

Are seminars for export promotion effective? Evidence from a randomized controlled trial*

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Abstracts

This paper investigates impacts of informational and motivational seminars for export promotion targeting small and medium enterprises (SMEs) in the traditional apparel and textile clusters in Vietnam. In order to control for biases due to self-selection, we conducted a randomized controlled trial and invited randomly selected firms to one-day seminars. Because only some of the invited firms participated in the seminars, we employ an instrumental variable approach in which dummies for random invitation are used as instruments for the participation. We find that the seminars had no significant effect on most firms' preparation for, perception of, or engagement in exporting activity. However, the seminars encouraged large firms and firms with prior export experience, which possibly embody higher productivity and absorptive capacity, to (re-)start exporting. Our results suggest that policy for export promotion of underdeveloped firms should focus on productivity improvement, while provision of information is effective to productive firms.

Keywords: export promotion, randomized controlled trial, small and medium enterprises, Vietnam

JEL classifications: F14; O19; C93

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1. Introduction

International trade has been recognized as one of key factors of economic growth (Frankel and Romer, 1999). Export benefits the economy by expanding production and employment and by improving productivity through increasing returns to scale and learning by exporting (Blalock and Gertler, 2004; Kimura and Kiyota, 2006). Yet, many countries, less developed countries in particular, are suffering from various trade obstacles which hinder them from realizing the full benefits of trade (Stiglitz and Charlton, 2006).

Low productivity at the firm level is a major obstacle to export according to the heterogeneous-firm trade models developed by Melitz (2003) because low-productivity firms cannot be profitable in export markets due to initial costs of exporting. Besides productivity, there may be other obstacles to export such as informational and institutional barriers. Artopoulos et al. (2013) concluded from their study in Argentina that knowledge about foreign markets is a more critical hindrance to consistent export than knowledge about production technologies. Other studies found that as the number of exporters in one region increases, other firms in the same region are more likely to engage in exporting (Bernard and Jensen, 2004; Okubo and Tomiura, 2015; Todo, 2011), suggesting that information spillovers from current exporters can drive non-exporters to start exporting. Moreover, Nordås et al. (2006) and Itakura (2013) showed that institutional setting measured by time for customs procedures and logistics services largely affect trade volumes.

To ease the supply-side constraints to export, various policy measures have been utilized. The most direct measures are export subsidies and grants. In addition, to lower informational barriers, governments provide brochures, websites, and seminars that distribute information on foreign markets and export procedures. They also simplify customs procedures to introduce electronic customs (e-customs) so that most procedures can be completed online.

Econometric evaluation of policies and programs for export promotion has been conducted by several studies. For example, Volpe Martincus and Carballo (2008, 2010) found a positive effect of export promotion agencies (EPAs) on exports using country-level data, whereas Lederman et al. (2010) obtained similar results from firm-level data for Peru. Other policy measures, such as provision of informational materials such as pamphlets on export in Turkey (Durmuşoğlu et al., 2012) and trade shows in the United States (Wilkinson and Brouthers, 2006), were also found to improve firms' export performance. However, effects of export promotion policies are not always positive. Using firm-level data from Ireland, Görg et al. (2008) found that export subsidies and grants promoted exporting firms to expand their exports but do not encourage non-exporters to start exporting. Alvarez (2004) used firm-level data for Chilean small and medium enterprises (SMEs) and found that trade shows and trade missions did not improve firm performance while exporter committees had a positive impact.

One drawback of existing studies is that they could not fully correct for possible biases in the estimated effect of export promotion programs due to self-selection of participants. To avoid such biases, impact evaluation of firm-level training programs, not restricted to those for export promotion, has recently incorporated randomized controlled trials (RCTs) (Berge et al., 2014; Bloom et al., 2013; Higuchi et al., 2015; Mano et al., 2012; Nordås et al., 2006). RCTs were originally developed in medical science to evaluate effects of medical treatments and have been widely utilized to evaluate programs for poverty reduction in less developed countries since the late 1990s (Duflo et al., 2008). To the authors' best knowledge, however, impact evaluation of export promotion programs using RCTs has rarely been conducted. One exception is a study by Breinlich et al. (2016), which evaluated the impact of sending brochures made by the export promotion agency to randomly selected SMEs in the United Kingdom. A shortcoming of their study is to utilize brochures, which may not be an effective means to attract attention of firms and disseminate information on export. Indeed, among the respondents to their survey, only 16% read the brochure.

To fill this research gap, the present study examines whether seminars for export promotion can encourage exports by conducting an RCT. In the RCT, we held one-day seminars to SMEs in traditional industrial clusters in the apparel and textile industry in Vietnam. We provided information on export activities and conducted firm-level surveys before and three months after the seminars. Seminars are probably a better measure for export promotion than sending brochures because it can enhance information dissemination through face-to-face communication.

Using data from the pre- and post-seminar surveys, we estimated effects of firms' participation in the seminars on exporting. Because the post-program survey was conducted only three months after the seminars, our outcome variables also include those indicating how much firms prepare for exporting activity such as accessing websites of trade fairs and e-customs, and how much firm perceive difficulties in exporting.

Although we invited randomly selected SMEs to the seminars, some of the invited SMEs refused to participate. Therefore, we run two-stage least squares (2SLS) estimations in which the dummy variable for participation is treated as endogenous and instrumented by the dummy for the invitation. That is, we estimated the local average treatment effect (LATE) suggested by Angrist and Imbens (1995). Because participants are limited to invitees in our RCT, it can also be interpreted as the average treatment effect on the treated (ATT) (Angrist and Pischke, 2008).

To preview our results, we find that the seminars for export promotion in our study had insignificant effects on most firms' preparation for, perception of, and engagement in exporting activity. However, we find that large firms and firms with prior experience in exporting were encouraged to (re-)start exporting by the seminars. Because larger or experienced firms are more likely to embody higher productivity and absorptive capacity, our results suggest that information provision is only effective when firms are equipped with sufficiently high productivity to compete in

foreign markets. This is consistent with Melitz (2003) who emphasizes the importance of productivity in exporting decisions. At the same time, our results suggest that information barriers exist for firms with high productivity, being consistent with the empirical studies mentioned above. Therefore, our study implies that policy for export promotion of underdeveloped firms should focus on productivity improvement, while provision of information is effective to productive firms.

2. Methodology

2.1 Conceptual framework and estimation equation

We hypothesize that when firms do not have access to information on exporting activity, such as administrative procedures of exporting, access to foreign markets, or preferences of foreign customers, even productive firms may not engage in exporting. If this is the case, seminars that provide such information can facilitate firms' exports.

In the empirical analysis of this paper, we estimate the effect of the seminars for SMEs in the apparel and textile industry in Vietnam on the participants' propensity to export. In addition, because of the short time period between seminars and data collection, we also examine effects on two aspects of preparatory stages, i.e., preparation for and perception of exporting activity.

Thus, our estimation is simply as follows:

$$Y_{it} = \beta_0 + \beta_1 P_{it} + \beta_X X_{it-1} + \delta_j + \varepsilon_{it}, \quad (1)$$

where Y_{it} is an outcome variable that represents either preparation for, perception of, or engagement in exporting activity of firm i at time t , P_{it} is a vector of dummy variables for participation in different types of seminars for export promotion, X_{it-1} is a vector of control variables, and ε_{it} is the error term. Whenever possible, the outcome variable is replaced with its first difference, $Y_{it} - Y_{it-1}$, to control for the time-invariant characteristics of the firm.

In an alternative specification, we incorporate variables that represent the firm's information exchange partners in the village that participated in the seminars as an independent variable. Information exchange partners refer to the neighboring firms within the same cluster whose top managers or owners exchange business information with each other. By so doing, we can examine effects of information spillovers through firm networks and avoid undervaluation of the direct effect of participation in the seminars in the presence of spillovers from peers.

2.2 Estimation strategy

Although we are mainly interested in the value of β_1 in equation (1), the coefficient on the participation dummy, its estimate is biased when participants of seminars are self-selected and thus P is correlated with unobserved firm characteristics. Although we invited randomly selected firms to our seminars, only some of the invited firms participated. Therefore, we employ 2-stage least squares

(2SLS) estimations using the dummy for the random invitation as an instrument for the participation, following Angrist et al. (1996). This methodology estimates the local average treatment effect (LATE) of seminars given the invited status, which can further be interpreted as the average treatment effect on the treated (ATT) because no firm that was not invited was allowed to participate in any seminar. In addition, as the number of firm i 's information exchange partners who participated in the seminars may also be endogenous, it is instrumented by the number of firm i 's information exchange partners who were invited to the seminars.

3. Data and Social Experiment

3.1 Sampling and survey

The target of this study is SMEs in village industrial clusters in the apparel and textile industry in the Red River Delta surrounding Hanoi, the capital city of Vietnam. We chose SMEs in the apparel and textile industry because they have a reasonable share of current exporters, around 10 percent. The textile and apparel industry is one of the most common exporting manufacturing industries in most of the developing countries. We assumed that larger companies have enough resources to invest in information seeking activities on their own. For this reason, the general target of export promotion programs provided by governments is usually SMEs, and thus we focused on SMEs. We limited the location of our target firms to areas near Hanoi so that invited firms could come to our seminars held in Hanoi.

Village industrial clusters refer to traditionally developed agglomeration of SMEs including micro enterprises in a particular industry, such as the apparel, the wood furniture, and the ceramic industry, within the village and can often be observed in Vietnam. We targeted village clusters so that we could identify the inter-firm network within the village through which firm exchange information.

To identify such village clusters, we utilized data from the Vietnam Enterprise Survey (VES) of 2010. The VES is annually conducted by the General Statistical Office of Vietnam (GSO) and covers all foreign-owned firms and randomly selected domestic private firms. We selected villages or communes, the smallest administrative unit, with more than five registered firms in the textile and apparel industries (i.e., industry code 13 and 14 of Vietnamese System of Industry Classifications) in the 10 provinces in the Red River Delta in the VES data. Because not all firms are formally registered and firms in the VES are randomly selected, villages with more than five firms in the apparel and textile industry are most likely to be industrial clusters of the industry. This process identified 19 villages in 6 provinces. Then, we visited the selected villages and found that two villages among the 19 are not apparel and textile clusters in the sense that most manufacturing firms in the villages do not necessarily engage in apparel or textile production. We also omitted one village from our sample, because it was found that the apparel and textile firms in the village had already received business

management training through another RCT and had been surveyed several times for the impact evaluation (Higuchi et al., 2015). We assume that those firms in the village are already systematically different from other firms.

The remaining 16 apparel/textile village clusters in the Red River Delta are the target of our study. For each of the 16 villages, we obtained the full list of registered firms from the municipal governments. The number of registered firms for each village is summarized in Table 1, which totals 354. In December 2014 and January 2015, we requested face-to-face interviews to owners, managing directors, or highly-ranked managers of the 354 firms and obtained responses from 296. That is, the response rate is 84 percent. The questionnaire consisted of standard firm characteristics such as sales, the number of workers, main products, and ownership. In addition, we asked questions related to trade activities, such as experiences in exporting, knowledge about e-customs, and the perception of trade. Finally, we showed each firm the full list of registered firms in the village and asked to point out their information exchange partners in the list. Because we surveyed all registered firms within the village, we could identify the whole information sharing network of registered firms within each village.

We also conducted the second survey to the 296 firms in July and August 2015, about 4 months after the seminars for export promotion explained in detail below. 284 firms, or 96 percent of the sample from the previous round, responded to the second survey. While 5 of the 12 attritions had been closed, 7 refused to respond. For the second round survey, we added new questions regarding the information disseminated during the seminars, asking whether they know or practice what they had learned, in addition to the first questionnaire.

3.2 Seminars for export promotion

On March 14-16, 2015, we conducted an RCT in which we held three one-day seminars. The main aim of the seminars was to motivate and provide information to the participating managers. Seminars aimed at enhancing exported quantities by existing exporters typically include the explanation of export financing and insurance (Rosson and Seringhaus, 1991). However, because our sample is SMEs in village clusters, we focused on motivational and informational elements of export promotion.

The venue of the seminars was a three-star hotel located in the center of Hanoi. We chose a three-star hotel to attract participants. It took minimum 30 minutes by motorbike to maximum 2 hours by bus from the sample villages. For several villages located far from the hotel, we chartered buses for participants' transportation. We reimbursed the actual cost to those who used their own means of transportation such as public buses or motorbikes. No compensation was provided except for meals at the hotel. We did not collect any participation fees from the participants.

Each one-day seminar contained slightly different contents so that we can distinguish the effects of each lecture but the participants did not know the difference between the three types before their participation. The seminar on the first day (March 14) consisted of four classes. First, a business

school professor gave a lecture on international business, explaining the overall picture of the global economy and challenges and opportunities for Vietnamese firms. He also briefly introduced some modules and methods for firm management. Second, an official from the Vietnam Export Promotion Agency talked about basic steps to build a plan for exporting, how to prepare for exporting activity, how to access overseas markets, and how to meet business partners, customers, and buyers. Third, we invited two officials (one Vietnamese and one Japanese) from the Hanoi office of Japan External Trade Organization (JETRO), a public institution of the Japanese government that promotes trade and investment from and to Japan. They explained how to penetrate into the Japanese market and how to find Japanese buyers through their online system. Finally, current exporters in the same industry were invited to share their own experiences, including useful tools for overcoming the potential obstacles to exporting. They also illustrated how to deal with foreign importers and how to gain trust from overseas market describing episodes from their personal experience. In the seminar on the second day (March 15), we provided the same four classes and an additional class by an official from the General Department of Vietnam Customs to introduce the e-customs to participants and explain steps to register online and procedures of using the website. E-customs were introduced to Vietnam in 2014 as a foreign aid project of Japan (JICA, 2015). On the last day (March 16), we provided the same five classes as on the second day and additionally a dinner after all five classes so that participants could talk to each other as well as to lecturers in a more informal setting. On each day, the seminar started at 8:45AM and lasted until 4:00 or 4:30PM. In most classes, the lecturers shared their contact information and related websites so that participants could ask for further information.

3.3 Selection and participation of firms

We randomly selected 50 or 51 firms for each day of seminars (151 firms in total) by a stratified sampling strategy using the village as a stratum. That is about half of the firms we surveyed in the first survey. Then, we sent an enumerator of the firm-level survey to each firm for the face-to-face invitation to seminars in early March, giving a formal letter that explained details of the seminar. In the letter, we noted that only the owner, the managing director, or a highly-ranked manager can participate in the seminars although seminar participants and respondents to our surveys may be different. A few days before the seminars, we made phone calls for further invitation. If firms did not agree to participate at the time of the first phone call, we made another phone call a day before the seminar.

However, despite the efforts we made for the invitation, only a small number of invited firms actually participated in our seminars. Among the 50 firms invited on the first day, only 9 participated, whereas 15 among 50 on the second day and 14 among 51 on the last day. Note that the seminars were held on Saturday, Sunday, and Monday, but the number of participants does not vary significantly between weekends and weekdays. In total, out of 151 invited firms, 38 firms

participated, and thus the participation rate is 25.2 percent. Table 1 shows the number of firms which were invited and participated by village and by seminar date.

3.4 Quality and difficulty of the seminars

After each seminar, we asked participants to evaluate its quality and difficulty. 93% of participants reported that they participated because they wanted to know information about exporting activity, and 86% because they wanted to know information about foreign buyers. 69% reported that they in fact learned information about exporting activity, and 62% about foreign buyers. Accordingly, 90% were satisfied with the quality of the seminars. The average score for the quality of the classes for export promotion was 4.4 out of 5. Therefore, it is most likely that participants are well motivated and that the quality of the seminars was sufficiently high.

However, participants had difficulties in understanding the seminars. The average score for the difficulty of the classes for export promotion was 3.6, where one indicates “very difficult” and five “very easy.” In other words, the class was not “very easy” or “easy” to many of the participants, although most of them evaluated the class as “good” or “very good.”

3.5 Construction of variables

As we mentioned in Section 2.1, our outcome variables can be classified into three categories: variables that measure how much firms prepare for exporting activity, how firms subjectively perceive difficulties in exporting activity, and whether firms export. Obviously, the most direct outcome measure is the amount of exports or whether firms engage in exporting activity. However, because the second survey was conducted only three months after the seminar, the time period may be too short for firms to start exporting. Therefore, this paper also examines how the seminars changed firms' preparation for and perception of exporting activity.

The variables for preparation for exporting activity are based on the following six questions to respondent firms: whether they had accessed any website for export exhibitions or trade fairs in the last three months; whether they hired export agencies; whether they made or improved its catalog or website to advertise the firm to overseas buyers in the last three months; whether they assigned any person in charge of trade activity; whether they had trade names or brand names to appeal to overseas buyers; and whether they had accessed the website of e-customs. From dummy variables that take a value of one if the answer is yes to the six questions, we construct two measures of preparation for exporting activity. One is a composite index that averages the dummy variables from the first five questions, whereas the other is a dummy variable for the last question on the website of e-customs to particularly examine effects of the e-customs class.

The second category of outcome variables measures perception of exporting activity and consists of one dummy variable and two categorical variables. The dummy variable indicates whether the firm

is willing to export or not, or if the firm is already an exporter, whether it is willing to continue to export or not. The second variable is a composite index of perception and based on five questions on perceptions about exporting activity, taken from Breinlich et al. (2016), including how difficult it is to adapt products to be suitable for exporting; to deal with legal and tax regulations and standards; to enforce contracts in trade; to identify whom to make contact with for exporting in the first instance; and to deal with foreign languages and cultures. Five answers, each of which ranges from one (not difficult at all) to five (very difficult), are averaged and standardized so that the possible minimum and maximum are zero and one, respectively. The third perception variable measures the extent to which the top manager thinks customs as an obstacle to trade, ranging from one to five as above. This variable, after standardization to a score from zero to one, is used to check whether the class on e-customs was effective. We use the first-difference for the variables for willingness to trade and the perception of customs as an obstacle for trade, because we asked the same question in the two surveys.

The third category of outcome variables indicates whether firms export or not. More specifically, we distinguished between direct and indirect export and constructed a dummy variable for engaging in each of the two types of export. We also take a first difference for these two variables.

We estimated effects of two treatment dummies. The first dummy takes a value of one if the firm participated in the seminars in any of the three days. The second dummy accounts for participation in the seminar on either the second day or on the third day, i.e., if firms took the additional class on e-customs. The decision to participate in the seminars was made by invited firms. To avoid biases due to the endogeneity, these treatment dummies are instrumented by two dummies for random invitation to corresponding treatments as explained in Section 2.2.

We also tested the effect of another treatment dummy for firms participating in the networking dinner on the third day. However, among the 14 participants in the seminar on the third day (Table 1), four did not participate in the dinner, and thus the number of participants in the dinner was only 10. Probably because of this few number, we found that instruments, including the dummy for invitation to the dinner, were substantially weak in the 2SLS estimation using the dummy for participation in the dinner as a key treatment variable. Therefore, we do not present the dummy for participation in the dinner in our estimation.

To eliminate the effects of other firm attributes which may affect export behaviors, we employed three types of control variables. The first set represents firm size to examine the role of the standard factor related to exporting decisions. There are three size variables: the number of workers, the number of subcontractors, and the dummy variable for firms with more than one establishment. Because many firms refused to report their sales, we could not construct or incorporate any reliable productivity measure. The second set of controls are related to exporting activities, including the share of sales in the domestic market to total sales, an experience dummy variable that takes a value of one if the firm has ever exported, and a dummy representing the export status right before the seminar

participation in the year 2014. The third set of independent variables is personal characteristics of respondents that are mostly owners, presidents, or highly-ranked managers. A dummy for whether the respondent has lived outside the currently residing province captures both external links and outward oriented attitude. The education level controls the cognitive ability and knowledge level of the respondents. Finally, we asked how many business-related memberships the respondent holds to explain the social capital.

In an alternative specification, we incorporate the number of the firm's information exchange partners in the village that participated in the seminars as an independent variable, as we mentioned in Section 2.1. In the survey, each firm reported its information exchange partners from the list of all registered firms in the same village. Therefore, information exchange partners for each firm can be identified. Because this variable is also endogenous, we instrumented it by the number of the firm's partners that were invited to the seminars.

3.6 Descriptive statistics

Table 2 shows summary statistics of the sample firms. Looking at the the index counting the number of activities in export preparation which ranges from zero to one, we found that the average value is 0.117. This means most of firms tried less than one export preparation activity out of six activities surveyed. Similarly, the share of firms accessing the e-customs website was 9.7%, indicating most firms did not conduct preparation activity related to e-customs much. Most firms were interested in exporting activity in 2015, as 69% of firms showed willingness to export. However, many firms consider export procedures difficult, as the average value of the index of perception of difficulties of export procedures from zero to one is 0.449.

In 2014 before the seminars, 21.8% of firms had any export experience, and 15.3% were exporters. This evidence implies that one fourth of past exporters exited export markets after their entries. This frequent turnovers in export markets are often found in other countries (Eaton et al., 2007). In 2015 after the seminars, the share of exports increased to 21.0%. Among them, 12.5% engaged in direct export, whereas 10.1% in indirect export through intermediaries. Top destinations of exports of the sample firms are Japan, South Korea, China, Taiwan, and the United States.

The average number of workers is 35. Although the largest firm had 1,000 workers in 2014, 92% had fewer than 100. Thus, the target firms are mostly SMEs. Because our target villages have traditionally been clusters of the garment and textile industry, a number of subcontractors, mostly unregistered micro-enterprises, are well developed and easily available to downstream firms {Nam, 2010 #34} . Accordingly, some firms effectively utilize subcontractors and minimize the use of their own workers to maximize their profits. 34% of firms utilize subcontractors, and the average number of subcontractors is 20. We use the number of workers and the number of subcontractors as control variables that measure firm size. The average education level of top managers is high school diploma.

4. Estimation Results

4.1 Benchmark results

We now examine the effects of the informational and motivational seminars for export promotion by 2SLS, using the dummies for random invitation to the seminars and e-customs class as instruments for participation. Table 3 shows the results from the first stage of the 2SLS. Each invitation dummy has a positive and statistically significant effect on the participation of the corresponding seminar. F statistics from the first stage regressions shown in the bottom row of Table 3 are above nine, indicating that instruments are less likely to be weak.

Table 4 presents the 2SLS results for effects of the seminar on the composite index of export preparation activities. In column (1), we simply estimate the effect of the dummy for participation in any seminar without incorporating the dummy for participation in the e-customs class, finding it insignificant. Furthermore, when we incorporate the e-customs dummy in column (2), we find that the effect of seminar participation is negative and insignificant, while the effect of the e-customs class is positive and significant. Because the total effect of the seminars with the e-customs class (i.e., the seminars on the second and third day) is the sum of the two effects, we further test a null hypothesis that the total effect is zero by a Wald test. The p value from the Wald test is shown in the bottom row, indicating that we cannot reject the null hypothesis. Thus, the effect of any type of seminar is found to be insignificant.

To look at the the effects of the seminar on more direct outcome which the seminar explicitly talked about, the dummy variable for accessing the website of e-customs are shown in columns (3) and (4) of Table 4. As in the result on the composite index, the overall effect of participation in one of the seminars on accessing the e-customs website is insignificant (column [3]). When the dummy for the e-customs class is incorporated, the effect of the participation dummy becomes negative and significant, while the effect of the e-customs class is positive and significant. However, the total effect of the seminars with the e-customs class, or the sum of the two effects, is not significantly different from zero, according to the p value from a Wald test shown in the bottom row. Thus, the seminar on the first day without the class on e-customs discouraged participants' access to the e-customs website, while the seminar on the second and third day with the e-customs class had no negative or positive effect.

In addition, effects of the seminars on perceptions of exporting activities are mostly insignificant. Columns (1) and (2), (3) and (4), and (5) and (6) in Table 5 respectively show effects of the seminars on the dummy for willingness to trade, the composite index of perception of difficulties of export procedures, and the dummy for perception of customs as an obstacle to export. However, except for the weakly significant positive effect of the participation dummy in column (2), the effect of the participation dummy or the e-customs dummy is insignificant. In column (2), the effect of the dummy

for the e-customs class is negative, and we cannot reject the null hypothesis that the sum of the effects of the two treatment dummies is zero.

Finally, we estimate effects of the seminars on the actual export performances, finding them insignificant in any specification, regardless of whether we focus on direct (columns [1] and [2] of Table 6) or indirect export (columns [3] and [4]).

4.2 Information spillovers

The benchmark results indicate that the effects of the seminars for export promotion in this study were mostly insignificant. One possible reason for this finding is that the effects diffused to non-participants through firm networks. Because our empirical strategy compares participants and non-participants to estimate effects of the seminars, we underestimate their effects in the presence of such information diffusion. Thus, to check whether this is the case, we incorporate the number of each firm's information exchange partners that participated in any of the three seminars. Because participation of partners is endogenous, we instrument this variable by the number of partner firms that were invited to the seminars and the average number of workers of the invited partner firms. We experimented with several other variables for the average of partner firms' attributes, but because we found that they are not significantly correlated with the number of participant partners, we dropped them from the set of instruments.

The results from the incorporation of this new endogenous regressor are summarized in Table 7. It should be noted that instruments may be weak in these estimations, as the F statistics of excluded instruments in the first-stage regressions are 7.78, 6.66, and 5.47. Therefore, the results may be biased and should be viewed with caution. We find that although the number of participating partners has a significant effect on some of the outcome variables, the effect of the participation dummy and the e-customs class dummy does not change compared with the benchmark results in Tables 4-6. It is somewhat hard to interpret the results because they indicate that the seminars did not directly affect participants but affect non-participants indirectly through information diffusion. Because these inconsistent results may be due to the weak instruments, we will not argue further whether information spilled over from participants to non-participants. Rather, we close this sub-section by emphasizing that our benchmark results remain even after incorporating possibility of information spillovers.

4.3 Heterogeneous effects across firms

We have so far estimated the average effect of the seminars. However, effects of the seminars may be heterogeneous across firms, depending on firm characteristics. To check if this is the case, we incorporate interaction terms between the dummy for participation in the seminars and a number of variables for firm characteristics. We find that the interaction terms with two variables, the number of

subcontractors (a measure of firm size) and the dummy for prior export experience, result in a significant effect on some outcome variables at the five-percent level. We show the results with any statistical significance using the two variables in Table 8 but omit other results for brevity.

Column (1) in Table 8 indicates that after incorporating the interaction term with the number of subcontractors in the regression of the index of preparation for export, the coefficient on the participation dummy or the interaction term is not significantly different from zero. We further test the null hypothesis that the total effect of participation is zero for a hypothetical firm of the average size and that of the top 10% firm in terms of the number of subcontractors. The average and the top 10% of the number of subcontractors is 20 and 50, respectively, whereas their logs are 2.99 and 3.91. There are two top-10% firms in our sample that utilize 50 subcontractors, and the number of workers of the two is seven and 22. Therefore, the top-10% firms are very large in our sample, but not so in standard classifications. The p values from Wald tests provided in the middle rows of Table 8 show that the effect of participation on the index of preparation for export for top 10% firms is significantly different from zero, while the effect for the average firm is insignificant.

One may concern why the number of subcontractors is effective to promote the impact of the seminars while the number of workers, another measure of firm size, is not. As we explained in Section 3.6, a subcontracting system has been historically developed in these traditional apparel clusters so that some firms effectively utilize subcontractors and minimize the use of their own workers to maximize their profits. Therefore, the number of subcontractors may be more closely correlated with what is required for exporting, e.g., the productivity level and absorptive capacity as we will argue later, than the number of workers within the firm. Also, as shown in the column (1) and (2) of Table 4, companies with a large pool of workers have the own ability to prepare for export so that the effect of seminar is not significant. On the other hand, firms with large subcontractors do not rely on their own workers for production so that they lack human resources to gather information about overseas buyers and markets and prepare for exports. For this reason, the seminar appear to be more effective among firms with large subcontractors rather than large workers.

The effect of the interaction term with the number of subcontractors on willingness to export is positive and significant at the 10-percent level, whereas the effect of the participation dummy is negative and insignificant (column [3] of Table 8). According to the p values from the Wald tests, the effect of participation on willingness to trade is insignificant for the average-sized firms but positive and significant for largest 10% firms at the 10% level. Similarly, the effect of participation for largest 10% firms is positive and significant on the dummy for perception of customs as an obstacle to trade and the dummy for direct export, although its effect for smaller firms is absent (columns [5] and [7]). These results suggest that our seminars stimulated large firms' preparation and willingness to export and promoted engagement in direct export, although they feel more difficulties in customs procedures.

The effect of the interaction term between the participation dummy and the dummy for export experience on direct export is positive and significant (column [8] of Table 8), while its effect on indirect export is negative and significant (column [10]). We test whether the total effect of participation for experienced firms is zero by Wald tests and find it is positive and significant on direct export but insignificant on indirect export. To be more precise, because we use first-differenced dummies for direct and indirect export, we examine effects of the seminars on the change in exporting activity. Therefore, these results suggest that current non-exporters with prior export experience are encouraged to (re-)start direct exporting by participation in the seminars, possibly switching from indirect to direct export. To examine possible substitution from indirect to direct export, we run a similar 2SLS regression using the dummy variable for preference for direct to indirect export and show the result in column (12) of Table 8. The result clearly shows that by participating in the seminars, firms with export experience became more likely to prefer direct to indirect export.

4.4 Discussion

Based on the empirical results above, we conclude that the seminars for export promotion did not affect most firms but affected only large firms and firms with prior export experience. Because the participants were mostly satisfied with the seminars and learned information about exporting activity there (Section 3.4), it is less likely that the mostly insignificant effects are due to low quality of the seminars. Then, why were the seminars effective to only large or experienced firms? It should be emphasized that our target firms are mostly traditional SMEs in a less developed country. Therefore, most firms in our sample were underdeveloped and not ready for exporting. However, large or experienced firms were more likely to be equipped with high productivity, absorptive capacity, and product quality, and thus once they were provided necessary information, they could overcome informational barriers and (re-)enter export markets. Therefore, our results are consistent with Melitz (2003) who emphasizes the importance of the productivity level in engagement in exporting activity. On the other hand, our results also suggest information provision is helpful to productive firms. This is consistent with the recent empirical studies that found positive effects of information spillovers from neighbors (Bernard and Jensen, 2004; Okubo and Tomiura, 2015; Todo, 2011) and information provision by public institutions (Volpe Martincus and Carballo, 2008, 2010) on exporting activity. In summary, our findings suggest that improvement of productivity, managerial ability, and product quality is more important to underdeveloped firms particularly in less developed countries to enter foreign markets, although information provision should be effective to more advanced firms.

Another implication from this study is that export procedures are too complicated to most firms. This conjecture is supported by some of our results showing negative effects of the seminars on export promotion in some specifications. For example, the seminar on the first day without the e-customs class lowered participants' propensity to access to the e-customs website (column [4] of

Table 4), whereas large participant firms were more likely to perceive customs as an obstacle to export (column [5] of Table 8). Breinlich et al. (2016) also found a negative effect of brochures for export promotion in the United Kingdom on recipient firms' perceptions of exporting activity. Their results and ours suggest that when detailed information on exporting is provided, firms which did not know procedures for exporting realized their complications and difficulties and can be discouraged to take actions to start exporting. If export procedures are too complicated to most firms, utilization of intermediaries, such as trading firms, should encourage such firms' indirect export. Recent studies such as Ahn et al. (2011) and Bernard et al. (2011) reveal the role of intermediaries in facilitating international trade. Our results imply that policy supports to foster indirect export such as matching producers to intermediaries, rather than giving direct supports to producers, may be more effective means of export promotion when absorptive capacity of producers is too low.

5. Conclusion

This paper investigates the impact of informational and motivational one-day seminars for export promotion in traditional apparel and textile clusters in Northern Vietnam. In order to control for biases due to self-selection, we conducted an RCT and invited randomly selected firms to the seminars. Because only some of the invited firms actually participated in the seminars, we employ a 2SLS approach in which dummies for random invitation are used as instruments for actual participation. In other words, we estimated the local average treatment effect (LATE).

In summary, we find that the seminars for export promotion had insignificant effect on most participant firms' preparation for, perception of, and engaging in exporting activity. However, the seminars encouraged large firms and firms with prior export experience to prepare for, be willing to export, and (re-)start to export. This finding implies that firms with larger size, higher productivity, and higher absorptive capacity can effectively utilize information for export promotion while other firms, particularly SMEs in less developed countries, may not. This implication is consistent with the importance of productivity in exporting decisions argued in Melitz (2003) and the existence of information barriers to export found in the empirical literature.

An important policy implication from this study is that provision of information on exporting activity by public institutions works only when the productivity level and absorptive capacity of firms are sufficiently high to penetrate into foreign markets. By contrast, to underdeveloped firms, policies for productivity improvement should be given prior to informational support. Alternatively, policies should foster intermediaries for international trade to raise indirect exports of firms that perceive export procedures too difficult and complicated.

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Table 1. Number of Observations by Village

| Village | Total register firms | Number of respondents | | Number of Invited | Number of Participants | | | |
|---------|----------------------|-----------------------|---------------|-------------------|------------------------|------|------|------|
| | | First survey | Second survey | | Total | Day1 | Day2 | Day3 |
| 1 | 14 | 13 | 13 | 7 | 2 | 0 | 0 | 2 |
| 2 | 19 | 13 | 13 | 7 | 3 | 1 | 0 | 2 |
| 3 | 17 | 13 | 13 | 7 | 5 | 0 | 5 | 0 |
| 4 | 72 | 64 | 64 | 32 | 4 | 1 | 3 | 0 |
| 5 | 74 | 60 | 58 | 30 | 4 | 1 | 0 | 3 |
| 6 | 19 | 18 | 18 | 9 | 6 | 2 | 4 | 0 |
| 7 | 41 | 37 | 37 | 18 | 9 | 2 | 3 | 4 |
| 8 | 29 | 25 | 21 | 13 | 1 | 1 | 0 | 0 |
| 9 | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |
| 10 | 4 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |
| 11 | 15 | 11 | 10 | 5 | 1 | 0 | 0 | 1 |
| 12 | 18 | 17 | 14 | 9 | 1 | 0 | 0 | 1 |
| 13 | 9 | 4 | 3 | 2 | 0 | 0 | 0 | 0 |
| 14 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 15 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| 16 | 19 | 15 | 14 | 8 | 1 | 1 | 0 | 0 |
| Total | 354 | 296 | 284 | 151 | 38 | 9 | 15 | 14 |

Table 2. Descriptive Statistics

| Variable | N | Mean | S.D. | Min. | Max. |
|---|-----|--------|--------|--------|-------|
| <i>Treatment variables</i> | | | | | |
| Dummy for participation in any seminar | 248 | 0.137 | 0.345 | 0 | 1 |
| Dummy for participation in e-customs class | 248 | 0.109 | 0.312 | 0 | 1 |
| Dummy for invitation to any seminar | 248 | 0.520 | 0.501 | 0 | 1 |
| Dummy for invitation to e-customs class | 248 | 0.359 | 0.481 | 0 | 1 |
| <i>Outcome variables</i> | | | | | |
| Index for preparation for exporting activity (0 = least prepared, 1 = most prepared) | 248 | 0.117 | 0.199 | 0 | 0.800 |
| Dummy for accessing e-customs website | 248 | 0.097 | 0.296 | 0 | 1 |
| Dummy for willingness to export (2015) | 248 | 0.690 | 0.464 | 0 | 1 |
| (2014) | 248 | 0.464 | 0.500 | 0 | 1 |
| (1st differenced) | 248 | 0.226 | 0.634 | -1 | 1 |
| Index of perception of difficulties of export procedures (0 = least difficult, 1 = most difficult) | 152 | 0.449 | 0.158 | 0.200 | 1 |
| Index of perception of customs as obstacle (2015) | 176 | 0.206 | 0.294 | 0 | 1 |
| (2014) | 248 | 0.028 | 0.116 | 0 | 1 |
| (1st differenced) | 176 | 0.168 | 0.321 | -0.750 | 1 |
| Dummy for engaging in direct/indirect export (2015) | 248 | 0.210 | 0.408 | 0 | 1 |
| (2014) | 248 | 0.153 | 0.361 | 0 | 1 |
| Dummy for engaging in direct export (2015) | 248 | 0.121 | 0.327 | 0 | 1 |
| (2014) | 248 | 0.125 | 0.331 | 0 | 1 |
| (1st differenced) | 248 | 0.016 | 0.126 | 0 | 1 |
| Dummy for engaging in indirect export (2015) | 247 | 0.101 | 0.302 | 0 | 1 |
| (2014) | 248 | 0.060 | 0.239 | 0 | 1 |
| (1st differenced) | 248 | 0.077 | 0.267 | 0 | 1 |
| <i>Firm characteristics in 2014</i> | | | | | |
| Number of subcontractors | 248 | 19.899 | 52.615 | 0 | 450 |
| (log) | 248 | 1.383 | 1.584 | 0 | 6.109 |
| Number of workers | 248 | 35.827 | 81.550 | 1 | 1000 |
| (log) | 248 | 2.740 | 1.197 | 0 | 6.908 |
| Dummy for multi-establishments | 248 | 0.290 | 0.455 | 0 | 1 |
| Number of participating information exchange partners | 245 | 0.335 | 0.726 | 0 | 4 |
| Number of invited information exchange partners | 248 | 0.605 | 1.162 | 0 | 6 |
| Sales from domestic market (%) | 248 | 78.435 | 38.805 | 0 | 100 |
| Dummy for export experiences | 248 | 0.218 | 0.414 | 0 | 1 |
| <i>Manager characteristics in 2014</i> | | | | | |
| Dummy for top manager's living outside the current province | 248 | 0.415 | 0.494 | 0 | 1 |
| Top manager's education level (0 = no degree, 7 = graduate school) | 248 | 3.992 | 1.106 | 2 | 6 |
| Number of business-related memberships | 248 | 1.702 | 14.093 | 0 | 199 |

Table 3. Results from First-Stage Regressions

| | (1) | (2) |
|--|--|--|
| Dependent variable | Dummy for participation in any seminar | Dummy for participation in e-customs class |
| Dummy for invitation to any seminar | 0.2215*** (0.0593) | 0.0335 (0.0515) |
| Dummy for invitation to e-customs class | 0.0653 (0.0631) | 0.2568*** (0.0548) |
| Number of subcontractors (log) | 0.0035 (0.0151) | 0.0009 (0.0132) |
| Number of workers (log) | 0.0210 (0.0214) | 0.0266 (0.0186) |
| Dummy for multi-establishments | -0.0061 (0.0474) | -0.0352 (0.0412) |
| Dummy for top manager's living outside the current province | 0.0577 (0.0447) | 0.0483 (0.0388) |
| Top manager's education level (0 = no degree, 7 = graduate school) | -0.0171 (0.0193) | -0.0161 (0.0168) |
| Number of business-related memberships | 0.0000 (0.0014) | 0.0002 (0.0012) |
| Sales from domestic market in 2014 (%) | -0.0010 (0.0007) | -0.0009 (0.0007) |
| Dummy for export experiences | 0.0265 (0.0896) | 0.0509 (0.0779) |
| Dummy for export in 2014 | -0.1523 (0.1132) | -0.1659* (0.0984) |
| Number of observations | 248 | 248 |
| F statistics of excluded instruments | 9.53 | 9.05 |

Notes: Clustered robust standard errors by village are in brackets. *, **, and *** signify the statistical significance at the 10, 5, and 1-percent level, respectively.

Table 4. Impacts of the Seminars on Preparation for Exporting Activity

| Dependent variable | (1) | (2) | (3) | (4) |
|--|--|------------------------|---------------------------------------|------------------------|
| | Index for preparation for exporting activity | | Dummy for accessing e-customs website | |
| Dummy for participation in any seminar | 0.0475 (0.0929) | -0.1723 (0.1173) | 0.0015 (0.1035) | -0.2651** (0.1233) |
| Dummy for participation in e-customs class | | 0.2777*** (0.0617) | | 0.3368** (0.1693) |
| Number of subcontractors (log) | 0.0033 (0.0088) | 0.0035 (0.0080) | -0.0118** (0.0050) | -0.0115*** (0.0037) |
| Number of workers (log) | 0.0297*** (0.0062) | 0.0298*** (0.0082) | 0.0561** (0.0270) | 0.0563** (0.0232) |
| Dummy for multi-establishments | 0.0363** (0.0166) | 0.0432** (0.0219) | -0.0225 (0.0309) | -0.0141 (0.0259) |
| Dummy for top manager's living outside the current province | 0.0024 (0.0179) | -0.0011 (0.0184) | 0.0051 (0.0268) | 0.0008 (0.0276) |
| Top manager's education level (0 = no degree, 7 = graduate school) | -0.0029 (0.0131) | -0.0037 (0.0129) | 0.0002 (0.0117) | -0.0008 (0.0118) |
| Number of business-related memberships | 0.0002 (0.0005) | 0.0001 (0.0005) | -0.0001 (0.0002) | -0.0001 (0.0002) |
| Sales from domestic market in 2014 (%) | -0.0012*** (0.0004) | -0.0011*** (0.0004) | -0.0011* (0.0007) | -0.0010 (0.0006) |
| Dummy for export experiences | 0.0652** (0.0310) | 0.0508 (0.0341) | 0.1271 (0.0971) | 0.1096 (0.0925) |
| Dummy for export in 2014 | 0.0309 (0.0538) | 0.0453 (0.0488) | 0.1154 (0.1753) | 0.1330 (0.1652) |
| Observations | 248 | 248 | 248 | 248 |
| R-squared | 0.190 | 0.217 | 0.187 | 0.201 |
| H0: total effect of participation in seminars with e-customs class = 0 (<i>p</i> value) | | 0.2146 | | 0.5565 |

Notes: This table shows results from 2SLS estimations. Clustered robust standard errors in parentheses. *, **, and *** signify the statistical significance at the 10, 5, and 1-percent level, respectively.

Table 5. Impacts of the Seminars on Perception of Exporting Activity

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--|---|-----------------------|--|------------------------|---|-----------------------|
| Dependent variable | Dummy for willingness to export (1st differenced) | | Index of perception of difficulties of export procedures | | Dummy for perception of customs as obstacle (1st differenced) | |
| Dummy for participation in any seminar | 0.1862 (0.3031) | 0.5224* (0.3030) | 0.0376 (0.0678) | 0.1287 (0.0821) | 0.0376 (0.1334) | -0.1024 (0.1697) |
| Dummy for participation in e-customs class | | -0.4248 (0.4154) | | -0.1172 (0.1234) | | 0.1842 (0.2318) |
| Number of subcontractors (log) | -0.0255 (0.0292) | -0.0258 (0.0273) | -0.0126*** (0.0041) | -0.0127*** (0.0045) | 0.0046 (0.0149) | 0.0037 (0.0148) |
| Number of workers (log) | 0.0300 (0.0332) | 0.0299 (0.0321) | -0.0030 (0.0090) | -0.0027 (0.0092) | -0.0092 (0.0214) | -0.0082 (0.0214) |
| Dummy for multi-establishments | 0.0077 (0.1055) | -0.0029 (0.1134) | -0.0458** (0.0216) | -0.0452** (0.0200) | -0.1061** (0.0511) | -0.1049** (0.0503) |
| Dummy for top manager's living outside the current province | -0.2298** (0.0909) | -0.2245** (0.0901) | -0.0099 (0.0256) | -0.0084 (0.0265) | 0.0816*** (0.0270) | 0.0789*** (0.0257) |
| Top manager's education level (0 = no degree, 7 = graduate school) | 0.0539* (0.0313) | 0.0551* (0.0312) | -0.0016 (0.0108) | -0.0010 (0.0106) | -0.0151 (0.0203) | -0.0167 (0.0198) |
| Number of business-related memberships | 0.0046*** (0.0008) | 0.0047*** (0.0009) | 0.0003 (0.0004) | 0.0003 (0.0004) | -0.0004 (0.0003) | -0.0004 (0.0003) |
| Sales from domestic market in 2014 (%) | -0.0018 (0.0018) | -0.0020 (0.0017) | 0.0006 (0.0005) | 0.0005 (0.0006) | 0.0018** (0.0009) | 0.0020** (0.0009) |
| Dummy for export experiences | -0.2065*** (0.0709) | -0.1844** (0.0806) | 0.0180 (0.0640) | 0.0214 (0.0603) | 0.0232 (0.0810) | 0.0167 (0.0869) |
| Dummy for export in 2014 | 0.2189 (0.2252) | 0.1968 (0.2335) | 0.0336 (0.0448) | 0.0327 (0.0446) | 0.0795 (0.0937) | 0.0896 (0.0983) |
| Observations | 248 | 248 | 152 | 152 | 176 | 176 |
| R-squared | 0.054 | 0.046 | 0.228 | 0.240 | 0.056 | 0.055 |
| H0: total effect of participation in seminars with e-customs class = 0 (p value) | | 0.7793 | | 0.8957 | | 0.6191 |

Notes: This table shows results from 2SLS estimations. Clustered robust standard errors in parentheses. *, **, and *** signify the statistical significance at the 10, 5, and 1-percent level, respectively. The number of observations is smaller column 3 to 7 because many of firms have never tried export so that they chose "Don't know" for perception questions.

Table 6. Impacts of the Seminars on Engaging in Exporting Activity

| Dependent variable | (1) | (2) | (3) | (4) |
|---|--|------------------------|--|------------------------|
| | Dummy for engaging in direct export (1st differenced) | | Dummy for engaging in indirect export (1st differenced) | |
| Dummy for participation in any seminar | 0.0499 (0.0621) | 0.1044 (0.1003) | -0.0783 (0.0752) | -0.2060 (0.1868) |
| Dummy for participation in e-customs class | | -0.0688 (0.1104) | | 0.1614 (0.2226) |
| Number of subcontractors (log) | 0.0061* (0.0034) | 0.0061* (0.0033) | 0.0051 (0.0106) | 0.0053 (0.0099) |
| Number of workers (log) | 0.0093 (0.0078) | 0.0093 (0.0082) | 0.0249* (0.0132) | 0.0249* (0.0147) |
| Dummy for multi-establishments | 0.0057 (0.0206) | 0.0040 (0.0215) | 0.0170 (0.0392) | 0.0211 (0.0419) |
| Dummy for top manager's living outside the current province | -0.0266 (0.0193) | -0.0258 (0.0203) | -0.0029 (0.0233) | -0.0049 (0.0247) |
| Top manager's education level (0 = no degree, 7 = graduate school) | -0.0060 (0.0099) | -0.0058 (0.0098) | -0.0191 (0.0144) | -0.0196 (0.0150) |
| Number of business-related memberships | 0.0001 (0.0002) | 0.0001 (0.0002) | -0.0003** (0.0002) | -0.0003* (0.0002) |
| Sales from domestic market in 2014 (%) | -0.0008** (0.0004) | -0.0009** (0.0003) | -0.0035*** (0.0012) | -0.0035*** (0.0013) |
| Dummy for export experiences | 0.1499 (0.1103) | 0.1535 (0.1099) | 0.0138 (0.0499) | 0.0054 (0.0560) |
| Dummy for export in 2014 | -0.3191*** (0.1201) | -0.3226*** (0.1193) | -0.4735*** (0.1388) | -0.4652*** (0.1492) |
| Observations | 248 | 248 | 248 | 248 |
| R-squared | 0.205 | 0.194 | 0.235 | 0.213 |
| H0: total effect of participation in seminars with e-customs class = 0 (<i>p</i> value) | | 0.6014 | | 0.6264 |

Notes: This table shows results from 2SLS estimations. Clustered robust standard errors in parentheses. *, **, and *** signify the statistical significance at the 10, 5, and 1-percent level, respectively.

Table 7. Estimation of Information Spillovers

| | (1) | (2) | (3) | (4) |
|--|--|---------------------------------------|---|--|
| | Index for preparation for exporting activity | Dummy for accessing e-customs website | Dummy for willingness to export (1st differenced) | Index of perception of difficulties of export procedures |
| Dummy for participation in any seminar | -0.2212*** (0.0776) | -0.2277*** (0.0659) | 0.3144 (0.3621) | 0.1288 (0.0979) |
| Dummy for participation in e-customs class | 0.2717*** (0.0730) | 0.3135* (0.1724) | -0.4357 (0.4681) | -0.0583 (0.1607) |
| Number of participating partners | -0.0238 (0.0363) | -0.0162 (0.0511) | -0.1004 (0.1684) | 0.0790*** (0.0223) |
| Observations | 245 | 245 | 245 | 149 |

| | (5) | (6) | (7) |
|--|---|---|---|
| | Dummy for perception of customs as obstacle (1st differenced) | Dummy for engaging in direct export (1st differenced) | Dummy for engaging in indirect export (1st differenced) |
| Dummy for participation in any seminar | -0.1572 (0.1155) | 0.0930 (0.0833) | -0.1091 (0.1867) |
| Dummy for participation in e-customs class | 0.2469 (0.2437) | -0.0192 (0.1229) | 0.2170 (0.2288) |
| Number of participating partners | 0.0903 (0.1113) | 0.0463** (0.0232) | 0.0843* (0.0435) |
| Observations | 173 | 245 | 245 |

Notes: This table shows results from 2SLS estimations. Clustered robust standard errors in parentheses. *, **, and *** signify the statistical significance at the 10, 5, and 1-percent level, respectively. The F statistics of excluded instruments from the first stage regression are 7.78, 6.66, and 5.47.

Table 8. Heterogeneous Effects across Firms

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|----------------------|---|-----------------------|---|---------------------|
| | Index for preparation for exporting activity | | Dummy for willingness to export (1st differenced) | | Dummy for perception of customs as obstacle (1st differenced) | |
| Participation dummy | -0.0721 (0.1780) | 0.0958 (0.1439) | -0.1223 (0.4128) | 0.0971 (0.3776) | -0.1091 (0.1831) | 0.0440 (0.1671) |
| Participation dummy * number of subcontractors (log) | 0.0718 (0.0527) | | 0.1851* (0.1108) | | 0.0989* (0.0563) | |
| Participation dummy * dummy for export experiences | | -0.1587 (0.2210) | | 0.2930 (0.4141) | | -0.0193 (0.1930) |
| Wald statistic (<i>p</i> value) | | | | | | |
| H0: Total effect for average firms is 0. | 0.826 | | 0.699 | | 0.856 | |
| H0: Total effect for top 10% firms is 0. | 0.00147 | | 0.0746 | | 0.0529 | |
| H0: Total effect for firms with export experience is 0. | | 0.667 | | 0.205 | | 0.870 |
| Observations | 248 | 248 | 248 | 248 | 176 | 176 |
| R-squared | 0.157 | 0.160 | 0.052 | 0.058 | 0.017 | 0.056 |
| | (7) | (8) | (9) | (10) | (11) | (12) |
| | Dummy for engaging in direct export (1st differenced) | | Dummy for engaging in indirect export (1st differenced) | | Dummy for preference for direct to indirect export | |
| Participation dummy | -0.0143 (0.0581) | -0.0301 (0.0615) | -0.2111* (0.1273) | -0.0273 (0.0802) | -0.3647 (0.3587) | -0.0801 (0.3210) |
| Participation dummy * number of subcontractors (log) | 0.0385** (0.0152) | | 0.0797 (0.0678) | | 0.3214*** (0.1206) | |
| Participation dummy * dummy for export experiences | | 0.2630** (0.1334) | | -0.1676** (0.0783) | | 0.8255* (0.4666) |
| Wald statistic (<i>p</i> value) | | | | | | |
| H0: Total effect for average firms is 0. | 0.507 | | 0.127 | | 0.754 | |
| H0: Total effect for top 10% firms is 0. | 0.0597 | | 0.553 | | 1.28e-05 | |
| H0: Total effect for firms with export experience is 0. | | 0.0334 | | 0.123 | | 0.000697 |
| Observations | 248 | 248 | 248 | 248 | 248 | 248 |
| R-squared | 0.190 | 0.122 | 0.231 | 0.215 | -0.021 | 0.047 |

Notes: This table shows results from 2SLS estimations. Clustered robust standard errors in parentheses. *, **, and *** signify the statistical significance at the 10, 5, and 1-percent level, respectively.