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Evidence from a randomized controlled trial

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Abstract

This paper investigates the impacts of informational and motivational seminars on export promotion targeting small and medium enterprises (SMEs) in the traditional apparel and textile clusters in Vietnam. To control for biases due to self-selection, we conducted a randomized controlled trial and invited randomly selected firms to participate in 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 quantifying 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 productivity improvement is an effective means to encourage underdeveloped firms to export, whereas provision of information is effective for productive firms.

Keywords: Export promotion, Randomized controlled trial, Small and medium enterprises, Vietnam
JEL classifications: F14; O19; C93

1. Introduction

International trade has been recognized as a key factor in economic growth (Frankel and Romer, 1999). Exports benefit the economy by expanding production and employment and by improving productivity through increasing returns to scale in addition to learning-by-exporting (Blalock and Gertler, 2004; Kimura and Kiyota, 2006). However, many countries, especially those that are less developed, suffer from various trade obstacles that hinder them from realizing the full benefits of trade (Stiglitz and Charlton, 2006).

Low productivity at the firm level is a major obstacle to exporting according to the heterogeneous-firm trade models developed by Melitz (2003) because low-productivity firms cannot be profitable in export markets owing to the initial costs of exporting. Apart from productivity, there may be other obstacles to exporting, such as informational and institutional barriers. From their study in Argentina, Artopoulos et al. (2013) concluded that knowledge of foreign markets is a more critical hindrance to consistent exports than knowledge of production technologies. Other studies have 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; Todo, 2011; Okubo and Tomiura, 2015), which suggests that information spillovers from current exporters can drive non-exporters to begin exporting. Moreover, Nordås et al. (2006) and Itakura (2013) showed that the institutional setting, as quantified in terms of the time for customs procedures and logistics services, strongly affects the trade volume.

Various policy measures have been utilized to ease the supply-side constraints to exporting. The most direct measures are export subsidies and grants. In addition to lowering 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.

Several studies have conducted econometric evaluation of policies and programs for export promotion. 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 (e.g., pamphlets about 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, the 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 begin exporting. Alvarez (2004) used firm-level data regarding Chilean small and medium enterprises (SMEs) and found that trade shows and trade missions did not improve firm performance, whereas exporter committees had a positive impact.

One drawback of existing studies is that they cannot fully correct for possible biases in the estimated effect of export promotion programs due to self-selection of participants. To avoid such biases, impact evaluations of firm-level training programs, which is not restricted to programs for export promotion, have recently incorporated randomized controlled trials (RCTs) (Nordås et al., 2006; Mano et al., 2012; Bloom et al., 2013; Berge et al., 2014; Higuchi et al., 2015). RCTs were originally developed in medical science to evaluate the effects of medical treatments and have been widely used to evaluate poverty reduction programs in less developed countries since the late 1990s (Duflo et al., 2008). To the authors' best knowledge, however, impact evaluations of export promotion programs using RCTs have rarely been conducted. One exception is a study by Breinlich et al. (2016) that 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 was its use of brochures, which may not have been an effective means of attracting the attention of firms and disseminating information about exporting. Indeed, among the respondents to their survey, only 16% had read the brochure.

To fill this research gap, the present study examines whether seminars on 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 about export activities and conducted firm-level surveys before and three months after the seminars. Seminars are most likely a better measure for export promotion than sending brochures because they can enhance information dissemination through face-to-face communication.

Using data from pre- and post-seminar surveys, we estimated the effects of firms' participation in the seminars about exporting. Because the post-program survey was conducted only three months after the seminars, our outcome variables also include those indicating the extent to which firms prepare for exporting activity, such as accessing websites of trade fairs and e-customs, and the extent to which firms 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 is 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 on 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 exhibit higher productivity and absorptive capacity, our results suggest that information

provision is effective only 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. Simultaneously, our results suggest that information barriers exist for firms with high productivity, which is consistent with the empirical studies mentioned above. Therefore, our study implies that policies to encourage underdeveloped firms to export should focus on productivity improvement, whereas provision of information is effective for productive firms.

2. Methodology

2.1 Conceptual framework and estimation equation

We hypothesize that when firms do not have access to information about exporting activity, such as administrative procedures for 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 this paper's empirical analysis, we estimate the effect of the seminars on 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:

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

where Y_{it} is an outcome variable that represents 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 on 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 are the neighboring firms within the same cluster whose top managers or owners exchange business information with each other. By so doing, we can examine the 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 primarily interested in the value of β_1 in equation (1), the coefficient of the participation dummy, its estimate is biased when participants of seminars are self-selected; 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 2SLS estimations using the dummy for the random invitation as an instrument for the participation, following Angrist et al. (1996). This methodology estimates the LATE of seminars given the invited status, which can further be interpreted as the ATT because firms that were not invited were not allowed to participate in any seminar. In addition, because 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 serving 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 account for a modest yet non-negligible share of current exports, approximately 10 percent. The textile and apparel industry is one of the most common exporting manufacturing industries in most developing countries. We assumed that larger companies have sufficient 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 we thus focused on SMEs. We limited the location of our target firms to areas near Hanoi so that the invited firms could come to our seminars held in Hanoi.

Village industrial clusters are traditionally developed agglomerations of SMEs, including micro enterprises, in a particular industry, such as apparel, wood furniture, and ceramics, within a village and can often be observed in Vietnam. We targeted village clusters such that we could identify the inter-firm networks within the villages through which firms exchange information.

To identify such village clusters, we utilized data from the Vietnam Enterprise Survey (VES) of 2010. The VES is conducted annually 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 codes 13 and 14 of the 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. This process identified 19 villages in six 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 targets of our study. For each of the 16 villages, we obtained the full list of registered firms from the municipal government. The number of registered firms for each village is summarized in Table 1; the total number of firms is 354. In December 2014 and January 2015, we requested face-to-face interviews with owners, managing directors, or highly ranked managers of the 354 firms and obtained responses from 296, corresponding to a response rate of 84 percent. The questionnaire consisted of standard firm characteristics, such as sales, number of workers, main products, and ownership. In addition, we asked questions related to trade activities, such as experiences in exporting, knowledge of e-customs, and the perception of trade. Finally, we showed each firm the full list of registered firms in the village and asked them to note 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 of the 296 firms in July and August 2015, approximately four months after the seminars on export promotion explained in detail below. 284 firms, or 96 percent of the sample from the previous round, responded to the second survey. Whereas five of the 12 attritions had been closed in the interim, seven firms refused to respond to the second survey. For the second-round survey, we added new questions regarding the information disseminated during the seminars, asking whether the firms know or practice what they had learned, in addition to the first questionnaire.

3.2 Seminars on 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 an explanation of export financing and insurance (Seringhaus and Rosson, 1991). However, because our sample was SMEs in village clusters, we focused on the motivational and informational elements of export promotion.

The venue of the seminars was a three-star hotel located in the center of Hanoi that was selected to attract participants. It took minimum of 30 minutes by motorbike to a maximum of 2 hours by bus to travel to the venue from the sample villages. For several villages located far from the hotel, we chartered buses for the 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 content so that we could 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 about international business, explaining the overall picture of the global economy in addition to the challenges and opportunities facing 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 with Japan. They explained how to penetrate 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 potential obstacles to exporting. They also illustrated how to work with foreign importers and how to gain trust from overseas markets by 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 e-customs to participants and explain steps to register online and procedures for 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 the participants could converse with each other and with the 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 such 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) via a stratified sampling strategy using the village as a stratum. This sample size corresponds to approximately half the number of firms that we surveyed in the first survey. We then 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 explaining the details of the seminar. In the letter, we noted that only the owner, managing director, or a highly ranked manager could participate in the seminars although the seminar participants and respondents to our surveys may be different. A few days before the seminars, we made phone calls with further invitations. 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 our efforts, only a small number of invited firms actually participated in our seminars. Among the 50 firms invited on the first day, only nine participated, whereas there were 15 out of 50 on the second day and 14 out of 51 on the last day. Note that the seminars were held on Saturday, Sunday, and Monday, but the number of participants did not vary significantly between weekends and weekdays. In total, out of 151 invited firms, 38 firms participated; thus, the participation rate was 25.2 percent. Table 1 shows the number of firms that were invited and participated by village and 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 information about exporting activity, and 86% attended because they wanted information about foreign buyers. 69% reported that they in fact learned information about exporting activity, and 62% reported that they learned 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 the participants were highly motivated and that the quality of the seminars was sufficiently high.

However, the participants had difficulty 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 posed to respondent firms: whether they had accessed any website for export exhibitions or trade fairs in the past three months; whether they hired export agencies; whether they made or improved their catalogues or websites to advertise the firm to overseas buyers in the past 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 e-customs website. From the 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 regarding the e-customs website to examine the effects of the e-customs class in particular.

The second category of outcome variables measures perceptions 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, if the firm is already an exporter, whether it is willing to continue to export. The second variable is a composite index of perception and is based on five questions regarding perceptions about exporting activity taken from Breinlich et al. (2016), including how difficult it is to adapt products to make them suitable for exporting; to comply with legal and tax regulations and standards; to enforce contracts in trade; to identify whom to contact for exporting in the first instance; and to navigate foreign languages and cultures. Five answers, each of which ranges from one (not difficult at all) to five (very difficult), are averaged and standardized such 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 is 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 about e-customs was effective. We use the first-difference of 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. More specifically, we distinguished between direct and indirect exports 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 on 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 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; thus, the number of participants in the dinner was only 10. Probably because of this small number, we found that the 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 that 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 is 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 corresponds to the personal characteristics of respondents, who are mostly owners, presidents, or highly ranked managers. A dummy for whether the respondent has lived outside the province in which he or she currently resides 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 characterize 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, the 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 presents summary statistics regarding the sample firms. The average value of the index that counts the number of activities in export preparation, which ranges from zero to one, is 0.117. This means most firms tried less than one export preparation activity out of the six activities surveyed. Similarly, the share of firms accessing the e-customs website was 9.7%, indicating that most firms did not conduct significant preparation activity related to e-customs. Most firms were interested in exporting activity in 2015, with 69% of firms exhibiting a willingness to export. However, the results indicate that many firms consider export procedures difficult because 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 at least some export experience, and 15.3% were exporters. This evidence implies that one-fourth of past exporters exited export markets after their entries. This frequent turnover in export markets is 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% engaged in indirect export through intermediaries. The top destinations of exports from 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 et al., 2010). 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 a high school diploma.

4. Estimation Results

4.1 Benchmark results

We now examine the effects of the informational and motivational seminars on export promotion by 2SLS, using the dummies for random invitation to the seminars and e-customs class as instruments for participation. Table 3 presents 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. The F statistics from the first stage regressions shown in the bottom row of Table 3 are greater than nine, indicating that the instruments are unlikely 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, which we found insignificant. Furthermore, when we incorporate the e-customs dummy in column (2), we find that the effect of seminar participation is negative and insignificant, whereas 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 the null hypothesis that the total effect is zero using 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 examine the effects of the seminar on a more direct outcome that the seminar explicitly addressed, the dummy variable for accessing the website of e-customs is shown in columns (3) and (4) of Table 4. As for the result regarding 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, whereas 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 the 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, whereas the seminar on the second and third days with the e-customs class had no negative or positive effect.

In addition, the 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, list the 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. 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 the effects of the seminars on the actual export performance, 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 on 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 the 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 who 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 participating 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 because 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 affected non-participants indirectly through information diffusion.

Because these inconsistent results may be due to 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 the possibility of information spillovers.

4.3 Heterogeneous effects across firms

We have so far estimated the average effect of the seminars. However, the effects of the seminars may be heterogeneous across firms, depending on firm characteristics. To check whether 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 for 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, whereas the effect for the average firm is insignificant.

One concern may be why the number of subcontractors is effective in promoting the impact of the seminars, whereas 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 such 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 in Section 4.4, than the number of workers within the firm. Furthermore, as shown in columns (1) and (2) of Table 4, companies with a large pool of workers have the ability to prepare for export; thus, the effect of seminars is not significant. On the other hand, firms with a large number of subcontractors do not rely on their own workers for production and therefore lack human resources to gather information about overseas buyers and markets and prepare for exports. For this reason, the

seminar appears to be more effective among firms with large numbers of subcontractors rather than large numbers of 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 average-sized firms but positive and significant for the largest 10 percent of firms at the 10-percent level. Similarly, the effect of participation for the largest 10 percent of 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 perceive greater 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), whereas its effect on indirect export is negative and significant (column [10]). We test whether the total effect of participation for experienced firms is zero using the Wald tests; we find that 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 export 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 rather than 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 export.

4.4 Discussion

Based on the empirical results above, we conclude that the seminars on export promotion did not affect most firms but rather 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 (Section 3.4), it is less likely that the mostly insignificant effects are due to low quality of the seminars. Why, then, were the seminars effective only for 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 characterized by high productivity, absorptive capacity, and product quality; 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. Our results also suggest that 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; Todo, 2011; Okubo and Tomiura, 2015) and information provision by public institutions (Volpe Martincus and Carballo, 2008, 2010) on exporting activity. In summary, our findings suggest that improvements of productivity, managerial ability, and product quality are more important for underdeveloped firms, particularly in less-developed countries, to enter foreign markets, although information provision should be effective for more-advanced firms.

Another implication from this study is that export procedures are too complicated for 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 decreased participants' propensity to access to the e-customs website (column [4] of Table 4), and large participant firms were more likely to perceive customs as an obstacle to exporting (column [5] of Table 8). Breinlich et al. (2016) also found that brochures regarding export promotion in the United Kingdom had a negative effect on recipient firms' perceptions of exporting activity. Their results and ours suggest that when detailed information about exporting is provided, firms that did not know procedures for exporting realized their complications and difficulties and were discouraged from taking actions to start exporting. If export procedures are too complicated for 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 support to foster indirect export, such as matching producers with intermediaries, rather than giving direct support to producers, may be a more effective means of export promotion when the absorptive capacity of producers is too low.

5. Conclusions

This paper investigates the impact of informational and motivational one-day seminars on export promotion in traditional apparel and textile clusters in northern Vietnam. To control for biases due to self-selection, we conducted an RCT and invited randomly selected firms to participate in 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 LATE.

In summary, we find that the seminars on export promotion had an 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, have a willingness to export, and (re-)start exporting. This finding implies that firms with a larger size, higher productivity, and higher absorptive capacity can effectively utilize information for export

promotion, whereas other firms, particularly SMEs in less-developed countries, may not. This implication is consistent with the importance of productivity in exporting decisions that is supported by the results of Melitz (2003), in addition to the existence of information barriers to export found in the empirical literature.

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

References

Ahn, J., Khandelwal, A.K., Wei, S.-J., 2011. The role of intermediaries in facilitating trade. Journal of International Economics 84, 73-85.

Alvarez, R., 2004. Sources of export success in small- and medium-sized enterprises: the impact of public programs. International Business Review 13, 383-400.

Angrist, J., Imbens, G., 1995. Identification and estimation of local average treatment effects. NBER Technical Working Paper No. 118.

Angrist, J.D., Imbens, G.W., Rubin, D.B., 1996. Identification of causal effects using instrumental variables. Journal of the American statistical Association 91, 444-455.

Angrist, J.D., Pischke, J.-S., 2008. Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press, Princeton.

Artopoulos, A., Friel, D., Hallak, J.C., 2013. Export emergence of differentiated goods from developing countries: export pioneers and business practices in Argentina. Journal of Development Economics 105, 19-35.

Berge, L.I.O., Bjorvatn, K., Tungodden, B., 2014. Human and financial capital for microenterprise development: evidence from a field and lab experiment. Management Science 61, 707-722.

Bernard, A.B., Grazzi, M., Tomasi, C., 2011. Intermediaries in international trade: direct versus indirect modes of export. NBER Working Paper No. 17711.

Bernard, A.B., Jensen, J.B., 2004. Why some firms export. Review of Economics and Statistics 86, 561-569.

Blalock, G., Gertler, P.J., 2004. Learning from exporting revisited in a less developed setting. Journal of Development Economics 75, 397-416.

Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., Roberts, J., 2013. Does management matter? Evidence from India. Quarterly Journal of Economics 128, 1-51.

Breinlich, H., Donaldson, D., Nolen, P.J., Wright, G.C., 2016. Information, perceptions and exporting - evidence from a randomized controlled trial. Working Paper, University of Essex, Department of Economics.

Duflo, E., Glennerster, R., Kremer, M., 2008. Using randomization in development economics research: a toolkit, in: Schultz, T.W., Strauss, J. (Eds.), Handbook of Development Economics 4. North Holland, Amsterdam, pp. 3895–3962.

Durmuşoğlu, S.S., Apfelthaler, G., Nayir, D.Z., Alvarez, R., Mughan, T., 2012. The effect of government-designed export promotion service use on small and medium-sized enterprise goal achievement: a multidimensional view of export performance. Industrial Marketing Management 41, 680-691.

Eaton, J., Eslava, M., Kugler, M., Tybout, J., 2007. Export dynamics in Colombia: firm-level evidence. NBER Working Paper No. 13531.

Frankel, J.A., Romer, D., 1999. Does trade cause growth? American Economic Review 89, 379-399.

Görg, H., Henry, M., Strobl, E., 2008. Grant support and exporting activity. Review of Economics and Statistics 90, 168-174.

Higuchi, Y., Nam, V.H., Sonobe, T., 2015. Sustained impacts of Kaizen training. Journal of Economic Behavior & Organization 120, 189-206.

Itakura, K., 2013. Impact of liberalization and improved connectivity and facilitation in ASEAN for the ASEAN economic community. ERIA Discussion Paper 2013-1.

JICA, 2015. JICA continues to support e-customs and customs modernization in Vietnam. Japan International Cooperation Agency. http://www.jica.go.jp/vietnam/english/office/topics/press150731.html

Kimura, F., Kiyota, K., 2006. Exports, FDI, and productivity: dynamic evidence from Japanese firms. Review of World Economics 142, 695-719.

Lederman, D., Olarreaga, M., Payton, L., 2010. Export promotion agencies: do they work? Journal of Development Economics 91, 257-265.

Mano, Y., Iddrisu, A., Yoshino, Y., Sonobe, T., 2012. How can micro and small enterprises in Sub-Saharan Africa become more productive? The impacts of experimental basic managerial training. World Development 40, 458-468.

Melitz, M.J., 2003. The impact of trade on intra-industry reallocations and aggregate industry productivity. Econometrica 71, 1695-1725.

Nam, V.H., Sonobe, T., Otsuka, K., 2010. An inquiry into the development process of village industries: the case of a knitwear cluster in northern Vietnam. Journal of Development Studies 46, 312-330.

Nordås, H.K., Pinali, E., Grosso, M.G., 2006. Logistics and time as a trade barrier. OECD Trade Policy Paper No. 35.

Okubo, T., Tomiura, E., 2015. Regional variations in productivity premium of exporters: evidence from Japanese plant-level data. RIETI Discussion Paper 13005.

Seringhaus, F., Rosson, P.J., 1991. Export promotion and public organizations: present and future research, Export Development and Promotion: The Role of Public Organizations. Springer, Boston, pp. 319-325.

Stiglitz, J.E., Charlton, A., 2006. Aid for trade. International Journal of Development Issues 5, 1-41.

Todo, Y., 2011. Quantitative evaluation of determinants of export and FDI: firm-level evidence from Japan. World Economy 34, 355-381.

Volpe Martincus, C., Carballo, J., 2008. Is export promotion effective in developing countries? Firm-level evidence on the intensive and the extensive margins of exports. Journal of International Economics 76, 89-106.

Volpe Martincus, C., Carballo, J., 2010. Beyond the average effects: the distributional impacts of export promotion programs in developing countries. Journal of Development Economics 92, 201-214.

Wilkinson, T., Brouthers, L.E., 2006. Trade promotion and SME export performance. International Business Review 15, 233-252.

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	Day 1	Day 2	Day 3
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.
Treatment variables					
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
Outcome variables					
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
Firm characteristics in 2014					
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
Manager characteristics in 2014					
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 of First-Stage Regressions

Dependent variable	(1) Dummy for participation in any seminar	(2) Dummy for participation in e-customs class
Dummy for invitation to any seminar	0.2215***	0.0335
	(0.0593)	(0.0515)
Dummy for invitation to e-customs class	0.0653	0.2568***
	(0.0631)	(0.0548)
Number of subcontractors (log)	0.0035	0.0009
	(0.0151)	(0.0132)
Number of workers (log)	0.0210	0.0266
	(0.0214)	(0.0186)
Dummy for multi-establishments	-0.0061	-0.0352
	(0.0474)	(0.0412)
Dummy for top manager's living	0.0577	0.0483
outside the current province	(0.0447)	(0.0388)
Top manager's education level	-0.0171	-0.0161
(0 = no degree, 7 = graduate school)	(0.0193)	(0.0168)
Number of business-related memberships	0.0000	0.0002
	(0.0014)	(0.0012)
Sales from domestic market in 2014 (%)	-0.0010	-0.0009
	(0.0007)	(0.0007)
Dummy for export experiences	0.0265	0.0509
	(0.0896)	(0.0779)
Dummy for export in 2014	-0.1523	-0.1659*
	(0.1132)	(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 statistical significance at the 10-, 5-, and 1-percent levels, respectively.

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

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

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

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

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
	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	0.5224*	0.0376	0.1287	0.0376	-0.1024
	(0.3031)	(0.3030)	(0.0678)	(0.0821)	(0.1334)	(0.1697)
Dummy for participation in e-customs class		-0.4248		-0.1172		0.1842
		(0.4154)		(0.1234)		(0.2318)
Number of subcontractors (log)	-0.0255	-0.0258	-0.0126***	-0.0127***	0.0046	0.0037
	(0.0292)	(0.0273)	(0.0041)	(0.0045)	(0.0149)	(0.0148)
Number of workers (log)	0.0300	0.0299	-0.0030	-0.0027	-0.0092	-0.0082
	(0.0332)	(0.0321)	(0.0090)	(0.0092)	(0.0214)	(0.0214)
Dummy for multi-establishments	0.0077	-0.0029	-0.0458**	-0.0452**	-0.1061**	-0.1049**
	(0.1055)	(0.1134)	(0.0216)	(0.0200)	(0.0511)	(0.0503)
Dummy for top manager's living outside the current province	-0.2298**	-0.2245**	-0.0099	-0.0084	0.0816***	0.0789***
	(0.0909)	(0.0901)	(0.0256)	(0.0265)	(0.0270)	(0.0257)
Top manager's education level (0 = no degree, 7 = graduate school)	0.0539*	0.0551*	-0.0016	-0.0010	-0.0151	-0.0167
	(0.0313)	(0.0312)	(0.0108)	(0.0106)	(0.0203)	(0.0198)
Number of business-related memberships	0.0046***	0.0047***	0.0003	0.0003	-0.0004	-0.0004
	(0.0008)	(0.0009)	(0.0004)	(0.0004)	(0.0003)	(0.0003)
Sales from domestic market in 2014 (%)	-0.0018	-0.0020	0.0006	0.0005	0.0018**	0.0020**
	(0.0018)	(0.0017)	(0.0005)	(0.0006)	(0.0009)	(0.0009)
Dummy for export experiences	-0.2065***	-0.1844**	0.0180	0.0214	0.0232	0.0167
	(0.0709)	(0.0806)	(0.0640)	(0.0603)	(0.0810)	(0.0869)
Dummy for export in 2014	0.2189	0.1968	0.0336	0.0327	0.0795	0.0896
	(0.2252)	(0.2335)	(0.0448)	(0.0446)	(0.0937)	(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 presents results from 2SLS estimations. Clustered robust standard errors are quoted in parentheses. *, **, and *** signify statistical significance at the 10-, 5-, and 1-percent levels, respectively. The number of observations is smaller in columns 3 through 7 because many of the firms have never tried exporting; thus, they chose "Don't know" for perception questions.

Table 6. Impacts of the Seminars on Engaging in Export 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	0.1044	-0.0783	-0.2060
	(0.0621)	(0.1003)	(0.0752)	(0.1868)
Dummy for participation in e-customs class		-0.0688		0.1614
		(0.1104)		(0.2226)
Number of subcontractors (log)	0.0061*	0.0061*	0.0051	0.0053
	(0.0034)	(0.0033)	(0.0106)	(0.0099)
Number of workers (log)	0.0093	0.0093	0.0249*	0.0249*
	(0.0078)	(0.0082)	(0.0132)	(0.0147)
Dummy for multi-establishments	0.0057	0.0040	0.0170	0.0211
	(0.0206)	(0.0215)	(0.0392)	(0.0419)
Dummy for top manager's living outside the current province	-0.0266	-0.0258	-0.0029	-0.0049
	(0.0193)	(0.0203)	(0.0233)	(0.0247)
Top manager's education level (0 = no degree, 7 = graduate school)	-0.0060	-0.0058	-0.0191	-0.0196
	(0.0099)	(0.0098)	(0.0144)	(0.0150)
Number of business-related memberships	0.0001	0.0001	-0.0003**	-0.0003*
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Sales from domestic market in 2014 (%)	-0.0008**	-0.0009**	-0.0035***	-0.0035***
	(0.0004)	(0.0003)	(0.0012)	(0.0013)
Dummy for export experiences	0.1499	0.1535	0.0138	0.0054
	(0.1103)	(0.1099)	(0.0499)	(0.0560)
Dummy for export in 2014	-0.3191***	-0.3226***	-0.4735***	-0.4652***
	(0.1201)	(0.1193)	(0.1388)	(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 (*p* value)		0.6014		0.6264

Notes: This table presents results from 2SLS estimations. Clustered robust standard errors in parentheses. *, **, and *** signify statistical significance at the 10-, 5-, and 1-percent levels, 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***	-0.2277***	0.3144	0.1288
	(0.0776)	(0.0659)	(0.3621)	(0.0979)
Dummy for participation in e-customs class	0.2717***	0.3135*	-0.4357	-0.0583
	(0.0730)	(0.1724)	(0.4681)	(0.1607)
Number of participating partners	-0.0238	-0.0162	-0.1004	0.0790***
	(0.0363)	(0.0511)	(0.1684)	(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	0.0930	-0.1091
	(0.1155)	(0.0833)	(0.1867)
Dummy for participation in e-customs class	0.2469	-0.0192	0.2170
	(0.2437)	(0.1229)	(0.2288)
Number of participating partners	0.0903	0.0463**	0.0843*
	(0.1113)	(0.0232)	(0.0435)
Observations	173	245	245

Notes: This table presents results from 2SLS estimations. Clustered robust standard errors are quoted in parentheses. *, **, and *** signify statistical significance at the 10-, 5-, and 1-percent levels, 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	0.0958	-0.1223	0.0971	-0.1091	0.0440
	(0.1780)	(0.1439)	(0.4128)	(0.3776)	(0.1831)	(0.1671)
Participation dummy * number of subcontractors (log)	0.0718		0.1851*		0.0989*	
	(0.0527)		(0.1108)		(0.0563)	
Participation dummy * dummy for export experiences		-0.1587		0.2930		-0.0193
		(0.2210)		(0.4141)		(0.1930)
Wald statistic (*p* 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	-0.0301	-0.2111*	-0.0273	-0.3647	-0.0801
	(0.0581)	(0.0615)	(0.1273)	(0.0802)	(0.3587)	(0.3210)
Participation dummy * number of subcontractors (log)	0.0385**		0.0797		0.3214***	
	(0.0152)		(0.0678)		(0.1206)	
Participation dummy * dummy for export experiences		0.2630**		-0.1676**		0.8255*
		(0.1334)		(0.0783)		(0.4666)
Wald statistic (*p* 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 presents results from 2SLS estimations. Clustered robust standard errors are quoted in parentheses. *, **, and *** signify the statistical significance at the 10-, 5-, and 1-percent levels, respectively.