

The impact of Regional export promotion policies in Italy. The case of Lombardy

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Abstract

The paper aims at evaluating the impact of export promotion policies at the regional level in Italy. We estimate a difference-in-differences model with firm-level fixed-effects to analyze the effect of matching grants for export promotion activities – i.e. participation in international trade fairs – in Lombardy, the most important Italian region in economic terms. Results show that the matching grants exert a positive and significant impact on the export intensity, measured as export to total turnover, of micro- and small-sized firms. The effect is stronger for less internationalized firms and super-additive: the combined use of different measures increases more than proportionally the overall impact.

1. Introduction

In spite of the fact that the overall welfare improvement effect of public policies aimed at promoting exports is not so uncontroversial, almost all the countries pursue active policies to encourage firms to export for the general positive view on exporting shared by public opinions and politicians alike.

In international trade models with heterogeneous firms *à la* Melitz (2003), more productive firms self-select into exporting if their productivity is sufficiently large to cover the sunk cost of exporting (Melitz and Redding, 2014). Within this framework, as shown by Pflüger & Suedekum (2013), public programs aimed at covering some of the sunk costs of exporting (entry subsidies) can be justified from a social perspective since they help increasing competition and tightening market selection, thus improving average productivity. From an economic perspective, one can justify export promotion policies also by assuming export-related externalities or imperfect information on foreign demand. In particular, as discussed by Albornoz *et al.* (2012), when export profitability is uncertain and firms are risk-averse, small non-exporting firms under-invest in market exploration. In case of imperfect information, another possible positive externality of exporting, leading to suboptimal entry in the competitive equilibrium, can be generated by local information spillovers about foreign demand (see, for instance, Koenig *et al.*, 2010; Swenson, 2007). Moreover, as far as export promotion agencies are concerned, as argued by Broocks & Van Biesebroeck (2017), to the extent that the sunk costs of exporting are investment in acquisition of information about foreign markets, they are nonrival and can justify from a social welfare perspective the creation of these agencies.

A number of papers have recently investigated the issue of the actual impact of export promotion policies on exporting activities (e.g. Broocks & Van Biesebroeck, 2017; Cadot *et al.*, 2015; Cansino *et al.*, 2013; Görg *et al.*, 2008; Van Biesebroeck *et al.*, 2016; Volpe Martincus & Carballo, 2008; 2010a, b, c; 2012; Volpe Martincus *et al.*, 2012). These studies usually conclude that export promotion policies increase aggregate and firm-level exports, at least as long as they take the form of national export promotion agencies. Indeed, Volpe Martincus & Carballo (2008, 2010c, 2012) and Lederman *et al.* (2016), among the others, find evidence that export promotion agencies encourage exports by helping firms penetrating new foreign markets and surviving in export markets, in particular during cyclical downturns (Van Biesebroeck *et al.*, 2016).¹ Moreover, Broocks & Van

¹ National export promotion agencies are public agencies currently operated by the great majority of countries and their number has tripled over the last thirty years (Lederman *et al.*, 2010). They are supposed to promote exports by lowering the cost of exporting because they help firms overcoming information asymmetries on foreign distribution channels, duties, customs, required product standards and certifications, and foreign tastes.

Biesebroeck (2017) provide empirical evidence that they help non-exporters to start exporting (see also Munch & Schaur, 2017).²

Export promotion assistance programs appear in fact to exert their impact mainly on the extensive margin of trade (i.e. new exporters and/or new market entry by existing exporters), where the positive effect on the intensive margin (increasing sales in markets already served by existing exporters) emerges as less pronounced and not robust (e.g. Volpe Martincus & Carballo, 2008, 2010; Lederman *et al.*, 2016).³ At least, this is so as far as Latin America is concerned. In fact, for Canada, Van Biesebroeck *et al.* (2015) have recently shown that the effect on the intensive margin likely dominates.

The previous studies also find that the effectiveness of export promotion assistance is inversely proportional to the size of the firms, i.e. it exerts a larger impact on small rather than large firms. (Volpe Martincus & Carballo, 2010a; Volpe Martincus *et al.*, 2012).

The empirical findings are more mixed with respect to other kinds of export promotion policies (for a recent survey see Cadot *et al.*, 2014). In a much cited study on the determinants of exports, Bernard and Jensen (2004) find very little evidence that export promotion expenditures at the state level in the US influence the decision of plants to export.⁴ By analyzing Irish manufacturing plants from 1986 to 2002, Görg *et al.* (2008) find some empirical support of a positive effect of public grants on exporting, but only for large grants. Moreover, contrary to the previously discussed evidence, the positive effect seems to be mainly exerted via an improvement of the intensive trade margin, as they find little evidence that grants actually encourage non-exporters to start exporting. The same conclusion has been reached by Girma *et al.* (2009), who analyze the effect of production-related subsidies on exports by using a panel dataset of manufacturing firms in Germany.

A different conclusion is reached by Cansino *et al.* (2013), who evaluate the impact of a publicly funded program to promote firms' internationalization in Andalusia, an

²Broocks & Van Biesebroeck (2017) use firm-level data for Flanders, the largest region in Belgium, and argue that, although the short-term effect is admittedly small, "the impact can accumulate over time as new exporters gain experience" (p. 19).

³This seems to be somehow consistent with the theoretical literature on the role played by imperfect capital markets and firms' financial constraints in international trade. In particular, in the model put forward by Besedeš *et al.* (2014) to investigate the effect of financial constraints on the growth of exports at the micro level, credit constraints play a key role in the early stages of exporting, but not in the later ones.

⁴ On the estimation of the export equation, see the recent survey by Bayar (2017).

autonomous community in southern Spain.⁵ By analyzing the effect of the program on firms' export intensity, i.e. the ratio of export to total sales, they conclude that the program significantly improved export intensity at the firm level (the point estimate of the impact is 10 percentage points).

Finally, Cadot *et al.* (2015), who evaluate the effect of a program in Tunisia that provided matching grants to firms for implementing export business plans⁶ and distinguish short- vs. long-term impacts, conclude that, although the program had an impact in the short-term (on average firms' experienced both higher overall export levels and greater diversification across destinations and products as a result of the program),⁷ three years after the intervention no statistically significant impact of the program emerges from the study. Moreover, they find that the program benefited most medium-sized firms (although temporary), whereas they find no positive impact on export levels for small and large firms, also in the short term.

The major issue encountered by all the empirical studies aimed at evaluating the effect of export promotion policies on exports is that the beneficiaries of these policies are not randomly assigned, since firms might self-select into the application process and/or public administrations select recipients. To deal with this issue, researchers usually rely on quasi-experimental methods like instrumental variables, matching, difference-in-differences, and regression discontinuity design. In particular, as far as the evaluation of export promotion policies is concerned, the following methods have been employed in the literature: difference-in-differences with firm-level fixed-effects (FE-DID) (e.g. Volpe Martincus *et al.*, 2012); propensity score matching (e.g. Cansino *et al.*, 2013; Girma *et al.*, 2009); difference-in-differences combined with propensity-score matching (PSM-DID) (e.g. Görg *et al.*, 2008; Munch & Schaur, 2017; Van Biesebroeck *et al.*, 2015; Volpe Martincus &

⁵The evaluated program was the Diagnostic Program, a program focused on small- and medium-sized companies, previously non-exporters or in the early stages of the internalization process (Cansino *et al.*, 2013).

⁶The program (FAMEX) was a component of the World Bank's Export Development Project. The firm-level survey data were collected by the World Bank. They are also at the base of the work by Gourdon *et al.* (2011).

⁷Cadot *et al.* (2015) mainly focus on the effect of the program on firms' export value, the stated primary objective of the program, but they analyze also other possible outcomes, such as diversification of product and foreign markets.

Carballo, 2008, 2010b, 2012); propensity score weighted regressions (e.g. Broocks & Van Biesebroeck, 2017; Cadot *et al.*, 2015).⁸

In the present paper, the aim is to evaluate the effect of the export promotion policies carried out by the Lombardy region, the largest administrative region in Italy in terms of population, number of firms, GDP and exports.⁹

The policies to promote firms' internationalization carried out by the Lombardy Region in 2010-2014 were almost exclusively SME-oriented. They included several programs aimed at both the internationalization of production (GATE B, FRI) and the public support for exporting, under the form of: i) export promotion, i.e. (matching) grants to financially support firms' participation in missions abroad (voucher B) and international trade fairs (voucher C, FRIM-FIERE); ii) technical assistance and consulting (e.g. Spring 5; GATE A; voucher A); iii) integrated measures (e.g. TuttoFood, HOMI) (see Éupolis Lombardia, 2016, Ch. 3).¹⁰

Among these measures, we consider the impact of the vouchers, i.e. matching grants to support SMEs' participation in international trade fairs (voucher C) and missions abroad (voucher B), and to purchase consulting services (voucher A) (see Éupolis Lombardia, 2016, Ch. 4). In particular, we estimate the average effect of the vouchers granted in 2012 on export intensity of firms receiving the grants in the following two years.¹¹

⁸Both FE-DID and PSM-DID control for unobserved time-invariant differences across firms, but the latter does not rely on the linearity assumption. Along with FE-DID and PSM-DID, Volpe Martincus & Carballo (2008) estimate also a FE-DID with a lagged response variable via a SYS-GMM as a further robustness check to control for the time-variant unobserved factors that are simultaneously correlated with assignment and post-treatment performance (e.g. when participation in export promotion programs is more likely if a temporary change in export occurs).

⁹ In Italy, since the reform of the Constitution in 2001, the competence in foreign trade and export promotion is shared between the administrative regions and the central government. The Lombardy Region has retained direct competence in the subject, providing real and financial support to exporting firms (promotion, consulting, financing, information and training). The Region operates alongside, on the one hand, the Italian Trade Agency (ICE), on the other hand, SIMEST and SACE, two companies owned by CDP (Cassa Depositi e Prestiti), a joint-stock company under public control. These two companies provide financial services for export promotion. For comprehensive and up-to-date reviews of the different programs to support firms' internationalization processes at the national and regional level see ICE (2012, 2013, 2014). The public support system has developed within the limits set by the EU and the multilateral trade system norms, aimed at limiting direct public intervention and State aid to businesses.

¹⁰ In 2010-2014, the Lombardy Region allocated directly and indirectly (through the Chambers of Commerce) 57 million euro: 57% to export promotion; 21% to support the internationalization of production; 16% for technical assistance and consulting; 10% in integrated measures. The demand came from 7,325 firms, 80% of which were micro- and small-sized firms (see Éupolis Lombardia, 2016, p. 30).

¹¹ The measure was established in 2006 in an agreement between the Region and the Chambers of Commerce. Voucher A is financed by the Region, while vouchers B and C are financed by the Chambers of Commerce.

We address the (likely upward) selection bias by: i) using as control group a sub-sample of firms where endogenous selection into treatment is less likely; ii) estimating a difference-in-differences with firm-level fixed-effects. We also account for possible heterogeneous effects across different types of vouchers and firm size and degree of internationalization.

Results show that matching grants exert a positive and significant impact on export for micro- and small-sized firms. The effect is stronger the less internationalized are the firms. Finally, the effect is super-additive, since the combined use of different measures increase more than proportionally the overall impact of the policy.

The rest of the paper is structured as follows. In Section 2, we describe the data and the empirical strategy we adopted to achieve our research objectives, whereas in Section 3. we discuss the main results and carry out some robustness checks. Finally, Section 4 concludes.

2. Data and empirical strategy

The aim of the empirical analysis is to assess the effect of regional export promotion policies on firms' export performance. To this end, we use data taken from the Lombardy Region administrative archive for 2010-2014. In applying for a grant, each firm had to provide balance sheets information about the previous three to four years.¹² Using these retrospective data, we built a panel dataset of comparable financial information for about 5,000 Lombardy-based SMEs who applied for at least one export grant in the relevant period.

The main issue to be addressed in order to identify the causal impact of export grant on firm export performance is the choice of a suitable counterfactual methodology able to provide reliable results on the effects of the grant.

The amount of money granted in each voucher is constant and has to be matched by a correspondent amount by the firm. In 2010-14, the Lombardy Region allocated directly and indirectly to vouchers about 30 million euro. The average public funding for each voucher in the period was about 2,500-3,000 euro (about 45% of the total funding, public and private). The grants have been received by more than 5,000 firms, with an average financing rate in the period of roughly 70%. 61% of the firms received only one grant (Éupolis Lombardia, 2016, ch. 4).

¹² We have information on total turnover; export turnover; employees (annual working units); size (micro, small and medium); type and number of vouchers received by each firm in 2012; value of the export grant; location (NUTS3); and sector of economic activity.

In the following empirical analysis, we shall use a Fixed-Effect (FE) Difference-in-Differences (DID) estimator. In particular, we carry out our analysis by considering the following model:

$$Y_{it} = \alpha + \beta Treatment_i Post_t + \tau_t + \mu_i + \theta \mathbf{x}_{it} + \varepsilon_{it} \quad (1)$$

where the indexes i and t denote the i -th firm and the year t , respectively; Y is a measure of firm export intensity; $Treatment_i$ is a measure of the treatment received in 2012; $Post_t$ is a dummy for the years after the treatment; τ_t and μ_i are, respectively, time and firm fixed-effects; \mathbf{x} is a vector of time-varying firms' characteristics and ε is the error term. β is the parameter of interest. As regards to the outcome variable, we use export intensity, defined as the ratio between export and total turnover. We use different measures of the treatment: i) a dummy variable equal to one if the firm received a grant in 2012 and 0 otherwise; ii) the amount of the grant; iii) the number of assigned grants; iv) the number of fairs attended because of the program, considered both as a continuous variable and as a set of dummy variables for one, two, three and four or more fairs attended with the grant received in 2012.

The inclusion of the firm's fixed-effect μ_i in Equation (1) allows us to address the potential bias related to the correlation between treatment and time-invariant heterogeneity: whenever treated firms have a better capacity to exploit different types of public export supports, and this capacity is an unobserved time-invariant characteristic of the firm, the FE estimator is unbiased and consistent. Furthermore, firms who expect to gain more from international activities are more likely to apply for public support than other firms do. In our sample, all firms applied for a grant in one or more years during the relevant period. Thus, all the firms should have a quite similar pull in self-selecting themselves into the grant and the time-invariant component of the selection process is completely accounted for by the FE estimator. However, an additional potential source of bias is that time-varying characteristics of the firm could affect the treatment assignment. We address this issue by providing some robustness checks. Finally, time fixed-effects allow us to control for any change affecting all the firms in any given period.

An awkward issue when using counterfactual methodologies is the choice of the control groups. Given that there is no available control group to which the treated firms can be compared with, we create an ex-post experimental design and carefully select our control samples. In particular, we first selected all the firms that applied for the export grant in

2014 (1,853 SMEs). Among those firms, we defined our treatment group as the firms which got an export grant in 2012 (537) and our control group as firms which did not apply for the export grant in 2012. Eventually, we ended up with a database with 5,627 observations, since each firm is observed from 2010 to 2013: two years before the treatment, and two years after it. We also retain in the sample firms with incomplete information and thus work with an unbalanced panel dataset.

Table 1 summarizes the main characteristics of the two samples. It is apparent that firms in the target group are systematically larger and more internationalized than firms in the control group. On average with the 2012 grant, firms attended 1.7 trade fairs and received around 3,000 euro from the Lombardy administrative region. Our control sample does seem to be systematically different from our treatment group on observables, therefore we rely on the assumption that time-invariant differences are controlled for by the FE estimator.

Table 1: Sample means and standard deviations

	Control group	Target group
Turnover (mln of euro)	4.53 (8.34)	6.11 (6.60)
Export turnover (mln of euro)	1.74 (3.63)	3.09 (4.25)
Export intensity	0.275 (0.303)	0.475 (0.297)
Employees (annual work units)	18.18 (25.92)	25.29 (29.50)
Size:		
Micro (%)	30.67 (0.46)	14.01 (0.34)
Small (%)	51.22 (0.50)	59.44 (0.50)
Medium (%)	18.11 (0.38)	26.46 (0.44)
Number of attended trade fairs	0	1.76 (0.98)
Export grant (thousand euro)	0	2.839 (1.84)
Observations	3,832	1,795

3. Empirical results

We start the analysis by exploring the impact of Voucher C – i.e. the support to participate in international trade fairs and exhibitions abroad – on firms' export intensity.

As discussed before, and given the panel structure of the data, the emphasis is on the change over time rather than on the absolute level. In other words, we analyze the difference in the change over time of the outcome variable – measured in different ways – between the treated and the control group. The results are summarized in Table 2 that shows that the impact of Voucher C is always positive and statistically significant at the conventional levels, regardless of the variable we used to proxy it.

In particular, column (1) shows that the coefficient of the treatment dummy is positive and significant, indicating that the use of the voucher increases export intensity of firms by 1.5 percentage points (p.p.). When the number of attended trade fairs is used as a proxy for the treatment, our findings indicate that participating in an additional trade fair increases export intensity by 0.7 p.p. (column 2). This effect, however, is not linear, as it is shown in column (3): participating in one trade fair per year increases firms' export intensity by 1.4 p.p. This effect is stronger (1.8 p.p.) when firms participate in two trade fairs and reaches its maximum when firms attend three international fairs per year. One more fair, however, does not add extra-benefits. This trend may indicate, on the one hand, that the likelihood of meeting new potential clients does not increase with the number of attended fairs, the main reason being that specialized fairs tend to attract the same potential clients and suppliers across the world, regardless of where they are held. On the other hand, participation in trade fairs help firms to improve their knowledge on how to do business abroad, thus reducing the effectiveness of the voucher. The positive impact exerted by Voucher C on firms' export intensity is further confirmed by using the monetary value of the grant received by each firm (column 4). In particular, our results show that a grant of 1,000 euro allows firms to increase the share of export turnover on total turnover by about 0.3%.

Table 2: Impact of Voucher C on export intensity

	(1)	(2)	(3)	(4)
Voucher C in 2012	.0154*** (.00537)			
No. of trade fairs		.0066*** (.00249)		
No. of trade fairs (dummies)				
One trade fair			.0139** (.00671)	
Two trade fairs			.0177* (.00972)	
Three trade fairs			.0319*** (.0106)	
Four or more trade fairs			.0439 (.0375)	
Grant received (euro, th.)				.00332** (.00146)
Employees	.000711** (.000323)	.000724** (.000323)	.000716** (.000323)	.000724** (.000323)
Constant	.304*** (.00704)	.303*** (.00704)	.304*** (.00705)	.303*** (.00704)
No. of obs.	5,627	5,627	5,627	5,627
R-squared	.044	.044	.046	.044
No. of firms	1,853	1,853	1,853	1,853
Time dummy	Yes	Yes	Yes	Yes

Response variable: export to total turnover ratio. FE DID estimator. Standard errors in brackets.

* 10%, ** 5%, *** 1% significance level.

Although these results are interesting and hint at a positive impact of the policy instrument on firms' export intensity, the design of the policy may be further improved by understanding whether and to what extent its effect varies across different types of firms and according to the delivered service. We explore this issue by analyzing the impact of the export grant on different sub-samples of firms. In particular, we are interested in

understanding whether the absolute and mean impact of the voucher is sensitive to the firm's size and its experience on international markets in terms of exports. In so doing, we consider separately the two ways the service is delivered, i.e. individual vs. group participation in trade fairs.¹³

Table 3 reports the main results. In column (1) the impact of the voucher is tested separately for micro, small and medium-sized firms. The estimated coefficients are positive and statistically significant only for micro and small firms with the former benefiting more than the latter from the public support: the impact on the share of export on total turnover for micro firms is twice as much than that for small firms, i.e. 4% against 1.8%. This result indicates that Voucher C is effective in stimulating small firms to approach foreign markets, since they have more difficulties in collecting the necessary information on their own. In contrast, medium-sized firms, having more human and financial resources, are more likely to perform these activities internally. Therefore, the use of the voucher does not allow them to gain extra benefits.¹⁴

As for the way the voucher is delivered, i.e. individual vs. group participation, only firms participating individually to trade fairs benefit from the voucher, as indicated by the estimated coefficients reported in column (2). Therefore, providing subsidies to firms that remain responsible for the organization of the participation in the event is definitely more effective than offering firms an all-inclusive participation in trade fairs, though it is a relatively cheap policy.

Other interesting facts emerge by taking into account the experience of firms on international markets. We consider three types of exporters: established, occasional and non-exporters. As it is shown in column 3 of Table 3, the voucher exerts a positive and

¹³ Individual participation implies that the firm receiving the grant organizes autonomously its participation in international trade fairs, freely chosen by each firm according to its own interests. In contrast, group participation implies that participation in trade fairs is organized by a specialized operator, which brings groups of firms (min 8) to specific events, selected in advanced by this operator and approved by the local administration delivering the grant.

¹⁴ Unfortunately, we cannot exclude that these results may also depend on self-selection of firms. It may happen that micro and small firms that apply for and receive the export grant are those with better prospects for export as well as medium-sized firms demanding for the export support are those with the weakest prospects. We believe this is less likely in our sample. Voucher C is a matching grant, therefore it is reasonable to suppose that only the firms with good export prospects apply for it.

Table 3: Heterogeneity of the impact of voucher C

	(1)	(2)	(3)
Voucher to micro-firm	.0400 ^{***} (.0121)		
Voucher to small firm	.0184 ^{***} (.00646)		
Voucher to medium firm	-.00400 (.00896)		
Voucher (individual participation)		.0206 ^{**} (.00825)	
Voucher (group participation)		.00933 (.00656)	
Voucher (individual and group participation)		.0161 (.0171)	
Voucher to established exporter			.0115 ^{**} (.00570)
Voucher to occasional exporter			.0270 [*] (.0140)
Voucher to non-exporter			.0510 ^{***} (.0185)
Employers	.000696 ^{**} (.000323)	.000720 ^{**} (.000323)	.000695 ^{**} (.000323)
Constant	.304 ^{***} (.00704)	.303 ^{***} (.00705)	.303 ^{***} (.00704)
No. of obs.	5,627	5,627	5,627
R-squared	.047	.044	.046
No. of firms	1,853	1,853	1,853
Time dummies	Yes	Yes	Yes

Response variable: export to total turnover ratio. FE DID estimator. Standard errors in brackets.

* 10%, ** 5%, *** 1% significance level.

significant impact on any kind of exporters. However, the magnitude of the impact is decreasing with the experience of the firm: established exporters gain the least (only 1.2%), while non-exporters the most (about 5%). This result indicates that export support makes more likely that new firms enter in foreign markets rather than ensuring higher returns on exports to established exporters. Therefore, Voucher C effectiveness relies on its capacity to raise export market participation, lowering the sunk cost of entry.

Finally, we compare the impact of Voucher C with that of the other types of vouchers granted by the Lombardy Region, i.e. Voucher A or B, and explored their potential joint impact. Table 4 summarizes the main results. Several interesting features emerge.

Firstly, the results confirm the effectiveness of Voucher C, the only one exerting a statistically significant impact on export intensity. Secondly, firms using Voucher C jointly with Voucher A gain additional benefits. These results are not surprising, since participating in trade fairs allow to meet potential clients and to conclude businesses, while other programs aim at providing firms with more information on foreign markets. Therefore, they tend to improve firms' awareness of the importance of export activity rather than to increase their export turnover. However, when these two policy instruments are combined, Voucher C effectiveness is stronger, since two different needs are satisfied simultaneously. Export market entry is easier not only because Voucher C helps firms overcoming entry barriers, but also because firms are more aware about the importance of foreign markets and knows how to deal more efficiently with them. As a result, the return of their participation in trade fairs is higher.

The lack of effectiveness of the other types of vouchers may reflect policy makers' preferences for export promotion programs, rather than a lack of effectiveness of these policy instruments. In the period, in fact, on average, about 50% of aggregate grants have been used to co-finance the costs related to export promotion activities like participation in trade fairs, while much smaller amounts were devoted to technical counseling and the organization of mission abroad, activities that may need more consistent financial investments in order to generate important spillovers. Therefore, while we can definitely conclude that Voucher C provided by the regional government to stimulate local firms'

participation to international trade fairs is a good policy instrument for export promotion, we cannot say anything concerning the other policy instruments.

Table 4: Impact of voucher C vs. other vouchers (A and B)

	(1)	(2)	(3)	(4)	(5)
Voucher A	.00826 (.0108)			.00762 (.0111)	-.0134 (.0142)
Voucher B		.00201 (.00682)		-.000719 (.00705)	.000384 (.00706)
Voucher C			.0154*** (.00537)	.0153*** (.00539)	.0119** (.00557)
Voucher A and C					.0522** (.0221)
Employers	.000719** (.000323)	.000719** (.000323)	.000711** (.000323)	.000713** (.000323)	.000714** (.000323)
Constant	.303*** (.00705)	.303*** (.00705)	.304*** (.00704)	.304*** (.00705)	.304*** (.00704)
No. of obs.	5,627	5,627	5,627	5,627	5,627
R-squared	.042	.042	.044	.044	.046
No. of firms	1,853	1,853	1,853	1,853	1,853
Year dummies	Yes	Yes	Yes	Yes	Yes

Response variable: export to total turnover ratio. FE DID estimator. Standard errors in brackets.
 * 10%, ** 5%, *** 1% significance level.

3.1. Robustness checks

Given the lack of an experimental design and the possibility of selection bias, there is a serious risk of over-estimating the actual impact of the export promotion program. In order to ensure that this is not the case, we have carried out some robustness checks.

First of all, we estimated Equation (1) using different techniques. In this exercise, we used as treatment variable a dummy equal to one if a Voucher C was granted to the firm in

Table 5: Robustness checks: impact of voucher C on export intensity

	(1)	(2)	(3)
	OLS DID	RE DID	FE DID
Voucher C in 2012	.1720*** (.0120)	.0264*** (.00533)	.0154*** (.00537)
Micro	.0544*** (.00968)	.0655*** (.0161)	
Small	.104*** (.0120)	.124*** (.0203)	
Employees			.000711** (.000323)
Constant	.415*** (.109)	.392** (.196)	.304*** (.00704)
No. of obs.	5,627	5,627	5,627
R-squared	0.19	0.17	0.046
No. of firms	1,853	1,853	1,853
Firm fixed effect	No	No	Yes
Sector dummies (1-digit)	Yes	Yes	No
NUTS3 dummies	Yes	Yes	No
Time dummies	Yes	Yes	Yes

Response variable: export to total turnover ratio. Standard errors in brackets.

* 10%, ** 5%, *** 1% significance level.

2012 and 0 otherwise. Table 5 summarizes the main results. Column (1) reports the results obtained with a pooled OLS DID estimator. Pre and post observations are taken in both the groups, treated and control. In a well-designed evaluation, where the treatment is randomly assigned, the control group detects and adjusts for all the effects not related to the program, while the target group identifies the effects of the program. Therefore, the difference between the change in the outcome variable for the target group and that of the control group reveals the real impact of the program. However, this methodology relies on the assumption that there is no systematic difference between the two groups. Should this not

be the case, the estimated impact of the program would be biased. The comparison between the results in column (1) and (3) of Table 2 shows that this is in fact the case, since the impact of the program with the pooled OLS-DID estimator seems to be upwardly biased, when compared to the FE-DID estimates reported in column (3). By using the Random-Effects (RE) DID estimator (column 2 in Table 2), the distortion decreases, since firm-specific effects are not fixed but normally distributed. Clearly, by using the FE estimator, the coefficient is even smaller, indicating that, by including firm-level fixed-effects, the time-invariant unobserved heterogeneity is successfully controlled for. This method therefore provides the more reliable estimates.

4. Concluding remarks

In this paper, we have investigated empirically whether firm-specific export subsidies can play a role in helping firms to expand their exports. In so doing, we have taken advantage of the case of manufacturing and service firms located in Lombardy, one of the largest and richest regions in Italy, over the period 2010-2014. In this regard, we had access to firm-level information, including export turnover and total turnover, as well as qualitative and quantitative information on export subsidies provided by local authorities to each firm. As for the Lombardy Region, the relatively large number of exporters, who represent about 30% of national exporters, and assisted firms makes it a very interesting case. More specifically, we assess the effectiveness of a matching grant to support local firms' participation to international trade fairs (Voucher C) – both in absolute terms and relatively to other export promotion initiatives, i.e. Voucher A and B – with a difference-in-differences approach, controlling for firms' level fixed-effects as well as time-variant firms' characteristics.

We find that Voucher C is effective and positively affect firms' export intensity, measured as export to total turnover. This effect is larger for micro- and small-sized firms and for less experienced exporters. We also find that combining trade fairs with counseling, information and training courses provided through Voucher A, reinforces the impact of Voucher C.

Although robust to corrections for several potential econometric problems, we should stress that some caution is still needed in interpreting our results. First, we cannot deny that the estimated coefficients are upwardly biased due to unobserved time-varying firm characteristics able to affect the export intensity, like, for example, productivity. Secondly, self-selection bias, though minimized, might be still present due to the way data have been collected. Firms approaching export promotion programs may be different from those not interested in them, either because they do not want to trade across borders or because they do not consider those programs as effective instruments and prefer to organize the same types of activities on their own. These problems may be solved with randomized assignment of assistance to firms and improving the collection of administrative data.

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