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

David J. Kuenzel*

Wesleyan University

June 2023 – Version 1.2

Abstract

Geographical protections (GP) 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 widely 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 over the period 2005 to 2020 that enforce EU GPs abroad and explore their effects on trade. 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 divert trade away from third-country exporters, they lead to significant price increases, both in EU and third-country exports.

JEL codes: F13, F14, Q17, Q56

Keywords: Geographical Protections, Trade, EU, Non-tariff Measures

*Contact information: Wesleyan University, Department of Economics, 318 High St, Room 310, Middletown, CT 06459, E-mail: dkuenzel@wesleyan.edu, Tel: +1(860)685-3052. I thank James Lake, Yoto Yotov, and participants of the Fall 2022 Midwest International Conference and the SEA 2022 Annual Meeting for their helpful comments and suggestions. I am also grateful to Alessandro Olper and Valentino Raimondi for sharing their EU geographical protection data.

1 Introduction

Geographical protections (GP), which identify a good as originating from a specific region, are a hotly 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 therefore should not be rewarded with any special protection. After failing to clarify the relevant passages in the WTO's TRIPS agreements 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] Importantly, whereas GPs are contested, their actual impact on international trade patterns is not well understood.

In this paper, I use the product-level information from these EU agreements to identify the trade effects of cross-border geographical protections. Focusing on HS6-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-country exporters have not suffered losses in their exports as a result of the EU's GP agreements, GPs result in higher prices charged by both EU and third countries. 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 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

[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. Josling (2006) discusses the differences in the EU and US approaches toward GPs.

[3] The HS6-digit classification consists of about 5,000 products.

[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.

complete dataset of the EU's geographical protections at the HS6-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 HS6-digit level. However, Raimondi et al. only focus on the registration date of GPs in the EU and not to what extent they are enforced 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 expand the Raimondi et al. (2020) database until 2021 and match this information to all GPs (except wines) in the universe of EU agreements over time at the HS6-digit level.[5] 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. That is, I can speak to the potential trade diversion effects of GPs. 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. Moreover, I 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 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

[5] Wine GPs (HS4-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.

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.

This paper also relates to the empirical trade literature that increasingly attempts to determine the effects of individual preferential trade agreement (PTA) 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 partnters. They find that articles related to technical barriers to trade, antidumping, trade facilitation, subsidies and competition policies account for most of the trade-enhancing effects of PTAs, indicating the importance of reducing NTMs for raising trade flows subsequent to these deals.[7] 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 PTA and WTO membership, ensuring that any GP impact on trade is in addition to general trade agreement effects.

The findings in this paper speak as well to the question of trade creation and trade diversion as first raised by Viner (1950). While PTAs raise imports from partner countries, trade is also diverted away from lower cost third-country exporters. Existing studies mostly focus on the impact of tariff reductions on third countries, but non-tariff measures in PTAs are at least as relevant.[8] Mattoo et al. (2022) find that deeper trade agreements lead to more trade creation and less trade diversion as deep PTAs 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. For the EU's partner countries, GPs can raise imports from the bloc. However, there is the risk that the EU GPs also depress trade flows with third countries. This trade-diverting channel is potentially welfare-reducing for both the importer and third-country exporters. The estimates in this paper suggest that the EU's GPs mostly lead to trade creation but also to higher prices.

[7] 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).

[8] For the impact of PTA 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).

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 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 PTAs 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 PTAs 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 and the necessary data. Section 4 presents the empirical evidence linking the product-level EU GPs to exports of the bloc itself and those of third-countries. Section 5 considers several extensions to the baseline framework, which identify the exact source 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 its 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). Moreover, even blatant violations would have to be resolved through the WTO dispute settlement system, which can be time-intensive and beset with uncertainty. Reforming and clarifying the TRIPS agreement's GP provisions was originally part of the Doha Round framework, but did not produce any tangible results. 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. As a result of these efforts, the EU had in place stand-alone GP agreements or geographical protections as part of preferential trade deals with 31 countries at the end of 2021 (see Table 1).[9] 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 HS6-digit categories. 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 2 shows that the export share of HS6-digit products with GPs in total EU exports in the respective HS2-digit sectors with GPs (see Table 2) rose from 3.4 percent to 8.9 percent during the same time frame. This paper sets out to answer the question to what extent the EU's GP agreements are

[9] 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).

responsible for this rise in EU exports in the affected product categories.

Although there is no comprehensive worldwide database on GPs, based on available information 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 member countries.[10] 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.[11]

For my analysis below, I obtain data on EU geographical protections directly from the respective agreement texts.[12] In the vast majority of cases, the agreements contain the specific EU products with their name and country of origin that receive geographical protection 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 HS6-digit level, which is the most detailed internationally comparable product classification across countries. To match the EU GP products to HS6-digit codes, I expand and improve on the work by 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 add the corresponding HS6-digit matches for EU GPs registered between 2015 and 2021, correct some mismatches in the existing data, and expand the data to also account for aromatised wines and spirits. Appendix B explains the GP/HS6-digit matching procedure in more detail.

Table 1 shows that the coverage of EU GPs varies substantially across agreements and partner countries, from seven GP products and three HS6-digit sectors with the United States to 1,545 products and 157 HS6-digit sectors with Armenia. Table 2 lists the distribution of geographical

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

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

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

protections across HS2-digit industries for all EU GP agreements. In total, the EU agreements include 14,352 cross-border geographical protections. The vast majority of these EU GPs refer to animal products (HS02-HS05) with a count of 4,393, 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 6,133. A small minority of EU GPs cover mineral products (HS25), chemical products (HS33) and textiles (HS51). Beverages, spirits and vinegar (HS22) is the leading HS2-digit industry with 4,913 cross-border EU GPs, followed by dairy and other edible products of animal origin (HS04) with 2,426, 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. To explore this question, I follow the latest theoretical and empirical strategies suggested in the gravity literature. 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 estimate a trade gravity model using the Poisson Pseudo Maximum Likelihood (PPML) estimator. As outlined by Santos Silva and Tenreyro (2006), the PPML approach can account for heteroskedastic trade flows and the presence of zero trade observations. The baseline empirical model is

$$X_{ijp,t} = exp\left[\sum_{s=-1}^{S=1} \alpha_s EUGP_{ijp,t+s} + \theta Z_{ij,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp}\right] \times \epsilon_{ijp,t} \quad , \tag{1}$$

where $X_{ijp,t}$ are bilateral exports of HS6-digit product p from country j to country i in year t in levels.[13]

[13] Yotov (2022) emphasizes the benefits of also including domestic trade flows in gravity estimations. Unfortunately,

$EUGP_{ijp,t}$ 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.[14] To capture anticipatory and delayed responses of trade flows to these policy changes, the model also accounts for a one-year lag and a one-year lead of the EUGP measure, which has been suggested as standard practice in the gravity literature (e.g., Egger et al. 2020). For instance, in the present context, 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, exporters might already adjust their goods deliveries before any GP agreement takes effect in order to comply with the new legally enforceable GP rules.

Below I use both a binary measure to capture the extensive margin of the EU GP impact and 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 explicit agreement in HS6-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 HS6-digit product p during year t in importing country i when j is the EU. The parameter α in equation (1) then measures the average product-level impact of the EU's GP agreements on its export flows. If EU GP agreements serve the purpose of stimulating trade, we should expect that $\alpha > 0$. Otherwise, if GPs are an ineffective strategy to encourage exports, α should be zero or even negative.

The model in equation (1) includes importer-year-HS6 and exporter-year-HS6 fixed effects, $\gamma_{ip,t}$ and $\omega_{jp,t}$, respectively, to account for multilateral resistance (Anderson and van Wincoop 2003). To eliminate potential endogeneity concerns, I follow the reasoning of Baier and Bergstrand (2007) and add country-pair-HS6 fixed effects: ϕ_{ijp}. This fixed effects structure 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.[15]

Importantly, the presence of exporter-year-product fixed effects also accounts for the exact registration date of new GP's in the EU's official geographical protections register (eAmbrosia),

data on domestic trade flows at the HS6-digit level are currently not available.

[14] Neither Comtrade nor EU-provided export data specifies what share of exports in a HS 6-digit category is accounted for by GPs. The estimates in this paper might therefore understate the impact of GPs on trade.

[15] One could also add importer-exporter-year fixed effects to the model. The results are similar to the baseline specification in that case; see Table A1 in Appendix A. Note, however, that one drawback of adding importer-exporter year fixed effects is that the WTO and RTA effects cannot be identified.

which offers official protection only within the EU bloc.[16] Therefore, the impact 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, e.g., due to new marketing strategies by producers after the successful entry into the official EU registry. However, the presence of this large number of fixed effects poses a substantial computational challenge. I therefore estimate the model with the PPML procedure developed by Correia et al. (2020).

One of the innovations in this paper is the measurement of potential trade-diversion effects on competing third-country exporters of the same product. To that end, I modify equation (1) to include a second GP variable:

$$X_{ijp,t} = exp\left[\sum_{s=-1}^{S=1} \alpha_s EUGP_{ijp,t+s} + \sum_{s=-1}^{S=1} \beta_s EUGPthird_{ijp,t+s}\right] \times exp\left[\theta Z_{ij,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp}\right] \times \epsilon_{ijp,t} \quad , \tag{2}$$

where $EUGPthird_{ijp,t}$ captures the impact of EU GPs on non-EU exports in HS6-digit product p from country j to i in year t. As discussed above, the model also accounts for a one-year lag and a one-year lead of the 'EUGPthird' measure. 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 the third-country exporter has itself a GP agreement in place with the EU for product p during year t as the producers in country j should already be accustomed with EU GP regulations. This restriction makes it possible to identify the 'EUGPthird' impact, which otherwise would be collinear with the exporter-year-HS6 fixed effects.

Similar to the case of the 'EUGP' measure, I use below both a simple binary 'EUGPthird' variable and a count measure. The latter captures 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 divert trade away from competing exporters, the estimate of parameter β will be negative. Otherwise, if EU GPs are not harmful to third-country exporters, β will be zero or even positive.

Lastly, the model includes additional control variables in the vector $Z_{ijp,t}$ that vary at the

[16] The same reasoning also applies to non-EU exporters with GP registries. Importantly, non-EU countries have not been particularly active in pursuing formal GP agreements, which minimizes the possibility that non-EU GPs are missing in the data.

importer-exporter-year level and that could potentially be correlated with the GP measures and their effect on trade flows. First, the binary variable $RTA_{ij,t}$ 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, 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. Second, I include the variable $bothWTO_{ij,t}$, which takes the value one of if importer i and exporter j are both members of the WTO at time t. As the WTO's TRIPS agreement provides general protections for GPs, the omission of a WTO membership control could potentially bias the estimates of parameters α and β.[17]

3.2 Data

I estimate the model in equation (1) at three distinct EU aggregation levels to ensure that the results are not driven by the exact choice of 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.[18]

Depending on the time frame and country pairs one considers, estimating the empirical models in equations (1) and (2) at the HS6-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 some reasonable restrictions on the sample. First, for any country pair, I only include HS6-digit products from those HS2-digit industries that have been included in an EU GP agreement at some point (see Table 2). 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 HS2-digit industries (Algeria, Australia, Brazil, Egypt, Hong

[17] The results below are nearly identical when including applied tariff rates. These estimates are available upon request.

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

Kong, Israel, Morocco, Nigeria, Russia, Saudi Arabia, Turkey, United Arab Emirates). Overall, the included importers account for over 80 percent of the EU exports in the HS2-digit categories included in EU GP agreements. Fourth, I drop importer/exporter/HS6-digit observations if they never record a positive trade flow over the sample period.

The first EU GP agreement that considers HS codes beyond spirits (and wines) enters 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.[19] I use the CEPII's BACI HS6-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 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, 10,762 out of the total 8,101,768 observations at the HS6-digit are subject to at least one EU GP (.13 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 1 shows that only 23.7 percent (2,550 out of 10,762) of these HS6-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 804 out of the 10,762 (or 7.5 percent) HS6-digit sectors having more than 50 EU GPs. The maximum EU GP count in an HS6-digit sector is 255. With regard to third-country exporters, 2.1 percent of HS6-digit products in the sample feature a non-EU exporter that has to compete in a sector with EU GPs.

The average HS6-digit export value in a given year in the 'EU' sample is slightly below 1.2 million USD. However, about 54 percent of all HS6-digit sectors have zero trade flows, highlighting the importance of using the PPML estimator. 86.5 percent of observations feature importers and

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

exporters that are WTO members, whereas about 39.1 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.

4 Results

In this part, I present the baseline results in two steps. First, I focus on estimates of the model in equation (1) that only consider the 'EUGP' variable to establish the baseline impact of the EU's product-level GP agreements on its exports to the respective partner countries. In the second part, I then introduce the 'EUGPthird' measure to examine the effects of cross-border geographical protections for EU products on third-country exporters.

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/HS4-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.[20] Column (1) first reports results for the 'EU' sample when regressing bilateral imports at the HS6-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, RTA and WTO membership have statistically significant (at the one percent level) positive effects on trade.[21] 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, it is possible that even for individual EU members the GP actions of the

[20] 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.

[21] The EU GP estimates, dummy and count, are similar throughout when allowing the RTA and bothWTO coefficients to vary at the HS 2-digit level. Accounting for RTA depth does also not affect the EU GP results. These estimates are all available upon request.

EU as a whole are more important for its exports than the extent of its own GPs. For instance, even in the absence of an individual GP, GPs from other EU members could indicate that the destination market resembles more closely that of the EU, giving any EU member a competitive edge. 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 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 HS6-digit product in the importing country at hand.[22] The estimates in column (4) confirm the notion that GPs of the EU as a whole are more relevant for an individual EU member's exports than their own GPs. Specifically, the 'EUGP' estimate of .0955 is statistically significant at the 10 percent level and implies that the presence of an EU GP will, on average, raise exports of its members to the importer in question by 10.0 percent $(= e^{.0955} - 1)$.[23]

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) therefore follow the same structure as before but add a one-year lead and a one-year lag of the respective GP variables as outlined in equation (1). The row 'EUGP Impact' reports the sum of the lag, contemporaneous and lead estimates and therefore captures the complete effect of EU GPs on trade flows. Two results 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 more positive and statistically significant at the five percent level. The coefficient of .1462 indicates that EU exports increase, on average, by 15.7 percent $(= e^{.1462} - 1)$ in HS6-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 HS6-digit product raises, on average, exports of any member by 17.8 percent $(= e^{.1636} - 1)$, an effect that is again statistically significant at the five percent level. However, even when considering potential 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). Overall, when considering the binary GP measures in Table 4, there is some evidence that EU GP agreements raise trade flows

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

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

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 2 and Figure 1 show that the distribution of EU GPs varies greatly across partners and within HS6-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) successfully protect via a formal agreement with a specific importer in a given HS6-digit sector. The count measures have the advantage that they can capture the impact of 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 HS6-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 .0056 indicates that for each additional cross-border GP the EU's exports in the affected HS6-digit sector increase by .6 percent ($= e^{.0056} - 1$) 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 $.6 \times 13 = 7.8$ 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: $.6 \times 29 = 17.4$ percent.

Different from Table 4, the GP count variable coefficient is now also positive and highly statistically significant 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 has a statistically significant (at the one percent level) positive effect on individual members' exports to importers that enforce geographical protections for at least one EU member. 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 RTA and 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 one lead and lag, respectively, of the GP count variables. The results are very similar to the purely contemporaneous results in specifications (9) to (12). Except for column (15), the EU GP count variables have a statistically significant (at the one percent level) impact on EU exports at the HS6-digit level in all three samples. The magnitude of the composite EU GP effect from the dynamic specifications is about 25 percent higher than in the pure contemporaneous models, suggesting that the latter underestimate to some extent the economic importance of geographical protections. Going forward, I therefore include leads and lags of the EU GP variable in all specifications. Importantly, the results in Table 5 indicate that the intensive margin of geographical protections in bilateral agreements are a major driver of any boost in EU exports due to cross-border GPs.

The results in Table 4 and Table 5 are robust to a number of reasonable alternative specifications. Table A2 in Appendix A shows that separately accounting for EU RTAs and non-EU RTAs leaves the results unchanged, with EU and non-EU RTAs having nearly identical effects on trade flows. Piermartini and Yotov (2016) suggest to estimate gravity models by skipping years to ensure non-spurious results. In Table A3, 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. Moreover, Table A4 shows that using three-year instead of one-year leads and lags results in qualitatively similar estimates. In fact, the statistical significance and magnitude of the EU GP coefficients increase throughout in that case. 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 Third-country Effects of EU GPs

After establishing baseline estimates for the direct impact of EU GPs on the exports of the bloc as a whole and its individual member countries, I now consider the third-country effects of the EU's geographical protections anchored in bilateral agreements. In line with the results above and the model outlined in equation (2), I only present specifications that also account for one-year lead and lag effects of the EU GP measures.[24]

The left panel in Table 6 uses binary 'EUGP' and 'EUGPthird' variables, whereas the right panel presents results using the corresponding count measures. Columns (17) and (18) focus on the 'EU' and 'EU15' trade and GP aggregates, respectively. In both cases, the composite effects

[24] Specifications that focus only on contemporaneous estimates deliver similar results and are available on request.

of the EU's GP agreements on its exports are positive but statistically insignificant. At the same time, the EU GP agreement effects on third-country exporters are also statistically indistinguishable from zero. Hence, the simple presence of a recognized EU GP in an HS6-digit category does not affect the exports of the EU itself nor of countries outside the bloc. When considering the 'Ind. EU' sample and GP aggregate in specification (19), the results are similar with regard to the GP impact on EU members' exports. However, the total trade impact of EU GPs on third-country exporters is now negative and statistically significant at the five percent level. Column (20) includes instead the 'EU' GP aggregate in addition to the 'EUGPthird' measure when considering the sample with individual EU member country exports. The conclusion is again the same as in columns (17) and (18). Importantly, when focusing on simple binary measures, the empirical evidence suggests that EU GPs have mostly insignificant effects on third-country trade flows to EU partner countries.

When considering the corresponding count specifications in columns (21) to (24) in Table 6, two results emerge. First, as found earlier in Table 5, the direct impact of EU GPs on the export of the EU as a whole and its individual members is positive and statistically significant (at least at the five percent level) throughout, except when considering the 'Ind. EU' sample and GP aggregate in specification (23). Second, the 'EUGPthird' count measure is statistically insignificant in three of the four samples. Only for the 'Ind. EU' trade and GP sample in column (23) there is some evidence for a trade diversion effect away from third-country exporters due to EU GPs. Table 6 therefore suggests that sales of non-EU exporters are mostly not adversely affected by the EU's push to include more GPs in bilateral agreements. More generally, 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 Extensions

In this part, I consider four relevant extensions to the baseline analysis. First, I analyze the impact of EU GP agreement provisions on export prices in both EU countries and third countries. Second, 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. Third, I consider the impact of the EU's initial market share on the effectiveness of its GPs on trade. Finally, I provide product-specific estimates of the EU GP effect on trade.

5.1 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 (2) using ordinary least squares:

$$log\left(Price_{ijp,t}\right) = \sum_{s=-1}^{S=1} \alpha_s EUGP_{ijp,t+s} + \sum_{s=-1}^{S=1} \beta_s EUGPthird_{ijp,t+s} \\ + \theta Z_{ijp,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp} + \epsilon_{ijp,t} \tag{3}$$

where $Price_{ijp,t}$ is the unit value of HS6-digit product p for exports from country j to i in year t. As before, the estimation accounts for RTA and WTO membership as well as importer-year-HS6, exporter-year-HS6, and importer-exporter-HS6 fixed effects. Parameter α captures the impact of GP agreements on the product price of EU exporters with registered protections in importing country i, whereas β considers the price effects for third-country exporters to country i.

Following the same approach as in Table 6, I examine in Table 7 the impact of EU GPs using both binary and count measures for $EUGP$ and $EUGPthird$. Using the binary variables, specifications (25) and (26) 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 8.5 percent ($= e^{.0814} - 1 = .0848$) and 9.6 percent ($= e^{.0921} - 1 = .0965$). When considering the 'Ind. EU' sample and GP aggregate in column (27), the magnitude of the price effect is about half of the earlier two estimates and its statistical significance drops just outside the 10 percent level (p-value = .124) An exception to the positive effect on EU members' export prices is the 'Ind. EU' sample in column (28) 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 HS6-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 their products in the presence of at least one EU GP. This effect is significant in all binary GP specifications at least at the five percent level and the magnitude of the average price increase is estimated to be between 6.4 percent ($= e^{.0621} - 1$) and 10.0 percent ($= e^{.0949} - 1$). 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.

One key result emerges when moving on to the respective count measure specifications in columns (29) to (32) of Table 7. For both the 'EUGP' and 'EUGPthird' count variables, there are no significant positive effects on prices except in the 'Ind. EU' sample and GP aggregate in specification (31). Therefore, the extensive margin of EU GPs as captured by the binary measures is more important for pricing considerations than the intensive margin as measured by the EU GP counts. Overall, Table 7 suggests that the presence of at least one EU product with special geographical protection status is already sufficient to result in substantial price increases by non-EU exporters.

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. Parts of the literature therefore hypothesize that PDOs should be much more impactful in boosting EU trade flows than other EU geographical protection labels (e.g., Duvaleix-Treguer et al. 2021). In this part, I examine this question in detail.

Table 8 reports results using the model in equation (1) 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 10,762 HS6-digit observations with at least one GP, 5,451 feature at least one PDO, 6,570 have PGIs and 1,972 are subject to a GI.[25] Following the same structure as earlier, columns (33) to (36) in Table 8 focus on binary variables for the PDO and 'Other GP' measures.

Two results emerge. First, in all samples other than column (35), PDOs have a positive and significant (at least at the five percent level) composite effect on exports of the EU and its members. The magnitude of the PDO effect 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 24.8 percent ($e^{.2212} - 1$) in the 'EU' sample in specification (33) compared to the earlier measured 15.7 percent in column (5) of Table 4. Second, there is no statistically significant composite 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 in none of the specifications (33) to (36) the respective difference between the PDO and 'Other EUGP' impact is statistically significant at conventional levels. The exact p-values are reported at the bottom of each column in Table 8.

Specifications (37) to (40) replace the binary variables with the respective PDO and 'Other EUGP' count measures. In this case, the results are less clear-cut. The composite PDO count estimates are still positive and statistically significant for three of the four specifications, although only at the 10 percent level in the 'EU' and 'EU15' samples. 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 all samples as well. In fact, the magnitudes of the 'Other EUGP' count composite coefficients are throughout greater than for the corresponding PDO measures. However, the hypothesis that the PDO and 'Other EUGP' estimates are equal can only be rejected in one specification – column (39). Hence, the count variable results in Table 8 do not offer support for the notion that PDOs are more effective in boosting trade flows than other geographical protections.

Overall, Table 8 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 somewhat along the extensive and intensive GP margins, the evidence does not support the notion that the PDO label is necessarily more powerful than any other.

[25] Note that each HS6-digit can be simultaneously subject to both PDOs and PGIs. GIs are restricted to HS products referencing spirits and aromatised wines.

5.3 The Role of EU Import Shares

It remains an open question whether pre-existing market conditions in importing countries affect the impact of EU GPs on trade. Specifically, I consider in this part to what extent the initial EU import share affects the success of GPs to raise EU exports in the future. A substantial existing import share of EU products prior to the implementation of GPs indicates that consumers in the importing country already hold EU products in high regard, potentially limiting the positive impact of EU GPs. In contrast, a lower existing import share accounted for by EU countries could suggest a greater opportunity for EU GPs to raise EU exports, e.g., by signaling a higher quality of EU products to consumers in importing countries.

To test this hypothesis, I consider the average EU import share in the three years preceding the year when an EU GP is first observed in a given HS6-digit sector. I then split the existing EU GP measures (binary and count) into two separate EU GP 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 HS6-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 43.7 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 respective EUGP measure with the corresponding 'EUGP High' 'and 'EUGP Low' variables.

Table 9 reports the results when focusing on the dynamic specifications that include a one-year lag, one-year lead and the contemporaneous value of the respective EUGP variables. Focusing on the binary EUGP measures in columns (41) through (44), 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, sectors with initially low EU import shares experience througout a highly significant (at least at the five percent level) boost in the exports of the EU and its individual members after 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 30.0 ($= e^{.2623} - 1$) and 70.8 ($= e^{.5356} - 1$) percent. Note that the difference between the 'EUGP High' and 'EUGP Low' composite effects is statistically significant at least at the 10 percent level in all four cases. The exact p-values are reported at the bottom of each column in Table 9.

Specifications (45) to (48) focuses 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 three out of the four 'EUGP High' count measures have a statistically significant impact on EU exports, the magnitude of the effects is substantially smaller than for the corresponding 'EUGP Low' variables. Except for column (46), which shows a p-value of 0.1307, the difference between both sets of estimates is statistically significant at least at the 10 percent level. Therefore, 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.

5.4 Product-specific Effects

The analysis so far has not considered the potential heterogeneous impact of EU GPs on trade across different product types. 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 products 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 (1) by adding interactions of the EUGP variables with four industry dummies, D_k:

$$X_{ijp,t} = exp\left[\sum_{k}^{K}\sum_{s=-1}^{S=1}\alpha_{ks}EUGP_{ijp,t+s} \times D_k + \theta Z_{ij,t} + \gamma_{ip,t} + \omega_{jp,t} + \phi_{ijp}\right] \times \epsilon_{ijp,t} \quad , \tag{4}$$

where α_{ks} captures the effect of a GP on EU exports to country i in industry k in year $t+s$ out of the set of the aforementioned industries $K = \{\text{Animals}, \text{Fats}, \text{Foodstuffs}, \text{Vegetables}\}$.

Table 10 reports results based on the estimation of equation (4). To conserve space, I only report the composite industry-specific effects, which account for the respective one-year lag, one-year lead and the contemporaneous EUGP estimates. Columns (49) through (52) show results using the binary EUGP measures, whereas specifications (53) to (56) use the corresponding count measures. Three conclusions emerge from the estimates in Table 10. 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 products. Second, except for the individual EU member specification with the member-level EUGP measures in specification (51), animals GPs have a statistically significant (at least at the five percent level) impact on EU exports in the binary specifications, indicating their importance at the extensive margin. At the same time, foodstuffs GPs show a similar pattern for the count specifications, emphasizing the intensive margin of GPs as key driver of export increases for EU members in this product group. Lastly, only GPs in the fats category are mostly unsuccessful in stimulating EU exports.

6 Concluding Remarks

The gravity literature is increasingly emphasizing the role of non-tariff measures in international agreements and their impact on trade flows. Geographical protections (GPs) are a perfect illustration of countries' increasingly shifting focus beyond tariff instruments in the international policy arena. In this paper, I leverage the rich product-level EU data on GPs and examine the consequences of their inclusion in international agreements on trade flows. Specifically, 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-country exporters experience no significant diversion of their own exports. The latter finding suggests that the increased spending on EU exports subsequent to GP agreements can be mostly classified as trade creation. Furthermore, the empirical evidence does not suggest that different EU labels are necessarily 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 increase 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. Whereas EU GP agreements seem to have no trade-diverting effects, the empirical evidence in the form of higher prices suggests that non-members 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 than currently provided 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, whereas the literature is focusing more and more on the impact of detailed trade agreement provisions, 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.

References

Agostino, Mariarosaria and Francesco Trivieri, "Geographical Indication and Wine Exports: An Empirical Investigation Considering the Major European Producers," *Food Policy*, 2014, *46* (June), 22–36.

Anderson, James E. and Eric van Wincoop, "Gravity with Gravitas: A Solution to the Border Puzzle," *American Economic Review*, 2003, *93* (1), 170–192.

Baier, Scott L. and Jeffrey H. Bergstrand, "Do Free Trade Agreements Actually Increase Member's International Trade?," *Journal of International Economics*, 2007, *71* (1), 72–95.

Beattie, Alan, "EU Trade Negotiators Find Non-Greek 'Feta' Hard to Swallow," *Financial Times*. Available: https://www.ft.com/content/55d787c8-c4d2-11e9-a8e9-296ca66511c9, 22 August, 2019.

Breinlich, Holger, Valentina Corradi, Nadia Rocha, Michele Ruta, João M. C. Santos Silva, and Tom Zylkin, "Machine Learning in International Trade Research: Evaluating the Impact of Trade Agreements," *Working Paper*, 2022.

CEPII, "BACI: International Trade Database at the Product-Level (Version 202201)," 2022.

Collins, Padraig, "EU MUST Be Joking: European Union DEMANDS Australia Dumps Luxury Car Tax If It Wants a Trade Deal," *Daily Mail*. Available: https://www.dailymail.co.uk/news/article-11082769/, 4 August, 2022.

Correia, Sergio, Paul Guimarães, and Tom Zylkin, "Fast Poisson Estimation with High-dimensional Fixed Effects," *The Stata Journal*, 2020, *20* (1), 95–115.

Crivelli, Pramila, "Regionalism and Falling External Protection in High and Low Tariff Members," *Journal of International Economics*, 2016, *102* (September), 70–84.

Curzi, Daniele and Martijn Huysmans, "The Impact of Protecting EU Geographical Indications in Trade Agreements," *American Journal of Agricultural Economics*, 2022, *104* (1), 364–384.

De Filippis, Fabrizio, Mara Giua, Luca Salvatici, and Cristina Vaquero-Piñeiro, "The International Trade Impacts of Geographical Indications: Hype or Hope?," *Food Policy*, 2022, *112*, 102371.

Dhingra, Swati, Rebecca Freeman, and Eleonora Mavroeidi, "Beyond Tariff Reductions: What Extra Boost From Trade Agreement Provisions?," *LSE Centre for Economic Performance Discussion Discussion Paper No 1532*, 2018.

Duvaleix-Treguer, Sabine, Charlotte Emlinger, Carl Gaigné, and Karine Latouche, "Geographical Indications and Trade: Firm-level Evidence from the French Cheese Industry," *Food Policy*, 2021, *102*, 102–118.

Ederington, Josh and Michele Ruta, "Nontariff Measures and the World Trading System," in Kyle Bagwell and Robert W. Staiger, eds., *Handbook of Commerical Policy*, Vol. 1B, Amsterdam: Elsevier, 2016, pp. 211–277.

Egger, Peter H. and Mario Larch, "Interdependent Preferential Trade Agreement Memberships: An Empirical Analysis," *Journal of International Economics*, 2008, *76* (2), 384–399.

_ , _ , **and Yoto V. Yotov**, "Gravity-Model Estimation with Time-Interval Data: Revisiting the Impact of Free Trade Agreements," *CESifo Working Paper No. 8553*, 2020.

Estevadeordal, Antoni, Caroline Freund, and Emanuel Ornelas, "Does Regionalism Affect Trade Liberalization Toward Nonmembers?," *Quarterly Journal of Economics*, 2008, *123* (4), 1531–1575.

European Commission, "Quality Schemes Explained," https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/quality-schemes-explained_en, 2022. Accessed 16 July 2022.

Falvey, Rod and Neil Foster-McGregor, "The Breadth of Preferential Trade Agreements and the Margins of Exports," *Review of World Economics*, 2022, *158*, 181–251.

Gaigné, Carl and Christophe Gouel, "Trade in Agricultural and Food Products," in Christopher B. Barrett and David R. Just, eds., *Handbook of Agricultural Economics*, Vol. 6, Amsterdam: Elsevier, 2022, pp. 4845–4931.

Josling, Tim, "The War on Terroir: Geographical Indications as a Transatlantic Trade Conflict," *Journal of Agricultural Economcis*, 2006, *57* (3), 337–363.

Karacaovali, Baybars and Nuno Limão, "The Clash of Liberalizations: Preferential vs. Multilateral Trade Liberalization in the European Union," *Journal of International Economics*, 2008, *74* (2), 299–327.

Kohl, Tristan, Steven Brakman, and Harry Garretsen, "Do Trade Agreements Stimulate International Trade Differently? Evidence from 296 Trade Agreements," *The World Economy*, 2016, *39* (1), 97–131.

Kuenzel, David J. and Rishi R. Sharma, "Preferential Trade Agreements and MFN Tariffs: Global Evidence," *European Economic Review*, 2021, *138* (September), 103850.

Leufkens, Daniel, "EU's Regulation of Geographical Indications and their Effects on Trade Flows," *German Journal of Agricultural Economics*, 2017, *66* (4), 223–233.

Limão, Nuno, "Preferential Trade Agreements as Stumbling Blocks for Multilateral Trade Liberalization: Evidence for the United States," *American Economic Review*, 2006, *96* (3), 896–914.

_ , "Are Preferential Trade Agreements with Non-trade Objectives a Stumbling Block for Multilateral Liberalization?," *Review of Economic Studies*, 2007, *74* (3), 821–855.

Malik, Maslina, "Updates on Geographical Indications in the ASEAN Region," https://www.wipo.int/edocs/mdocs/sct/en/wipo_geo_lis_19/wipo_geo_lis_19_6.pdf, 2019. Accessed 5 May 2023.

Mattoo, Aaditya, Alen Mulabdic, and Michele Ruta, "Trade Creation and Trade Diversion in Deep Trade Agreements," *Canadian Journal of Economics*, 2022, *55* (3), 1598–1637.

Mulabdic, Alen, Alberto Osnago, and Michele Ruta, "Deep Integration and UK-EU Trade Relations," *World Bank Policy Research Working Paper 7947*, 2017.

Piermartini, Roberta and Yoto V. Yotov, "Estimating Trade Policy Effects with Structural Gravity," *WTO Working Paper ERSD-2016-10*, 2016.

Raimondi, Valentina, Chiara Falco, Daniele Curzi, and Alessandro Olper, "Trade Effects of Geographical Indication Policy: The EU Case," *Journal of Agricultural Economics*, 2020, *71* (2), 330–356.

Regmi, Narendra and Scott L. Baier, "Using Machine Learning Methods to Capture Heterogeneity in Free Trade Agreements," *Working Paper*, 2020.

Saggi, Kamal, Andrey Stoyanov, and Halis Murat Yildiz, "Do Free Trade Agreements Affect Tariffs of Nonmember Countries? A Theoretical and Empirical Investigation," *American Economic Journal: Applied Economics*, 2018, *10* (3), 128–170.

Santos Silva, João M. C. and Silvana Tenreyro, "The Log of Gravity," *Review of Economics and Statistics*, 2006, *88* (4), 641–658.

Sorgho, Zakaria and Bruno Larue, "Geographical Indication Regulation and Intra-trade in the European Union," *Agricultural Economics*, 2014, *45* (S1), 1–12.

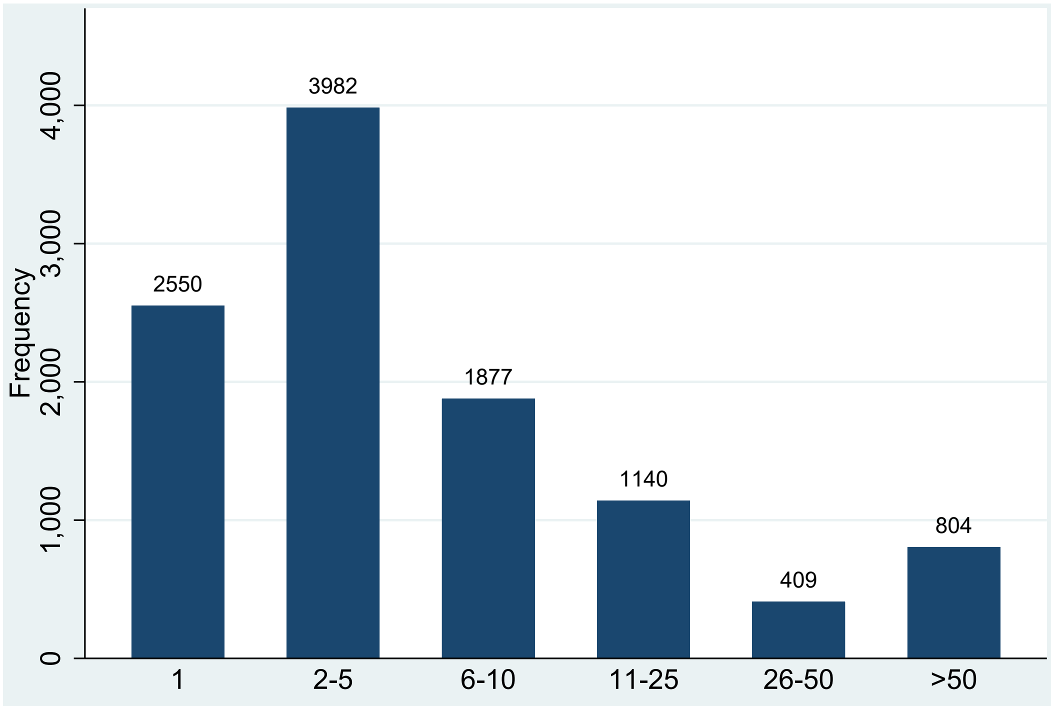
_ **and** _ , "Do Geographical Indications Really Increase Trade? A Conceptual Framework and Empirics," *Journal of Agricultural & Food Industrial Organization*, 2018, *16* (1), 1–18.

Viner, Jacob, *The Customs Union Issue*, New York, NY: Carnegie Endowment for International Peace, 1950.

World Trade Organization, "TRIPS: Geographical Indications – Background," https://www.wto.org/english/tratop_e/trips_e/gi_background_e.htm#general, 2022. Accessed 16 July 2022.

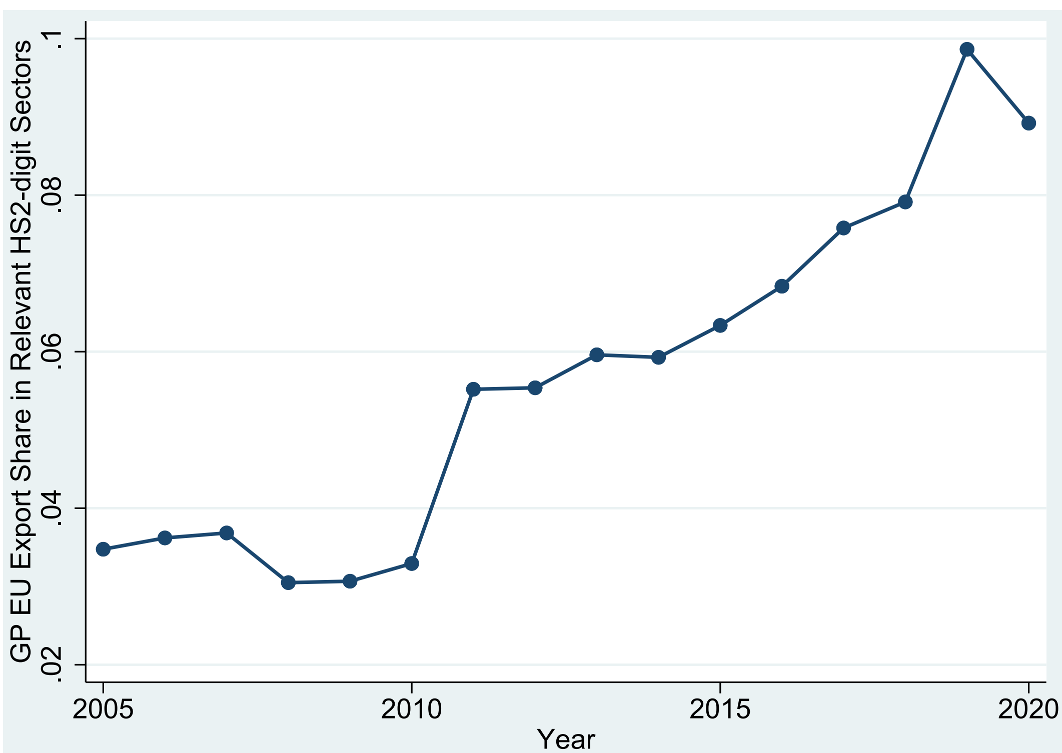
Yotov, Yoto V., "On the Role of Domestic Trade Flows for Estimating the Gravity Model of Trade," *Contemporary Economic Policy*, 2022, *40* (3), 526–540.

Figure 1: Cross-border EU Geographical Protections in HS6-digit Sectors, by Count



Notes: Author's own calculations based on data for the baseline EU sample. For HS6-digit EU export sectors with geographical protections, the figure shows the distribution of their counts.

Figure 2: Export Share of HS6-digit Products with GPs in Respective EU HS2-digit Exports



Notes: Author's own calculations based on data for the baseline EU sample. The figure shows the export share of HS6-digit products with GPs in total EU exports in the HS2-digit sectors with GPs; see Table 2.

Table 1: Geographical Protection Agreements of the European Union

EU Partner	Date (en-forced)	Products Covered	GPs	HS6 Sectors
Albania	4/1/2009	Aromatised wine, spirits, wines	245	9
Armenia	6/1/2018	Agricultural products, foodstuffs, spirits, wines	1,545	157
Bosnia and Herzegovina	7/1/2008	Aromatised wines, spirits, wines	279	9
Canada 1	6/1/2004	Spirits, wines	192	7
Canada 2	9/21/2017	Agricultural products, foodstuffs	171	40
Chile	2/1/2003	Aromatised wines, spirits, wines	209	9
China	3/1/2021	Agricultural products, foodstuffs	51	21
Colombia	8/1/2013	Agricultural products, foodstuffs, spirits, wines	57	19
Costa Rica	10/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Ecuador	1/1/2017	Agricultural products, foodstuffs, spirits, wines	57	19
El Salvador	10/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Georgia	4/1/2012	Agricultural products, foodstuffs, spirits, wines	1,151	121
Guatemala	12/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Honduras	8/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Iceland 1	1/1/1994	Spirits, wines	121	7
Iceland 2	5/1/2018	Agricultural products, foodstuffs	1,155	138
Japan	2/1/2019	Agricultural products, foodstuffs, spirits, wines	115	34
Liechtenstein*	1/1/1994	Spirits, wines	121	7
Mexico 1	7/1/1997	Spirits	200	7
Mexico 2	5/1/2004	Spirits	236	7
Moldova	4/1/2013	Agricultural products, foodstuffs, spirits, wines	1,201	128
Montenegro	1/1/2008	Agricultural products, foodstuffs, spirits, wines	1,065	117
Nicaragua	8/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Norway	1/1/1994	Spirits, wines	121	7
Panama	8/1/2013	Agricultural products, foodstuffs, spirits, wines	118	30
Peru	3/1/2013	Agricultural products, foodstuffs, spirits, wines	56	19
Serbia	2/1/2010	Agricultural products, foodstuffs, spirits, wines	1,204	135
Singapore	11/21/2019	Agricultural products, foodstuffs, spirits, wines	109	33
South Africa 1	2/28/2002	Spirits	196	7
South Africa 2	10/10/2016	Agricultural products, foodstuffs, spirits, wines	244	33
South Korea	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	1/1/2016	Agricultural products, foodstuffs, spirits, wines	1,158	120
USA	3/25/1994	Spirits	7	3
Vietnam	7/31/2020	Agricultural products, foodstuffs, spirits, wines	89	29

* Liechtenstein is not included in the empirical analysis.

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	231	18
04	Dairy produce, birds' eggs, natural honey, and other edible products of animal origin	2,426	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	667	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	4,913	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**	**14,352**	**157**

Table 3: Summary Statistics

Variable	Definition	Mean	SD	Min	Max	Obs.
Sample: EU						
EUGP	EUGP in HS6 product: 1 (yes), 0 (no)	0.001	0.036	0.000	1.000	8,101,768
EUGP Count	Count of EUGPs in HS6 product	0.017	1.090	0.000	255.000	8,101,768
EUGP Third Country	EUGP in HS6 product faced by non-EU exporters: 1 (yes), 0 (no)	0.021	0.145	0.000	1.000	8,101,768
EUGP Third Country Count	Count of EUGPs in HS6 product faced by non-EU exporters	0.262	3.881	0.000	255.000	8,101,768
Trade	Bilateral imports of HS6 product (in $1,000s)	1,184.917	32,192.090	0.000	27,122,280	8,101,768
bothWTO	Importer and exporter are WTO member: 1 (yes), 0 (no)	0.865	0.342	0.000	1.000	8,101,768
log(Price)	Log unit price of bilateral imports of HS6 product	1.273	1.663	-10.169	14.370	3,215,599
RTA	Importer and exporter are RTA member: 1 (yes), 0 (no)	0.391	0.488	0.000	1.000	8,101,768
Sample: EU15						
EUGP	EUGP in HS6 product: 1 (yes), 0 (no)	0.001	0.036	0.000	1.000	7,943,771
EUGP Count	Count of EUGPs in HS6 product	0.015	0.981	0.000	245.000	7,943,771
EUGP Third Country	EUGP in HS6 product faced by non-EU15 exporters: 1 (yes), 0 (no)	0.021	0.143	0.000	1.000	7,943,771
EUGP Third Country Count	Count of EUGPs in HS6 product face by non-EU15 exporters	0.232	3.467	0.000	245.000	7,943,771
Trade	Bilateral imports of HS6 product (in $1,000s)	1,173.513	32,363.814	0.000	27,122,280	7,943,771
bothWTO	Importer and exporter are WTO member: 1 (yes), 0 (no)	0.865	0.342	0.000	1.000	7,943,771
log(Price)	Log unit price of bilateral imports of HS6 product	1.265	1.663	-10.169	14.370	3,150,807
RTA	Importer and exporter are RTA member: 1 (yes), 0 (no)	0.392	0.488	0.000	1.000	7,943,771
Sample: Individual EU Countries						
EUGP	EUGP in HS6 product: 1 (yes), 0 (no)	0.002	0.049	0.000	1.000	11,975,802
EUGP Count	Count of EUGPs in HS6 product	0.010	0.390	0.000	114.000	11,975,802
EUGP - All EU	EUGP in HS6 product: 1 (yes), 0 (no)	0.011	0.106	0.000	1.000	11,975,802
EUGP Count - All EU	Count of EUGPs in HS6 product	0.170	3.385	0.000	220.000	11,975,802
EUGP Third Country	EUGP in HS6 product faced by non-EU exporters	0.015	0.120	0.000	1.000	11,975,802
EUGP Third Country Count	Count of EUGPs in HS6 product faced by non-EU exporters	0.178	3.204	0.000	255.000	11,975,802
Trade	Bilateral imports of HS6 product (in $1,000s)	801.817	25,951.840	0.000	27,122,280	11,975,802
bothWTO	Importer and exporter are WTO member: 1 (yes), 0 (no)	0.875	0.331	0.000	1.000	11,975,802
log(Price)	Log unit price of bilateral imports of HS6 product	1.393	1.672	-10.169	14.010	4,743,793
RTA	Importer and exporter are RTA member: 1 (yes), 0 (no)	0.427	0.495	0.000	1.000	11,975,802

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
$EUGP_{t-1}$					0.1630***	0.1292*	0.0623	0.1579***
					(0.0613)	(0.0669)	(0.0571)	(0.0603)
$EUGP_{t}$	0.0798	0.0157	-0.0141	0.0955*	-0.1355***	-0.1546***	-0.0761*	-0.1241***
	(0.0578)	(0.0578)	(0.0510)	(0.0570)	(0.0436)	(0.0441)	(0.0448)	(0.0444)
$EUGP_{t+1}$					0.1187**	0.0951*	0.0210	0.1299***
					(0.0485)	(0.0502)	(0.0481)	(0.0487)
EUGP Impact	0.0798	0.0157	-0.0141	0.0955*	0.1462**	0.0698	0.0072	0.1636**
	(0.0578)	(0.0578)	(0.0510)	(0.0570)	(0.0714)	(0.0747)	(0.0638)	(0.0705)
RTA	0.1316***	0.1307***	0.1289***	0.1256***	0.1321***	0.1311***	0.1291***	0.1260***
	(0.0231)	(0.0237)	(0.0232)	(0.0235)	(0.0231)	(0.0237)	(0.0232)	(0.0235)
bothWTO	0.2962***	0.3446***	0.3348***	0.3353***	0.2964***	0.3449***	0.3348***	0.3355***
	(0.0884)	(0.0990)	(0.0910)	(0.0910)	(0.0884)	(0.0989)	(0.0910)	(0.0909)
Observations	8,101,768	7,943,771	11,975,802	11,975,802	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830	0.9858	0.9858	0.9830	0.9830
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

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$_{t-1}$					0.0037**	0.0055***	0.0053	0.0036**
					(0.0016)	(0.0019)	(0.0055)	(0.0016)
EUGP Count$_t$	0.0056***	0.0058***	-0.0018	0.0062***	-0.0012	-0.0009	-0.0015	-0.0005
	(0.0016)	(0.0019)	(0.0072)	(0.0016)	(0.0010)	(0.0012)	(0.0029)	(0.0010)
EUGP Count$_{t+1}$					0.0046***	0.0027	-0.0057	0.0047***
					(0.0017)	(0.0020)	(0.0038)	(0.0016)
EUGP Impact	0.0056***	0.0058***	-0.0018	0.0062***	0.0072***	0.0072***	-0.0019	0.0078***
	(0.0016)	(0.0019)	(0.0072)	(0.0016)	(0.0019)	(0.0022)	(0.0084)	(0.0019)
RTA	0.1322***	0.1293***	0.1288***	0.1265***	0.1322***	0.1295***	0.1289***	0.1265***
	(0.0228)	(0.0234)	(0.0231)	(0.0232)	(0.0228)	(0.0234)	(0.0231)	(0.0232)
bothWTO	0.2971***	0.3465***	0.3348***	0.3362***	0.2975***	0.3466***	0.3347***	0.3365***
	(0.0884)	(0.0989)	(0.0910)	(0.0909)	(0.0884)	(0.0989)	(0.0910)	(0.0909)
Observations	8,101,768	7,943,771	11,975,802	11,975,802	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830	0.9858	0.9858	0.9830	0.9830
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

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 – Third-country Effects

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$_{t-1}$	0.1198	0.0985	0.0019	0.1177	EUGP Count$_{t-1}$	0.0058**	0.0090***	0.0051	0.0065***
	(0.1258)	(0.1301)	(0.0600)	(0.1239)		(0.0023)	(0.0029)	(0.0055)	(0.0022)
EUGP$_{t}$	-0.0081	-0.0282	-0.0188	-0.0005	EUGP Count$_{t}$	0.0011	0.0008	-0.0005	0.0016
	(0.0543)	(0.0545)	(0.0454)	(0.0542)		(0.0015)	(0.0017)	(0.0030)	(0.0015)
EUGP$_{t+1}$	0.0541	0.0484	-0.0298	0.0621	EUGP Count$_{t+1}$	0.0008	-0.0013	-0.0100***	-0.0001
	(0.0626)	(0.0640)	(0.0491)	(0.0632)		(0.0023)	(0.0029)	(0.0038)	(0.0023)
EUGP Impact	0.1658	0.1188	-0.0467	0.1793	EUGP Impact	0.0076***	0.0085**	-0.0053	0.0080***
	(0.1332)	(0.1352)	(0.0665)	(0.1314)		(0.0029)	(0.0036)	(0.0078)	(0.0030)
EUGP Third$_{t-1}$	-0.0539	-0.0405	-0.1492***	-0.0503	EUGP Third Count$_{t-1}$	0.0025	0.0043*	-0.0019	0.0033*
	(0.1043)	(0.1047)	(0.0471)	(0.1011)		(0.0020)	(0.0024)	(0.0014)	(0.0019)
EUGP Third$_{t}$	0.1638***	0.1679***	0.1514***	0.1592***	EUGP Third Count$_{t}$	0.0030*	0.0024	0.0017*	0.0027*
	(0.0469)	(0.0468)	(0.0414)	(0.0461)		(0.0016)	(0.0018)	(0.0010)	(0.0015)
EUGP Third$_{t+1}$	-0.0873	-0.0669	-0.1424***	-0.0913	EUGP Third Count$_{t+1}$	-0.0052***	-0.0051**	-0.0066***	-0.0059***
	(0.0607)	(0.0606)	(0.0479)	(0.0599)		(0.0020)	(0.0025)	(0.0014)	(0.0019)
EUGP Third Impact	0.0225	0.0605	-0.1402**	0.0176	EUGP Third Impact	0.0004	0.0016	-0.0068***	0.0000
	(0.1164)	(0.1155)	(0.0633)	(0.1128)		(0.0030)	(0.0036)	(0.0021)	(0.0030)
RTA	0.1320***	0.1310***	0.1276***	0.1259***	RTA	0.1322***	0.1294***	0.1278***	0.1265***
	(0.0231)	(0.0237)	(0.0233)	(0.0235)		(0.0228)	(0.0234)	(0.0231)	(0.0232)
bothWTO	0.2961***	0.3443***	0.3365***	0.3351***	bothWTO	0.2969***	0.3457***	0.3383***	0.3359***
	(0.0884)	(0.0990)	(0.0909)	(0.0910)		(0.0884)	(0.0990)	(0.0909)	(0.0910)
Observations	8,101,768	7,943,771	11,975,802	11,975,802	Observations	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830	Pseudo R2	0.9858	0.9858	0.9830	0.9830
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

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 – Price Effects

EUGP Measure: Binary					EUGP Measure: Count				
Dep. Var.: log(Price)	(25)	(26)	(27)	(28)	Dep. Var.: log(Price)	(29)	(30)	(31)	(32)
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
$EUGP_{t-1}$	0.0057	0.0181	-0.0212	-0.0593*	EUGP $Count_{t-1}$	-0.0003	-0.0006	-0.0019	-0.0021**
	(0.0367)	(0.0383)	(0.0286)	(0.0340)		(0.0012)	(0.0014)	(0.0033)	(0.0010)
$EUGP_{t}$	0.0213	0.0180	0.0254	0.0177	EUGP $Count_{t}$	-0.0000	0.0004	0.0009	0.0010
	(0.0384)	(0.0396)	(0.0283)	(0.0343)		(0.0014)	(0.0015)	(0.0036)	(0.0011)
$EUGP_{t+1}$	0.0544*	0.0560*	0.0356	0.0239	EUGP $Count_{t+1}$	0.0013	0.0018	0.0068*	-0.0008
	(0.0329)	(0.0339)	(0.0261)	(0.0294)		(0.0012)	(0.0014)	(0.0037)	(0.0008)
EUGP Impact	0.0814**	0.0921**	0.0397	-0.0177	EUGP Impact	0.0010	0.0017	0.0058	-0.0018**
	(0.0362)	(0.0376)	(0.0258)	(0.0327)		(0.0012)	(0.0012)	(0.0039)	(0.0008)
EUGP $Third_{t-1}$	0.0319	0.0238	0.0684***	0.0261	EUGP Count $Third_{t-1}$	-0.0002	-0.0003	0.0011	-0.0004
	(0.0308)	(0.0318)	(0.0202)	(0.0308)		(0.0011)	(0.0013)	(0.0009)	(0.0011)
EUGP $Third_{t}$	0.0366	0.0418	0.0358*	0.0451	EUGP Count $Third_{t}$	0.0002	0.0002	-0.0001	0.0005
	(0.0319)	(0.0327)	(0.0186)	(0.0318)		(0.0011)	(0.0013)	(0.0009)	(0.0011)
EUGP $Third_{t+1}$	0.0011	-0.0035	-0.0094	0.0028	EUGP Count $Third_{t+1}$	0.0007	0.0011	0.0011*	0.0004
	(0.0282)	(0.0287)	(0.0170)	(0.0278)		(0.0009)	(0.0010)	(0.0007)	(0.0009)
EUGP Third Impact	0.0695**	0.0621**	0.0949***	0.0741***	EUGP Third Impact	0.0007	0.0009	0.0022***	0.0006
	(0.0299)	(0.0307)	(0.0179)	(0.0278)		(0.0010)	(0.0011)	(0.0007)	(0.0009)
RTA	-0.0100*	-0.0079	0.0086*	0.0088*	RTA	-0.0098*	-0.0076	0.0070	0.0072
	(0.0052)	(0.0053)	(0.0047)	(0.0047)		(0.0052)	(0.0053)	(0.0046)	(0.0046)
bothWTO	-0.0331*	-0.0278	-0.0339*	-0.0331*	bothWTO	-0.0322*	-0.0270	-0.0325*	-0.0322*
	(0.0182)	(0.0185)	(0.0181)	(0.0182)		(0.0182)	(0.0185)	(0.0181)	(0.0181)
Observations	3,215,599	3,150,807	4,743,793	4,743,793	Observations	3,215,599	3,150,807	4,743,793	4,743,793
Pseudo R2	0.8031	0.8034	0.7862	0.7862	Pseudo R2	0.8031	0.8034	0.7862	0.7862
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

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 8: EU GPs and Trade – PDOs vs. Other EU GPs

	GP Measure: Binary					**GP 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	GI Aggregate	EU	EU15	Ind. EU	EU
PDO_{t-1}	0.3301***	0.3031***	0.2280***	0.3255***	PDO $Count_{t-1}$	0.0043*	0.0049*	0.0017	0.0033
	(0.0924)	(0.1003)	(0.0611)	(0.0902)		(0.0026)	(0.0025)	(0.0058)	(0.0025)
PDO_t	-0.1104**	-0.0576	-0.1151***	-0.1097**	PDO $Count_t$	-0.0012	-0.0004	-0.0012	-0.0005
	(0.0544)	(0.0568)	(0.0425)	(0.0551)		(0.0014)	(0.0015)	(0.0033)	(0.0014)
PDO $_{t+1}$	0.0015	0.0109	-0.0740	0.0523	PDO $Count_{t+1}$	0.0025	0.0005	-0.0076*	0.0040*
	(0.0695)	(0.0732)	(0.0712)	(0.0707)		(0.0024)	(0.0025)	(0.0039)	(0.0023)
PDO Impact	0.2212**	0.2564**	0.0390	0.2681***	PDO Impact	0.0057*	0.0050*	-0.0071	0.0068**
	(0.1039)	(0.1064)	(0.0873)	(0.1040)		(0.0029)	(0.0030)	(0.0091)	(0.0029)
Other $EUGP_{t-1}$	0.0278	-0.0082	-0.0047	0.0221	Other EUGP $Count_{t-1}$	0.0025	0.0066**	0.0175*	0.0038*
	(0.0722)	(0.0822)	(0.0568)	(0.0710)		(0.0020)	(0.0031)	(0.0091)	(0.0020)
Other $EUGP_t$	-0.0835	-0.1202**	-0.0435	-0.0688	Other EUGP $Count_t$	-0.0012	-0.0022	-0.0021	-0.0006
	(0.0565)	(0.0579)	(0.0491)	(0.0581)		(0.0019)	(0.0028)	(0.0064)	(0.0018)
Other $EUGP_{t+1}$	0.1276**	0.0981	0.0262	0.1218**	Other EUGP $Count_{t+1}$	0.0075**	0.0073	0.0005	0.0059**
	(0.0601)	(0.0634)	(0.0531)	(0.0611)		(0.0030)	(0.0045)	(0.0096)	(0.0030)
Other EUGP Impact	0.0720	-0.0304	-0.0220	0.0751	Other EUGP Impact	0.0089***	0.0117***	0.0159**	0.0091***
	(0.0884)	(0.0922)	(0.0629)	(0.0873)		(0.0026)	(0.0039)	(0.0078)	(0.0025)
RTA	0.1321***	0.1309***	0.1291***	0.1260***	RTA	0.1321***	0.1293***	0.1286***	0.1265***
	(0.0231)	(0.0237)	(0.0232)	(0.0234)		(0.0228)	(0.0234)	(0.0231)	(0.0232)
bothWTO	0.2979***	0.3465***	0.3348***	0.3369***	bothWTO	0.2975***	0.3468***	0.3353***	0.3364***
	(0.0883)	(0.0989)	(0.0910)	(0.0909)		(0.0884)	(0.0989)	(0.0910)	(0.0909)
Observations	8,101,768	7,943,771	11,975,802	11,975,802	Observations	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830	Pseudo R2	0.9858	0.9858	0.9830	0.9830
PDO - Oth. EUGP p-val	0.3785	0.1003	0.5921	0.2538	PDO - Oth. EUGP p-val	0.4365	0.2068	0.0639	0.5660
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

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 – High vs. Low EU Import Shares

	GP Measure: Binary					**GP Measure: Count**			
Dep. Variable: Trade	(41)	(42)	(43)	(44)	Dep. Variable: Trade	(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	GI Aggregate	EU	EU15	Ind. EU	EU
EUGP High_{t-1}	0.0381	-0.0256	0.0418	0.0401	EUGP High Count_{t-1}	0.0034**	0.0041**	0.0052	0.0027*
	(0.0890)	(0.0839)	(0.0572)	(0.0853)		(0.0015)	(0.0017)	(0.0053)	(0.0016)
EUGP High_{t}	-0.0752	-0.1065**	-0.1178***	-0.0689	EUGP High Count_{t}	-0.0078	-0.0136	0.0042	-0.0065
	(0.0593)	(0.0511)	(0.0415)	(0.0606)		(0.0086)	(0.0107)	(0.0113)	(0.0083)
EUGP High_{t+1}	0.0758	0.0723	0.0747	0.1034	EUGP High Count_{t+1}	0.0086	0.0145	-0.0105	0.0097
	(0.0664)	(0.0603)	(0.0471)	(0.0657)		(0.0085)	(0.0105)	(0.0115)	(0.0082)
EUGP High Impact	0.0387	-0.0598	-0.0012	0.0745	EUGP High Impact	0.0042**	0.0051**	-0.0012	0.0059***
	(0.0966)	(0.0859)	(0.0640)	(0.0956)		(0.0017)	(0.0020)	(0.0079)	(0.0018)
EUGP Low_{t-1}	0.3156***	0.3628***	0.8261***	0.3042***	EUGP Low Count_{t-1}	0.0047	0.0087*	0.2240***	0.0062***
	(0.0698)	(0.0870)	(0.1570)	(0.0707)		(0.0036)	(0.0052)	(0.0513)	(0.0020)
EUGP Low_{t}	-0.1864***	-0.2159***	-0.0162	-0.1763***	EUGP Low Count_{t}	0.0140	0.0319	0.0034	0.0020
	(0.0559)	(0.0710)	(0.2082)	(0.0571)		(0.0279)	(0.0320)	(0.0786)	(0.0083)
EUGP Low_{t+1}	0.1523**	0.1155	-0.2743**	0.1524**	EUGP Low Count_{t+1}	-0.0070	-0.0266	-0.0540	0.0019
	(0.0636)	(0.0745)	(0.1287)	(0.0637)		(0.0284)	(0.0328)	(0.0620)	(0.0080)
EUGP Low Impact	0.2815***	0.2623**	0.5356***	0.2803***	EUGP Low Impact	0.0117***	0.0140**	0.1734***	0.0102***
	(0.0935)	(0.1109)	(0.1597)	(0.0921)		(0.0039)	(0.0059)	(0.0392)	(0.0020)
RTA	0.1314***	0.1302***	0.1289***	0.1255***	RTA	0.1319***	0.1291***	0.1287***	0.1265***
	(0.0231)	(0.0237)	(0.0232)	(0.0235)		(0.0228)	(0.0234)	(0.0231)	(0.0232)
bothWTO	0.2959***	0.3443***	0.3350***	0.3347***	bothWTO	0.2952***	0.3452***	0.3348***	0.3360***
	(0.0884)	(0.0990)	(0.0910)	(0.0910)		(0.0885)	(0.0990)	(0.0910)	(0.0909)
Observations	8,101,768	7,943,771	11,975,802	11,975,802	Observations	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830	Pseudo R2	0.9858	0.9858	0.9830	0.9830
High - Low p-val	0.0537	0.0129	0.0003	0.0988	High - Low p-val	0.0584	0.1307	0.0000	0.0011
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

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 10: EU GPs and Trade – Product-specific Effects

GP Measure: Binary				
Dep. Variable: Trade	(49)	(50)	(51)	(52)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP Animals Impact	0.2964**	0.2640**	-0.0406	0.3815***
	(0.1261)	(0.1273)	(0.1108)	(0.1120)
EUGP Fats Impact	-0.0795	-0.0691	-0.0310	0.0377
	(0.2296)	(0.2314)	(0.2346)	(0.2278)
EUGP Foodstuffs Impact	0.0102	-0.1367	-0.1189	0.0145
	(0.1096)	(0.1122)	(0.0948)	(0.1084)
EUGP Vegetables Impact	0.3966***	0.3251**	0.4087***	0.3900***
	(0.1447)	(0.1479)	(0.1342)	(0.1397)
RTA	0.1384***	0.1375***	0.1343***	0.1312***
	(0.0267)	(0.0274)	(0.0268)	(0.0272)
bothWTO	0.3081***	0.3589***	0.3404***	0.3429***
	(0.0964)	(0.1080)	(0.0991)	(0.0990)
Observations	6,663,276	6,506,290	9,768,413	9,768,413
Pseudo R2	0.9856	0.9855	0.9831	0.9831
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

GP Measure: Count				
Dep. Variable: Trade	(53)	(54)	(55)	(56)
Sample	EU	EU15	Ind. EU	Ind. EU
GI Aggregate	EU	EU15	Ind. EU	EU
EUGP Animals Impact	0.0039	0.0033	-0.0134**	0.0061**
	(0.0027)	(0.0029)	(0.0074)	(0.0029)
EUGP Fats Impact	0.0048	0.0048	0.0216**	0.0070
	(0.0076)	(0.0077)	(0.0112)	(0.0067)
EUGP Foodstuffs Impact	0.0066***	0.0081**	0.0073	0.0066***
	(0.0025)	(0.0035)	(0.0083)	(0.0024)
EUGP Vegetables Impact	0.0320***	0.0293***	0.0761**	0.0261***
	(0.0067)	(0.0063)	(0.0302)	(0.0066)
RTA	0.1378***	0.1348***	0.1334***	0.1311***
	(0.0262)	(0.0270)	(0.0266)	(0.0267)
bothWTO	0.3076***	0.3591***	0.3403***	0.3420***
	(0.0965)	(0.1080)	(0.0991)	(0.0991)
Observations	6,663,276	6,506,290	9,768,413	9,768,413
Pseudo R2	0.9856	0.9855	0.9831	0.9831
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

Notes: The table presents results from PPML regressions. Note that the table reports the aggregate EU GP impact for the four listed product groups consisting in each case of the sum of the 1-year lag, contemporaneous and 1-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

Table A1: EU GPs and Trade – Baseline Results with Importer-Exporter-Year Fixed Effects

EUGP Measure: Binary					**EUGP Measure: Count**				
Dep. Variable: Trade	(A1)	(A2)	(A3)	(A4)	Dep. Variable: Trade	(A5)	(A6)	(A7)	(A8)
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
$EUGP_{t-1}$	0.1330***	0.1078**	0.0523	0.1431***	EUGP $Count_{t-1}$	0.0022	0.0040***	0.0029	0.0022*
	(0.0475)	(0.0506)	(0.0441)	(0.0480)		(0.0014)	(0.0015)	(0.0046)	(0.0013)
$EUGP_{t}$	-0.0360	-0.0643	0.0309	-0.0293	EUGP $Count_{t}$	0.0004	0.0016	0.0013	0.0015
	(0.0473)	(0.0484)	(0.0424)	(0.0477)		(0.0011)	(0.0012)	(0.0031)	(0.0010)
$EUGP_{t+1}$	0.0307	0.0032	-0.1050**	0.0220	EUGP $Count_{t+1}$	0.0014	-0.0008	-0.0087***	0.0003
	(0.0566)	(0.0575)	(0.0438)	(0.0545)		(0.0017)	(0.0020)	(0.0033)	(0.0016)
EUGP Impact	0.1277**	0.0467	-0.0218	0.1357**	EUGP Impact	0.0040**	0.0048**	-0.0045	0.0040**
	(0.0649)	(0.0626)	(0.0518)	(0.0636)		(0.0018)	(0.0022)	(0.0062)	(0.0018)
Observations	8,097,373	7,938,176	11,971,097	11,971,097	Observations	8,097,373	7,938,176	11,971,097	11,971,097
Pseudo R2	0.9887	0.9886	0.9861	0.9861	Pseudo R2	0.9887	0.9886	0.9861	0.9861
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
Imp x Exp x Year FE	Yes	Yes	Yes	Yes	Imp x Exp x Year FE	Yes	Yes	Yes	Yes

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 EU RTA and Non-EU RTA Controls

EUGP Measure: Binary					**EUGP Measure: Count**				
Dep. Variable: Trade	(A9)	(A10)	(A11)	(A12)	Dep. Variable: Trade	(A13)	(A14)	(A15)	(A16)
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-1}	0.1633***	0.1304*	0.0625	0.1576***	EUGP Count_{t-1}	0.0037**	0.0056***	0.0054	0.0035**
	(0.0613)	(0.0669)	(0.0572)	(0.0603)		(0.0016)	(0.0019)	(0.0055)	(0.0016)
EUGP t	-0.1397***	-0.1669***	-0.0785*	-0.1201***	EUGP Count_{t}	-0.0013	-0.0011	-0.0016	-0.0005
	(0.0442)	(0.0449)	(0.0449)	(0.0450)		(0.0010)	(0.0013)	(0.0029)	(0.0010)
EUGP t+1	0.1185**	0.0949*	0.0211	0.1300***	EUGP Count_{t+1}	0.0046***	0.0026	-0.0057	0.0048***
	(0.0485)	(0.0502)	(0.0481)	(0.0487)		(0.0017)	(0.0020)	(0.0038)	(0.0016)
EUGP Impact	0.1421**	0.0583	0.0051	0.1675**	EUGP Impact	0.0071***	0.0071***	-0.0019	0.0078***
	(0.0714)	(0.0748)	(0.0632)	(0.0704)		(0.0019)	(0.0022)	(0.0084)	(0.0019)
EU RTA	0.1375***	0.1471***	0.1335***	0.1209***	EU RTA	0.1387***	0.1407***	0.1328***	0.1242***
	(0.0247)	(0.0246)	(0.0241)	(0.0245)		(0.0242)	(0.0238)	(0.0240)	(0.0240)
Non-EU RTA	0.1299***	0.1252***	0.1273***	0.1279***	Non-EU RTA	0.1295***	0.1250***	0.1272***	0.1275***
	(0.0298)	(0.0301)	(0.0301)	(0.0301)		(0.0298)	(0.0301)	(0.0301)	(0.0301)
bothWTO	0.2965***	0.3449***	0.3349***	0.3354***	bothWTO	0.2976***	0.3466***	0.3347***	0.3365***
	(0.0884)	(0.0989)	(0.0910)	(0.0909)		(0.0884)	(0.0989)	(0.0910)	(0.0909)
Observations	8,101,768	7,943,771	11,975,802	11,975,802	Observations	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830	Pseudo R2	0.9858	0.9858	0.9830	0.9830
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

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 2-year Intervals

	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
$EUGP_{t-1}$	0.2353***	0.2000**	0.0617	0.2291***	EUGP $Count_{t-1}$	0.0029	0.0046**	0.0039	0.0027
	(0.0773)	(0.0857)	(0.0925)	(0.0773)		(0.0019)	(0.0023)	(0.0080)	(0.0020)
$EUGP_{t}$	-0.2056**	-0.2196**	-0.0615	-0.1910**	EUGP $Count_{t}$	0.0010	0.0011	0.0016	0.0026
	(0.0912)	(0.1010)	(0.1028)	(0.0902)		(0.0031)	(0.0034)	(0.0086)	(0.0029)
$EUGP_{t+1}$	0.1132**	0.0902	0.0096	0.1266**	EUGP $Count_{t+1}$	0.0026	0.0006	-0.0072*	0.0020
	(0.0565)	(0.0591)	(0.0559)	(0.0571)		(0.0028)	(0.0030)	(0.0038)	(0.0026)
EUGP Impact	0.1429**	0.0706	0.0097	0.1647**	EUGP Impact	0.0064***	0.0064***	-0.0018	0.0072***
	(0.0664)	(0.0685)	(0.0637)	(0.0665)		(0.0018)	(0.0022)	(0.0053)	(0.0018)
RTA	0.1252***	0.1278***	0.1238***	0.1203***	RTA	0.1260***	0.1264***	0.1237***	0.1213***
	(0.0249)	(0.0254)	(0.0249)	(0.0252)		(0.0246)	(0.0251)	(0.0248)	(0.0248)
bothWTO	0.2318***	0.2817***	0.2791***	0.2785***	bothWTO	0.2344***	0.2844***	0.2790***	0.2809***
	(0.0873)	(0.0918)	(0.0878)	(0.0877)		(0.0873)	(0.0917)	(0.0878)	(0.0877)
Observations	3,497,453	3,429,838	5,185,015	5,185,015	Observations	3,497,453	3,429,838	5,185,015	5,185,015
Pseudo R2	0.9863	0.9862	0.9836	0.9836	Pseudo R2	0.9863	0.9862	0.9836	0.9836
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

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 3-year Lag and Lead

EUGP Measure: Binary					EUGP Measure: Count				
Dep. Variable: Trade	(A25)	(A26)	(A27)	(A28)	Dep. Variable: Trade	(A29)	(A30)	(A31)	(A32)
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}	0.2865***	0.2791***	0.1165*	0.2565***	EUGP Count_{t-3}	0.0057**	0.0071***	0.0029	0.0046**
	(0.0786)	(0.0788)	(0.0632)	(0.0735)		(0.0022)	(0.0024)	(0.0040)	(0.0021)
EUGP_{t}	0.0171	-0.0435	0.0119	0.0460	EUGP Count_{t}	0.0028*	0.0027	0.0005	0.0039***
	(0.0551)	(0.0550)	(0.0475)	(0.0534)		(0.0015)	(0.0018)	(0.0058)	(0.0014)
EUGP_{t+3}	0.0182	-0.0255	-0.0631	0.0171	EUGP Count_{t+3}	0.0022	0.0011	-0.0094***	0.0017
	(0.0523)	(0.0472)	(0.0408)	(0.0526)		(0.0016)	(0.0018)	(0.0035)	(0.0015)
EUGP Impact	0.3217***	0.2102*	0.0654	0.3196***	EUGP Impact	0.0106***	0.0109***	-0.0059	0.0102***
	(0.1154)	(0.1133)	(0.0984)	(0.1131)		(0.0028)	(0.0031)	(0.0101)	(0.0027)
RTA	0.1190***	0.1131***	0.1112***	0.1095***	RTA	0.1188***	0.1118***	0.1114***	0.1097***
	(0.0252)	(0.0259)	(0.0254)	(0.0256)		(0.0250)	(0.0258)	(0.0253)	(0.0254)
bothWTO	0.2890***	0.3397***	0.3229***	0.3233***	bothWTO	0.2906***	0.3414***	0.3226***	0.3249***
	(0.0983)	(0.1127)	(0.1027)	(0.1026)		(0.0983)	(0.1126)	(0.1027)	(0.1026)
Observations	6,520,613	6,392,589	9,683,394	9,683,394	Observations	6,520,613	6,392,589	9,683,394	9,683,394
Pseudo R2	0.9864	0.9864	0.9837	0.9837	Pseudo R2	0.9864	0.9864	0.9837	0.9837
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

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				
Dep. Variable: Trade	(A33)	(A34)	(A35)	(A36)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
$EUGP_{t-1}$	0.0721	0.0427	0.0041	0.0706
	(0.0632)	(0.0683)	(0.0583)	(0.0621)
$EUGP_{t}$	-0.0761*	-0.0966**	-0.0345	-0.0680
	(0.0428)	(0.0429)	(0.0443)	(0.0435)
$EUGP_{t+1}$	0.1327***	0.1092**	0.0289	0.1454***
	(0.0495)	(0.0511)	(0.0483)	(0.0499)
EUGP Impact	0.1287*	0.0554	-0.0015	0.1480**
	(0.0714)	(0.0747)	(0.0639)	(0.0706)
RTA_{t-1}	0.1437***	0.1374***	0.1380***	0.1364***
	(0.0205)	(0.0207)	(0.0206)	(0.0207)
RTA_{t}	0.0512***	0.0544***	0.0495***	0.0509***
	(0.0176)	(0.0179)	(0.0176)	(0.0178)
RTA_{t+1}	-0.0322	-0.0319	-0.0283	-0.0331
	(0.0201)	(0.0207)	(0.0203)	(0.0205)
$bothWTO_{t-1}$	0.1872***	0.2115***	0.2104***	0.2113***
	(0.0709)	(0.0753)	(0.0709)	(0.0708)
$bothWTO_{t}$	0.1417***	0.1549***	0.1366**	0.1364**
	(0.0545)	(0.0577)	(0.0549)	(0.0548)
$bothWTO_{t+1}$	-0.0110	0.0138	0.0268	0.0269
	(0.1033)	(0.1122)	(0.1033)	(0.1032)
Observations	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830
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

EUGP Measure: Count				
Dep. Variable: Trade	(A37)	(A38)	(A39)	(A40)
Sample	EU	EU15	Ind. EU	Ind. EU
EUGP Aggregate	EU	EU15	Ind. EU	EU
EUGP $Count_{t-1}$	0.0023	0.0038**	0.0034	0.0022
	(0.0016)	(0.0018)	(0.0050)	(0.0016)
EUGP $Count_{t}$	-0.0003	0.0001	-0.0003	0.0003
	(0.0010)	(0.0012)	(0.0030)	(0.0010)
EUGP $Count_{t+1}$	0.0049***	0.0031	-0.0052	0.0051***
	(0.0017)	(0.0020)	(0.0038)	(0.0016)
EUGP Impact	0.0069***	0.0070***	-0.0020	0.0075***
	(0.0019)	(0.0022)	(0.0083)	(0.0019)
RTA_{t-1}	0.1446***	0.1374***	0.1379***	0.1372***
	(0.0203)	(0.0205)	(0.0205)	(0.0205)
RTA_{t}	0.0487***	0.0513***	0.0489***	0.0486***
	(0.0174)	(0.0177)	(0.0175)	(0.0175)
RTA_{t+1}	-0.0291	-0.0296	-0.0275	-0.0296
	(0.0199)	(0.0205)	(0.0202)	(0.0203)
$bothWTO_{t-1}$	0.1885***	0.2131***	0.2103***	0.2125***
	(0.0709)	(0.0752)	(0.0709)	(0.0708)
$bothWTO_{t}$	0.1415***	0.1550***	0.1366**	0.1361**
	(0.0545)	(0.0577)	(0.0549)	(0.0548)
$bothWTO_{t+1}$	-0.0106	0.0147	0.0266	0.0275
	(0.1033)	(0.1121)	(0.1033)	(0.1032)
Observations	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830
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

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 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・トラディツィォナーレ・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' HS6-digit code. 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 2021, 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.[26] To identify and match the relevant HS6-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 HS6-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 HS6-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 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 HS6-digit code definition for each product. For instance, I classify the registered British

[26] The Ambrosia database can be accessed at https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/geographical-indications-register/.

GP 'Orkney beef' under the HS6-digit code 020110 (Meat of bovine animals, fresh or chilled: Carcasses and half-carcasses). However, one could also classify this product under the HS6-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	https://eur-lex.europa.eu/resource.html?uri=cellar:f83a503c-fa20-4b3a-9535-f1074175eaf0.0004.02/DOC_2&format=PDF	1204-1209
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
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

continued ...

. . . continued

EU Partner	Agreement Text	Pages
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
$EUGP_{t-1}$	0.1813***	0.1292*	0.0538	0.1801***	EUGP $Count_{t-1}$	0.0049***	0.0055***	0.0053	0.0042**
	(0.0557)	(0.0669)	(0.0543)	(0.0558)		(0.0019)	(0.0019)	(0.0060)	(0.0018)
$EUGP_{t}$	-0.1470***	-0.1546***	-0.0794*	-0.1257***	EUGP $Count_{t}$	-0.0019*	-0.0009	-0.0050**	-0.0012
	(0.0407)	(0.0441)	(0.0435)	(0.0411)		(0.0010)	(0.0012)	(0.0020)	(0.0010)
$EUGP_{t+1}$	0.1687***	0.0951*	0.0353	0.1512***	Wide EUGP $Count_{t+1}$	0.0067***	0.0027	-0.0041	0.0064***
	(0.0438)	(0.0502)	(0.0472)	(0.0448)		(0.0020)	(0.0020)	(0.0044)	(0.0019)
EUGP Impact	0.2030***	0.0698	0.0097	0.2056***	EUGP Impact	0.0097***	0.0072***	-0.0037	0.0094***
	(0.0679)	(0.0747)	(0.0602)	(0.0679)		(0.0024)	(0.0022)	(0.0085)	(0.0023)
RTA	0.1303***	0.1311***	0.1290***	0.1247***	RTA	0.1313***	0.1295***	0.1290***	0.1260***
	(0.0231)	(0.0237)	(0.0232)	(0.0235)		(0.0228)	(0.0234)	(0.0231)	(0.0232)
bothWTO	0.2968***	0.3449***	0.3349***	0.3355***	bothWTO	0.2983***	0.3466***	0.3346***	0.3370***
	(0.0884)	(0.0989)	(0.0910)	(0.0909)		(0.0884)	(0.0989)	(0.0910)	(0.0909)
Observations	8,101,768	7,943,771	11,975,802	11,975,802	Observations	8,101,768	7,943,771	11,975,802	11,975,802
Pseudo R2	0.9858	0.9858	0.9830	0.9830	Pseudo R2	0.9858	0.9858	0.9830	0.9830
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

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:

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

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), the resulting increase in demand for product k from exporter j will subsequently increase trade flows from country j to importer i.[27] Equation (C.3) is therefore the theoretical foundation for the empirical models in (1) and (2) in section 3.1.

[27] Note that 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.