually decrease. EU GP agreements therefore have important ramifications not only for their signatories but also the worldwide trading community at large.

When moving on to the respective count measure specifications in columns (45) to (48) of Table 9, there are no significant positive effects on prices except for third-country exporters in the 'Ind. EU' sample and GP aggregate in specification (47). Therefore, the extensive margin of EU GPs as captured by the binary measures is more important for pricing considerations than the intensive margin in the form of EU GP counts. Overall, Table 9 suggests that the presence of at least one EU product with geographical protection status is already sufficient to result in substantial price increases.

5.2 PDOs vs. Other Geographical Protections

As discussed in section 2, the EU's PDO label imposes stricter sourcing and production requirements than the PGI and GI categories. PDOs might therefore be much more impactful in boosting EU trade flows than other EU geographical protection labels. However, this notion would require that consumers outside of the EU can easily distinguish between different kinds of EU GP labels and associated quality levels. In this part, I examine this question in detail.

Table 10 reports results using the model in equation (2) but splits the EUGP measure into two separate variables: (i) one capturing solely PDOs, and (ii) one capturing all other GPs, i.e., PGIs and GIs. In the 'EU' sample, out of the 10,637 HS 6-digit observations with at least one GP, 5,378 feature PDOs and 8,443 are subject to PGIs or GIs.[29] Following the same structure as earlier, columns (49) to (52) in Table 10 focus on binary variables for the PDO and 'Other GP' measures. Two results emerge. First, in all samples other than column (51), PDOs have a positive and statistically significant (at least at the one percent level) composite effect on EU exports. The magnitude of the PDO effects is substantially higher than in the corresponding specifications in Table 4 that use a single GP measure. For instance, the total PDO impact on trade flows is 57.8 percent ($e^{.4560} - 1$) in the 'EU' sample in specification (49) compared to the earlier measured 25.6 percent in column (5) of Table 4. Second, there is no statistically significant positive impact of the 'Other EUGP' variable on EU trade flows in any of the four binary specifications. These results are in line with the hypothesis that PDOs are much more relevant in influencing trade flows than other GPs with weaker requirements. Note, however, that only in two out of the four specifications in the left panel of Table 10 the equality of the PDO and 'Other EUGP' impact is rejected at least at the 10 percent statistical significance level. The exact p-values for testing the equality of both estimates are reported at the bottom of each column in Table 10.

Specifications (53) to (56) replace the binary variables with corresponding count measures of the PDO and 'Other EUGP' variables. In this case, the results are less clear-cut. The composite PDO count estimates are still positive and statistically significant (at least at the five percent level) for three of the four specifications. However, the composite trade impact of the 'Other GP' count measures is now positive and statistically significant (at least at the five percent level) in the same samples as well. In fact, the magnitude of the 'Other EUGP' count composite coefficient is greater than for the corresponding PDO measure in columns (54) and (55). Focusing on the count measures,

[29] Note that each HS 6-digit product can be simultaneously subject to both PDOs and PGIs. GIs are restricted to HS products referencing spirits and aromatised wines.

the hypothesis that the PDO and 'Other EUGP' count estimates are equal can only be rejected in one specification – column (55). Hence, the count variable results in Table 10 do not offer support for the notion that PDOs are more effective in boosting trade flows than other geographical protections.

In summary, Table 10 suggests that both PDOs and other, less stringent, geographical protections have a positive impact on exports of the EU and its individual members. Although their impact differs along the extensive and intensive GP margins, the evidence does not unequivocally support the notion that the PDO label is necessarily more powerful than any other.

5.3 Industry-specific Effects

The analysis so far has not considered the potential heterogeneous impact of EU GPs on trade across different industries. In this part, I divide the import sectors in the sample into four broad product categories: 1. animals (HS 02-05) , 2. fats (HS 15), 3. foodstuffs (HS 16-17, 19-22), and 4. vegetables (HS 06-12). Note from Table 2 that this classification does not account for HS sectors 25 (earth and building materials), 33 (essential oils and cosmetic products) and 51 (wool and woven fabric) as these product categories are quite distinct from these four groups. I drop the latter observations in the analysis below. To extract the industry-specific GP effects on EU exports, I modify the estimation equation in (2) by adding interactions of the EUGP variables with four industry dummies, D_l:

$$X_{ijp,t} = exp\left[\sum_{l}^{L}\left(\alpha_l EUGP_{ijp,t} + \sum_{s}^{3}\alpha_{sl} EUGP_{ijp,t+s} + \sum_{k}^{3}\beta_{kl} EUGP_{ijp,t-k}\right) D_l\right] \times exp\left[\theta Z_{ij,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp}\right] \times \epsilon_{ijp,t} \quad , \tag{5}$$

where the α_l, α_{sl} and β_{kl} parameters capture the effects of a GP on EU exports to country i in industry l out of the set of the aforementioned industries $L = \{\text{Animals, Fats, Foodstuffs, Vegetables}\}$ from years $t-3$ to $t+3$, respectively.

Table 11 reports results based on the estimation of equation (5). To conserve space, I only report the composite industry-specific effects, $\alpha_l + \alpha_{1l} + \alpha_{2l} + \alpha_{3l} + \beta_{1l} + \beta_{2l} + \beta_{3l}$, which account for the respective lag, lead and contemporaneous EUGP estimates. Columns (57) through (60) show results using the binary EUGP measures, whereas specifications (61) to (64) use the corresponding count measures. Three conclusions emerge from the estimates in Table 11. First, only GPs for vegetable products consistently increase EU exports in both the binary and count specifications.

The magnitude of the vegetable GP impact on trade is also throughout higher than those of any of the other industries. Second, for five out of eight specifications animals GPs have a statistically significant (at least at the 10 percent level) positive impact on EU exports. The GP effects on EU exports in the animals category are more consistent for the binary specifications, indicating their particular importance at the extensive margin. Lastly, GPs in the fats and foodstuffs categories are mostly unsuccessful in stimulating EU exports.

6 Concluding Remarks

Geographical protections (GPs) are a perfect illustration of countries' increasingly shifting focus beyond tariff instruments in the international policy arena. In this paper, I construct and leverage a rich product-level EU dataset on GP agreements and examine their impact on trade flows. I am able to match all items (except wines) contained in EU GP agreements with 31 countries to product-level international trade data and use a state-of-the-art gravity analysis to examine their impact on EU and third-country exports over the period 2005 to 2020.

I find that past GP agreements have helped to boost EU exports, in particular in products with higher numbers of negotiated GP protections and sectors with lower initial EU import shares. In addition, GPs for vegetable products create the most consistent positive impact on EU exports. These results hold across different EU and GP aggregates. At the same time, third countries experience no significant reductions in their own exports. Furthermore, the empirical evidence does not consistently suggest that different EU labels are more powerful than others in boosting the bloc's exports after GP agreements. Besides their impact on trade flows, the EU's geographical protections also induce price increases in both EU and non-EU exports to GP agreement signatories.

The results in this paper have several policy implications. As GP agreements can be used to boost exports, one can expect that more countries will pursue this strategy in the future. Beyond offering stronger protections than trademarks, GPs can signal higher quality to consumers and allow countries to establish comparative advantages that previously did not exist. Through its GP agreements the EU has already granted a number of GPs to non-EU economies. By forging GP agreements the EU is therefore implicitly encouraging the increased usage of GPs by other countries. Beyond the EU, especially the members of ASEAN and selected Asian countries, e.g., India and Japan, are increasingly becoming active users of GP policies (Marie-Vivien 2020). Whereas EU GP agreements do not induce export declines for third countries, the empirical evidence in the form of higher prices suggests that non-members of GP agreements have to invest into quality upgrades of their products to remain competitive.

Although desirable, it is unlikely that WTO members will agree any time soon on a universal clarification of GPs in the TRIPS agreement that would provide guardrails against the proliferation of excessive protection schemes based on products' geographical characteristics. Avoiding a patchwork of GP agreements with different rules and potentially various adverse implications for international trade should nevertheless be paramount. If no WTO-wide agreement can be reached, reform-willing members should identify the subset of countries that are ready to enshrine more clearly defined GP guidelines in TRIPS. This strategy of plurilateral agreements within the WTO framework has been employed successfully before, e.g., with the Government Procurement Agreement.

There are several promising areas for further research. Whereas the EU is the most prominent user of GP agreements, the data situation for other countries is much less transparent. In addition, the literature on trade agreements is focusing more and more on the impact of detailed RTA provisions, but little is known to what extent countries go beyond existing TRIPS agreement provisions. Collecting data on geographical protections pursued by countries other than the EU could help to further clarify the role that GPs play in world trade.

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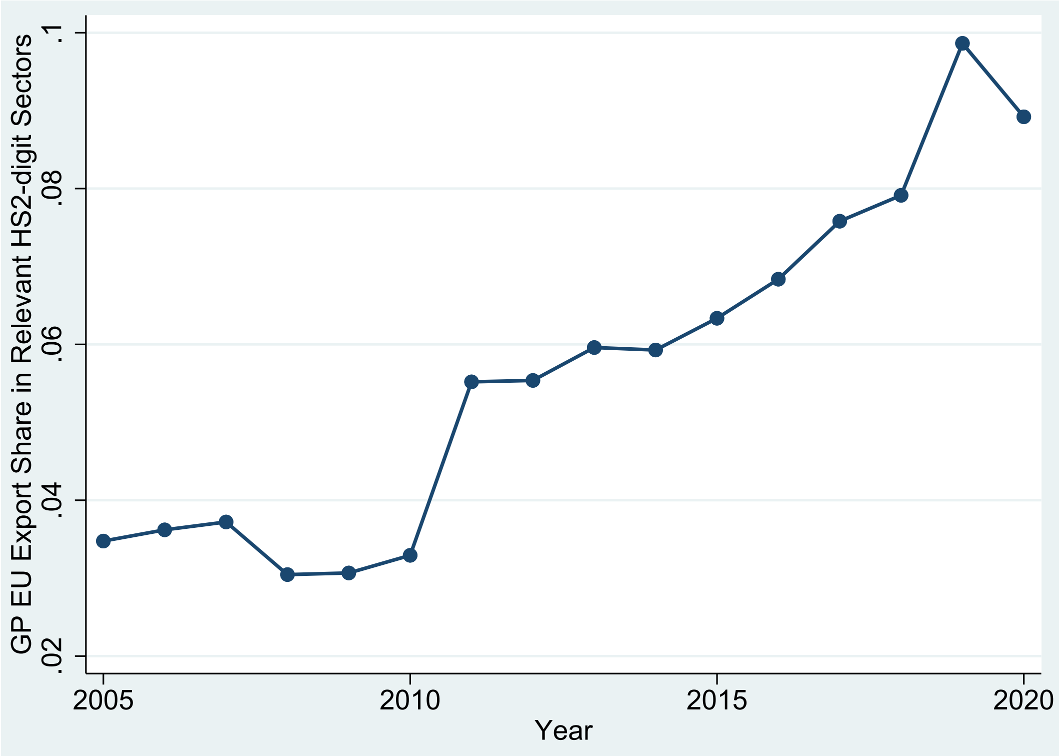
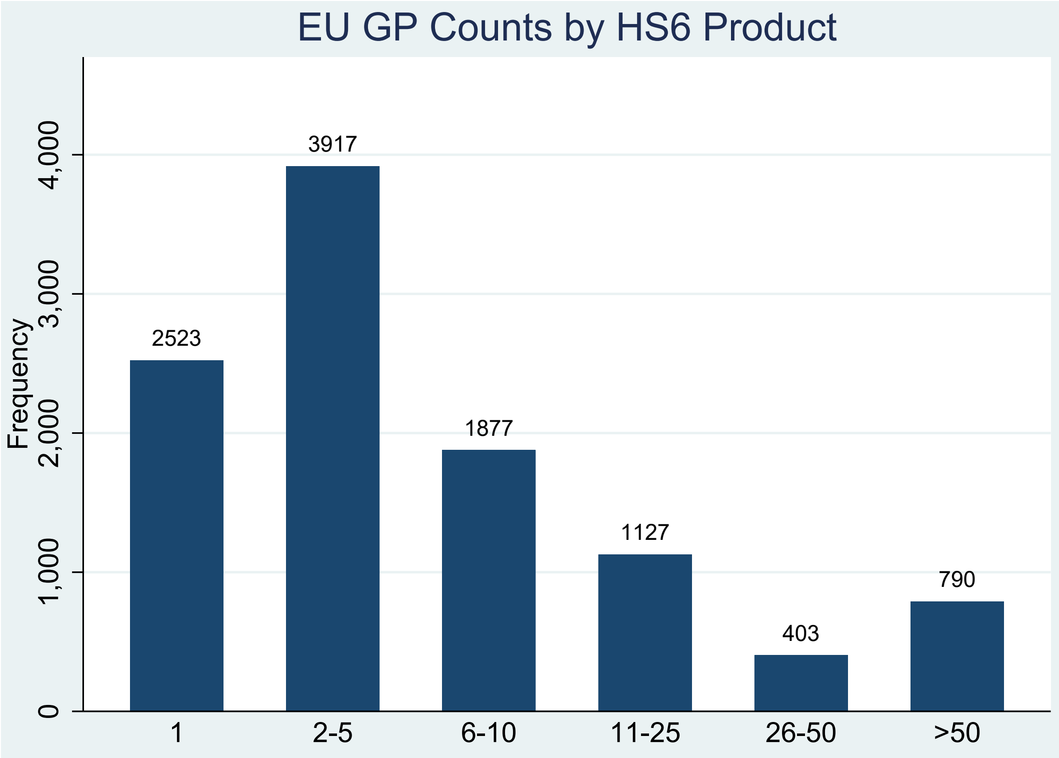
Figure 1: Export Share of HS 6-digit Products with GPs in Respective EU HS 2-digit Exports



Notes: Author's own calculations based on data for the baseline EU sample. The figure shows the export share of HS 6-digit products with GPs in total EU exports in the HS 2-digit sectors with GPs; see Table 2.

Figure 2: Cross-border EU Geographical Protections in HS 6-digit Sectors, by Count



Notes: Author's own calculations based on data for the baseline EU sample. For HS 6-digit EU export sectors with geographical protections, the figure shows the distribution of their counts.

Table 1: Geographical Protection Agreements of the European Union (as of the End of 2023)

EU Partner	Date (enforced)	Products Covered	GPs	HS6 Sectors
Albania^R	4/1/2009	Aromatised wine, spirits, wines	245	9
Armenia^R	6/1/2018	Agricultural products, foodstuffs, spirits, wines	1,545	157
Bosnia and Herzegovina^R	7/1/2008	Aromatised wines, spirits, wines	279	9
Canada 1	6/1/2004	Spirits, wines	192	7
Canada 2^R	9/21/2017	Agricultural products, foodstuffs	171	40
Chile 1	2/1/2003	Aromatised wines, spirits, wines	209	9
Chile 2	2/15/2023	Aromatised wines, spirits, wines	536	9
China	3/1/2021	Agricultural products, foodstuffs	46	20
Colombia^R	8/1/2013	Agricultural products, foodstuffs, spirits, wines	57	19
Costa Rica^R	10/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Ecuador^R	1/1/2017	Agricultural products, foodstuffs, spirits, wines	57	19
El Salvador^R	10/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Georgia^R	4/1/2012	Agricultural products, foodstuffs, spirits, wines	1,151	121
Guatemala^R	12/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Honduras^R	8/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Iceland^R 1	1/1/1994	Spirits, wines	121	7
Iceland^R 2	5/1/2018	Agricultural products, foodstuffs	1,155	138
Japan^R	2/1/2019	Agricultural products, foodstuffs, spirits, wines	115	34
Liechtenstein*	1/1/1994	Spirits, wines	121	7
Mexico 1^R	7/1/1997	Spirits	200	7
Mexico 2^R	5/1/2004	Spirits	236	7
Moldova^R	4/1/2013	Agricultural products, foodstuffs, spirits, wines	1,201	128
Montenegro^R	1/1/2008	Agricultural products, foodstuffs, spirits, wines	1,066	117
Nicaragua^R	8/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Norway	1/1/1994	Spirits, wines	121	7
Panama^R	8/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Peru^R	3/1/2013	Agricultural products, foodstuffs, spirits, wines	56	19
Serbia^R	2/1/2010	Agricultural products, foodstuffs, spirits, wines	1,205	135
Singapore^R	11/21/2019	Agricultural products, foodstuffs, spirits, wines	109	33
South Africa 1^R	2/28/2002	Spirits	196	7
South Africa 2	10/10/2016	Agricultural products, foodstuffs, spirits, wines	244	33
South Korea^R	7/1/2011	Agricultural products, foodstuffs, spirits, wines	86	25
Switzerland 1	6/1/2002	Aromatised wines, spirits, wines	209	9
Switzerland 2	12/1/2011	Agricultural products, foodstuffs	819	113
Switzerland 3	7/1/2017	Agricultural products, foodstuffs	1,175	138
Ukraine^R	1/1/2016	Agricultural products, foodstuffs, spirits, wines	1,158	120
USA	3/25/1994	Spirits	7	3
Vietnam^R	7/31/2020	Agricultural products, foodstuffs, spirits, wines	89	29

Notes: *Liechtenstein is not included in the empirical analysis. ^{R} indicates that the geographical protections have been negotiated as part of a broader RTA.

Table 2: Sectoral Distribution of Geographical Protections Across EU Agreements

HS2	Description	GPs	HS6 Sectors
02	Meat and edible meat offal	1,735	17
03	Fish and crustaceans, molluscs and other aquatic invertebrates	230	18
04	Dairy produce, birds' eggs, natural honey, and other edible products of animal origin	2,424	10
05	Products of animal origin, not elsewhere specified or included	1	1
06	Live trees and other plants, bulbs, roots, and cut flowers and ornamental foliage	10	3
07	Edible vegetables, certain roots and tubers	1,174	28
08	Edible fruit and nuts and peel of citrus fruit or melons	1,079	27
09	Coffee, tea, maté and spices	111	4
10	Cereals	69	1
11	Products of the milling industry, malt, starches, inulin and wheat gluten	50	4
12	Oil seeds and oleaginous fruits, miscellaneous grains, seeds and fruit, industrial or medicinal plants, straw and fodder	102	6
15	Animal or vegetable fats and oils, prepared edible fats and animal or vegetable waxes	1,185	2
16	Preparations of meat, fish or crustaceans, molluscs, and other aquatic invertebrates	669	4
17	Sugars and sugar confectionery	142	2
19	Preparations of cereals, flour, starch or milk and pastrycooks' products	370	8
20	Preparations of vegetables, fruit, nuts or other parts of plants	33	4
21	Miscellaneous edible preparations	8	2
22	Beverages, spirits and vinegar	5,447	12
25	Salt, sulphur, earths and stone, plastering materials, lime and cement	9	1
33	Essential oils and resinoids, perfumery and cosmetic or toilet preparations	34	2
51	Wool, fine or coarse animal hair, horsehair yarn and woven fabric	3	1
All	**Total**	**14,885**	**157**

Table 3: Summary Statistics

Variable	Definition	Mean	SD	Min	Max	Obs.
Sample: EU						
bothWTO	Importer and exporter are WTO member: 1 (yes), 0 (no)	0.876	0.330	0.000	1.000	7,839,129
EUGP	EUGP in HS6 product: 1 (yes), 0 (no)	0.001	0.037	0.000	1.000	7,839,129
EUGP Count	Count of EUGPs in HS6 product	0.017	1.090	0.000	255.000	7,839,129
EUGP Third Country	EUGP in HS6 product faced by non-EU exporters: 1 (yes), 0 (no)	0.021	0.144	0.000	1.000	7,839,129
EUGP Third Country Count	Count of EUGPs in HS6 product faced by non-EU exporters	0.257	3.842	0.000	220.000	7,839,129
log(Price)	Unit price of bilateral imports of HS6 product	1.278	1.663	-10.169	14.370	3,163,203
NTM Count	Count of Importer NTMs in HS6 product	11.810	17.320	0.000	456.000	6,057,338
RTA	Importer and exporter are RTA member: 1 (yes), 0 (no)	0.395	0.489	0.000	1.000	7,839,129
RTA Depth	Depth of RTA agreement between importer and exporter	0.094	0.181	0.000	0.923	6,057,338
Tariff	Importer's tariff on exporter's HS6 products (in ad valorem terms)	0.110	0.570	0.000	30.000	6,057,338
Trade	Bilateral imports of HS6 product (in $1,000s)	1,220.621	32,723.711	0.000	27,122,280	7,839,129
Sample: EU15						
bothWTO	Importer and exporter are WTO member: 1 (yes), 0 (no)	0.876	0.330	0.000	1.000	7,686,223
EUGP	EUGP in HS6 product: 1 (yes), 0 (no)	0.001	0.036	0.000	1.000	7,686,223
EUGP Count	Count of EUGPs in HS6 product	0.015	0.979	0.000	245.000	7,686,223
EUGP Third Country	EUGP in HS6 product faced by non-EU exporters: 1 (yes), 0 (no)	0.021	0.142	0.000	1.000	7,686,223
EUGP Third Country Count	Count of EUGPs in HS6 product faced by non-EU exporters	0.228	3.437	0.000	215.000	7,686,223
log(Price)	Unit price of bilateral imports of HS6 product	1.270	1.662	-10.169	14.370	3,099,519
NTM Count	Count of Importer NTMs in HS6 product	11.821	17.308	0.000	456.000	5,937,901
RTA	Importer and exporter are RTA member: 1 (yes), 0 (no)	0.395	0.489	0.000	1.000	7,686,223
RTA Depth	Depth of RTA agreement between importer and exporter	0.094	0.181	0.000	0.923	5,937,901
Tariff	Importer's tariff on exporter's HS6 products (in ad valorem terms)	0.110	0.553	0.000	30.000	5,937,901
Trade	Bilateral imports of HS6 product (in $1,000s)	1,208.867	32,898.348	0.000	27,122,280	7,686,223
Sample: Individual EU Countries						
bothWTO	Importer and exporter are WTO member: 1 (yes), 0 (no)	0.886	0.318	0.000	1.000	11,441,000
EUGP	EUGP in HS6 product: 1 (yes), 0 (no)	0.002	0.050	0.000	1.000	11,441,000
EUGP Count	Count of EUGPs in HS6 product	0.010	0.397	0.000	114.000	11,441,000
EUGP Third Country	EUGP in HS6 product faced by non-EU exporters: 1 (yes), 0 (no)	0.014	0.119	0.000	1.000	11,441,000
EUGP Third Country Count	Count of EUGPs in HS6 product faced by non-EU exporters	0.176	3.183	0.000	220.000	11,441,000
log(Price)	Unit price of bilateral imports of HS6 product	1.399	1.672	-10.169	14.005	4,636,211
NTM Count	Count of Importer NTMs in HS6 product	11.505	17.081	0.000	456.000	8,730,482
RTA	Importer and exporter are RTA member: 1 (yes), 0 (no)	0.431	0.495	0.000	1.000	11,441,000
RTA Depth	Depth of RTA agreement between importer and exporter	0.142	0.250	0.000	0.923	8,730,482
Tariff	Importer's tariff on exporter's HS6 products (in ad valorem terms)	0.118	0.621	0.000	30.000	8,730,482
Trade	Bilateral imports of HS6 product (in $1,000s)	835.089	26,548.297	0.000	27,122,280	11,441,000

Table 4: EU GPs and Trade – Binary GP Measure

Dependent Variable: Trade	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	EU	EU15	Ind. EU	Ind. EU	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU	EU	EU15	Ind. EU	EU
$EUGP_{t-3}$					0.2670***	0.2657***	0.1335**	0.2514***
					(0.0665)	(0.0697)	(0.0569)	(0.0656)
$EUGP_{t-2}$					-0.0013	-0.0424	-0.0295	-0.0002
					(0.0393)	(0.0443)	(0.0539)	(0.0406)
$EUGP_{t-1}$					0.0172	0.0081	0.0041	0.0165
					(0.0345)	(0.0366)	(0.0422)	(0.0337)
$EUGP_{t}$	0.0364	-0.0318	-0.0580	0.0449	-0.1722***	-0.1965***	-0.1117**	-0.1664***
	(0.0609)	(0.0625)	(0.0535)	(0.0608)	(0.0438)	(0.0478)	(0.0461)	(0.0450)
$EUGP_{t+1}$					0.1059***	0.1041***	0.0481	0.1122***
					(0.0364)	(0.0394)	(0.0384)	(0.0361)
$EUGP_{t+2}$					0.0771*	0.0825*	0.0596*	0.0885**
					(0.0397)	(0.0433)	(0.0328)	(0.0412)
$EUGP_{t+3}$					-0.0656	-0.1048*	-0.1215**	-0.0690
					(0.0616)	(0.0588)	(0.0532)	(0.0633)
EUGP Impact	0.0364	-0.0318	-0.0580	0.0449	0.2281**	0.1167	-0.0174	0.2329**
	(0.0609)	(0.0625)	(0.0535)	(0.0608)	(0.1117)	(0.1169)	(0.0946)	(0.1133)
bothWTO	0.3722***	0.4275***	0.3915***	0.3922***	0.3720***	0.4276***	0.3912***	0.3922***
	(0.0987)	(0.1113)	(0.1067)	(0.1067)	(0.0987)	(0.1113)	(0.1067)	(0.1066)
Observations	7,839,129	7,686,223	11,441,000	11,441,000	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832	0.9860	0.9859	0.9832	0.9832
RTA x HS2 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table 5: EU GPs and Trade – GP Count Measure

Dependent Variable: Trade	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Sample	EU	EU15	Ind. EU	Ind. EU	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU	EU	EU15	Ind. EU	EU
EUGP Count$_{t-3}$					0.0055***	0.0060***	0.0053*	0.0057***
					(0.0014)	(0.0016)	(0.0030)	(0.0014)
EUGP Count$_{t-2}$					-0.0012	-0.0010	-0.0007	-0.0013
					(0.0010)	(0.0011)	(0.0048)	(0.0010)
EUGP Count$_{t-1}$					0.0009	0.0027*	0.0025	0.0011
					(0.0014)	(0.0015)	(0.0027)	(0.0013)
EUGP Count$_{t}$	0.0044***	0.0046**	-0.0036	0.0044***	-0.0019	-0.0021	-0.0033	-0.0019
	(0.0017)	(0.0021)	(0.0070)	(0.0016)	(0.0017)	(0.0015)	(0.0028)	(0.0012)
EUGP Count$_{t+1}$					0.0038***	0.0026*	0.0014	0.0040***
					(0.0012)	(0.0014)	(0.0027)	(0.0013)
EUGP Count$_{t+2}$					-0.0006	-0.0015	-0.0015	-0.0003
					(0.0016)	(0.0020)	(0.0032)	(0.0016)
EUGP Count$_{t+3}$					0.0020	0.0022	-0.0092**	0.0013
					(0.0016)	(0.0020)	(0.0036)	(0.0017)
EUGP Impact	0.0044***	0.0046**	-0.0036	0.0044***	0.0087***	0.0089***	-0.0055	0.0085***
	(0.0017)	(0.0021)	(0.0070)	(0.0017)	(0.0024)	(0.0029)	(0.0098)	(0.0024)
bothWTO	0.3736***	0.4295***	0.3915***	0.3993***	0.3739***	0.4300***	0.3913***	0.3938***
	(0.0987)	(0.1112)	(0.1067)	(0.1066)	(0.0986)	(0.1112)	(0.1067)	(0.1066)
Observations	7,839,129	7,686,223	11,441,000	11,441,000	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832	0.9860	0.9859	0.9832	0.9832
RTA x HS2 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table 6: EU GPs and Trade – High vs. Low EU Import Shares

	EUGP Measure: Binary					**EUGP Measure: Count**			
Dep. Variable: Trade	(17)	(18)	(19)	(20)	Dep. Variable: Trade	(21)	(22)	(23)	(24)
Sample	EU	EU15	Ind. EU	Ind. EU	Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU	EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP High$_{t-3}$	0.1825**	0.1837**	0.1064*	0.1761**	EUGP High Count$_{t-3}$	0.0060***	0.0047***	0.0047	0.0054***
	(0.0869)	(0.0836)	(0.0564)	(0.0861)		(0.0012)	(0.0014)	(0.0029)	(0.0014)
EUGP High$_{t-2}$	-0.0615	-0.1478**	-0.0239	-0.0597	EUGP High Count$_{t-2}$	-0.0002	-0.0010	-0.0013	-0.0015
	(0.0601)	(0.0661)	(0.0537)	(0.0615)		(0.0010)	(0.0012)	(0.0045)	(0.0011)
EUGP High$_{t-1}$	-0.0125	-0.0155	0.0035	-0.0102	EUGP High Count$_{t-1}$	-0.0000	0.0028*	0.0017	-0.0003
	(0.0534)	(0.0499)	(0.0426)	(0.0524)		(0.0014)	(0.0015)	(0.0037)	(0.0017)
EUGP High$_{t}$	-0.1247**	-0.1541***	-0.1511***	-0.1165**	EUGP High Count$_{t}$	-0.0022*	-0.0021	-0.0621	-0.0713
	(0.0569)	(0.0542)	(0.0434)	(0.0584)		(0.0013)	(0.0016)	(0.0592)	(0.0739)
EUGP High$_{t+1}$	0.0504	0.0600	0.0433	0.0541	EUGP High Count$_{t+1}$	0.0028*	0.0010	-0.0001	0.0037**
	(0.0449)	(0.0481)	(0.0429)	(0.0464)		(0.0015)	(0.0015)	(0.0037)	(0.0017)
EUGP High$_{t+2}$	-0.0148	0.0108	0.0503	0.0030	EUGP High Count$_{t+2}$	-0.0019	-0.0014	-0.0016	-0.0007
	(0.0470)	(0.0508)	(0.0335)	(0.0476)		(0.0020)	(0.0024)	(0.0032)	(0.0017)
EUGP High$_{t+3}$	0.0553	-0.0033	-0.0389	0.0472	EUGP High Count$_{t+3}$	0.0026	0.0033	-0.0070*	0.0017
	(0.0868)	(0.0636)	(0.0521)	(0.0870)		(0.0018)	(0.0021)	(0.0036)	(0.0017)
EUGP High Impact	0.0747	-0.0663	-0.0105	0.0941	EUGP High Impact	0.0071***	0.0074***	-0.0657	-0.0631
	(0.1502)	(0.1403)	(0.0956)	(0.1515)		(0.0022)	(0.0027)	(0.0560)	(0.0733)
EUGP Low$_{t-3}$	0.3707***	0.4069***	1.0116***	0.3451***	EUGP Low Count$_{t-3}$	0.0043	0.0099**	0.1944***	0.0062***
	(0.0815)	(0.0881)	(0.2086)	(0.0794)		(0.0032)	(0.0041)	(0.0510)	(0.0018)
EUGP Low$_{t-2}$	0.0853*	0.1003**	0.1476	0.0879**	EUGP Low Count$_{t-2}$	-0.0024	-0.0018	0.1182**	-0.0007
	(0.0439)	(0.0465)	(0.1624)	(0.0428)		(0.0025)	(0.0031)	(0.0517)	(0.0015)
EUGP Low$_{t-1}$	0.0561	0.0448	0.0999	0.0526	EUGP Low Count$_{t-1}$	0.0034	0.0038	0.0906	0.0026
	(0.0394)	(0.0482)	(0.1181)	(0.0378)		(0.0030)	(0.0061)	(0.0606)	(0.0018)
EUGP Low$_{t}$	-0.2009***	-0.2361***	-0.0875	-0.1972***	EUGP Low Count$_{t}$	-0.0008	-0.0021	-0.0184	0.0394
	(0.0578)	(0.0714)	(0.2101)	(0.0592)		(0.0022)	(0.0037)	(0.1535)	(0.0671)
EUGP Low$_{t+1}$	0.1475***	0.1461**	0.0223	0.1560***	EUGP Low Count$_{t+1}$	0.0066***	0.0108***	0.0189	0.0023
	(0.0541)	(0.0618)	(0.0865)	(0.0538)		(0.0024)	(0.0039)	(0.0386)	(0.0018)
EUGP Low$_{t+2}$	0.1396**	0.1368**	0.0592	0.1524**	EUGP Low Count$_{t+2}$	0.0014	-0.0049	-0.0060	0.0008
	(0.0574)	(0.0658)	(0.0842)	(0.0613)		(0.0031)	(0.0057)	(0.0500)	(0.0020)
EUGP Low$_{t+3}$	-0.1495*	-0.1904**	-0.4776***	-0.1550*	EUGP Low Count$_{t+3}$	0.0013	0.0003	-0.1694**	0.0003
	(0.0785)	(0.0897)	(0.1100)	(0.0830)		(0.0029)	(0.0050)	(0.0688)	(0.0021)
EUGP Low Impact	0.4489***	0.4085***	0.7755***	0.4418***	EUGP Low Impact	0.0138**	0.0161**	0.2284	0.0509
	(0.1295)	(0.1453)	(0.1883)	(0.1331)		(0.0057)	(0.0080)	(0.1462)	(0.0666)
bothWTO	0.3712***	0.4273***	0.3915***	0.3914***	bothWTO	0.3738***	0.4294***	0.3911***	0.3938***
	(0.0987)	(0.1113)	(0.1067)	(0.1066)		(0.0987)	(0.1113)	(0.1067)	(0.1066)
Observations	7,839,129	7,686,223	11,441,000	11,441,000	Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832	Pseudo R2	0.9860	0.9859	0.9832	0.9832
High - Low p-value	0.0384	0.0086	0.0000	0.0593	High - Low p-value	0.2254	0.2733	0.0412	0.0623
RTA x HS2 FE	Yes	Yes	Yes	Yes	RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes	Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes	Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes	Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4	Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table 7: EU GPs and Trade – Results with Additional Policy Controls

EUGP Measure: Binary				
Dep. Variable: Trade	(25)	(26)	(27)	(28)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
$EUGP_{t-3}$	0.3413***	0.3158***	0.1488**	0.3263***
	(0.0691)	(0.0689)	(0.0660)	(0.0653)
$EUGP_{t-2}$	0.0082	-0.0037	-0.0144	0.0119
	(0.0335)	(0.0348)	(0.0353)	(0.0344)
$EUGP_{t-1}$	-0.1650**	-0.1865***	-0.0583	-0.1637***
	(0.0658)	(0.0655)	(0.0528)	(0.0632)
$EUGP_{t}$	-0.0850	-0.0453	0.0382	-0.0880
	(0.0706)	(0.0744)	(0.0639)	(0.0732)
$EUGP_{t+1}$	0.0879**	0.0957**	0.0410	0.0919**
	(0.0409)	(0.0448)	(0.0396)	(0.0411)
$EUGP_{t+2}$	0.0610	0.0670	0.0202	0.0850*
	(0.0470)	(0.0522)	(0.0366)	(0.0491)
$EUGP_{t+3}$	-0.0644	-0.0991	-0.1435***	-0.0709
	(0.0654)	(0.0626)	(0.0533)	(0.0668)
EUGP Impact	0.1840	0.1438	0.0320	0.1926*
	(0.1166)	(0.1184)	(0.1019)	(0.1138)
Tariff	-0.0089	-0.0077	-0.0062	-0.0065
	(0.0090)	(0.0092)	(0.0089)	(0.0089)
NTM Count	-0.0002	-0.0008	0.0010	0.0011
	(0.0043)	(0.0042)	(0.0044)	(0.0044)
RTA Depth	0.0585	-0.0244	0.0108	0.0047
	(0.1246)	(0.1296)	(0.1319)	(0.1324)
bothWTO	0.4104***	0.4615***	0.4303***	0.4314***
	(0.1117)	(0.1285)	(0.1228)	(0.1228)
Observations	6,057,338	5,937,901	8,730,482	8,730,482
Pseudo R2	0.9881	0.9881	0.9854	0.9854
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

EUGP Measure: Count				
Dep. Variable: Trade	(29)	(30)	(31)	(32)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP $Count_{t-3}$	0.0028	0.0030	0.0093***	0.0022
	(0.0022)	(0.0024)	(0.0031)	(0.0022)
EUGP $Count_{t-2}$	0.0016	0.0013	-0.0040	0.0010
	(0.0017)	(0.0019)	(0.0052)	(0.0017)
EUGP $Count_{t-1}$	-0.0041**	-0.0017	-0.0026	-0.0031
	(0.0020)	(0.0025)	(0.0019)	(0.0019)
EUGP $Count_{t}$	0.0036	0.0058*	-0.0031	0.0034
	(0.0025)	(0.0031)	(0.0045)	(0.0028)
EUGP $Count_{t+1}$	0.0041***	0.0020	0.0010	0.0036**
	(0.0014)	(0.0014)	(0.0029)	(0.0015)
EUGP $Count_{t+2}$	-0.0020	-0.0023	-0.0043	-0.0005
	(0.0020)	(0.0024)	(0.0035)	(0.0021)
EUGP $Count_{t+3}$	0.0023	0.0025	-0.0107***	0.0016
	(0.0016)	(0.0020)	(0.0040)	(0.0017)
EUGP Impact	0.0084***	0.0105***	-0.0143	0.0082**
	(0.0032)	(0.0035)	(0.0104)	(0.0033)
Tariff	-0.0090	-0.0077	-0.0062	-0.0064
	(0.0090)	(0.0092)	(0.0089)	(0.0089)
NTM Count	-0.0003	-0.0009	0.0010	0.0011
	(0.0043)	(0.0042)	(0.0044)	(0.0044)
RTA Depth	0.0608	-0.0258	0.0164	0.0046
	(0.1241)	(0.1291)	(0.1317)	(0.1319)
bothWTO	0.4125***	0.4639***	0.4298***	0.4332***
	(0.1117)	(0.1284)	(0.1228)	(0.1228)
Observations	6,057,338	5,937,901	8,730,482	8,730,482
Pseudo R2	0.9881	0.9881	0.9854	0.9854
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table 8: EU GPs and Trade – Third-country Effects

	EUGP Measure: Binary					EUGP Measure: Count			
Dep. Variable: Trade	(33)	(34)	(35)	(36)	Dep. Variable: Trade	(37)	(38)	(39)	(40)
Sample	EU	EU15	Ind. EU	Ind. EU	Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU	EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP_{t-3}	0.1524	0.1779	0.0457	0.1559	EUGP Count_{t-3}	0.0064***	0.0086***	0.0040	0.0069***
	(0.1248)	(0.1281)	(0.0560)	(0.1221)		(0.0023)	(0.0026)	(0.0032)	(0.0021)
EUGP_{t-2}	-0.1689**	-0.2124**	-0.0714	-0.1700**	EUGP Count_{t-2}	-0.0019	-0.0022	-0.0003	-0.0019
	(0.0846)	(0.0860)	(0.0569)	(0.0824)		(0.0014)	(0.0014)	(0.0051)	(0.0013)
EUGP_{t-1}	0.1114*	0.1077	0.0187	0.1064*	EUGP Count_{t-1}	0.0025*	0.0054***	0.0029	0.0033**
	(0.0641)	(0.0656)	(0.0460)	(0.0631)		(0.0015)	(0.0016)	(0.0029)	(0.0014)
EUGP_{t}	-0.0531	-0.0790	-0.0489	-0.0475	EUGP Count_{t}	0.0002	-0.0007	-0.0018	0.0001
	(0.0561)	(0.0594)	(0.0467)	(0.0554)		(0.0015)	(0.0019)	(0.0029)	(0.0015)
EUGP_{t+1}	0.0509	0.0540	0.0106	0.0525	EUGP Count_{t+1}	0.0027	0.0021	-0.0007	0.0023
	(0.0437)	(0.0453)	(0.0378)	(0.0435)		(0.0018)	(0.0022)	(0.0024)	(0.0019)
EUGP_{t+2}	0.0512	0.0561	0.0386	0.0645	EUGP Count_{t+2}	-0.0029	-0.0041	-0.0024	-0.0028
	(0.0520)	(0.0526)	(0.0343)	(0.0522)		(0.0025)	(0.0030)	(0.0031)	(0.0024)
EUGP_{t+3}	-0.0592	-0.0775	-0.1196**	-0.0656	EUGP Count_{t+3}	0.0002	-0.0002	-0.0124***	-0.0014
	(0.0722)	(0.0729)	(0.0548)	(0.0730)		(0.0022)	(0.0029)	(0.0035)	(0.0022)
EUGP Impact	0.0847	0.0268	-0.1262	0.0963	EUGP Impact	0.0072*	0.0088*	-0.0107	0.0066*
	(0.2238)	(0.2286)	(0.0966)	(0.2222)		(0.0038)	(0.0048)	(0.0091)	(0.0039)
EUGP Third_{t-3}	-0.1407	-0.1092	-0.2343***	-0.1188	EUGP Third Count_{t-3}	0.0014	0.0038	-0.0033**	0.0019
	(0.1127)	(0.1128)	(0.0556)	(0.1071)		(0.0022)	(0.0024)	(0.0015)	(0.0020)
EUGP Third_{t-2}	-0.2022***	-0.2115***	-0.0940***	-0.2057***	EUGP Third Count_{t-2}	-0.0009	-0.0015	0.0003	-0.0008
	(0.0768)	(0.0764)	(0.0345)	(0.0732)		(0.0012)	(0.0012)	(0.0011)	(0.0011)
EUGP Third_{t-1}	0.1196**	0.1311**	0.0379	0.1148**	EUGP Third Count_{t-1}	0.0016	0.0028**	0.0003	0.0023*
	(0.0597)	(0.0603)	(0.0340)	(0.0585)		(0.0014)	(0.0014)	(0.0011)	(0.0013)
EUGP Third_{t}	0.1543***	0.1569***	0.1738***	0.1547***	EUGP Third Count_{t}	0.0025	0.0017	0.0021	0.0022
	(0.0479)	(0.0476)	(0.0405)	(0.0469)		(0.0018)	(0.0019)	(0.0013)	(0.0016)
EUGP Third_{t+1}	-0.0774*	-0.0737	-0.1182***	-0.0838*	EUGP Third Count_{t+1}	-0.0015	-0.0007	-0.0036***	-0.0020
	(0.0458)	(0.0469)	(0.0366)	(0.0452)		(0.0019)	(0.0023)	(0.0014)	(0.0019)
EUGP Third_{t+2}	-0.0356	-0.0374	-0.0671	-0.0334	EUGP Third Count_{t+2}	-0.0032	-0.0033	-0.0018	-0.0033
	(0.0506)	(0.0512)	(0.0410)	(0.0498)		(0.0021)	(0.0025)	(0.0014)	(0.0020)
EUGP Third_{t+3}	0.0117	0.0408	0.0205	0.0076	EUGP Third Count_{t+3}	-0.0028	-0.0034	-0.0042***	-0.0039**
	(0.0672)	(0.0654)	(0.0602)	(0.0657)		(0.0018)	(0.0023)	(0.0014)	(0.0018)
EUGP Third Impact	-0.1703	-0.1029	-0.2814***	-0.1645	EUGP Third Impact	-0.0029	-0.0006	-0.0103***	-0.0035
	(0.1935)	(0.1940)	(0.0922)	(0.1873)		(0.0041)	(0.0049)	(0.0029)	(0.0041)
bothWTO	0.3742***	0.4288***	0.3941***	0.3942***	bothWTO	0.3742***	0.4297***	0.3959***	0.3943***
	(0.0986)	(0.1113)	(0.1066)	(0.1066)		(0.0986)	(0.1112)	(0.1065)	(0.1065)
Observations	7,839,129	7,686,223	11,441,000	11,441,000	Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832	Pseudo R2	0.9860	0.9859	0.9832	0.9832
RTA x HS2 FE	Yes	Yes	Yes	Yes	RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes	Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes	Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes	Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4	Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table 9: EU GPs and Trade – Price Effects

	EUGP Measure: Binary					EUGP Measure: Count			
Dep. Var.: log(Price)	(41)	(42)	(43)	(44)	Dep. Var.: log(Price)	(45)	(46)	(47)	(48)
Sample	EU	EU15	Ind. EU	Ind. EU	Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU	EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP_{t-3}	-0.0569	-0.0562	-0.0187	-0.0604*	EUGP Count_{t-3}	-0.0006	-0.0002	-0.0048*	-0.0000
	(0.0391)	(0.0394)	(0.0289)	(0.0320)		(0.0012)	(0.0013)	(0.0026)	(0.0009)
EUGP_{t-2}	0.0350	0.0326	-0.0056	0.0411	EUGP Count_{t-2}	0.0007	0.0006	0.0049	-0.0002
	(0.0392)	(0.0407)	(0.0282)	(0.0320)		(0.0012)	(0.0014)	(0.0033)	(0.0009)
EUGP_{t-1}	-0.0000	0.0197	-0.0032	-0.0756**	EUGP Count_{t-1}	-0.0009	-0.0013	-0.0034	-0.0023**
	(0.0383)	(0.0399)	(0.0274)	(0.0317)		(0.0012)	(0.0015)	(0.0031)	(0.0010)
EUGP_{t}	0.0517	0.0473	0.0390	0.0453	EUGP Count_{t}	0.0013	0.0017	0.0020	0.0016
	(0.0377)	(0.0387)	(0.0267)	(0.0312)		(0.0013)	(0.0015)	(0.0036)	(0.0011)
EUGP_{t+1}	-0.0100	-0.0080	0.0245	-0.0042	EUGP Count_{t+1}	0.0010	0.0008	0.0042	-0.0003
	(0.0376)	(0.0390)	(0.0297)	(0.0302)		(0.0018)	(0.0017)	(0.0037)	(0.0012)
EUGP_{t+2}	-0.0032	0.0082	-0.0088	0.0229	EUGP Count_{t+2}	0.0007	0.0011	0.0047	0.0001
	(0.0392)	(0.0411)	(0.0289)	(0.0317)		(0.0016)	(0.0017)	(0.0038)	(0.0013)
EUGP_{t+3}	0.0805**	0.0655*	0.0143	0.0074	EUGP Count_{t+3}	-0.0009	-0.0002	-0.0001	-0.0007
	(0.0377)	(0.0392)	(0.0253)	(0.0295)		(0.0014)	(0.0014)	(0.0028)	(0.0011)
EUGP Impact	0.0970*	0.1091**	0.0415	-0.0233	EUGP Impact	0.0013	0.0025	0.0075	-0.0019*
	(0.0501)	(0.0516)	(0.0344)	(0.0433)		(0.0017)	(0.0017)	(0.0048)	(0.0010)
EUGP Third_{t-3}	-0.0285	-0.0239	0.0170	-0.0283	$\text{EUGP Third Count}_{t-3}$	0.0008	0.0011	0.0007	0.0007
	(0.0347)	(0.0339)	(0.0181)	(0.0306)		(0.0010)	(0.0011)	(0.0007)	(0.0009)
EUGP Third_{t-2}	0.0540	0.0537	0.0381**	0.0697**	$\text{EUGP Third Count}_{t-2}$	0.0011	0.0015	0.0015**	0.0011
	(0.0343)	(0.0346)	(0.0184)	(0.0306)		(0.0010)	(0.0012)	(0.0007)	(0.0010)
EUGP Third_{t-1}	-0.0078	-0.0178	0.0355*	-0.0183	$\text{EUGP Third Count}_{t-1}$	-0.0021*	-0.0028*	-0.0009	-0.0022**
	(0.0329)	(0.0343)	(0.0190)	(0.0298)		(0.0012)	(0.0015)	(0.0008)	(0.0011)
EUGP Third_{t}	0.0541*	0.0604*	0.0351**	0.0620**	$\text{EUGP Third Count}_{t}$	0.0011	0.0012	0.0005	0.0014
	(0.0314)	(0.0322)	(0.0179)	(0.0291)		(0.0011)	(0.0013)	(0.0009)	(0.0011)
EUGP Third_{t+1}	-0.0333	-0.0342	-0.0161	-0.0229	$\text{EUGP Third Count}_{t+1}$	-0.0000	0.0002	0.0002	-0.0002
	(0.0317)	(0.0327)	(0.0186)	(0.0292)		(0.0013)	(0.0014)	(0.0009)	(0.0012)
EUGP Third_{t+2}	0.0289	0.0350	0.0113	0.0291	$\text{EUGP Third Count}_{t+2}$	0.0015	0.0019	0.0016*	0.0014
	(0.0327)	(0.0336)	(0.0186)	(0.0296)		(0.0014)	(0.0015)	(0.0009)	(0.0013)
EUGP Third_{t+3}	0.0088	-0.0023	-0.0031	-0.0000	$\text{EUGP Third Count}_{t+3}$	-0.0010	-0.0011	-0.0006	-0.0010
	(0.0307)	(0.0317)	(0.0171)	(0.0279)		(0.0012)	(0.0013)	(0.0007)	(0.0011)
EUGP Third Impact	0.0763*	0.0709	0.1179***	0.0913**	EUGP Third Impact	0.0015	0.0020	0.0030***	0.0012
	(0.0433)	(0.0439)	(0.0271)	(0.0401)		(0.0014)	(0.0015)	(0.0009)	(0.0012)
bothWTO	-0.0357*	-0.0283	-0.0285	-0.0276	bothWTO	-0.0351*	-0.0279	-0.0263	-0.0261
	(0.0194)	(0.0197)	(0.0182)	(0.0183)		(0.0194)	(0.0197)	(0.0182)	(0.0182)
Observations	3,163,203	3,099,519	4,636,211	4,636,211	Observations	3,163,203	3,099,519	4,636,211	4,636,211
R2	0.8026	0.8029	0.7860	0.7860	R2	0.8026	0.8029	0.7860	0.7860
RTA x HS2 FE	Yes	Yes	Yes	Yes	RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes	Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes	Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes	Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4	Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from log-linear OLS regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table 10: EU GPs and Trade – PDOs vs. Other EU GPs

GP Measure: Binary				
Dep. Variable: Trade	(49)	(50)	(51)	(52)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
PDO$_{t-3}$	0.4755***	0.3773***	0.2141***	0.4601***
	(0.1043)	(0.1091)	(0.0677)	(0.1020)
PDO$_{t-2}$	0.0449	0.0855	0.0660	0.0554
	(0.0576)	(0.0613)	(0.0828)	(0.0595)
PDO$_{t-1}$	0.0200	0.0184	0.0572	0.0246
	(0.0517)	(0.0557)	(0.0477)	(0.0507)
PDO$_{t}$	-0.1262**	-0.0748	-0.1494***	-0.1282**
	(0.0589)	(0.0640)	(0.0483)	(0.0597)
PDO$_{t+1}$	-0.0229	-0.0421	-0.0496	-0.0023
	(0.0425)	(0.0449)	(0.0441)	(0.0429)
PDO$_{t+2}$	-0.0432	-0.0454	-0.0048	-0.0281
	(0.0508)	(0.0554)	(0.0454)	(0.0513)
PDO$_{t+3}$	0.1119	0.1567*	-0.0246	0.1303
	(0.0792)	(0.0807)	(0.0577)	(0.0801)
PDO Impact	0.4560***	0.4756***	0.1089	0.5118***
	(0.1578)	(0.1609)	(0.1193)	(0.1607)
Other EUGP$_{t-3}$	0.0953	0.1212	0.0799	0.0901
	(0.0771)	(0.0859)	(0.0550)	(0.0761)
Other EUGP$_{t-2}$	-0.0570	-0.1171**	-0.0389	-0.0596
	(0.0489)	(0.0586)	(0.0465)	(0.0500)
Other EUGP$_{t-1}$	0.0220	0.0107	-0.0276	0.0139
	(0.0428)	(0.0473)	(0.0404)	(0.0424)
Other EUGP$_{t}$	-0.1169**	-0.1577**	-0.0639	-0.1081*
	(0.0562)	(0.0621)	(0.0502)	(0.0583)
Other EUGP$_{t+1}$	0.1291***	0.1321***	0.0523	0.1280***
	(0.0452)	(0.0501)	(0.0414)	(0.0452)
Other EUGP$_{t+2}$	0.0873*	0.0901*	0.0576	0.0938*
	(0.0486)	(0.0543)	(0.0363)	(0.0511)
Other EUGP$_{t+3}$	-0.1108	-0.1569**	-0.1153*	-0.1198
	(0.0776)	(0.0725)	(0.0590)	(0.0801)
Other EUGP Impact	0.0490	-0.0776	-0.0558*	0.0383
	(0.1396)	(0.1462)	(0.0950)	(0.1408)
bothWTO	0.3744***	0.4301***	0.3913***	0.3949***
	(0.0985)	(0.1112)	(0.1067)	(0.1065)
Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832
PDO - Other EUGP p-value	0.1216	0.0427	0.3261	0.0793
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

GP Measure: Count				
Dep. Variable: Trade	(53)	(54)	(55)	(56)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
PDO Count$_{t-3}$	0.0088***	0.0071***	0.0029	0.0084***
	(0.0022)	(0.0022)	(0.0038)	(0.0022)
PDO Count$_{t-2}$	-0.0015	-0.0012	-0.0017	-0.0019
	(0.0013)	(0.0013)	(0.0060)	(0.0013)
PDO Count$_{t-1}$	0.0001	0.0016	0.0016	-0.0004
	(0.0020)	(0.0020)	(0.0028)	(0.0019)
PDO Count$_{t}$	-0.0024	-0.0018	-0.0027	-0.0018
	(0.0018)	(0.0020)	(0.0033)	(0.0018)
PDO Count$_{t+1}$	0.0028	0.0004	-0.0002	0.0031*
	(0.0017)	(0.0017)	(0.0027)	(0.0018)
PDO Count$_{t+2}$	-0.0030	-0.0023	-0.0044	-0.0021
	(0.0025)	(0.0027)	(0.0034)	(0.0025)
PDO Count$_{t+3}$	0.0039*	0.0036	-0.0065	0.0042*
	(0.0023)	(0.0025)	(0.0045)	(0.0024)
PDO Impact	0.0087**	0.0074*	-0.0111	0.0096**
	(0.0038)	(0.0039)	(0.0105)	(0.0039)
Other EUGP Count$_{t-3}$	0.0019	0.0038	0.0119**	0.0024
	(0.0019)	(0.0027)	(0.0052)	(0.0018)
Other EUGP Count$_{t-2}$	-0.0011	-0.0009	0.0013	-0.0009
	(0.0020)	(0.0026)	(0.0065)	(0.0021)
Other EUGP Count$_{t-1}$	0.0020	0.0052**	0.0083	0.0032*
	(0.0019)	(0.0026)	(0.0058)	(0.0018)
Other EUGP Count$_{t}$	-0.0014	-0.0028	-0.0046	-0.0022
	(0.0019)	(0.0029)	(0.0063)	(0.0021)
Other EUGP Count$_{t+1}$	0.0054***	0.0073***	0.0069	0.0050**
	(0.0020)	(0.0027)	(0.0068)	(0.0020)
Other EUGP Count$_{t+2}$	0.0016	-0.0011	0.0052	0.0010
	(0.0027)	(0.0041)	(0.0070)	(0.0028)
Other EUGP Count$_{t+3}$	0.0007	0.0008	-0.0141*	-0.0012
	(0.0027)	(0.0042)	(0.0080)	(0.0028)
Other EUGP Impact	0.0090***	0.0123**	0.0149	0.0074**
	(0.0035)	(0.0052)	(0.0097)	(0.0032)
bothWTO	0.3741***	0.4303***	0.3919***	0.3939***
	(0.0986)	(0.1112)	(0.1067)	(0.1066)
Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832
PDO - Other EUGP p-value	0.9511	0.4848	0.0769	0.6873
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table 11: EU GPs and Trade – Industry-specific Effects

GP Measure: Binary

Dep. Variable: Trade	(57)	(58)	(59)	(60)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP Animals Impact	0.5516**	0.4666**	0.0238	0.6655***
	(0.2172)	(0.2220)	(0.1512)	(0.2070)
EUGP Fats Impact	-0.2764	-0.2707	-0.3359	-0.1568
	(0.3517)	(0.3517)	(0.3177)	(0.3417)
EUGP Foodstuffs Impact	-0.0248	-0.2176	-0.2516	-0.0445
	(0.1736)	(0.1820)	(0.1454)	(0.1746)
EUGP Vegetables Impact	0.6822***	0.6044***	0.6918***	0.6861***
	(0.1799)	(0.1868)	(0.1752)	(0.1806)
bothWTO	0.3906***	0.4493***	0.3980***	0.4015***
	(0.1080)	(0.1218)	(0.1169)	(0.1167)
Observations	6,445,606	6,293,673	9,332,346	9,332,346
Pseudo R2	0.9857	0.9857	0.9833	0.9833
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

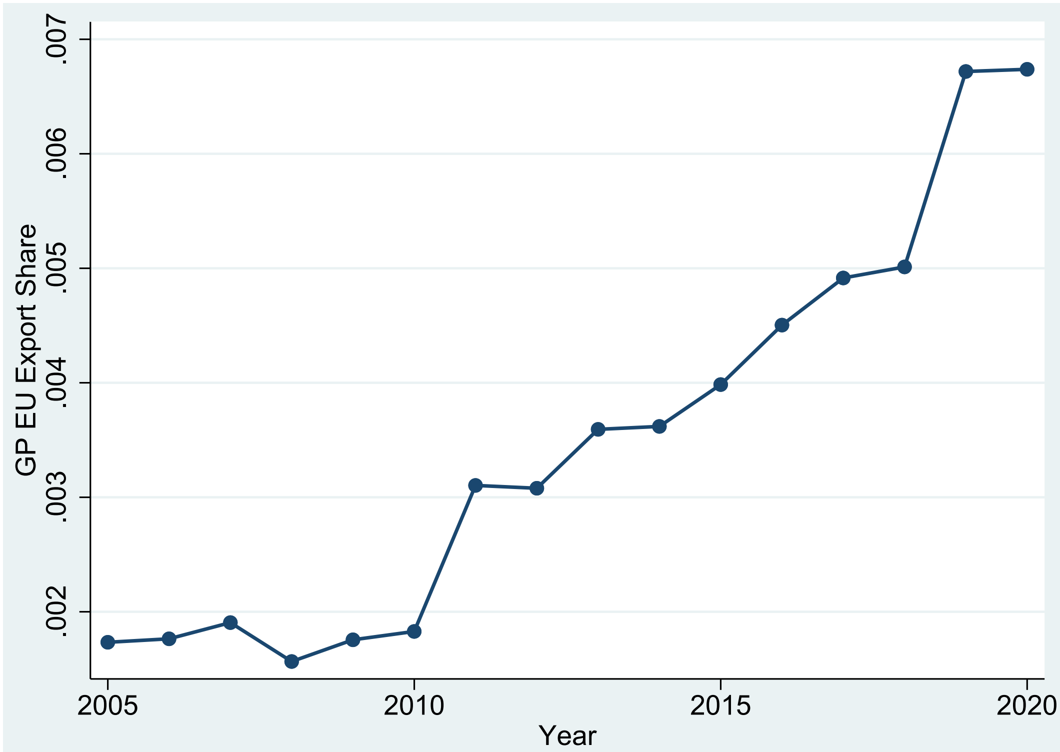
GP Measure: Count

Dep. Variable: Trade	(61)	(62)	(63)	(64)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP Animals Impact	0.0061*	0.0049	-0.0173*	0.0084**
	(0.0036)	(0.0039)	(0.0090)	(0.0038)
EUGP Fats Impact	-0.0015	-0.0017	0.0166	0.0014
	(0.0111)	(0.0114)	(0.0119)	(0.0098)
EUGP Foodstuffs Impact	0.0064*	0.0081*	0.0037	0.0041
	(0.0034)	(0.0049)	(0.0104)	(0.0033)
EUGP Vegetables Impact	0.0412***	0.0384***	0.1080**	0.0362***
	(0.0083)	(0.0080)	(0.0425)	(0.0085)
bothWTO	0.3902***	0.4496***	0.3979***	0.4003***
	(0.1081)	(0.1219)	(0.1170)	(0.1168)
Observations	6,445,606	6,293,673	9,332,346	9,332,346
Pseudo R2	0.9857	0.9857	0.9833	0.9833
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Note that the table reports the aggregate EU GP impact for the four listed industries consisting in each case of the sum of the 3-year lag, 2-year lag, 1-year lag, contemporaneous, 1-year lead, 2-year lead and 3-year lead coefficients. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Appendix A: Additional Results

Figure A1: Export Share of HS 6-digit Products with GPs in Total EU Exports



Notes: Author's own calculations based on data for the baseline EU sample. The figure shows the export share of HS 6-digit products with GPs in total EU exports.

Table A1: EU GPs and Trade – Baseline Results without RTA x HS2 Interactions

EUGP Measure: Binary				
Dep. Variable: Trade	(A1)	(A2)	(A3)	(A4)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
$EUGP_{t-3}$	0.2589***	0.2577***	0.1279**	0.2444***
	(0.0669)	(0.0696)	(0.0569)	(0.0660)
$EUGP_{t-2}$	-0.0077	-0.0510	-0.0333	-0.0064
	(0.0397)	(0.0449)	(0.0546)	(0.0409)
$EUGP_{t-1}$	0.0177	0.0084	0.0042	0.0171
	(0.0346)	(0.0364)	(0.0421)	(0.0339)
$EUGP_{t}$	-0.1277***	-0.1478***	-0.0742*	-0.1219***
	(0.0430)	(0.0432)	(0.0443)	(0.0443)
$EUGP_{t+1}$	0.1033***	0.1009***	0.0459	0.1102***
	(0.0361)	(0.0391)	(0.0380)	(0.0358)
$EUGP_{t+2}$	0.0797**	0.0832*	0.0588*	0.0892**
	(0.0398)	(0.0432)	(0.0324)	(0.0412)
$EUGP_{t+3}$	-0.0674	-0.1077*	-0.1229**	-0.0708
	(0.0617)	(0.0587)	(0.0530)	(0.0633)
EUGP Impact	0.2568**	0.1438	0.0065	0.2618**
	(0.1104)	(0.1152)	(0.0940)	(0.1118)
RTA	0.1309***	0.1305***	0.1291***	0.1272***
	(0.0231)	(0.0237)	(0.0233)	(0.0236)
bothWTO	0.3739***	0.4287***	0.3925***	0.3937***
	(0.0986)	(0.1111)	(0.1066)	(0.1065)
Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9859	0.9859	0.9832	0.9832
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

EUGP Measure: Count				
Dep. Variable: Trade	(A5)	(A6)	(A7)	(A8)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP $Count_{t-3}$	0.0054***	0.0058***	0.0049*	0.0056***
	(0.0014)	(0.0016)	(0.0029)	(0.0014)
EUGP $Count_{t-2}$	-0.0014	-0.0012	-0.0011	-0.0015
	(0.0011)	(0.0011)	(0.0047)	(0.0010)
EUGP $Count_{t-1}$	0.0010	0.0027*	0.0026	0.0012
	(0.0013)	(0.0015)	(0.0027)	(0.0013)
EUGP $Count_{t}$	-0.0010	-0.0009	-0.0016	-0.0010
	(0.0011)	(0.0013)	(0.0029)	(0.0011)
EUGP $Count_{t+1}$	0.0038***	0.0025*	0.0012	0.0039***
	(0.0012)	(0.0014)	(0.0026)	(0.0013)
EUGP $Count_{t+2}$	-0.0004	-0.0014	-0.0014	-0.0002
	(0.0017)	(0.0020)	(0.0032)	(0.0016)
EUGP $Count_{t+3}$	0.0021	0.0022	-0.0092**	0.0013
	(0.0016)	(0.0020)	(0.0036)	(0.0016)
EUGP Impact	0.0095***	0.0098***	-0.0046	0.0093***
	(0.0023)	(0.0028)	(0.0100)	(0.0024)
RTA	0.1301***	0.1280***	0.1286***	0.1268***
	(0.0228)	(0.0234)	(0.0232)	(0.0233)
bothWTO	0.3759***	0.4313***	0.3925***	0.3954***
	(0.0985)	(0.1110)	(0.1066)	(0.1065)
Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9859	0.9859	0.9832	0.9832
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table A2: EU GPs and Trade – Baseline Results with Extended Importer Sample

EUGP Measure: Binary

Dep. Variable: Trade	(A9)	(A10)	(A11)	(A12)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
$EUGP_{t-3}$	0.2464***	0.2461***	0.1255**	0.2358***
	(0.0630)	(0.0664)	(0.0549)	(0.0622)
$EUGP_{t-2}$	-0.0073	-0.0505	-0.0303	-0.0078
	(0.0370)	(0.0416)	(0.0517)	(0.0381)
$EUGP_{t-1}$	0.0368	0.0326	0.0178	0.0356
	(0.0341)	(0.0364)	(0.0427)	(0.0335)
$EUGP_{t}$	-0.1535***	-0.1794***	-0.0916**	-0.1533***
	(0.0436)	(0.0475)	(0.0466)	(0.0446)
$EUGP_{t+1}$	0.0783**	0.0751*	0.0016	0.0866**
	(0.0371)	(0.0403)	(0.0381)	(0.0370)
$EUGP_{t+2}$	0.0624	0.0691	0.0643*	0.0721*
	(0.0388)	(0.0424)	(0.0334)	(0.0400)
$EUGP_{t+3}$	-0.0787	-0.1086*	-0.1124**	-0.0782
	(0.0584)	(0.0563)	(0.0524)	(0.0594)
EUGP Impact	0.1844*	0.0844	-0.0250	0.1909*
	(0.1029)	(0.1081)	(0.0892)	(0.1042)
bothWTO	0.1290	0.2034**	0.1669*	0.1676*
	(0.1063)	(0.0888)	(0.0860)	(0.0860)
Observations	19,678,066	19,293,077	27,570,518	27,570,518
Pseudo R2	0.9814	0.9813	0.9783	0.9783
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

EUGP Measure: Count

Dep. Variable: Trade	(A13)	(A14)	(A15)	(A16)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP $Count_{t-3}$	0.0047***	0.0050***	0.0042	0.0049***
	(0.0013)	(0.0014)	(0.0028)	(0.0012)
EUGP $Count_{t-2}$	-0.0011	-0.0010	-0.0007	-0.0014
	(0.0010)	(0.0010)	(0.0046)	(0.0009)
EUGP $Count_{t-1}$	0.0008	0.0025*	0.0023	0.0010
	(0.0013)	(0.0014)	(0.0027)	(0.0013)
EUGP $Count_{t}$	-0.0018	-0.0020	-0.0022	-0.0019*
	(0.0011)	(0.0014)	(0.0028)	(0.0012)
EUGP $Count_{t+1}$	0.0036***	0.0026**	0.0000	0.0039***
	(0.0011)	(0.0013)	(0.0025)	(0.0012)
EUGP $Count_{t+2}$	-0.0013	-0.0024	-0.0015	-0.0010
	(0.0016)	(0.0020)	(0.0031)	(0.0016)
EUGP $Count_{t+3}$	0.0014	0.0016	-0.0090**	0.0008
	(0.0015)	(0.0019)	(0.0036)	(0.0016)
EUGP Impact	0.0063***	0.0065**	-0.0069	0.0064***
	(0.0021)	(0.0026)	(0.0093)	(0.0022)
bothWTO	0.1293	0.2042**	0.1670*	0.1679*
	(0.1063)	(0.0888)	(0.0860)	(0.0860)
Observations	19,678,066	19,293,077	27,570,518	27,570,518
Pseudo R2	0.9814	0.9813	0.9783	0.9783
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table A3: EU GPs and Trade – Baseline Results with EU RTA and Non-EU RTA Controls

	EUGP Measure: Binary					EUGP Measure: Count			
Dep. Variable: Trade	(A17)	(A18)	(A19)	(A20)	Dep. Variable: Trade	(A21)	(A22)	(A23)	(A24)
Sample	EU	EU15	Ind. EU	Ind. EU	Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU	EUGP Aggregate	EU	EU15	Ind. EU	EU
$EUGP_{t-3}$	0.2667***	0.2673***	0.1392**	0.2512***	EUGP $Count_{t-3}$	0.0055***	0.0059***	0.0054*	0.0056***
	(0.0652)	(0.0676)	(0.0562)	(0.0645)		(0.0014)	(0.0016)	(0.0029)	(0.0014)
$EUGP_{t-2}$	-0.0027	-0.0452	-0.0293	-0.0001	EUGP $Count_{t-2}$	-0.0011	-0.0010	-0.0007	-0.0012
	(0.0399)	(0.0445)	(0.0553)	(0.0411)		(0.0011)	(0.0011)	(0.0048)	(0.0011)
$EUGP_{t-1}$	0.0235	0.0141	0.0075	0.0220	EUGP $Count_{t-1}$	0.0011	0.0030*	0.0027	0.0013
	(0.0339)	(0.0361)	(0.0415)	(0.0331)		(0.0014)	(0.0015)	(0.0028)	(0.0014)
$EUGP_{t}$	-0.1813***	-0.2068***	-0.1219**	-0.1643***	EUGP $Count_{t}$	-0.0021	-0.0022	-0.0034	-0.0021
	(0.0482)	(0.0557)	(0.0485)	(0.0496)		(0.0013)	(0.0017)	(0.0029)	(0.0013)
$EUGP_{t+1}$	0.1158***	0.1127***	0.0526	0.1201***	EUGP $Count_{t+1}$	0.0041***	0.0028**	0.0014	0.0041***
	(0.0365)	(0.0394)	(0.0385)	(0.0364)		(0.0012)	(0.0014)	(0.0027)	(0.0013)
$EUGP_{t+2}$	0.0568	0.0669	0.0501	0.0748*	EUGP $Count_{t+2}$	-0.0009	-0.0018	-0.0016	-0.0005
	(0.0407)	(0.0445)	(0.0327)	(0.0419)		(0.0016)	(0.0020)	(0.0032)	(0.0016)
$EUGP_{t+3}$	-0.0680	-0.1078*	-0.1234**	-0.0712	EUGP $Count_{t+3}$	0.0020	0.0022	-0.0093***	0.0013
	(0.0624)	(0.0589)	(0.0532)	(0.0640)		(0.0016)	(0.0020)	(0.0036)	(0.0016)
EUGP Impact	0.2110**	0.1012	-0.0252	0.2325**	EUGP Impact	0.0086***	0.0089***	-0.0055	0.0084***
	(0.1024)	(0.1100)	(0.0867)	(0.1038)		(0.0023)	(0.0028)	(0.0099)	(0.0023)
bothWTO	0.3771***	0.4307***	0.3958***	0.3964***	bothWTO	0.3789***	0.4327***	0.3957***	0.3980***
	(0.0983)	(0.1110)	(0.1064)	(0.1063)		(0.0983)	(0.1109)	(0.1064)	(0.1063)
Observations	7,839,129	7,686,223	11,441,000	11,441,000	Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832	Pseudo R2	0.9860	0.9859	0.9832	0.9832
EU RTA x HS2 FE	Yes	Yes	Yes	Yes	RTA x HS2 FE	Yes	Yes	Yes	Yes
Non-EU RTA x HS2 FE	Yes	Yes	Yes	Yes	RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes	Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes	Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes	Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4	Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table A4: EU GPs and Trade – Baseline Results with 2-year Intervals

EUGP Measure: Binary				
Dep. Variable: Trade	(A25)	(A26)	(A27)	(A28)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
$EUGP_{t-3}$	0.2253***	0.2336**	0.1799***	0.2473***
	(0.0852)	(0.0925)	(0.0687)	(0.0859)
$EUGP_{t-2}$	0.0119	-0.0526	-0.1012	-0.0306
	(0.1038)	(0.1120)	(0.1038)	(0.1028)
$EUGP_{t-1}$	0.0711	0.0659	0.0010	0.0964
	(0.1042)	(0.1107)	(0.1176)	(0.1054)
$EUGP_{t}$	-0.2156**	-0.2294*	-0.0866	-0.2314**
	(0.1100)	(0.1175)	(0.1199)	(0.1117)
$EUGP_{t+1}$	0.1194	0.0810	0.1141	0.1719*
	(0.1033)	(0.1054)	(0.1060)	(0.1009)
$EUGP_{t+2}$	0.0466	0.1065	-0.0342	0.0125
	(0.1109)	(0.1101)	(0.1016)	(0.1079)
$EUGP_{t+3}$	-0.0603	-0.1275*	-0.1031	-0.0591
	(0.0809)	(0.0762)	(0.0640)	(0.0805)
EUGP Impact	0.1983*	0.0775	-0.0301	0.2069*
	(0.1085)	(0.1143)	(0.0939)	(0.1113)
bothWTO	0.2985***	0.3454***	0.3163***	0.3168***
	(0.0983)	(0.1028)	(0.1032)	(0.1031)
Observations	3,406,258	3,340,553	4,986,459	4,986,459
Pseudo R2	0.9864	0.9863	0.9838	0.9838
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

EUGP Measure: Count				
Dep. Variable: Trade	(A29)	(A30)	(A31)	(A32)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP $Count_{t-3}$	0.0051***	0.0060***	0.0000	0.0062***
	(0.0017)	(0.0018)	(0.0066)	(0.0016)
EUGP $Count_{t-2}$	-0.0000	-0.0018	0.0050	-0.0023
	(0.0029)	(0.0030)	(0.0068)	(0.0028)
EUGP $Count_{t-1}$	-0.0014	0.0015	-0.0010	0.0002
	(0.0029)	(0.0031)	(0.0089)	(0.0029)
EUGP $Count_{t}$	0.0004	-0.0001	0.0008	0.0003
	(0.0035)	(0.0038)	(0.0091)	(0.0036)
EUGP $Count_{t+1}$	0.0015	0.0009	-0.0020	0.0025
	(0.0038)	(0.0044)	(0.0063)	(0.0039)
EUGP $Count_{t+2}$	-0.0008	-0.0024	-0.0026	-0.0014
	(0.0033)	(0.0040)	(0.0061)	(0.0033)
EUGP $Count_{t+3}$	0.0036	0.0041	-0.0048	0.0028
	(0.0023)	(0.0026)	(0.0044)	(0.0023)
EUGP Impact	0.0085***	0.0082***	-0.0045	0.0082***
	(0.0024)	(0.0029)	(0.0097)	(0.0024)
bothWTO	0.3006***	0.3478***	0.3166***	0.3185***
	(0.0982)	(0.1027)	(0.1032)	(0.1031)
Observations	3,406,258	3,340,553	4,986,459	4,986,459
Pseudo R2	0.9864	0.9863	0.9838	0.9838
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table A5: EU GPs and Trade – Baseline Results with RTA/WTO Leads and Lags

	EUGP Measure: Binary					**EUGP Measure: Count**			
Dep. Variable: Trade	(A33)	(A34)	(A35)	(A36)	Dep. Variable: Trade	(A37)	(A38)	(A39)	(A40)
Sample	EU	EU15	Ind. EU	Ind. EU	Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU	EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP_{t-3}	0.2737***	0.2756***	0.1254**	0.2492***	EUGP Count_{t-3}	0.0055***	0.0059***	0.0053*	0.0055***
	(0.0706)	(0.0737)	(0.0588)	(0.0701)		(0.0014)	(0.0016)	(0.0029)	(0.0014)
EUGP_{t-2}	-0.1065**	-0.1392***	-0.0870	-0.1034**	EUGP Count_{t-2}	-0.0025**	-0.0025**	-0.0026	-0.0027***
	(0.0416)	(0.0461)	(0.0553)	(0.0422)		(0.0010)	(0.0011)	(0.0044)	(0.0010)
EUGP_{t-1}	-0.0049	-0.0199	-0.0143	-0.0091	EUGP Count_{t-1}	-0.0003	0.0009	0.0009	-0.0004
	(0.0367)	(0.0391)	(0.0431)	(0.0359)		(0.0013)	(0.0014)	(0.0025)	(0.0013)
EUGP_{t}	-0.0948**	-0.1110**	-0.0401	-0.0776*	EUGP Count_{t}	-0.0008	-0.0004	-0.0010	-0.0006
	(0.0428)	(0.0452)	(0.0452)	(0.0440)		(0.0011)	(0.0014)	(0.0030)	(0.0011)
EUGP_{t+1}	0.0716*	0.0681	0.0217	0.0840**	EUGP Count_{t+1}	0.0035***	0.0023	0.0008	0.0038***
	(0.0407)	(0.0422)	(0.0384)	(0.0401)		(0.0012)	(0.0014)	(0.0027)	(0.0013)
EUGP_{t+2}	0.1384***	0.1397***	0.0935***	0.1581***	EUGP Count_{t+2}	0.0010	0.0002	0.0004	0.0013
	(0.0445)	(0.0469)	(0.0340)	(0.0448)		(0.0017)	(0.0022)	(0.0034)	(0.0017)
EUGP_{t+3}	-0.0886	-0.1298**	-0.1329**	-0.0893	EUGP Count_{t+3}	0.0021	0.0023	-0.0092***	0.0013
	(0.0629)	(0.0626)	(0.0533)	(0.0660)		(0.0016)	(0.0020)	(0.0036)	(0.0017)
EUGP Impact	0.1889*	0.0836	-0.0336	0.2120*	EUGP Impact	0.0083***	0.0087***	-0.0054	0.0083***
	(0.1127)	(0.1177)	(0.0945)	(0.1145)		(0.0024)	(0.0029)	(0.0098)	(0.0024)
bothWTO_{t-3}	0.2599***	0.2739***	0.2690***	0.2699***	bothWTO_{t-3}	0.2619***	0.2762***	0.2694***	0.2708***
	(0.0801)	(0.0846)	(0.0825)	(0.0826)		(0.0801)	(0.0846)	(0.0826)	(0.0826)
bothWTO_{t-2}	0.0361	0.0541	0.0308	0.0330	bothWTO_{t-2}	0.0338	0.0518	0.0296	0.0308
	(0.0572)	(0.0606)	(0.0593)	(0.0593)		(0.0573)	(0.0607)	(0.0594)	(0.0593)
bothWTO_{t-1}	-0.0186	-0.0130	-0.0050	-0.0053	bothWTO_{t-1}	-0.0154	-0.0097	-0.0041	-0.0027
	(0.0540)	(0.0572)	(0.0556)	(0.0555)		(0.0540)	(0.0572)	(0.0556)	(0.0555)
bothWTO_{t}	0.2079***	0.2206***	0.2004***	0.1995***	bothWTO_{t}	0.2074***	0.2205***	0.2002***	0.1997***
	(0.0576)	(0.0608)	(0.0602)	(0.0601)		(0.0575)	(0.0607)	(0.0601)	(0.0601)
bothWTO_{t+1}	-0.1119	-0.0999	-0.0993	-0.1011	bothWTO_{t+1}	-0.1116	-0.0999	-0.0991	-0.1004
	(0.0766)	(0.0803)	(0.0807)	(0.0807)		(0.0766)	(0.0803)	(0.0807)	(0.0806)
bothWTO_{t+2}	0.3766***	0.4242***	0.4038***	0.4053***	bothWTO_{t+2}	0.3738***	0.4223***	0.4034***	0.4034***
	(0.1191)	(0.1303)	(0.1275)	(0.1274)		(0.1192)	(0.1303)	(0.1275)	(0.1275)
bothWTO_{t+3}	-0.3549	-0.3774	-0.3645	-0.3606	bothWTO_{t+3}	-0.3494	-0.3709	-0.3659	-0.3572
	(0.2703)	(0.2940)	(0.2803)	(0.2799)		(0.2697)	(0.2933)	(0.2806)	(0.2793)
Observations	7,839,129	7,686,223	11,441,000	11,441,000	Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9833	0.9833	Pseudo R2	0.9860	0.9859	0.9832	0.9832
RTA (t-3) to (t+3) x HS2 FE	Yes	Yes	Yes	Yes	RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes	Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes	Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes	Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4	Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table A6: EU GPs and Trade – High vs. Low EU Export Shares

	GP Measure: Binary			
Dep. Variable: Trade	(A41)	(A42)	(A43)	(A44)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP $High_{t-3}$	0.2686***	0.4114**	0.2360**	0.2595***
	(0.0738)	(0.1976)	(0.1120)	(0.0729)
EUGP $High_{t-2}$	-0.0085	-0.0610	-0.0736	-0.0078
	(0.0420)	(0.0744)	(0.0689)	(0.0433)
EUGP $High_{t-1}$	0.0104	0.0315	-0.4142**	0.0088
	(0.0361)	(0.1462)	(0.1948)	(0.0354)
EUGP $High_{t}$	-0.1685***	-0.0226	0.2258**	-0.1613***
	(0.0418)	(0.1062)	(0.1074)	(0.0433)
EUGP $High_{t+1}$	0.0852**	0.0231	0.0148	0.0903***
	(0.0341)	(0.1154)	(0.0767)	(0.0346)
EUGP $High_{t+2}$	0.0203	0.0409	-0.1071	0.0279
	(0.0317)	(0.1454)	(0.0671)	(0.0324)
EUGP $High_{t+3}$	0.0261	-0.0881	0.0670	0.0264
	(0.0541)	(0.1861)	(0.1512)	(0.0562)
EUGP High Impact	0.2336*	0.3352	-0.0514	0.2439**
	(0.1194)	(0.2520)	(0.2479)	(0.1214)
EUGP Low_{t-3}	0.2384***	0.2494***	0.1169*	0.1703*
	(0.0888)	(0.0746)	(0.0638)	(0.0891)
EUGP Low_{t-2}	0.0900	-0.0366	-0.0224	0.0948
	(0.0779)	(0.0460)	(0.0591)	(0.0806)
EUGP Low_{t-1}	0.1287*	0.0120	0.0171	0.1332*
	(0.0766)	(0.0357)	(0.0438)	(0.0777)
EUGP Low_{t}	-0.1659	-0.1980***	-0.1159**	-0.1739
	(0.1386)	(0.0483)	(0.0475)	(0.1387)
EUGP Low_{t+1}	0.1515	0.1049***	0.0442	0.1491
	(0.1185)	(0.0397)	(0.0401)	(0.1169)
EUGP Low_{t+2}	0.2427**	0.0827*	0.0760**	0.2753**
	(0.1106)	(0.0435)	(0.0332)	(0.1142)
EUGP Low_{t+3}	-0.3778***	-0.1049*	-0.1426***	-0.3885***
	(0.1452)	(0.0591)	(0.0520)	(0.1474)
EUGP Low Impact	0.3075**	0.1095	-0.0269	0.2602**
	(0.1340)	(0.1199)	(0.0947)	(0.1306)
bothWTO	0.3720***	0.4273***	0.3912***	0.3923***
	(0.0987)	(0.1114)	(0.1067)	(0.1066)
Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832
High - Low p-value	0.6386	0.4166	0.9217	0.9167
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

	GP Measure: Count			
Dep. Variable: Trade	(A45)	(A46)	(A47)	(A48)
Sample	EU	EU15	Ind. EU	Ind. EU
GI Aggregate	EU	EU15	Ind. EU	EU
EUGP High $Count_{t-3}$	0.0061***	0.0033	0.0246***	0.0095***
	(0.0015)	(0.0048)	(0.0073)	(0.0029)
EUGP High $Count_{t-2}$	-0.0019*	-0.0038***	0.0003	-0.0058**
	(0.0010)	(0.0015)	(0.0040)	(0.0024)
EUGP High $Count_{t-1}$	0.0014	-0.0043	0.0190	-0.0060*
	(0.0014)	(0.0163)	(0.0160)	(0.0032)
EUGP High $Count_{t}$	-0.0025**	0.0377***	-0.0224	-0.0036*
	(0.0012)	(0.0137)	(0.0308)	(0.0020)
EUGP High $Count_{t+1}$	0.0039***	0.0028	-0.0025	0.0105*
	(0.0014)	(0.0097)	(0.0182)	(0.0060)
EUGP High $Count_{t+2}$	0.0002	-0.0191	-0.0541*	-0.0138
	(0.0018)	(0.0174)	(0.0280)	(0.0090)
EUGP High $Count_{t+3}$	0.0021	0.0209	0.0333	0.0121***
	(0.0016)	(0.0245)	(0.0258)	(0.0038)
EUGP High Impact	0.0094***	0.0375	-0.0018	0.0030
	(0.0024)	(0.0319)	(0.0363)	(0.0079)
EUGP Low $Count_{t-3}$	0.0011	0.0063***	0.0032	0.0054***
	(0.0030)	(0.0014)	(0.0029)	(0.0014)
EUGP Low $Count_{t-2}$	0.0044	-0.0009	-0.0006	-0.0009
	(0.0039)	(0.0012)	(0.0051)	(0.0011)
EUGP Low $Count_{t-1}$	-0.0020	0.0024*	0.0035	0.0012
	(0.0030)	(0.0014)	(0.0028)	(0.0014)
EUGP Low $Count_{t}$	0.0019	-0.0023	-0.0031	-0.0019
	(0.0029)	(0.0015)	(0.0028)	(0.0012)
EUGP Low $Count_{t+1}$	0.0038	0.0026*	0.0013	0.0038***
	(0.0027)	(0.0014)	(0.0027)	(0.0013)
EUGP Low $Count_{t+2}$	-0.0073	-0.0013	-0.0001	0.0005
	(0.0053)	(0.0021)	(0.0032)	(0.0016)
EUGP Low $Count_{t+3}$	0.0015	0.0021	-0.0105***	0.0003
	(0.0047)	(0.0020)	(0.0034)	(0.0017)
EUGP Low Impact	0.0035	0.0090***	-0.0063	0.0084***
	(0.0062)	(0.0029)	(0.0096)	(0.0024)
bothWTO	0.3731***	0.4295***	0.3911***	0.3938***
	(0.0986)	(0.1113)	(0.1067)	(0.1066)
Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832
High - Low p-value	0.3418	0.3659	0.9019	0.4690
RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Table A7: Countries in Sample

Afghanistan	French South. & Ant. Territories	North Macedonia
Albania*	Gabon	Norway*
Algeria*	Gambia, The	Oman
American Samoa	Georgia*	Pakistan
Andorra	Ghana	Palau
Angola	Greenland	Panama*
Anguilla	Grenada	Papua New Guinea
Antigua and Barbuda	Guam	Paraguay
Argentina	Guatemala*	Peru*
Armenia*	Guinea	Philippines
Aruba	Guyana	Qatar
Australia*	Haiti	Russian Federation*
Azerbaijan	Honduras*	Rwanda
Bahamas, The	Hong Kong SAR, China*	Saint Helena
Bahrain	Iceland*	Saint Pierre and Miquelon
Bangladesh	India	Samoa
Barbados	Indonesia	San Marino
Belarus	Iran, Islamic Rep.	Sao Tome and Principe
Belize	Iraq	Saudi Arabia*
Benin	Israel*	Senegal
Bermuda	Jamaica	Serbia*
Bhutan	Japan*	Seychelles
Bolivia	Jordan	Sierra Leone
Bosnia and Herzegovina*	Kazakhstan	Singapore*
Botswana	Kenya	Solomon Islands
Brazil*	Kiribati	Somalia
British Virgin Islands	Korea, Dem. Rep.	South Africa*
Brunei Darussalam	Korea, Rep*	Sri Lanka
Burkina Faso	Kuwait	St Kitts and Nevis
Burundi	Kyrgyz Republic	St Lucia
Cabo Verde	Lao PDR	St Vincent and the Grenadines
Cambodia	Lebanon	Sudan
Cameroon	Lesotho	Suriname
Canada*	Liberia	Switzerland*
Cayman Islands	Libya	Syrian Arab Republic
Central African Republic	Macao SAR, China	Tajikistan
Chad	Madagascar	Tanzania
Chile*	Malawi	Thailand
China*	Malaysia	Timor-Leste
Colombia*	Maldives	Togo
Comoros	Mali	Tokelau
Congo, Dem. Rep.	Marshall Islands	Tonga
Congo, Rep.	Mauritania	Trinidad and Tobago
Cook Islands	Mauritius	Tunisia
Costa Rica*	Mexico*	Turkey*
Cote d'Ivoire	Micronesia	Turkmenistan
Cuba	Moldova*	Turks and Caicos Islands
Curacao	Mongolia	Uganda
Djibouti	Montenegro*	Ukraine*
Dominica	Morocco*	United Arab Emirates*
Dominican Republic	Mozambique	United States*
Ecuador*	Myanmar	Uruguay
Egypt, Arab Rep.*	Namibia	Uzbekistan
El Salvador*	Nauru	Vanuatu
Eritrea	Nepal	Venezuela, RB
Eswatini	Netherlands Antilles	Vietnam*
Ethiopia	New Caledonia	West Bank and Gaza
European Union	New Zealand	Yemen, Rep.
Falkland Island	Nicaragua*	Zambia
Fiji	Niger	Zimbabwe
French Polynesia	Nigeria*	

Notes: All listed countries are present as exporters; countries with * are also present as importers.

Appendix B: EU GP Agreements Data

The key to the analysis in this paper is the product-level geographical protection data from EU agreements. To obtain this information, I proceed in two steps. First, for all relevant EU agreements (see Table 1), I locate the relevant portions of the agreement texts with the GP information. Table B1 below provides for each of the agreements listed in Table 1 the link to the actual agreement text and the page numbers with the relevant data. Figure B1 provides a sample excerpt from the EU-Japan GP Agreement Text. In this case, the page lists four GPs that Italian producers have enjoyed in Japan since February 1, 2019.

Figure B1: Excerpt from EU-Japan GP Agreement Text

ITALY

Name to be protected	Transcription into Japanese (for information purposes)	Category of good and short description [in square brackets, for information purpose]
Aceto Balsamico di Modena	アチェート・バルサミコ・ディ・モデナ	Other products of Annex I to the TFEU (spices etc.) [wine vinegar]
Aceto balsamico tradizionale di Modena	アチェート・バルサミコ・トラディツィオナーレ・ディ・モデナ	Other products of Annex I to the TFEU (spices etc.) [wine vinegar]
Asiago[1/2]	アジアーゴ	Cheeses [hard cow milk cheese]
Bresaola della Valtellina	ブレザオラ・デッラ・ヴァルテッリーナ	Meat products (cooked, salted, smoked, etc.) [dry cured beef meat]

Notes: The figure shows p. 72 of the EU-Japan GP agreement. See Table B1 for link to agreement text.

In the second step, I then merge this data with the list of all geographical protections registered by EU members, which contains the respective products' HS 6-digit codes. As described in section 2, Raimondi et al. (2020) generate this list for all EU agricultural and food GPs that were registered between 1996 and 2014. I expand this list to include all EU GPs registered between 2015 and 2023, correct some mismatches in the existing data, and expand the data to also account for aromatised wines and spirits. I obtain information on EU-registered GPs from the Ambrosia database.[30] To identify and match the relevant HS 6-digit codes to EU GPs, I rely on the detailed product descriptions provided in Ambrosia.

Taking as example the GPs in Figure B1, 'Aceto Balsamico di Modena' and 'Aceto balsamico tradizionale di Modena' are classified in HS code 220900 (Vinegar and substitutes for vinegar obtained from acetic acid). 'Asiago' cheese falls under HS code 040690 (Cheese and curd: Other cheese), whereas 'Bresaola della Valtellina' is classified in the HS code 021020 (Meat and edible meat offal, salted, in brine, dried or smoked; edible flours and meals of meat or meat offal: Meat of bovine animals). I collect all HS 6-digit information in the HS2002 nomenclature as the trade data used in this paper goes back to the year 2005. In addition to the actual HS codes, the EU GP HS 6-digit database also contains information on whether a product is classified as PDO or PGI (all spirits and aromatised wines are GIs) – see section 2 for the differences between these categories. With the data compiled in the second step, I then generate the EU GP dummy and count measures

[30] The Ambrosia database can be accessed at https://ec.europa.eu/agriculture/eambrosia/geographical-indications-register/.

described in section 3.

Note that I follow Raimondi et al. (2020) in my compilation of the final EU GP list in choosing an as narrow as possible HS 6-digit code definition for each product. For instance, I classify the registered British GP 'Orkney beef' under the HS 6-digit code 020110 (Meat of bovine animals, fresh or chilled: Carcasses and half-carcasses). However, one could also classify this product under the HS 6-digit code 020210 (Meat of bovine animals, frozen: Carcasses and half-carcasses). I reran the above specifications with alternative EU GP dummy and count measure that took these possible 'wider' definitions into account. Table B2 below reports the baseline results with this 'wider' EU GP definition. These estimates are very similar to those obtained with the 'narrow' EU GP definition reported in Table 4 and Table 5.

Table B1: Geographical Protection Agreements of the EU - Agreement Texts

EU Partner	Agreement Text	Pages
Albania	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02006A0901(01)-20090301&from=EN	194-198
Armenia	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22018A0126(01)&from=EN	295-380
Bosnia and Herzegovina	https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:169:0013:0807:EN:PDF%20	763-775
Canada 1	https://www.europarl.europa.eu/cmsdata/121890/Agreement_trade_wines_spirits_EU-Canada_2003.pdf	51-57
Canada 2	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22017A0114(01)&from=EN	436-444
Chile 1	https://eur-lex.europa.eu/resource.html?uri=cellar:f83a503c-fa20-4b3a-9535-f1074175eaf0.0004.02/DOC_2&format=PDF	1204-1209
Chile 2	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022D0728(01)	5-14
China	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22020A1203(01)&from=EN	20-25
Colombia	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2012:354:FULL&from=EN	2598-2602
Costa Rica	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A1215(01)&from=EN	2601-2608
Ecuador	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2016:356:FULL&from=EN	2598-2602
El Salvador	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A1215(01)&from=EN	2601-2608
Georgia	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A0330(01)&from=EN	10-42, 124-140
Guatemala	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A1215(01)&from=EN	2601-2608
Honduras	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A1215(01)&from=EN	2601-2608
Iceland 1	https://op.europa.eu/en/publication-detail/-/publication/650e7cf9-3ffe-4c4b-8c6c-dde12018fec6/language-en/format-PDF/source-231622990	689
Iceland 2	https://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=CELEX:22017A1024(01)&from=en	10-54
Japan	https://trade.ec.europa.eu/doclib/docs/2018/august/tradoc_157234.pdf#page=65	65-79, 86-104

continued ...

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EU Partner	Agreement Text	Pages
Liechtenstein*	https://op.europa.eu/en/publication-detail/-/publication/650e7cf9-3ffe-4c4b-8c6c-dde12018fec6/language-en/format-PDF/source-231622990	689
Mexico 1	https://eur-lex.europa.eu/resource.html?uri=cellar:30da3b97-660b-4c8f-8822-4e0c3cda302c.0004.02/DOC_2&format=PDF	21-25
Mexico 2	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:JOL_2004_160_R_NS017&from=en	5-10
Moldova	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22013A0115(01)&from=EN	11-169
Montenegro	https://eur-lex.europa.eu/resource.html?uri=cellar:0aa464d2-f14e-47ee-a72e-062b423c44bc.0006.01/DOC_2&format=PDF	6, 181-189
Nicaragua	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A1215(01)&from=EN	2601-2608
Norway	https://op.europa.eu/en/publication-detail/-/publication/650e7cf9-3ffe-4c4b-8c6c-dde12018fec6/language-en/format-PDF/source-231622990	689
Panama	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A1215(01)&from=EN	2601-2608
Peru	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2012:354:FULL&from=EN	2598-2602
Serbia	https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:028:0002:0397:EN:PDF	6, 263-270
Singapore	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22019A1114(01)&from=EN#page=1	635-648
South Africa 1	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2002:028:FULL&from=EN	120-124
South Africa 2	https://trade.ec.europa.eu/doclib/docs/2015/october/tradoc_153915.pdf	2089-2100
South Korea	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22011A0514(01)&from=EN	1319-1323, 1331-1333
Switzerland 1	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22002A0430(04)&from=EN	290-296, 300
Switzerland 2	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22011A1116(01)&qid=1635001010521&from=EN	12-44
Switzerland 3	https://eur-lex.europa.eu/legal-content/fr/TXT/PDF/?uri=CELEX:22017D1189&from=EN	187-237
Ukraine	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22014A0529(01)&from=EN	1781-1815, 1912-1927
USA	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:21994A0624(01)&from=EN	1
Vietnam	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2020:186:FULL&from=EN#page=3	1296-1303

Table B2: EU GPs and Trade – Baseline Results with Wide EU GP Definition

	EUGP Measure: Binary					EUGP Measure: Count			
Dep. Variable: Trade	(B1)	(B2)	(B3)	(B4)	Dep. Variable: Trade	(B5)	(B6)	(B7)	(B8)
Sample	EU	EU15	Ind. EU	Ind. EU	Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU	EUGP Aggregate	EU	EU15	Ind. EU	EU
Wide $EUGP_{t-3}$	0.2130***	0.2050***	0.0868	0.1982***	Wide EUGP $Count_{t-3}$	0.0059***	0.0065***	0.0057*	0.0067***
	(0.0578)	(0.0621)	(0.0529)	(0.0586)		(0.0016)	(0.0019)	(0.0033)	(0.0016)
Wide $EUGP_{t-2}$	0.0881**	0.0473	0.0128	0.0714*	Wide EUGP $Count_{t-2}$	-0.0003	-0.0003	-0.0002	-0.0010
	(0.0403)	(0.0444)	(0.0517)	(0.0397)		(0.0012)	(0.0013)	(0.0051)	(0.0011)
Wide $EUGP_{t-1}$	-0.0086	-0.0037	-0.0077	0.0103	Wide EUGP $Count_{t-1}$	0.0012	0.0026	0.0018	0.0010
	(0.0342)	(0.0346)	(0.0402)	(0.0314)		(0.0014)	(0.0016)	(0.0027)	(0.0014)
Wide $EUGP_{t}$	-0.1302***	-0.1615***	-0.1030**	-0.1247***	Wide EUGP $Count_{t}$	-0.0020*	-0.0023*	-0.0064***	-0.0021*
	(0.0389)	(0.0432)	(0.0440)	(0.0407)		(0.0011)	(0.0013)	(0.0021)	(0.0011)
Wide $EUGP_{t+1}$	0.0909***	0.0933**	0.0463	0.0826**	Wide EUGP $Count_{t+1}$	0.0025**	0.0010	0.0013	0.0025*
	(0.0331)	(0.0365)	(0.0375)	(0.0330)		(0.0013)	(0.0015)	(0.0028)	(0.0013)
Wide $EUGP_{t+2}$	0.0986**	0.0833*	0.0664**	0.1102**	Wide EUGP $Count_{t+2}$	0.0020	0.0010	-0.0001	0.0023
	(0.0398)	(0.0451)	(0.0329)	(0.0473)		(0.0018)	(0.0021)	(0.0030)	(0.0018)
Wide $EUGP_{t+3}$	-0.0135	-0.0470	-0.1018*	-0.0323	Wide EUGP $Count_{t+3}$	0.0043**	0.0052**	-0.0083**	0.0032*
	(0.0557)	(0.0553)	(0.0523)	(0.0599)		(0.0018)	(0.0022)	(0.0039)	(0.0019)
Wide EUGP Impact	0.3383***	0.2168**	-0.0003	0.3157***	Wide EUGP Impact	0.0135***	0.0136***	-0.0061	0.0126***
	(0.1021)	(0.1053)	(0.0874)	(0.1048)		(0.0033)	(0.0039)	(0.0105)	(0.0032)
bothWTO	0.3730***	0.4284***	0.3914***	0.3931***	bothWTO	0.3760***	0.4323***	0.3913***	0.3955***
	(0.0986)	(0.1113)	(0.1067)	(0.1066)		(0.0985)	(0.1111)	(0.1067)	(0.1065)
Observations	7,839,129	7,686,223	11,441,000	11,441,000	Observations	7,839,129	7,686,223	11,441,000	11,441,000
Pseudo R2	0.9860	0.9859	0.9832	0.9832	Pseudo R2	0.9860	0.9859	0.9832	0.9832
RTA x HS2 FE	Yes	Yes	Yes	Yes	RTA x HS2 FE	Yes	Yes	Yes	Yes
Imp x HS6 x Year FE	Yes	Yes	Yes	Yes	Imp x HS6 x Year FE	Yes	Yes	Yes	Yes
Exp x HS6 x Year FE	Yes	Yes	Yes	Yes	Exp x HS6 x Year FE	Yes	Yes	Yes	Yes
Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes	Imp x Exp x HS6 FE	Yes	Yes	Yes	Yes
Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4	Clustering	ie x HS4	ie x HS4	ie x HS4	ie x HS4

Notes: The table presents results from PPML regressions. Clustered standard errors at the importer/exporter/4-digit HS level are in parentheses. The Ind. EU samples treat all EU members as a single exporter for clustering purposes. ***, ** and * indicate 1 percent, 5 percent and 10 percent significance levels, respectively.

Appendix C: Cross-border GPs and Trade Flows

In this part, I discuss in more detail the theoretical mechanism how geographical protections can affect product-level trade flows between countries. The theoretical discussion below follows Gaigné and Gouel (2022) and my main contribution is to highlight the relevant theoretical channel for cross-border GPs on trade.

Using the standard Dixit-Stiglitz constant elasticity of substitution utility assumption, demand in country i for variety ν of product k from exporter j is given by

$$x_{ij}^k(\nu) = p_{ij}^k(\nu) q_{ij}^k(\nu) = \left(\bar{\xi}_{ij}^k \left[\theta_{ij}^k(\nu) \right]^{\xi_i^k} \right)^{\epsilon^k - 1} E_i^k \left(\frac{P_i^k}{p_{ij}^k(\nu)} \right)^{\epsilon^k - 1} , \tag{C.1}$$

where E_i^k is the total amount of spending in country i on product k, P_i^k is the aggregate price index in i, and $p_{ij}^k(\nu)$ is the price of j's product k variety ν in i. $\epsilon^k > 1$ is the constant elasticity of substitution between varieties. Importantly, the first term in equation (C.1) captures the appeal of variety ν from country j in country i. More specifically, $\bar{\xi}_{ij}^k$ measures the attraction of consumers to product k in i from exporter j, $\theta_{ij}^k(\nu)$ captures the actual product quality of variety ν, and ξ_i^k signals the degree of appreciation for a larger number of differentiated products. Based on equation (C.1), establishing a cross-border GP for exporter j in country i is likely to increase the consumer taste in i for product k originating from j, $\bar{\xi}_{ij}^k$, raising in turn the quantity demanded at any given price.

On the supply side, producer prices of variety ν of product k are made up of three components:

$$p_{ij}^k(\nu) = m_{ij}^k(\nu) mc_{ij}^k(\nu) \tau_{ij}^k \tag{C.2}$$

with

$$mc_{ij}^k(\nu) = \frac{c_j^k \left[\theta_{ij}^k \right]^{\alpha^k}}{z_j^k(\nu)} ,$$

where $mc_{ij}^k(\nu)$ is the marginal production cost, $m_{ij}^k(\nu)$ is the markup over marginal cost, and τ_{ij}^k captures variable trade costs. Marginal cost can vary across exporters based on input cost c_j and producer-specific efficiency $z_j^k(\nu)$. Note that with monopolistic competition, the markup is invariant over destinations and producers as $m_{ij}^k(\nu) = \epsilon^k/(\epsilon^k - 1) = m^k$.

Combining (C.1) with (C.2), and aggregating over all varieties of product k, Gaigné and Gouel (2022) derive the following structural gravity equation to model exports in product k from country j to country i:

$$X_{ij}^k = E_i^k \left(P_i^k \right)^{\epsilon^k - 1} \left(\frac{(\bar{\xi}_{ij}^k \tilde{Z}_{ij}^k)}{m^k c_j^k \tau_{ij}^k} \right)^{\epsilon^k - 1} \tag{C.3}$$

with

$$\tilde{Z}_{ij}^k = \left\{ \int_{\Omega_{ij}^k} \left[z_j^k(\nu) \right]^{\epsilon^k - 1} \left[\theta_{ij}^k(\nu) \right]^{(\epsilon^k - 1)(\xi_i^k - \alpha^k)} d\nu \right\}^{1/\left(\epsilon^k - 1\right)} .$$

$\tilde{Z}_{ij}^k$ captures the heterogeneity in productivity and quality across the set of varieties in product k (Ω_{ij}^k) exported from j to i apart from consumer taste, $\bar{\xi}_{ij}^k$. As noted earlier, a cross-border GP for exporter j in country i will stimulate consumer taste for product k from country j, $\bar{\xi}_{ij}^k$. Based on equation (C.3), this increase in demand for product k from exporter j will subsequently increase trade flows from country j to importer i.[31] Equation (C.3) is therefore the theoretical foundation for the empirical model in section 3.1.

[31] A cross-border GP could also limit competition for the exact variety at issue as competing producers are not allowed to market a similar product to consumers. However, under monopolistic competition, individual producers are too small to take advantage of this possibility as indicated by the constant markup m^k over destinations and producers.