The EU preferential trade policy towards the Southern Mediterranean Countries: A Generalized Propensity Score evaluation

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Abstract

The aim of this work is to assess the trade impact of preferential schemes by adopting a novel methodological approach, namely a generalized propensity score matching (GPS) technique. In this exercise, we focus on the case of the EU-MED Association Agreements in agricultural and fishery products. Differently from the majority of current analyses, we choose a continuous variable to measure preferences instead of relying on a dummy variable to capture the average treatment effect of PTAs. Second, we use highly disaggregated data at sectoral level in order to evaluate properly the preferential treatment which is conceived to be applied at the product level. Our preliminary results show that the impact of the EU preferential policy on SMCs trade flows is significant and better evaluated using impact evaluation techniques.

Keywords: International trade, EU-MED integration, Preferential trade agreement, Impact evaluation, Matching econometrics.

JEL classification: : C21,F10, F13, F15

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1 Introduction

In the last two decades, the number of preferential trade agreements (PTAs) has increased more than four-fold (WTR, 2011). The explosion of PTAs has triggered a parallel increase of research on the subject. Overall, the key research question is the following: do preferences impact trade? Over the last decade there have been numerous attempts to assess the impact of preference on trade flows, using different econometrics techniques. While the common perception is that preferences do impact positively on trade, empirical evidence is controversial.

This work gets in this framework offering several methodological improvements. Differently from the majority of current analyses, it chooses a continuous variable to measure preferences instead of relying on a dummy variable to capture the average treatment effect of PTAs. Using a continuous rather than a binary treatment provides some advantages: the preferential measure variable allows to capture the heterogeneity of depth and coverage across products and countries of the preferential regime and to control for the preference utilization. Second, this work uses highly disaggregated data at sectoral level in order to evaluate properly the preferential treatment which is conceived to be applied at the product level. Furthermore, we adopt a novel methodological approach to assess the trade impact of preferential scheme: the impact evaluation techniques (Angrist and Pischke, 2008; Imbens and Wooldridge 2009). While there is widespread consensus on the relevance of the modern literature on impact evaluation, its application to trade policy issues is still rare. In this work, we apply a generalized propensity score (GPS) matching technique where the preference margin is the continuous treatment and the bilateral trade flow at product level is the outcome. GPS is a non-parametric method to estimate treatment effects conditional on observable determinants of treatment intensity. Using the GPS technique we are not compelled to fulfil the hard task to retrieve a control group from outside our sample which shares similar characteristics, which is mandatory with the binary treatment matching techniques. Finally, this technique allows to represent the so-called dose-response function and illustrate how bilateral trade flows at product level respond to changes in the preferential margin.

In this empirical exercise, we focus on the case study of the EU trade preferential policy towards the Southern Mediterranean Countries (SMCs) based on the new generation of EU-MED Association Agreements (AAs). Over fifteen years after the launch of the Barcelona Process SMCs are nowadays fully involved in the EU-MED partnership, except Syria (including the Palestinian Authority holding an Interim Euro-Mediterranean Association Agreement, see Table 1).

Table 1: State of implementation of EU-MED AAs

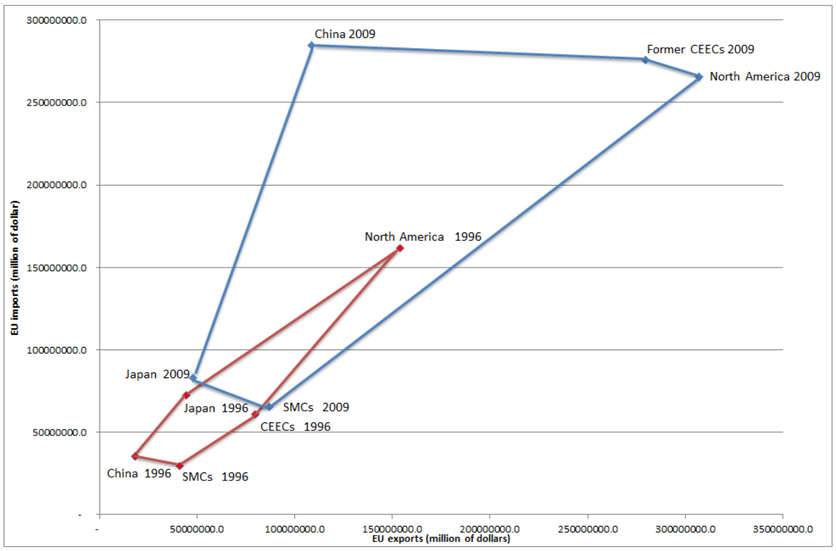
Country	Signature date	Entry into force
Algeria	22 April 2002	1 September 2005
Egypt	25 June 2001	1 June 2004
Israel	20 November 1995	1 June 2000
Jordan	24 November 1997	1 May 2002
Lebanon	17 June 2002	1 April 2006
Morocco	26 February 1996	1 March 2000
Palestinian Authority	24 February 1997	1 July 1997 (Interim association agreement)
Syria	Negotiations concluded awaiting for signature	
Tunisia	17 July 1995	1 March 1998
Turkey	6 March 1995	31 December 1995

The objective of the network of bilateral AAs between EU members countries and SMCs is to provide for the gradual establishment of a Mediterranean FTA in accordance with the rules of the World Trade Organization (WTO). It foresees the free movement of goods between the 27 EU members countries and SMCs by the gradual removal of customs duties (after a transitional period of twelve years following the entry into force of the agreements) as well as the prohibition of quantitative restrictions and/or any similar or discriminatory measures between the parties. As a result, from 1995 to date, SMCs have registered a dramatic decrease in Most Favored Nations (MFN) customs duties (below 18 percent for agricultural products and 5 percent for non-agricultural products). While all SMCs industrial goods are currently EU duty free, a pervasive trade liberalization process is currently in place in the agricultural sector, which is key for the development of SMCs: more than 80 percent of agricultural products imported from the Mediterranean countries now enter the EU market either duty free or at reduced rates. Reciprocally, one third of EU exports of agricultural products benefits from preferential treatment in the Mediterranean countries. Liberalization of trade in services and investment, including the right of establishment, is also part of the Association Agreements' key objectives,[1] as well as the establishment of bilateral dispute settlement mechanisms for trade matters. Furthermore, the 42 members of the EU-MED partnership have also adopted a PanEuroMed Protocol on cumulation of origin. This allows economic operators to cumulate

[1] The Istanbul Framework Protocol, endorsed in July 2004, defines the core principles of services liberalization, including a regional MFN clause to ensure the consistency and coherence of the bilateral agreements.

processing made in different countries of the region and thus obtain preferential treatment. However, as it is apparent from Fig.1, since the Barcelona Declaration EU-MED trade relations are worsened relatively to the other EU main trade partners[2], even if in a context on increased absolute trade. Should we conclude that EU trade preferences are not effective?

Figure 1: EU Trade with its main partners (1996-2009)



Source: Authors' own calculations on Comtrade

We aim at providing an answer to the above question by presenting a robust assessment of the effectiveness of the EU preferential policy in stimulating additional export flows from the SMCs. Since industrial products benefit from duty free access into the EU market, our focus will be on agricultural and fishery products. A number of impact evaluation assessments with a specific focus on SMCs have been carried out to date. The majority of this assessments apply gravity equations and rely on dummy variables to capture the economic impacts of alternative trade policies (for a survey see Jarreau, 2011).This is in fact the most workable solution, but unsatisfactory for a number of reasons: it implicitly assumes equal treatment and does not control for gradual implementation of the agreements; it does not control for specific

[2] To highlight the different performances of SMCs and CEECs, in the figure we adopt the EU15 group instead of the EU27 one as in the empirical analysis.

country pair events contemporaneous with PTAs; it is unstable and loses significance the more one controls for heterogeneity in the model.

To our knowledge this is the first assessment of the EU-MED preferential policy adopting GPS. Our preliminary results show how the impact of EU preferential policy on SMCs trade flows is significant, even if diversified by product, and better evaluated using impact evaluation techniques.

2 Literature review

An increasing number of empirical studies has investigated the actual effects of PTAs on trade. This evidence suggests, generally speaking, that preferences do impact positively on trade flows among member countries (see for example, Agostino et. al., 2007; Baier and Bergstrand, 2007 and 2009; Carrére, 2006; Cirera et al., 2011; Collier and Venables, 2007; Di Rubbo and Canali, 2008; Egger et al., 2011; Frazer and Van Biesebroeck, 2010; Lee and Shin, 2006; Magee, 2008; Nilsson, 2007; Nilsson et al., 2009). The converse is less common. Ozden and Reinhardt (2004) examining the period 1976-2000 find that export performance improves when asymmetric preferences are removed. Collier and Venables (2007) suggest little impact either on diversification. Trefler (2004) finds trade diversion effects resulting from the US-Canada FTA and Romalis (2007) finds trade diverting effects in regard to the North American FTA. Egger (2004) finds that joining a PTA does not exert any significant short-term impact on trade volumes, but that there is a considerable trade creation effect in the long-run.

Two main methodological approaches are commonly applied to measure the impact of preferences scheme on trade flows: gravity model and computable general equilibrium (CGE) model. In the gravity approach, the key question is to what extent PTA partners trade more than would be predicted by standard bilateral trade determinants (e.g. income, geographical proximity, etc.). The effect of trade agreements is estimated by including dummy variables for the presence of policy factors to measure this impact. This strand of the empirical literature typically focuses either on EU or on the US preferences schemes (see, among others, Acharya et al., 2011; Agostino et. al., 2007; Caporale et al., 2009; Collier and Venables, 2007; De Benedictis et al., 2005; Di Rubbo and Canali, 2008; Frazer and Van Biesebroeck, 2010; Martnez-Zarzoso et al., 2009; Péridy, 2005; Nilsson, 2007; Nilsson et al., 2009). Other studies apply a continuous variable instead of applying a dummy variable, i.e. they compute the "preferential margins" guaranteed by a country to its partners (Aiello and Demaria, 2010; Cipollina and Salvatici, 2010; Francois et al., 2006; Hoekman and Nicita, 2011; Kee et al., 2009; Low et al., 2009; Nilsson and Matsson, 2009). Most of the works that employ a dummy variable conducts empirical analysis on aggregate data, while papers that employ quantitative variables focus on disaggregated data on trade.

An alternative strategy to measure the trade impact of preferences is to use computable general equilibrium models. Several studies have used the CGE model - such as GTAP (Hertel, 1997) and MIRAGE (Bchir et al., 2002) to quantify the impact of PTAs. Both static and dynamic effects are considered in recent CGE studies of economic integration (see, among others, Lee and van der Mensbrugghe, 2008; Bouet et al., 2008). The static model evaluates the one off, more immediate impact of the removal of trade barriers (e.g. Gilbert et al., 2004; Urata and Kiyota, 2005). The dynamic model incorporates medium-term to long-term efficiency gains from resource reallocation and capital accumulation (e.g. Cheong, 2003; Francois and Wignaraja, 2008). Yet these models have been criticized because PTA results have been shown to be particularly sensitive to assumptions on the trade elasticity (Brown et al., 1992; Ackerman and Gallagher, 2008) and a further limitation of CGE models is poor economic interpretation of trade policy effects because of many variables and equations, which make them a black box (Panagariya and Duttagupta, 2001).

As a PTA is not an exogenous random variable but it is likely to be endogenously determined by and correlated with the country-pair trade flows and its determinants (Baier and Bergstrand, 2007; Egger et al., 2008), several authors have recently addressed the endogeneity issue relying on the impact evaluation methods and, in particular, using non-parametric matching techniques based on the benchmark between treatment and control groups (Baier and Bergstrand, 2009; Egger et al., 2008; Millimet and Tchernis, 2009; Montalbano and Nenci, 2011; Persson, 2001) While there is widespread consensus on the relevance of the modern literature on impact evaluation, its application to trade policy issues is still rare.

3 The empirical model

To estimate the causal effect at the product level of the EU-MED preferential regime on the SMCs export flows towards the EU we apply a Generalized

Propensity Score (GPS) matching estimator where the preferential margin (PM) is the continuous treatment and the SMCs export flows to the EU at product level is the outcome. The GPS method -originally proposed by Hirano and Imbens (2004) and Imai van Dyk (2004) - allows to correct for selection bias, in a setting with a continuous treatment, by comparing units that are similar in terms of their observable characteristics. This method has been recently applied by several authors to evaluate the impact of labour market programmes (Kluve, 2010; Kluve et al., 2012), regional transfer schemes (Becker et al., 2010), FDI (Du and Girma, 2009), and the relationship between migration and trade (Egger et al. 2012).

3.1 The GPS estimator

Let us use index $i = 1, ..., N$ to indicate a 6-digit products traded from SMCs to the EU27 area and assume the unit-level dose-response of potential outcomes, EU bilateral imports, $Yi(t)$ as a function of the treatment $t \in \tau$, where t is a specific product-level preferential margin. Our objective is to estimate the average dose-response function across all observations $i, D(t) = E[Yi(t)]$. Following the standard procedure, we drop the index i for simplicity and assume that $Y(t)_{t\in\tau}$, T and X are defined on a common probability space, that is continuously distributed with respect to a Lebesgue measure on τ, and that $Y = Y(T)$ is a well defined random variable. In this setting, we adopt the Hirano and Imbens (2004)' s definition of weak *unconfoundedness* for continuous treatments as follows:

$$Y(t)\perp T|X \; for \; all \; t \in \tau \; (1)$$

The weak *unconfoundedness* assumption assures that, after controlling for observable characteristics X, any remaining difference in treatment intensity T across product-level observations is independent of the potential outcomes $Y(t)$. This is a key assumption in this exercise since the lack of independence between treatment and outcome is likely in the PTAs' case (Baier and Bergstrand, 2007; Egger et al., 2008).[3] Following Hirano and Imbens (2004), the GPS may be defined as:

$$R = r(t, X) \qquad (2)$$

[3] This assumption is called weak *unconfoundedness* because it does not require joint independence of all potential outcomes. Instead, it requires conditional independence to hold at every treatment level.

where $r(t,X)$ is the conditional density of the treatment given the covariates. R is a valid measure of similarity or dissimilarity across product-level observations if it respects the balancing property. It means that within strata with the same value of $r(t,X)$, the probability that $T = t$ does not depend on the value of X. In other words, the GPS has the following property:

$$X \perp 1\{T = t\} \, | r(t,X)(3)$$

As shown by Hirano and Imbens (2004), combining the mechanical implication provided by equation 2 with the *unconfoundedness* assumption implies that the assignment to treatment is uncounfounded, given the GPS. It allows us to evaluate the GPS at a given treatment level by considering the conditional density of the respective treatment level t. In this framework, each point of the preferential margin granted by the EU to a SMC at product-level can be translated into a unique propensity score.

Two steps are needed to eliminate the bias associated with the differences on the covariates (see Hirano and Imbens, 2004 for a proof). The first one is the estimation of the conditional expectation of the outcome as a function of two scalar, the treatment level T and the GPS $R, \beta(t,r) = E[Y|T = t, R = r]$. Secondly, we need to estimate the dose-response function at a particular level of the treatment averaging the conditional expectation over the GPS at that particular level of the preferential margin, $D(t) = E[\beta(t, r(t,X))]$.

3.2 Variables and Data

In this exercise, we make use of three different sets of data: the 6-digit product level preferential margins applied by the EU to the SMCs (i.e., the treatment, T_i); the observable characteristics which are able to explain the probability to reach a specific level of preferential margin (X_i); and the outcome in terms of export flows from SMCs to the EU corresponding to the level of treatment received ($Y(t)$). Regarding the continuous variable for the actual product-level preferential margin granted to SMCs in the framework of the EU-MED AAs, we apply here the following relative preferential margin (RPM) formula:

$$RPM_{jit} = \frac{\sum\limits_{v} T_{vit}^{EU} * imp_{vit}^{EU}}{\sum\limits_{v} imp_{vit}^{EU}} - T_{jit}^{EU} \ with \ v \neq j \tag{4}$$

where imp are EU bilateral imports and T is the minimum tariff applied by the EU to imports of product i.[4] j indexes SMCs while v indexes the exporters competing with country j in accessing the EU market; i indexes the HS 6 digit categories; t stands for observed years. While the second term is simply the minimum tariff applied by the EU to imports of product i from country j (T_{jit}^{EU}), the first term is the counterfactual. It builds on the arguments made by Low et al., (2009); Carrére et al., (2010); Hoekman and Nicita (2011) and it is computed as the trade weighted minimum tariff level the EU imposes on all other countries except j for which the preferential margin is calculated. Weights are the EU bilateral imports of product i from countries v, so as to take into account the supply capacity of SMCs competitors to the EU market. To soften the endogeneity problem we keep trade weights fixed over time in all the observed years by taking the average values 1995-2009 of the EU bilateral imports. The RPM_{jit} provides the relative advantage of SMC j in product i and year t with respect to each trading competitors partner, capturing the discriminatory effects of the overall EU-MED system of preferences. Hence, it provides a reliable measure for the actual differences in the EU market access both across SMCs within the EU-MED AAs framework and between SMCs and trade competitors joining or not other PTAs with the EU. The use of the above counterfactual acknowledges the fact that for a given country is the relative preference (i.e., the market access conditions relative to that faced by foreign competitors) that matters, not the absolute one, especially in the case of EU because of the proliferation of EU PTAs all around the world. RPM could be positive or negative, depending on the advantage or disadvantage of the SMC_j in product i for each year t with respect to all the other competing exporters to EU. It varies between the maximum negative bias (i.e., being the only trading partner facing tariffs when all other exporters enjoy duty free access) and the maximum positive bias (i.e., being the only trading partner enjoying duty free access while all other exporters face MFN tariffs). RPM is zero when there is no discrimination (i.e., the EU applies identical tariffs across all existing trading partners or guarantees duty free access to all the partners). Please note that the use of RPM solves a number of weaknesses of the simple dummy strategy. First of all, it allows us to rely on a continuous measure of trade preferences. Secondly, it considers both the presence of differentiated treatments in the EU-MED framework as well as the issue of

[4] This tariff rate is equal to the MFN applied tariff unless a preferential tariff exists in the database.

the gradual implementation of the EU-MED AAs. However, it presents its own drawbacks. First of all, it does not take into account the restrictive effects on non-tariff measures; secondly, it takes into account only the direct price effects of tariffs, ignoring the general equilibrium of cross price effects (Fugazza and Nicita, 2011).

The issue of the covariates able to explain the probability to reach a specific level of preferential margin (X_i) is an hot one. As stated by Baier and Bergstrand (2004), PTAs may well be a response to, rather than a source of, large trade flows giving ground to endogeneity bias in trade impact evaluations. While no empirical assessment has been carried out till date on the actual determinants of the product level preferential margins, Baier and Bergstrand (2004), by introducing asymmetric absolute and relative factor endowments into a Krugman-type increasing-returns/monopolistic-competition model, present, theoretically and empirically, the determinants of the likelihood of (and the net utility gains) bilateral PTAs (i.e., countries' economic size, distance, trade similarity and relative factor endowments).[5] Moving from a country-level to a product level perspective, to take into account of trade similarity and/or trade specialisation based on the relative factor endowments we apply the following product-level Lafay index:

$$L_{jit} = \left[\frac{x_{it}^j - m_{it}^j}{x_{it}^j + m_{it}^j} - \frac{\sum_i x_{it}^j - \sum_i m_{it}^j}{\sum_i x_{it}^j + \sum_i m_{it}^j} \right] * \left[\frac{x_{it}^j + m_{it}^j}{\sum_i x_{it}^j + \sum_i m_{it}^j} \right] * 100 \quad (5)$$

This index measures the SMC j level of trade specialisation or revealed comparative advantage for each year t as the contribution to the trade balance of each product i to overall exports of country j. It is an index of specialization that takes account of both exports (x) and imports (m) and is therefore more suitable for a country with intraindustry trade. To acknowledge the meaning of the index, please note that if there were no comparative advantage or disadvantage for any industry i, then country j total trade balance (surplus or deficit) should be distributed across all industries according to their share in total trade. The contribution to the trade balance is the difference between the actual and this theoretical balance. Hence, a positive contribution is

[5] Baier and Begstrand (2004) correctly predict, based solely upon economic characteristics, 85 percent of the 286 FTAs existing in 1996 among 1431 pairs of countries and 97 percent of the remaining 1145 pairs with no FTAs.

interpreted as a revealed comparative advantage for that industry. The advantage of using this index lies in its ability to derive a workable measure of each country's comparative advantages as they are revealed in trade data, avoiding difficulties linked to quantitative evaluations of factor-endowments and relative prices. Of course, decisions about preferences are not driven exclusively by the revealed comparative advantages. There are a number of issues, mainly outside the economics field, that can have a role in determining a specific preferences structure, also relative to other preferential schemes. To take into account these largely unobservable issues we apply here also a set of country, year and product specific fixed effects to control for all unobserved determinants of RPM. Our outcome variable are the export flows in agriculture and fisheries from SMCs to the EU from 2005 to 2009, disaggregated by export countries, products and year. In this exercise we use HS classification at the maximum disaggregation available (6 digit). Hence, we take into account agricultural, food and fishery products listed under chapters 1 to 24 of the Harmonized System Code (HS), Sections I-IV. To properly link products and tariffs we use WITS-TRAINS dataset. Since the aim of our empirical exercise is to examine whether the effect of the change in tariffs is stronger the greater the advantage it provides relative to other competitors, the choice of the time span (from 2005 to 2009, which is the last available year of observation) allows us to have a sufficient degree of variation in order to identify the impact of preference margins on export flows. While, in fact, EU-MED AAs are symmetrical, they foresee a transitional period of 12 years after the entry into force of the agreements. Hence, we should wait until 2005 to have sufficient heterogeneity in the preferential regimes across SMCs and products.

The complete dataset from 2005 to 2009 includes 1479 observations.[6] However, two more sample restrictions are applied. First, we eliminate those observations which can be considered as a duty free access case (i.e., when both the counterfactual and the minimum tariff applied by the EU are equal to zero). Second, we eliminate the observations in the first and the last 5 percentiles of the preferential margin distribution in order to clean our dataset from potential outliers. These two restrictions leave us with 1107 observations.

[6] It includes the only available data on both trade flows and tariffs at 6-digit product level for our sample of countries.

4 GPS estimation and results

The first step to assess the impact of preferential margins on export flows is to estimate the GPS and test the so called "balancing property". To this end, we assume a normal distribution function for the treatment variable, i.e. the 6 digit product level preferential margin. This choice is confirmed by the Skewness/Kurtosis tests for Normality.[7] Once we confirm the normality of the treatment variable we can calculate the GPS by estimating the vector β and the parameter σ^2 by maximum likelihood and obtaining the predicted value such as:

$$\widehat{R}_i = \frac{1}{\sqrt{2\pi\widehat{\sigma}^2}} exp\left[-\frac{1}{2\widehat{\sigma}^2}(t_i - \widehat{\beta}_0 - X\widehat{\beta}_1)^2\right] \tag{6}$$

Table 2 shows that the different intensity of the preferential margin across product lines and SMCs are robust to our model specification including the Lafay index and the series of fixed effects previously described. More specifically, the Lafay index is positive and significant, indicating that the higher the contribution to trade balance in a specific sector the higher the probability to have a positive preferential margin within the EU overall preferential scheme.

Table 2: The Generalised Propensity Score estimation

	Coef.	**z**	
Lafay Index	4.125	2.300	**
SMCs Dummies	Yes	**15.270**	***
Year Dummies	Yes	**189.980**	***
6-digit product Dummies	Yes	**935.520**	***
Constant	-6.034	-1.270	***
Observation	1,107		

In bold the results of the Wald tests for joint significance of the three groups of dummies

[7] Skewness is equal to .1333582, while kurtosis is equal to 3.207455. The joint normality test confirms the assumption of normal distribution at 5 percent.

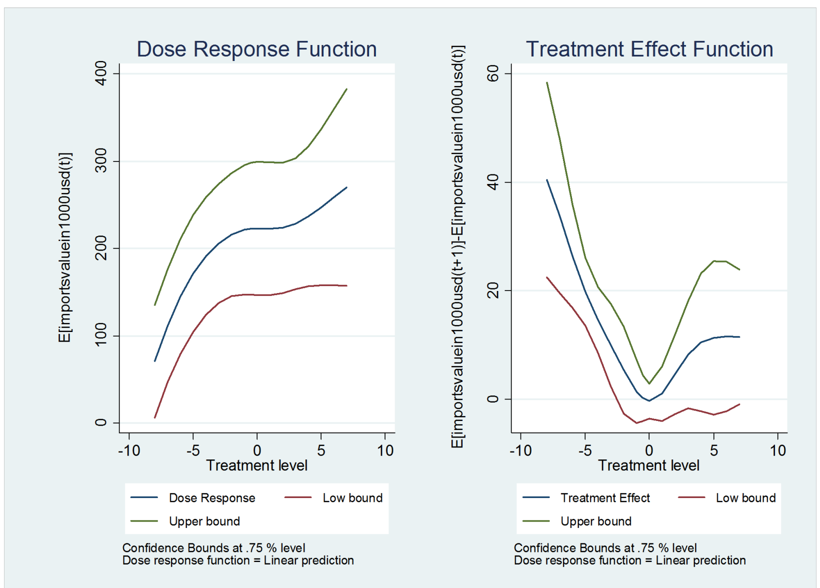
It is well-known that the GPS technique removes any bias in the estimation of the dose-response function only if the covariates are enough balanced, meaning that we have to respect the condition in equation 3. For testing the balancing property we divide the data in groups and blocks. The groups are determined on the basis of the treatment intensity, i.e. the product-level preferential margin, which is discretised at the 30th and 70th percentiles, leaving us with three groups. The first and the third group consist of respectively with 333 and 321 observations while the second group contains 453 observations. The balancing property test foresees to compare each groups covariates with the covariates of all other groups. In addition to the three groups, we divide the data in each group in two blocks based on the estimated GPS. The two blocks for each of the three groups are defined by the 50th percentile of the GPS evaluated at the median value of the groups. The group-block structure allows to compare observations with the same predicted preferential margin (blocks) but different actual preferential margin (groups). Following Hirano and Imbens (2004) the balancing property is tested comparing observed characteristics of units within a specific block of predicted preferential margin across different groups.

Table 3: Assessment of the balancing property

	Mean Difference	**Standard Deviation**	**t-value**
	Group I	[$\leq -.58$]	
Lafay index	-0.00327	0.00921	-0.3548
	Group II	[-.58, 4.68]	
Lafay index	0.01119	0.00817	1.3689
	Group III	[$\geq$ 4.68]	
Lafay index	-0.01829	0.0099	-1.8469

Table 3 reports the t-statistics for each group's comparison. It turns out that the difference between the three groups is not significant and, according to a standard two-sided t-test, the balancing property is satisfied at 5 percent level. It allows us to confirm that our GPS reduces the potential selection bias emerging from the product-level specialization. We can now finally estimate the dose-response function, i.e., to assess the level of SMCs' exports towards the EU in agriculture and fishery industries at 6-digit product level at a specific level of the observed preferential margin, given the estimated GPS in the first stage (Table 4). It allows us to obtain the conditional expectation of the outcome we are interested in, given the level of treatment and the estimated GPS. The parameters are estimated using OLS. We tried different polynomials of the observed preferential margin, the estimated GPS, and their interaction. Among the different alternatives, we choose the following specification with the linear treatment variable and the cubic GPS, together with their interaction which turns out to be more significant.[8]

Figure 2: Dose-response function: graphical representation



Source: Authors' own calculations

Figure 2 reports the graphical representation of the dose-response function. It is evident that there is a positive relationship between the product level preferential margin granted by the EU in agricultural and fishery products and the respective level of exports from SMCs to the EU. In particular, as expected, the main benefits are attached to those products passing from negative to zero preferential margin, while moving around the zero (i.e., when

[8] Other polinomial specifications neither add any relevant information nor affect the dose response function.

Table 4: Dose-Response Function estimation

	Coef	t	
RPM	16.54	1.88	*
GPS	28831.77	1.79	*
GPS^2	-709000.20	-1.77	*
GPS^3	4772961.00	1.69	*
$RPM * GPS$	-239.52	-1.54	
$Cons,$	-10.58	-0.06	
Observation	1107		

EU preferential margins are equal for all the trading partners) guarantees the smaller benefit. Finally, the casual relationship between the preferential margin and the level of exports starts to be positive and remarkable when RPM is higher than 2.

5 Conclusions

Recent debate on PTAs is focusing on the following key research question: do preferences impact trade? While the common perception is that preferences do impact positively on trade, empirical evidence is controversial. The issue is becoming hotter in the framework of the EU-MED PTAs, since trade relations between EU and SMCs are actually worsening relatively to the other EU main trade partners since the Barcelona Declaration. Here the issue becomes: are the current EU-MED preferences really effective? The aim of this work is to assess the trade impact of EU-MED preferential schemes by adopting a novel methodological approach, namely a GPS matching technique. Differently from the majority of current analyses, we choose a continuous variable to measure preferences instead of relying on a dummy variable to capture the average treatment effect of PTAs. Second, we use highly disaggregated data at sectoral level in order to evaluate properly the preferential treatment which is conceived to be applied at the product level. Our preliminary results show that the impact of the EU product-level preferential policy on SMC trade flows in agricultural and fishery products is significant, even if diversified by product, and better evaluated using impact evaluation techniques.

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