11-2018

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Catherine Y. Co
University of Nebraska at Omaha, cco@unomaha.edu

Thu Kim Nguyen
Vietnam National University–International University

Tung Nhu Nguyen
Vietnam National University–International University

Que Nguyet Tran
Montana State University-Bozeman

International Review of Economics and Finance 58 (2018) 449–466

Contents lists available at ScienceDirect

International Review of Economics and Finance

journal homepage: www.elsevier.com/locate/iref

The exporting and subcontracting decisions of Viet Nam's small- and medium-sized enterprises☆

Catherine Y. Co [a,*], Thu Kim Nguyen [b], Tung Nhu Nguyen [b], Que Nguyet Tran [c]

[a] Department of Economics, College of Business Administration, University of Nebraska at Omaha, 6708 Pine Street, 68182, Omaha, NE, USA
[b] School of Business, Vietnam National University–International University, Quarter 6, Linh Trung Ward, Thu Duc District, Ho Chi Minh City, Viet Nam
[c] College of Education, Health, and Human Development, Montana State University, 59717, Bozeman, MT, USA

ARTICLE INFO

JEL classification:
F14
F61
L24
O12

Keywords:
Viet Nam
Exports
Subcontractors
SMEs

ABSTRACT

The exporting and subcontracting decisions of a panel of Vietnamese private small- and medium-sized enterprises is investigated. We find that among subcontractors, subcontracting is a supplementary rather than primary activity; the propensity to export increases with managers' or owners' knowledge of customs law; and, there is some evidence that subcontractors are more likely to have made product improvements while exporters are more likely to have adopted new processes or technologies. Our study provides useful insights into SME exporting and subcontracting strategies made more relevant by the expected reductions in trade costs associated with the World Trade Organization's Trade Facilitation Agreement.

1. Introduction and background

Viet Nam's economic achievements since the start of *đổi mới* in 1986 are remarkable. Real income per capita (purchasing power parity basis) in 1990 was only 5.2 per cent of the income levels of high-income countries. By 2016, this reached 13.8 per cent (World Bank, 2017). More importantly, the percentage of the population living in poverty dropped from 77.1 per cent in 1992 to 12.0 per cent in 2014.[1] Viet Nam's economic achievements are partly due to its export success (WTO, 2013). However, a majority of the country's exports are from foreign-invested enterprises (FIEs) with a 70.7 per cent share of Viet Nam's exports in 2015, and FIEs import more than half of their inputs (Malesky, 2016). This means that a large part of Viet Nam's exports are predicated on assembly work with minimal local content.

There is recognition on the part of Viet Nam's government that small- and medium-sized enterprises (SMEs) might benefit from internationalization through exposure to increased competition and quality standards, or through learning by doing.[2] Decision No.

☆ This research was originally commissioned by UNU-WIDER in Helsinki, within the 'Structural transformation and inclusive growth in Viet Nam' research project. We thank Christine Ngo and participants at the 'Micro, Small, and Medium Enterprises in Vietnam Workshop' (Hanoi, Vietnam, November 8, 2016) for their helpful comments, and SM Shihab Siddiqui for valuable research assistance. Any remaining errors are our responsibility. Conflicts of interest: None.

* Corresponding author.
E-mail address: cco@unomaha.edu (C.Y. Co).

[1] Based on a poverty line of $3.10/day in 2011 PPP terms (World Bank, 2017).

[2] Viet Nam's Ministry of Planning and Investment (2014) defines industrial small enterprises as those with over ten but under 200 employees and capital not exceeding VND 20 billion (about US$900,000 at an exchange rate of VND 22,000/US$), while medium enterprises have over 200 but under 300 employees with capital of over VND 20 billion but under VND 100 billion (about US$4.5 million).

https://doi.org/10.1016/j.iref.2018.05.004
Received 2 October 2017; Received in revised form 27 April 2018; Accepted 3 May 2018
Available online 5 May 2018

1231/QĐ-TTg dated 7 September 2012 approved Viet Nam's 2011–15 Small and Medium Enterprises Development Plan which sought to increase the share of SMEs to 25 per cent of exports.[3] On June 12, 2017, Viet Nam's National Assembly passed the Law on Supporting SMEs which takes effect January 1, 2018 (KPMG, 2017). Because SMEs account for a considerable share of enterprises in Viet Nam, enhancing their competitiveness through internationalization has the potential for delivering considerable macro effects in the form of increased employment and income, improved working conditions, and production diversification.[4] But, hurdles to internationalization by SMEs are also numerous. What determines whether SMEs manage to internationalize?

Enterprises' exporting decision is well studied in the literature, but their subcontracting decision is not. In the context of Viet Nam, the decision to work as subcontractor or not turns out to be quite pertinent.[5] Tas and van Oyen (2000) describe Vietnamese government's efforts to raise awareness among SMEs of the benefits of subcontracting, and modest attempts by the Viet Nam Chamber of Commerce and Industry in the late 1990s at matching potential subcontractors with contractors. These attempts were largely unsuccessful due primarily to a weak institutional environment and limited local firm capabilities. Since then, the legal and regulatory environments are much improved, and subcontracting has become one of the cornerstones of Viet Nam's development strategy. In fact, the 2014 amendment to Viet Nam's Law on Investment provides preferential treatment to subcontractors (referred to as supporting industries) in support of select industries such as electronics.

Because of subcontracting's potential to complement enterprises' internationalization efforts, we expand current literature by considering enterprises' joint exporting and subcontracting decisions. In particular, we focus on whether these decisions are related to SMEs' access to finance, knowledge of relevant laws, and technical capacity. These three areas are addressed by Viet Nam's 2011–15 SME Development Plan.[6] Their importance is reflected in the survey data we use where respondents say authorities can best 'help the enterprise expand and increase its profits' by providing access to credit (18.4 per cent indicate this as most important in the 2015 survey), by further removing bureaucratic requirements/restrictions (16.3 per cent), and through better private sector policies (12.9 per cent). Although only 6.1 per cent identify help 'through assistance with technical know-how' as most important, with Viet Nam's aim to boost the contribution of high-tech industries to 45 per cent of GDP by 2020,[7] we expect more SMEs will require help in this dimension in the future.

Although our study uses SME data from Viet Nam, our findings provide useful insights into SME exporting and subcontracting strategies broadly made more relevant by the World Trade Organization's Trade Facilitation Agreement (TFA, in force in 2017) which aims to streamline and harmonize customs procedures across member countries (WTO, 2017a, 2015). The expected reduction in trade costs from the TFA will surely benefit SMEs as burdensome and costly customs procedures have had disproportionate adverse effects on SMEs' internationalization activities either through direct exports or through participation in global value chains through subcontract work.

Briefly, we find that producing as subcontractor is a way to participate in export markets, and among the 13 per cent of SMEs that produce as subcontractors, subcontracting is supplementary rather than primary activity. We find evidence that the propensity to export increases with managers' or owners' knowledge of customs law. But, there is no evidence that knowledge of the investment law is associated with the likelihood of working as subcontractor. We find no evidence that both decisions are associated with SMEs' access to finance. And, there is some evidence that subcontractors are more likely to have made product improvements while exporters are more likely to have adopted new processes or technologies.

In the next section, we provide an overview of relevant literature. Data and empirical methodology are described in detail in sections 3 and 4, respectively. Baseline estimates and robustness checks are discussed section 5. Finally, section 6 contains concluding remarks and extensions.

2. Related literature

The presence of asymmetric information and unequal bargaining power among parties to a transaction are germane to our empirical work. Subcontracting arrangements fall between competitive spot bidding and organizing all firm activities in-house. Industrial organization-based models show that if production can be split into several stages, all activities will be organized in-house if transaction and monitoring costs are 'high' (Kimura, 2002). Competitive spot bidding is preferred when transaction and monitoring costs are 'low'. Commissioning firms (international or domestic producers, wholesalers, or retailers) choose subcontracting arrangements when transaction and monitoring costs are 'moderate'. No subcontracting offers are accepted if commissioning firms monopolize producer surpluses by exercising their dominant bargaining power over subcontractors (Razzolini & Vannoni, 2011). Subcontracting arrangements entail a loss of control over some activities for subcontractors (e.g. input use must conform to commissioning firms' requirements) which are balanced against potential benefits (e.g. minimal up-front investments in building a network of buyers). For our purposes,

[3] Viet Nam's SMEs have a 20 per cent share of exports in the 1990s (UNCTAD, 2005). The first comprehensive approach to aid the development of SMEs in Viet Nam is Decree No. 56/2009/NĐ-CP dated 30 June 2009. This decree includes provisions on credit access, a development fund to assist SMEs to invest in high-tech equipment and facilities is made available, and so are funds for productivity improvement, training, and market expansion. Provincial and city governments have developed areas for SMEs to cluster and thrive and have provided funds to help SMEs register and protect their intellectual property rights.

[4] Based on employment size, a third of the non-state enterprises in 2012 are SMEs (Ministry of Planning and Investment, 2014). SMEs account for 45 per cent of the country's GDP and 51 per cent of total employment in 2014 (Malesky, 2016).

[5] In the 2015 survey we use, subcontractors have a 13.5 per cent share of total full-time employment, a 9.9 per cent share of total physical assets, a 12.5 per cent share of total value added, and an 8.4 per cent share of total sales. We are unable to find information on the relative size of the subcontracting sector in Viet Nam, but there is anecdotal evidence that the majority of the subcontractors in Viet Nam are foreign-owned receiving materials, designs, and operations management from their foreign parents. We should note that the SMEs we study do not have foreign capital, thus our contribution is to shed light on private and locally-owned subcontracting operations in Viet Nam.

[6] These fall under solution groups 2, 3, and 6 of the 2011–15 SME Development Plan.

[7] Decision No. 418/QĐ-TTg dated 11 April 2012 contains Viet Nam's science and technology (S&T) development strategy for 2011–20.

SMEs make a joint decision: to export or not, and whether to produce as subcontractor or not. The first is a market entry decision while the second is an operation mode decision.

Subcontracting arrangements require an institutional environment where contracts are enforceable. When contract enforcement is weak, enterprises are less likely to enter into subcontracting arrangements due to the additional costs associated with finding alternative buyers if commissioning firms fail to honour contracts. Likewise, subcontracting arrangement exclusivity is dependent on the contract sensitivity of the products involved in the transactions.[8] Exclusive subcontracting offers increase as products are required to conform to commissioning firms' specifications. An enforceable exclusive contract involves higher margins for subcontractors as products tend to be more specialized rather than homogeneous. Empirically, these suggest that subcontracting (compared to competitive spot bidding) is more likely in industries involving products that are more contract-intensive or differentiated.

Past studies on foreign market entry mode choice have traditionally looked at firms' choice among exporting, foreign direct investment, and licensing primarily because historically only developed-country firms 'go global'. While there is growing literature on the internationalization strategies of emerging economy firms, the focus is mostly on 'large' firms. Thus, studies focus on greenfield versus acquisition strategies of emerging economy multinationals in developed markets (e.g. see Anderson & Sutherland, 2015; Sun, Peng, Ren, & Yan, 2012), or whether investments are made to access advanced technology such as Lenovo's acquisition of IBM's PC business. A related literature is the cross-border merger and acquisition choices of emerging market firms (e.g. see Dailami et al., 2012). For SMEs from developing countries, a more suitable choice set is whether to enter foreign markets (export directly or indirectly) or not, and whether to produce as subcontractor to commissioning firms or not.[9] Subcontracting arrangements take various forms in developing countries. Most common is subcontracting for foreign-invested enterprises in the garment industry in a number of countries such as Viet Nam and Laos wherein commissioning firms take the dominant role (e.g. Kongmanila & Takahashi, 2009). SMEs face capital, technology, and market access constraints, thus working as subcontractors or suppliers to large multinational enterprises (MNEs) is one approach to surmounting these constraints.[10] Being part of an international network opens new possibilities and provides opportunities for SMEs to build their capacity and enhance their competitiveness.

Melitz's (2003) model with heterogeneous firms and exporting fixed costs is also pertinent to our empirical work. In essence, Melitz's model predicts that the most productive firms service domestic and foreign markets, firms with intermediate productivity levels only service the domestic market, and the least productive firms would exit. Building on Melitz's framework, Ahn, Khandelwal, and Wei (2011) introduce intermediaries. Intermediaries provide firms an option to export indirectly instead of exporting directly. Ahn et al. (2011: 75) show that 'firms of intermediate levels of productivity use intermediation while the most productive firms directly reach foreign consumers'. Micro-data from various countries confirm the predictions of the models. Among myriad factors found to be important in firms' foreign market entry decisions (to export or not), we focus on firms' access to finance (both formal and informal sources), knowledge of relevant laws, and technical capacity.

The empirical evidence on the relationship between the decision to export and firms' financial position is mixed. Wagner (2014) gives a recent review of this literature. Bellone, Musso, Nesta, and Schiavo (2010) find no relationship between firms' exporting propensity and financial position using French firm-level data while Japanese firms' exports are sensitive to the health of their reference banks (Amiti & Weinstein, 2011). The role of access to credit on the decision to export among firms from developing countries is less understood and is, in fact, more relevant as financial constraints are more binding for these firms (Berman & Héricourt, 2010). Using data from as many as 5000 firms from nine developing and emerging countries, Berman and Héricourt (2010) find that the probability of exporting increases with the magnitude of firms' internal (cash flow-to-total asset ratio) and external (total debt-to-total asset ratio) funds.

Mixed evidence also characterizes the decision to subcontract and firms' financial position. Kimura (2002) finds no significant relationship between Japanese firms' financial position (proxied by the operating surplus to total sales ratio) and their decision to work as a subcontractor whereas Hayashi (2002) finds that metalworking and machinery firms with no problem accessing finance have higher subcontracting orders relative to total sales ratio in Indonesia. The author concludes that access to finance enables SMEs to fully take advantage of subcontracting opportunities with large-scale enterprises more easily.

It is widely believed that the availability of financing from informal creditors makes financial constraint less of a problem among SMEs, and informal finance might be an important source of operational funds or expansion capital. One reason is because loans from banks can involve lengthy documentation while informal loans require little or no documentation (Khan, 2015). Another reason for this is that, unlike banks, providers of informal credit are not required to meet capital, reserve, or liquidity requirements and other regulations (Waldron, 1995). They can also collect information about borrowers at lower costs than banks due to having a prior relationship with borrowers (Lin & Sun, 2006). Thus, informal lenders have more flexibility in structuring loan terms including the rate of interest, repayment schedule, and collateral requirement (Waldron, 1995). The evidence on how access to informal finance impacts firms in developing countries is likewise mixed. One strand finds that firm performance (e.g. return on assets and net income reinvestment rate) improves with access to informal finance while bank loans have negligible effects (e.g. Su & Sun, 2011). A second strand finds that funds from family and friends do not contribute to SME growth, and some forms of informal credit (e.g. borrowing from money lenders) are, in fact, detrimental to firm growth (e.g. Khan, 2015).

[8] Bandyopadhyay, Roy, and Liu (2015) argue that the strength of contract enforcement affects the type of items traded. For example, inputs that are specialized or contract-intensive require a strong enforcement environment.

[9] Subcontracting is the 'flip-side' of outsourcing, so the literature on outsourcing is useful here. Sharpston (1975) describes the development of international subcontracting and its essential features while Taymaz and Kiliçaslan (2005) provide a brief overview of the theoretical approaches for understanding subcontracting.

[10] Nugent and Yhee (2002) document that about 57.6 per cent of South Korea's SMEs receive subcontracting orders in 1997, and about half and 12.4 per cent of the SMEs indicate receiving technological and financial support, respectively, from contracting firms.

The literature has emphasized the importance of institutional context under which firms operate. For example, at the macro level, countries with better quality institutions do more trade (e.g. Méon & Sekkat, 2008) and attract more foreign direct investment (e.g. Kurul, 2017). As discussed previously, subcontracting arrangements are more likely when contracts are enforceable, as both parties to the contract receive protection. At the micro level, we argue that while the institutional environment firms operate in is relevant, knowledge of existing laws by owners or managers is equally relevant. As far as we can tell, no one has formally explored the possibility that current knowledge of relevant laws by owners or managers might affect their foreign market entry and mode of operation decisions. When studying SMEs, knowledge of existing laws is crucial. Limited or lack of knowledge of customs procedures or regulations might prevent even the most successful small, domestic market-oriented enterprises from expanding into foreign markets. Limited or lack of knowledge of regulations governing investments hinders enterprises from taking full advantage of preferences available for those operating in support (e.g. subcontractor) of select activities such as garment production. Viet Nam's 2011–15 SME Development Plan recognizes the importance of access to information. It specifically provides for the establishment of an information network where the public can easily access legal documents and portals to disseminate policies and government programmes available to SMEs.

There is some evidence that the propensity to export increases with new product introductions. Bernard and Jensen (2004) find export probability increases by about 3 per cent whenever US plants experience a change in their industry classification (interpreted as new product introductions by the authors) for plants operating from 1984 to 1992. It is important to note that there is a strand of literature studying the interdependence between the decision to export and the decision to innovate. For example, for a panel of German firms, Becker and Egger (2013) find that both product and process innovation increase the likelihood that firms export, and the estimated effect is larger for product innovation. For SMEs from developing countries, the adoption of new processes or technologies (which increase efficiency) or merely coming out with better versions of existing products might be a sufficient threshold to compete internationally. Our paper is closest in sprit to Nguyen at al. (2008) who use the 2005 version of the survey. They find that product innovation, process innovation, and product modification all contribute to the likelihood of exporting, with process innovation having the smallest coefficient estimate in the probit regressions. We build on their work by considering a wider set of issues after Viet Nam's entry to the WTO and after the global financial crisis of 2008.

3. Data

We use data from the 2011, 2013, and 2015 versions of the 'Survey of Small and Medium Scale Manufacturing Enterprises (SMEs) in Viet Nam' made available by the United Nations University World Institute for Development Research (UNU-WIDER). To administer the biennial surveys, UNU-WIDER collaborates with Viet Nam's Central Institute for Economic Management (CIEM) of the Ministry of Planning and Investment (MPI) and the Institute of Labour Science and Social Affairs (ILSSA) of the Ministry of Labour, Invalids, and Social Affairs (MoLISA). The surveys were administered in Hanoi, Ho Chi Minh City, Hai Phong, Long An, Phu Tho, Quang Nam, Nghe An, Khanh Hoa, and Lam Dong. These cover northern, central, and southern regions of the country. Stratified sampling ensures representation by ownership type across the nine areas. The surveys include non-state locally-owned manufacturing enterprises only.[11]

The survey asks whether an enterprise exports, and if yes, how. Ideally, we would like to classify enterprises into three mutually exclusive groups: 1) exporting directly only, 2) exporting both directly and indirectly (through trading companies), or 3) exporting indirectly only. But, available data lump 1) and 2) together to define direct exporters. Enterprises in groups 1) and 2) are classified as direct exporters while enterprises that belong in any of the three groups are classified as exporters. *Exporter* is set equal to 1 if an enterprise exports directly, indirectly, or both, 0 otherwise while *direct exporter* equals 1 if an enterprise exports directly, or both directly and indirectly, 0 otherwise. Note that direct exporters is a subset of exporters. The use of the stricter definition (direct exporter) tests the notion that barriers to exporting directly are higher than when exporting indirectly.[12] *Subcontractor* is set equal to 1 if an enterprise produce as subcontractor, 0 otherwise. We classify enterprises according to their actual responses to the survey questions described above. Thus, direct exporters can be subcontractors too. Available data do not provide the breakdown of exports exclusively through subcontracting agreements. Likewise, the breakdown of subcontracting revenue into domestic sales and exports is also not available. These limitations preclude us from studying the decision to engage via direct exports only vis-à-vis foreign subcontracting.

In the SME literature, it is common practice to distinguish micro enterprises from SMEs. This is because micro enterprises are primarily household ventures established to make a living, as opposed to SMEs which are mostly established to take advantage of available business opportunities. For this reason, we only include SMEs in our estimation sample below.[13] For reference, summary statistics for the three main variables appear in Table 1.[14] In the three survey years, 14–17 per cent of the SMEs are exporters,[15] 8–11 per cent are direct exporters, and 13–14 per cent are subcontractors. Very few are both exporters and subcontractors (about 3 per cent), and

[11] The surveys exclude joint stock companies with state capital and joint ventures with foreign capital 'due to the often unclear nature of government and foreign involvement in such ownership structures.' (UNU-WIDER, various years).

[12] Since direct exporters in our data set also export using intermediaries, we are unable to clearly delineate the role of intermediaries in the SMEs' exporting decision. But, combining the predictions of Melitz's (2003) and Ahn et al.'s (2011) models, we expect the most productive enterprises to export directly (1), or both directly and indirectly (2), and those with lower levels of productivity will only export indirectly (3).

[13] In an early version of the paper, micro enterprises are included in the estimations. For the most part, results with or without micro enterprises are qualitatively similar.

[14] The entire dataset has 7702 observations with 1721 enterprises surveyed in three years, 757 in two years, and 1025 in one year. The summary statistics in Table 1 exclude SMEs with more than 300 full-time employees, those classified as service providers, and two observations that indicate having state and foreign capital.

[15] Nguyen et al. (2008) report that 6 per cent of the enterprises in the 2005 SME survey export. Using 2005–12 Enterprise Surveys (covering all registered manufacturing enterprises with 30 employees or more and a representative sample of small enterprises), Newman et al. (2014) document an export rate of 7 per cent (2005) to 21 per cent (2012) for the balanced sample of private domestic firms.

Table 1
Exporting and subcontracting rates.

Item	Survey Year		
	2015	2013	2011
Exporters (per cent)	17.1	14.1	14.3
Direct Exporters (per cent)	11.4	8.1	7.5
Subcontractors (per cent)	13.4	13.1	13.9
Exporter and Subcontractor (per cent)	3.1	2.8	2.5
Pearson, chi-sq., *p-value*	0.067	0.017	0.254
Direct Exporter and Subcontractor (per cent)	2.1	1.0	1.2
Pearson, chi-sq., *p-value*	0.100	0.845	0.682
No. of enterprises	945	903	855

Source: Authors' calculations using data from the 2011, 2013, and 2015 Survey of Small and Medium Scale Manufacturing Enterprises (SMEs) in Viet Nam (UNU-WIDER et al. various years).

there is some evidence that the two decisions are inter-related as the Pearson χ^2 statistics lead to the rejection of the null hypothesis at the 10 per cent level of significance that the decision to export and produce as subcontractor is independent in two years. Thus, our estimation approach below accounts for this possibility.

4. Empirical methodology

We distinguish four types of enterprises: non-subcontractors who do not export (base or control group), subcontractors who do not export, non-subcontractors who export, and subcontractors who export. The bivariate random effects (panel) probit model is used for two reasons: First, less than 20 per cent (15 per cent) of the sample are exporters (subcontractors) (Table 2). Among exporters, the mean exports to revenue shares are 27 per cent for subcontractors and 29.8 per cent for non-subcontractors.[16] Among subcontractors, the mean subcontracts to revenue shares are 8.6 per cent for exporters and 12.5 per cent for non-exporters. These low rates are indicative of the difficulty of becoming an exporter or subcontractor: SMEs must surpass thresholds (e.g. productivity threshold) before they can export or work as subcontractor.[17] Second, the bivariate random effects (panel) probit model allows for the theoretical possibility that the exporting and subcontracting thresholds are correlated, and thus, the decisions of whether to export or not (y_1) and whether to work as subcontractor or not (y_2) might be correlated. These two decisions (outcomes) are determined by two unobserved latent variables (y_1^* and y_2^*):

$$\begin{aligned} y_{1it}^* &= x_{it}^{'}\beta_1 + z_{1it}^{'}\gamma_1 + u_{1i} + \varepsilon_{1it}, \\ y_{2it}^* &= x_{it}\beta_2 + z_{2it}\gamma_2 + u_{2i} + \varepsilon_{2it} \end{aligned} \tag{1}$$

where $\boldsymbol{x}$ includes regressors common to both decisions while $\boldsymbol{z}_1$ and $\boldsymbol{z}_2$ include regressors relevant to each decision. The u_i's are enterprise-specific (i) errors which are time invariant. Each u_j is normally distributed with mean 0 and variance $\sigma_{u_j}^2$, where $j = 1, 2$. The ε_{it}'s are random errors and ε_1 and ε_2 are jointly normally distributed with means of 0 and variances equal to 1, and a correlation equal to ρ.[18] The two observed outcomes are defined as follows:

$$y_1 = \begin{cases} 1 \; if \; y_1^* > 0 \\ 0 \; if \; y_1^* \leq 0 \end{cases}$$

$$y_2 = \begin{cases} 1 \; if \; y_2^* > 0 \\ 0 \; if \; y_2^* \leq 0 \end{cases}$$

Note that $y_1 = 0$ and $y_2 = 0$ is the base or control group, and if ρ is equal to zero, the bivariate random effects (panel) probit regression model is equivalent to two separate random effects (panel) probit regression models. With the exception of three factors, the same specification is used for both decision equations as factors that are associated with market entry decisions are more likely also associated with mode of operation choices.

[16] The export shares are for the SMEs' most important product only.

[17] This applies Melitz (2003) model's predictions that the most productive firms export, and firms with intermediate productivity service only the domestic market. That is, there is a productivity threshold that firms must 'jump' or 'surpass' before they can export. One might imagine a comparable threshold for working as a subcontractor. All else equal, commissioning firms might offer subcontracts to the most productive firms, alternatively, only the most productive firms will seek out and 'win' subcontracts from contractors.

[18] A non-zero correlation means that unobserved characteristics (such as manager ability) that make enterprises more (less) likely to be exporters overlap with unobserved characteristics that make them more (less) likely to be subcontractors. Ignoring the potential correlation between the error terms of the two decision equations might lead to incorrect inferences. See Greene (2000) for details. We use Plum's (2016) *bireprob* routine (for Stata) which allows ε_1 and ε_2 to be correlated, and for the random effects error terms (u_1 and u_2) to be correlated as well.

Table 2
Summary Statistics, by exporting and subcontracting status.

	Exporters	Exporters	Non-Exporters	Non-Exporters
	Subcontractors	Non-Subcontractors	Subcontractors	Non-Subcontractors
No. of observations	43	189	142	928
Percent of sample, n = 1302	3.3	14.5	10.9	71.3
Exports/Revenue, per cent	27.0	29.8	0.0	0.0
	(35.7)	(39.4)		
Subcontracts/Revenue, per cent	8.6	0.0	12.5	0.0
	(17.9)		(21.1)	
Proportion in:				
SY11	0.302	0.286	0.359	0.341
	(0.46)	(0.45)	(0.48)	(0.47)
SY13	0.279	0.323	0.317	0.341
	(0.45)	(0.47)	(0.47)	(0.47)
SY15	0.419	0.392	0.324	0.319
	(0.50)	(0.49)	(0.47)	(0.47)
Other locations	0.093	0.228	0.331	0.290
	(0.29)	(0.42)	(0.47)	(0.45)
Hanoi	0.279	0.275	0.331	0.284
	(0.45)	(0.45)	(0.47)	(0.45)
Ho Chi Minh City	0.488	0.450	0.162	0.320
	(0.51)	(0.50)	(0.37)	(0.47)
Haiphong	0.140	0.048	0.176	0.106
	(0.35)	(0.21)	(0.38)	(0.31)
Basic and Fabricated Metals	0.116	0.053	0.310	0.210
	(0.32)	(0.22)	(0.46)	(0.41)
Food, beverages, and tobacco	0.070	0.212	0.085	0.158
	(0.26)	(0.41)	(0.28)	(0.37)
Textiles and apparel	0.256	0.180	0.148	0.098
	(0.44)	(0.39)	(0.36)	(0.30)
Leather and wood	0.163	0.196	0.077	0.063
	(0.37)	(0.40)	(0.27)	(0.24)
Paper, publishing, and printing	0.116	0.074	0.113	0.108
	(0.32)	(0.26)	(0.32)	(0.31)
Refined petroleum and Chemical products	0.070	0.016	0.000	0.033
	(0.26)	(0.13)	(0.00)	(0.18)
Rubber and non-metallic mineral products	0.116	0.175	0.169	0.184
	(0.32)	(0.38)	(0.38)	(0.39)
Electric machinery, computers, motor vehicles, other transport	0.070	0.053	0.056	0.063
	(0.26)	(0.22)	(0.23)	(0.24)
Furniture, jewelry, and others	0.023	0.042	0.042	0.083
	(0.15)	(0.20)	(0.20)	(0.28)
Ownership	0.907	0.767	0.711	0.705
	(0.29)	(0.42)	(0.45)	(0.46)
Assets (million VND)	19,479.7	27,413.0	12,122.6	9875.8
	(19,522.1)	(82,421.1)	(23,143.4)	(20,633.7)
Labor productivity (million VND)	72.7	75.1	59.1	57.0
	(80.8)	(112.0)	(60.2)	(115.0)
Financially constrained	0.512	0.381	0.352	0.290
	(0.51)	(0.49)	(0.48)	(0.45)
Wages (thousand VND)	1663.7	1606.5	1637.4	1578.3
	(381.3)	(458.0)	(476.3)	(465.9)
Production worker share	0.697	0.726	0.675	0.653
	(0.16)	(0.14)	(0.15)	(0.16)
Age	12.721	13.328	12.986	12.301
	(5.36)	(7.93)	(8.44)	(8.85)
Kinh	1.000	0.947	0.986	0.940
	(0.00)	(0.22)	(0.12)	(0.24)
Customs law	2.512	2.646	3.500	3.390
	(1.06)	(1.07)	(0.76)	(0.82)
Investment law	2.721	2.740	3.099	3.011
	(1.01)	(0.96)	(0.89)	(0.92)
Advertise	0.721	0.513	0.345	0.295
	(0.45)	(0.50)	(0.48)	(0.46)
New product introduction	0.116	0.111	0.085	0.066
	(0.32)	(0.32)	(0.28)	(0.25)
Old product improvement	0.116	0.196	0.246	0.153
	(0.32)	(0.40)	(0.43)	(0.36)
New process adoption	0.233	0.132	0.113	0.084
	(0.43)	(0.34)	(0.32)	(0.28)

Note: Mean (Standard Deviation). Variable definitions in the text. Sample: balanced panel. Number of enterprises: 434. See Table 1 for data source.

4.1. Baseline specification

We start with Berman and Héricourt's (2010) baseline specification in defining matrix $\boldsymbol{x}$. Matrix $\boldsymbol{x}$ includes period, location, sector, and ownership type qualitative indicators, firm size, productivity, and access to credit. Two period indicators (SY15 and SY13 are set to 1 for 2015 and 2013, respectively, 0 otherwise) control for time-specific shocks that affect all enterprises in the same way. Survey year 2011 is the base period. The location indicators account for city or province-level differences in characteristics or policies towards SMEs while the sector indicators account for sector-level differences in fixed costs that might affect SMEs' exporting and subcontracting decisions. We define three location indicators: *Hanoi*, *Ho Chi Minh City*, and *Hai Phong*. These are large metropolitan areas in Viet Nam. All other areas comprise the base location. We hypothesize that enterprises in these three metropolitan areas are more likely to be exporters and independent operators. We also define eight qualitative indicators for the main sector that enterprises operate in with basic and fabricated metal products as the reference sector. *Ownership* is set equal to 1 for limited liability companies and joint stock companies without state capital; 0 otherwise. Sole proprietorships, partnerships, and collectives/cooperatives form the base category, and this ownership type is expected to have a lower propensity to export or to produce as subcontractors.

Firm size is proxied by total assets and *labour productivity* is the ratio of value added over the number of full-time workers. We use the natural log of these variables. Size is a cost shifter; larger enterprises may face lower costs, thus are more likely to export (also see Bernard & Jensen, 2004) or to operate as subcontractors. The likelihood of exporting is expected to be positively associated with productivity (Bernard & Jensen, 2004) and so is the likelihood of being a subcontractor. We would ideally prefer to estimate productivity using Levinsohn and Petrin's (2003) methodology, but data limitation prevents us from doing so.[19]

The survey asks whether the enterprise has applied for bank loans or other formal credit or informal credit since the last survey, whether the enterprise encountered problems in getting credit, and whether the enterprise needs more credit. Following Rand (2007), *financially constrained* is set equal to 1 if an enterprise has applied for formal credit and indicates 'in need of a loan', regardless of whether it encountered problems in getting credit or not, equal to 0 otherwise. Notice that an enterprise that did not apply for formal credit is considered financially unconstrained using this definition. This creates a self-selection problem in that enterprises expecting not to qualify for formal credit (say from prior experience) will not apply altogether, and will use informal credit channels instead. To account for this, we also set this variable to 1 when an enterprise did not apply for formal credit but did apply for informal credit because it 'couldn't get formal credit'. This partly mitigates the self-selection problem described above, and includes the possibility that firms' inability to access formal credit markets force them to tap informal credit markets.

All else equal, we hypothesize that enterprises with access to external finance are more likely to export and not to produce as subcontractors. Exporting requires large up-front investments, and access to finance provides enterprises with the necessary liquidity or investment capital to enter foreign markets (e.g. Berman & Héricourt, 2010). Enterprises prefer to earn as much of the producers' surplus as possible. Intuitively, subcontractors earn a smaller portion of the surplus compared to non-subcontractors. One reason for choosing the subcontracting option is limited access to finance to purchase raw material inputs. Commissioning firms might supply the needed inputs in a subcontracting arrangement whereas a loan might be required when the enterprise is not a subcontractor.[20] Thus, financially constrained enterprises are expected to be more likely to produce as subcontractors.

4.2. Additional regressors

We expand Berman and Héricourt's (2010) specification. Average monthly wages paid to production workers (*wages*) is indicative of the quality of an enterprise's production workers (Bernard & Jensen, 2004), and there is evidence in the literature that the probability of exporting increases with labour quality (e.g. Schank, Schnabel, & Wagner, 2010). The probability of producing as a subcontractor declines with wages if subcontracting is primarily motivated by labour cost savings. Viet Nam's comparative advantage is in the production of unskilled labour-intensive goods, so we expect the probability of exporting and subcontracting to be positively correlated with the proportion of production workers to total employment (*production worker share*). We also control for the length of time an SME has been in operation and the manager's or owner's ethnicity. There is some evidence in the literature that younger firms are more likely to become exporters (e.g. Bernard, Jensen, & Schott, 2006). Thus, we expect the probability of exporting to decline with enterprise age. Managers or owners belonging to the major ethnic group (Kinh) might have wider and stronger business connections or networks, thereby increasing the likelihood of exporting and producing as subcontractor (see e.g. Hayashi, 2002).

There is reason to believe that knowledge of relevant laws is a crucial determinant of business decisions. This stems from the results of a recent survey that find that very few Vietnamese businesses have taken advantage of the benefits emanating from Viet Nam's existing free trade agreements (The Economist Intelligence Unit, 2014); either their knowledge of the benefits is minimal or they find the rules too troublesome to learn. The Law on Customs and the Law on Investment are relevant for our purposes. Responses to 'How would you characterize knowledge about the following laws and government regulations' range from 1 (good) to 4 (no knowledge/no interest). The Law on Customs governs exporting and importing activities in Viet Nam, we hypothesize that the likelihood of exporting increases with knowledge of the Law on Customs. The Law on Investments regulates investment activities of domestic and foreign

[19] Raw material usage is not available in the 2015 survey, so this leaves us with two years of data. We are unable to use Levinsohn and Petrin's (2003) methodology to estimate productivity because it requires lagged values of the exogenous variables as instruments, and this requirement leaves us with one year of data. The methodology requires a minimum of three years of data.

[20] This is consistent with Manova and Yu's (2015: 8) argument that 'most financially constrained exporters will conduct pure assembly and earn low profits …. Least financially constrained exporters will conduct ordinary trade and earn the highest profits'.

Table 3
Correlation coefficients.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
Assets (log)	(1)	1.000						
Labor productivity (log)	(2)	0.262***	1.000					
Wages (log)	(3)	0.113***	0.248***	1.000				
Production worker share	(4)	0.085***	−0.103***	0.075***	1.000			
Age	(5)	0.003	−0.061**	−0.007	0.072***	1.000		
Customs law	(6)	−0.278***	−0.110***	−0.062**	−0.034	−0.020	1.000	
Investment law	(7)	−0.191***	−0.030	−0.030	0.001	−0.025	0.492***	1.000

Note: Sample: balanced panel. Number of enterprises: 434; number of observations: 1302. ***, **, * statistically significant at the 1, 5, 10 per cent level. See Table 1 for data source.

investors in Viet Nam, so we expect knowledge of this particular law to affect subcontracting decisions, but exactly how is ambiguous. While knowledge of the law increases the likelihood of operating independently because the manager or owner is aware of the 'rules of the game', knowledge of the law might also increase the likelihood of producing as a subcontractor because the law covers business cooperation contracts, wherein parties cooperate in production (Article 23 2005 Law on Investment).[21]

Bernard and Jensen (2004) find that US plants introducing new products (*new product* is set equal to 1) have a higher likelihood of exporting. New product introductions expand enterprises' markets via the product space. In the context of developing-country SMEs, their ability to compete internationally might not require new product group introductions; mere adoption of new processes or technologies (*new process* is set to 1) or coming out with better versions of existing products (*product improvement* is set to 1) might be sufficient thresholds for exporting.[22] According to Esteve-Pérez and Rodríguez (2013: 234), process innovations 'associated with cost-savings and improvements in technical conditions, enhance firm efficiency, which could prompt export market participation.' Product improvements broaden or lengthen enterprises' market reach. We expect these to increase the likelihood of exporting and being independent operators, and prior research (e.g. Nguyen, Pham, Nguyen, & Nguyen, 2008) suggests that the estimated effects on the likelihood to export is larger for new product introductions than for new process adoptions.

Lastly, we include one more control in the subcontracting equation. Sharpston (1975) emphasizes that 'subcontracting avoids the problems of marketing: outlets, brand names, publicity, market research, design' (Sharpston, 1975: 118). Using this logic, a priori, we expect enterprises that advertise (*advertise* set equal to 1) are less likely to be subcontractors.

Because we are unable to distinguish between exit and exit from the survey, we only use SMEs surveyed in all three years in our panel regressions (434 enterprises, excluding observations with incomplete information).[23] Table 2 contains (overall) summary statistics for our sample by enterprises' exporting and subcontracting status. A larger percentage of the exporters (regardless of subcontracting status) is observed in survey year 2015 and located in Ho Chi Minh City. Non-exporting subcontractors are mostly observed in Hanoi and other areas. Exporter-subcontractors mostly produce textile and apparel while exporter-non-subcontractors mostly produce food, beverages, and tobacco products. A large percentage of the non-exporters (regardless of subcontracting status) are in basic and fabricated metals production.

On average, our sample has VND 9.9–27.4 billion worth of assets, 24–61 full-time employees, each employee generates about VND 57–75.1 million of value added. Exporters have more assets and employees, and are more productive than non-exporters, on average. Among exporters, non-subcontractors have more assets and are more productive. The opposite is true among non-exporters. Data show a higher percentage of exporters are financially constrained. On average, the monthly wage of a production worker is about VND 1.6 million, production workers comprised 65–73 per cent of the workforce, enterprises have been in operation for about 12 years, and less than 5 per cent have ethnic minority managers or owners. Exporters have better knowledge of the Law on Customs and Law on Investment than non-exporters. About 7–12 per cent of the enterprises introduced new products, 12–25 per cent made improvements to existing products, and 8–23 per cent adopted new processes or technologies. Regardless of subcontracting status, a larger percentage of exporters introduced new products or new processes or technologies. About 30–72 per cent of the enterprises advertise with the highest proportion of exporter-subcontractors advertising. The pairwise correlations among all continuous variables appear in Table 3 for reference. They range from −0.28 (total assets and knowledge of customs law) and 0.49 (knowledge of customs and investment laws).

5. Analysis of results

We estimate equation (1) using three specifications for exporter and direct exporter as regressands. These three specifications differ

[21] Prior to 2010, neither law contained specific provisions for SMEs or preferential treatment for subcontractors. In 2010, goods exported or imported for processing under a subcontracting agreement were exempt from export and import taxes (Article 12, Decree No. 87/2010/NĐ-CP). Certain provisions of the Law on Investment (as amended in 2014) and Circular 96/2015/TT-BTC are relevant to subcontracting decisions. Article 16 of the Law on Investment provides preferential treatment to enterprises operating in support of these industries: garment, textile, leather products, electronics, prioritized mechanical products, agricultural machinery, automobiles, automobile parts, shipbuilding, and high-tech industries. Preferential treatment as specified in Article 15 includes lower corporate income tax rate for a definite period or for the duration of the investment project, or exemption from corporate income tax; exemption from import duty for capital goods, raw materials, and supplies and components; and, exemption from or reduction of land rent, land use fees, and land use tax.

[22] To mitigate possible endogeneity between innovations and SMEs' exporting and subcontracting decisions, innovations made due primarily in response to client demands are not treated as innovations.

[23] We use the consumer price index to convert nominal to real (2005 = 100) values.

in the proxy used for technical capacity: introduced new products (specification 1), made product improvements (specification 2), and adopted new processes or technologies (specification 3). Table 4 contains bivariate random effects (panel) probit estimates using the broad exporter definition while Table 5 contains results using direct exporter as regressand. The bivariate random effects (panel) probit estimates show that the correlation between the residuals of the two decision equations range from −0.15 to 0.52, not significantly different from zero at the 5 per cent level in all specifications except one (specification (3) in Table 4). Since the cross-equation correlations are not significantly different from zero, we can reasonably be confident that estimating the two decision equations separately using the single-equation random effects (panel) probit model would provide similar conclusions. Tables 6 and 7 contain the estimates using exporter and direct exporters as regressands, respectively.[24] For the most part, results using the strict exporter definition are qualitatively similar to those using the broad exporter definition. Patterns described below are based on coefficient estimates that are statistically significant at the 5 per cent level using both definitions of exporting.

From Tables 6 and 7, we find evidence that the propensity to export increased in the 2015 survey compared to 2011 survey year, as the coefficient for SY15 is significantly different from zero. Compared to SMEs in less urbanized regions of the country, we consistently find that SMEs in Ho Chi Minh City have higher likelihood of exporting, and there is some evidence that those in Hai Phong have a higher likelihood of producing as subcontractors. Ho Chi Minh City is the commercial capital of Viet Nam and is home to a large percentage of FIEs which export.[25] This means Ho Chi Minh City has the requisite infrastructure and services conducive for exporting benefiting local SMEs as well. Hai Phong is a port city in the north, and data show the city attracts bigger projects than Hanoi and Ho Chi Minh City. General Statistics Office (2016) data show that accumulated registered capital from foreign direct investment (FDI) in Hai Phong is US$25.8 million per project compared with Hanoi's US$6.5 million and Ho Chi Minh City's US$6.7 million. The rate for the entire country is US$13 million. Because FDI projects in Hai Phong are comparatively large, there are more opportunities for subcontract work in Hai Phong compared to other areas.

Compared to those in basic and fabricated metal manufacturing (base industry), SMEs in several industries have a higher propensity to export (using broad exporter definition only). This includes SMEs that produce food, textile and apparel, leather and wood products, rubber and non-metallic products, or furniture (Table 6). These are Viet Nam's known comparative advantages. SMEs in food, beverage, or tobacco manufacturing have the lowest probability of producing as subcontractors. Compared with basic and fabricated metal products, a smaller proportion of food products is identified by Rauch (1999) as differentiated, so this result is consistent with our expectations that subcontracting is more likely in industries involving products that are differentiated as these potentially provide higher margins. There is no evidence that exporting and subcontracting decisions are a function of ownership type among locally-owned SMEs.

The propensity to export is positively associated with enterprise size (log of assets) as expected. This is consistent with studies using data from developed countries covering establishments of all sizes (e.g., Bernard & Jensen, 2004). Viet Nam's current comparative advantage is in labour-intensive products; thus, it is not surprising to find that enterprises with higher production worker shares have higher propensity to export. Among Viet Nam's SMEs, we find no evidence in support of the notion that subcontractors are larger or have higher worker-to-total-employment shares than non-subcontractors. Exporting and subcontracting decisions do not appear to be associated with variations in labour productivity and workforce quality (log of wages), and whether SMEs have access to external funds.[26] A closer look at the data shows that although exporters are more productive, on average, variations in this variable do not systematically explain the likelihood of exporting. This is quite surprising as prior studies consistently find that the likelihood of exporting increase with productivity. One study using Vietnamese data find this relationship (Newman, Rand, Tarp, & Nguyen, 2014). However, Newman et al. (2014) use data for much larger enterprises (those with at least 30 employees and only a representative sample of smaller enterprises is included) whereas our sample consists of smaller enterprises (30 employees, on average). Difference in size coverage might explain the difference in findings. It is worth noting that unlike subcontractors in developed countries such as Italy (see Razzolini & Vannoni, 2011), subcontractors (regardless of exporting status) in Viet Nam, on average, are slightly more productive. But again, variations in labour productivity do not systematically explain the probability of working as subcontractors.

Perhaps finding that SMEs' access to funds do not correlate well with their foreign market strategies and modes of operation should not be surprising as shortage of capital is not as important a growth constraint as in the past. Shortage of capital was the most important growth constraint for 54 per cent of the survey respondents in 2011 (just after the global financial crisis), but in 2015, only 22 per cent identify shortage of capital as the most important growth constraint. SMEs with Kinh managers or owners have higher a likelihood of exporting directly (Table 7). This variable is a good proxy for the breadth and depth of one's business connections and networks, and SMEs with managers or owners belonging to the majority ethnic group have wider and deeper business connections and networks.

There is evidence that the probability of exporting increases with a manager's or owner's self-reported knowledge of customs law (recall, low values indicate 'good' knowledge of the law). Creation and expansion of information networks and portals for SME expansion is one of the objectives of the 2011–15 SME Development Plan. To the extent that these informational campaigns have reached the SMEs in our sample, our results suggest that these campaigns have had the intended effects of affecting business decisions. Contrary to expectations, there is some evidence that enterprises that advertise are more likely to work as subcontractors. Sharpston (1975) suggests that enterprises work as subcontractors to avoid marketing problems such as establishing a brand or finding outlets. Our result suggests the opposite, and indicative of the possibility that SMEs with locally-recognized brand names (thus, are advertising) are able to compete more successfully for subcontract work, all else equal.

[24] We use Stata's *xtprobit* routine which unlike Plum (2016) *bireprobit* provides standard errors clustered at the enterprise level.

[25] At the end 2016, data show that 15.4 per cent of accumulated registered capital from foreign direct investment projects are in Ho Chi Minh City (General Statistics Office, 2016).

[26] A specification using internal access to finance (cash flow-to-total assets) provides qualitatively similar results and are available upon request.

Table 4
Bivariate random effects (panel) probit regressions. Dependent variables: exporter (yes, no) and subcontractor (yes, no).

	(1)		(2)		(3)	
	exp	subc	exp	subc	exp	subc
SY13	0.279	−0.096	0.289	−0.051	0.539*	−0.054
	(0.25)	(0.13)	(0.25)	(0.13)	(0.30)	(0.13)
SY15	1.107***	−0.017	1.224***	0.044	1.775***	0.019
	(0.31)	(0.13)	(0.31)	(0.14)	(0.42)	(0.13)
Hanoi	0.446	0.067	0.570	0.099	0.130	0.085
	(0.58)	(0.17)	(0.55)	(0.18)	(0.64)	(0.17)
Ho Chi Minh City	1.662***	−0.173	1.791***	−0.166	2.270***	−0.195
	(0.55)	(0.18)	(0.60)	(0.18)	(0.71)	(0.18)
Haiphong	0.439	0.517**	0.477	0.550**	0.931	0.510**
	(0.61)	(0.22)	(0.61)	(0.23)	(0.71)	(0.22)
Food, beverage, and tobacco	1.640**	−0.625***	1.76***	−0.643***	1.945***	−0.634***
	(0.64)	(0.22)	(0.67)	(0.23)	(0.71)	(0.22)
Textiles and apparel	2.087***	0.132	2.107***	0.120	1.287**	0.110
	(0.65)	(0.22)	(0.66)	(0.23)	(0.60)	(0.21)
Leather and wood	2.856***	−0.206	2.732***	−0.238	3.091***	−0.253
	(0.81)	(0.24)	(0.82)	(0.24)	(0.82)	(0.24)
Paper, publishing, and printing	1.356**	−0.076	1.336**	−0.075	2.012***	−0.056
	(0.60)	(0.22)	(0.59)	(0.23)	(0.73)	(0.22)
Refined petroleum and Chemical products	1.901*	−0.556	1.754	−0.554	1.692	−0.625
	(1.12)	(0.43)	(1.10)	(0.44)	(1.33)	(0.44)
Rubber and non-metallic mineral products	1.071	−0.326	1.067*	−0.343*	1.485**	−0.326*
	(0.67)	(0.20)	(0.62)	(0.20)	(0.71)	(0.20)
Electric machinery, computers, motor vehicles, other transport	−0.067	−0.473	−0.096	−0.484	0.148	−0.421
	(0.92)	(0.29)	(0.93)	(0.30)	(1.17)	(0.28)
Furniture, jewelry, and others	1.915**	−0.663**	1.735**	−0.708**	2.616***	−0.674**
	(0.86)	(0.28)	(0.85)	(0.29)	(0.97)	(0.28)
Ownership	1.013*	0.100	1.021*	0.124	1.057*	0.089
	(0.59)	(0.16)	(0.54)	(0.16)	(0.57)	(0.15)
Assets (log)	0.552***	0.065	0.508***	0.060	0.561***	0.062
	(0.14)	(0.05)	(0.13)	(0.05)	(0.16)	(0.05)
Labor productivity (log)	0.011	−0.064	−0.022	−0.084	0.003	−0.078
	(0.18)	(0.08)	(0.18)	(0.08)	(0.20)	(0.08)
Financially constrained	0.424	0.127	0.455	0.108	0.303	0.126
	(0.28)	(0.12)	(0.28)	(0.12)	(0.29)	(0.12)
Wages (log)	0.187	0.05	0.282	0.057	0.145	0.054
	(0.44)	(0.16)	(0.47)	(0.16)	(0.55)	(0.16)
Production worker share	2.797***	0.021	2.880***	0.037	2.788**	0.097
	(0.98)	(0.37)	(0.98)	(0.37)	(1.08)	(0.36)
Age	−0.006	0.003	−0.002	0.003	−0.004	0.003
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)
Kinh	0.234	0.648*	0.450	0.702*	0.077	0.601
	(0.64)	(0.38)	(0.66)	(0.40)	(0.75)	(0.38)
Customs law	−0.607***	–	−0.580***	–	−0.541***	–
	(0.14)		(0.13)		(0.15)	
Investment law	–	0.108*	–	0.112*	–	0.116*
		(0.06)		(0.06)		(0.06)
Advertise	–	0.302**	–	0.288**	–	0.288**
		(0.13)		(0.13)		(0.12)
New prod. Introduction	0.655	0.004	–	–	–	–
	(0.47)	(0.21)				
Old prod. improvement	–	–	0.368	0.390***	–	–
			(0.30)	(0.15)		
New process adoption	–	–	–	–	1.422***	0.311*
					(0.46)	(0.17)
Constant	−14.31**	−2.49	−15.21**	−2.37	−16.11*	−2.30
	(6.76)	(2.39)	(7.03)	(2.41)	(8.29)	(2.37)
ρ	0.364*		0.358*		0.520**	
	(0.21)		(0.21)		(0.21)	
Log likelihood	−802.41		−799.44		−797.53	
Wald chi-square	72.92***		73.43***		59.34***	
No. of enterprises	434		434		434	
No. of observations	1302		1302		1302	

Notes: Sample: balanced panel. Numbers in parentheses are standard errors. ***, **, * statistically significant at the 1, 5, 10 per cent level. See Table 1 for data source.

Table 5
Bivariate random effects (panel) probit regressions. Dependent variables: direct exporter (yes, no) and subcontractor (yes, no).

	(1)		(2)		(3)	
	exp	subc	exp	subc	exp	subc
SY13	0.086	−0.099	0.087	−0.053	0.144	−0.054
	(0.27)	(0.13)	(0.28)	(0.13)	(0.28)	(0.13)
SY15	1.044***	−0.016	1.151***	0.044	1.166***	0.017
	(0.33)	(0.14)	(0.35)	(0.14)	(0.32)	(0.14)
Hanoi	0.517	0.036	0.478	0.055	0.485	0.058
	(0.50)	(0.18)	(0.50)	(0.18)	(0.50)	(0.18)
Ho Chi Minh City	1.470***	−0.192	1.424***	−0.213	1.373***	−0.188
	(0.50)	(0.19)	(0.50)	(0.19)	(0.49)	(0.19)
Haiphong	−1.053	0.466**	−1.160	0.470*	−1.183*	0.457*
	(0.66)	(0.24)	(0.74)	(0.24)	(0.70)	(0.23)
Food, beverage, and tobacco	0.897	−0.612**	0.854	−0.653***	0.831	−0.635***
	(0.57)	(0.24)	(0.58)	(0.24)	(0.56)	(0.24)
Textiles and apparel	0.552	0.067	0.308	0.037	0.391	0.079
	(0.64)	(0.23)	(1.03)	(0.24)	(0.86)	(0.23)
Leather and wood	2.100**	−0.279	2.128**	−0.283	2.077***	−0.290
	(0.71)	(0.25)	(0.72)	(0.25)	(0.69)	(0.25)
Paper, publishing, and printing	−0.795	−0.107	−0.803	−0.111	−0.808	−0.096
	(0.70)	(0.24)	(0.71)	(0.24)	(0.67)	(0.24)
Refined petroleum and Chemical products	0.883	−0.640	0.847	−0.615	0.772	−0.717
	(0.70)	(0.47)	(0.70)	(0.47)	(0.72)	(0.50)
Rubber and non-metallic mineral products	−0.118	−0.350*	−0.166	−0.365*	−0.137	−0.370*
	(0.56)	(0.21)	(0.57)	(0.21)	(0.53)	(0.21)
Electric machinery, computers, motor vehicles, other transport	−0.382	−0.443	−0.407	−0.431	−0.326	−0.416
	(0.94)	(0.29)	(0.97)	(0.30)	(0.92)	(0.29)
Furniture, jewelry, and others	−0.876	−0.677**	−0.958	−0.706**	−0.876	−0.658**
	(0.85)	(0.29)	(0.91)	(0.29)	(0.86)	(0.29)
Ownership	1.016**	0.132	1.021**	0.151	1.015**	0.117
	(0.45)	(0.16)	(0.46)	(0.17)	(0.45)	(0.16)
Assets (log)	0.484***	0.070	0.503***	0.060	0.477***	0.058
	(0.14)	(0.05)	(0.17)	(0.05)	(0.15)	(0.05)
Labor productivity (log)	−0.023	−0.065	−0.036	−0.076	−0.017	−0.067
	(0.18)	(0.08)	(0.23)	(0.08)	(0.20)	(0.08)
Financially constrained	0.328	0.126	0.352	0.095	0.339	0.124
	(0.26)	(0.12)	(0.28)	(0.12)	(0.27)	(0.12)
Wages (log)	−0.118	0.10	−0.140	0.104	−0.139	0.094
	(0.27)	(0.17)	(0.28)	(0.16)	(0.27)	(0.17)
Production worker share	4.151***	−0.039	4.259***	−0.015	4.210***	−0.014
	(1.06)	(0.38)	(1.18)	(0.38)	(1.11)	(0.38)
Age	0.172	0.003	0.016	0.004	0.020	0.004
	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Kinh	1.005	0.725*	1.045	0.781*	1.020	0.733*
	(0.69)	(0.40)	(0.71)	(0.41)	(0.70)	(0.40)
Customs law	−0.810***	–	−0.787***	–	−0.793***	–
	(0.14)		(0.14)		(0.14)	
Investment law	–	0.112*	–	0.114*	–	0.118*
		(0.06)		(0.06)		(0.06)
Advertise	–	0.291**	–	0.272**	–	0.289**
		(0.13)		(0.13)		(0.13)
New prod. introduction	0.383	−0.004	–	–	–	–
	(0.46)	(0.21)				
Old prod. improvement	–	–	−0.012	0.395***	–	–
			(0.32)	(0.15)		
New process adoption	–	–	–	–	0.313	0.339*
					(0.34)	(0.18)
Constant	−9.22*	−3.29	−8.99*	−3.20	−9.08*	−3.11
	(4.93)	(2.48)	(5.38)	(2.49)	(5.13)	(2.49)
ρ	−0.178		−0.150		−0.164	
	(0.23)		(0.23)		(0.22)	
Log likelihood	−702.35		−699.17		−700.51	
Wald chi-square	69.53***		69.27***		70.27***	
No. of enterprises	434		434		434	
No. of observations	1302		1302		1302	

See notes on Table 4.

Table 6
Single-equation random effects (panel) probit regressions. Dependent variables: exporter (yes, no) and subcontractor (yes, no).

	(1)		(2)		(3)	
	exp	subc	exp	subc	exp	subc
SY13	0.173	−0.096	0.163	−0.049	0.364	−0.054
	(0.25)	(0.12)	(0.25)	(0.12)	(0.26)	(0.12)
SY15	1.035***	−0.012	1.128***	0.057	1.416***	0.024
	(0.31)	(0.15)	(0.30)	(0.15)	(0.33)	(0.14)
Hanoi	0.617	0.010	0.571	0.040	0.693	0.035
	(0.74)	(0.19)	(0.73)	(0.19)	(0.80)	(0.19)
Ho Chi Minh City	1.631**	−0.223	1.593**	−0.228	1.764**	−0.213
	(0.73)	(0.21)	(0.72)	(0.22)	(0.79)	(0.21)
Haiphong	−0.392	0.449*	−0.449	0.473**	−0.538	0.448*
	(1.02)	(0.23)	(1.02)	(0.24)	(1.10)	(0.23)
Food, beverage, and tobacco	2.377**	−0.797***	2.307**	−0.844***	2.601**	−0.807***
	(0.92)	(0.27)	(0.91)	(0.27)	(1.02)	(0.27)
Textiles and apparel	2.566***	0.079	2.530***	0.070	2.872***	0.099
	(0.97)	(0.24)	(0.95)	(0.25)	(1.04)	(0.24)
Leather and wood	3.701***	−0.271	3.636***	−0.282	3.851***	−0.292
	(1.06)	(0.27)	(1.05)	(0.28)	(1.18)	(0.27)
Paper, publishing, and printing	1.770*	−0.114	1.725*	−0.114	2.057*	−0.107
	(0.99)	(0.24)	(0.97)	(0.25)	(1.07)	(0.24)
Refined petroleum and Chemical products	1.635	−0.880	1.525	−0.900	1.418	−0.942
	(1.83)	(0.72)	(1.81)	(0.74)	(1.96)	(0.69)
Rubber and non-metallic mineral products	1.826**	−0.399*	1.788**	−0.409*	1.823*	−0.422*
	(0.88)	(0.22)	(0.87)	(0.23)	(0.96)	(0.23)
Electric machinery, computers, motor vehicles, other transport	1.257	−0.412	1.208	−0.434*	1.501	−0.403
	(0.99)	(0.25)	(0.96)	(0.26)	(1.09)	(0.25)
Furniture, jewelry, and others	2.532**	−0.744**	2.457*	−0.775**	2.918**	−0.739**
	(1.28)	(0.31)	(1.26)	(0.32)	(1.39)	(0.32)
Ownership	0.531	0.093	0.522	0.101	0.529	0.078
	(0.57)	(0.17)	(0.56)	(0.17)	(0.63)	(0.17)
Assets (log)	0.395***	0.082	0.382**	0.079	0.378**	0.073
	(0.15)	(0.06)	(0.15)	(0.06)	(0.17)	(0.06)
Labor productivity (log)	0.135	−0.036	0.131	−0.042	0.107	−0.044
	(0.27)	(0.10)	(0.28)	(0.11)	(0.28)	(0.10)
Financially constrained	0.431	0.146	0.429	0.124	0.527*	0.145
	(0.30)	(0.14)	(0.29)	(0.14)	(0.29)	(0.14)
Wages (log)	−0.017	0.065	−0.002	0.065	−0.060	0.062
	(0.27)	(0.19)	(0.27)	(0.18)	(0.29)	(0.19)
Production worker share	2.336**	−0.003	2.350**	0.001	2.715**	0.019
	(0.97)	(0.42)	(0.96)	(0.43)	(1.09)	(0.42)
Age	0.169	0.003	0.018	0.004	0.025	0.004
	(0.03)	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)
Kinh	0.089	0.737*	0.134	0.783*	0.258	0.741*
	(0.72)	(0.43)	(0.68)	(0.42)	(0.70)	(0.42)
Customs law	−0.580***	–	−0.565***	–	−0.596**	–
	(0.15)		(0.16)		(0.15)	
Investment law	–	0.101	–	0.102	–	0.108
		(0.07)		(0.07)		(0.07)
Advertise	–	0.287**	–	0.265*	–	0.283**
		(0.13)		(0.14)		(0.14)
New prod. introduction	0.650	0.039	–	–	–	–
	(0.41)	(0.22)				
Old prod. improvement	–	–	0.140	0.386**	–	–
			(0.28)	(0.16)		
New process adoption	–	–	–	–	1.262***	0.324*
					(0.43)	(0.19)
Constant	−12.78**	−3.31	−12.79**	−3.36	−12.85**	−3.15
	(5.02)	(2.82)	(5.10)	(2.81)	(5.45)	(2.82)
ρ	0.930	0.435	0.929	0.447	0.941	0.432
	(0.02)	(0.07)	(0.02)	(0.07)	(0.20)	(0.07)
Log likelihood	−315.31	−477.92	−316.09	−474.69	−311.33	−476.48
Wald chi-square	64.09***	40.09**	63.19***	49.13***	69.39***	45.49***
No. of enterprises	434	434	434	434	434	434
No. of observations	1302	1302	1302	1302	1302	1302

Notes: Sample: balanced panel. Numbers in parentheses are standard errors. ***, **, * statistically significant at the 1, 5, 10 per cent level. See Table 1 for data source.

Table 7
Single-equation random effects (panel) probit regressions. Dependent variable: direct exporter (yes, no).

	exp (1)	exp (2)	exp (3)
SY13	0.102	0.088	0.197
	(0.30)	(0.31)	(0.32)
SY15	1.143***	1.185***	1.249***
	(0.30)	(0.32)	(0.35)
Hanoi	0.444	0.442	0.457
	(0.62)	(0.62)	(0.62)
Ho Chi Minh City	1.589***	1.606***	1.578**
	(0.61)	(0.61)	(0.62)
Haiphong	−1.145	−1.181	−1.210
	(0.94)	(0.95)	(0.93)
Food, beverage, and tobacco	1.362*	1.380*	1.373*
	(0.80)	(0.80)	(0.80)
Textiles and apparel	1.101	1.088	1.144
	(0.80)	(0.80)	(0.80)
Leather and wood	3.027***	3.060***	3.044***
	(0.79)	(0.79)	(0.80)
Paper, publishing, and printing	−0.018	−0.025	−0.045
	(0.84)	(0.84)	(0.83)
Refined petroleum and Chemical products	1.177	1.171	1.011
	(1.64)	(1.65)	(1.68)
Rubber and non-metallic mineral products	0.505	0.500	0.462
	(0.74)	(0.74)	(0.74)
Electric machinery, computers, motor vehicles, other transport	0.357	0.354	0.394
	(0.86)	(0.86)	(0.87)
Furniture, jewelry, and others	−0.143	−0.17	−0.141
	(1.11)	(1.12)	(1.11)
Ownership	0.893	0.85	0.941
	(0.57)	(0.57)	(0.58)
Assets (log)	0.556***	0.575***	0.536***
	(0.15)	(0.16)	(0.15)
Labor productivity (log)	0.110	0.121	0.108
	(0.29)	(0.30)	(0.29)
Financially constrained	0.323	0.331	0.356
	(0.31)	(0.31)	(0.31)
Wages (log)	−0.175	−0.181	−0.186
	(0.32)	(0.32)	(0.32)
Production worker share	4.233***	4.308***	4.245***
	(1.11)	(1.12)	(1.15)
Age	0.041	0.040	0.046*
	(0.03)	(0.03)	(0.03)
Kinh	1.576**	1.650**	1.616**
	(0.75)	(0.78)	(0.77)
Customs law	−0.828***	−0.824***	−0.837***
	(0.18)	(0.18)	(0.18)
New prod. introduction	0.215	–	–
	(0.44)		
Old prod. improvement	–	−0.193	–
		(0.39)	
New process adoption	–	–	0.508
			(0.50)
Constant	−13.18**	−13.53**	−13.08**
	(6.39)	(6.52)	(6.43)
ρ	0.871	0.873	0.872
	(0.04)	(0.04)	(0.04)
Log likelihood	−214.63	−214.58	−213.93
Wald chi-square	65.69***	65.82***	59.24***
No. of enterprises	434	434	434
No. of observations	1302	1302	1302

See notes on Table 6.

Table 8
Single-equation probit regressions: Instrumental variable estimations.

	First Stage	Main equation	Correlation	Wald Test
Specification	Coeff. (Instrument) (1)	Coeff. (Relevant Law) (2)	(3)	p-value (4)
Exporting Equation				
(1)	0.300***	−0.420**	0.020	0.902
	(0.03)	(0.19)	(0.16)	
(2)	0.301***	−0.418**	0.019	0.903
	(0.03)	(0.19)	(0.16)	
(3)	0.299***	−0.415**	0.017	0.913
	(0.03)	(0.19)	(0.16)	
Direct Exporting Equation				
(1)	0.300***	−0.537**	0.012	0.953
	(0.03)	(0.25)	(0.21)	
(2)	0.301***	−0.554**	0.029	0.885
	(0.03)	(0.24)	(0.20)	
(3)	0.299***	−0.528**	0.002	0.992
	(0.03)	(0.25)	(0.21)	
Subcontracting Equation				
(1)	0.430***	0.246*	−0.140	0.230
	(0.03)	(0.13)	(0.12)	
(2)	0.430***	0.256**	−0.148	0.208
	(0.03)	(0.13)	(0.12)	
(3)	0.430***	0.242**	−0.131	0.257
	(0.03)	(0.13)	(0.11)	

Notes: Sample: balanced panel. Number of enterprises: 434; number of observations: 1302. Numbers in parentheses are standard errors clustered at the enterprise level. The regressand for the first stage regression is knowledge of the relevant law against all exogenous variables in the respective decision equation and the instrument variable (knowledge of tax law). ***, **, * statistically significant at the 1, 5, 10 per cent level. See Table 1 for data source.

Unlike Nguyen et al. (2008), we do not consistently find that SMEs that export have better technical capacity. The probability of exporting (broad definition) is only associated with the introduction of new processes or technologies (Table 6). This is most likely because compared to the 2005 version of the survey used by Nguyen et al. (2008), a smaller percentage of SMEs report introducing new products in the 2011–2015 period (0.07–0.12 versus 0.41), making improvements to existing products (0.12–0.25 versus 0.60), or adopting new processes or technologies (0.08–0.23 versus 0.30).[27] Finally, there is some evidence that enterprises that have introduced improvements on existing products (independent of buyer requirements) are more likely to work as subcontractors. These improvements enhance the capabilities of SMEs to compete for subcontract work.

It is possible that as enterprises engage in exporting and/or subcontracting, their managers or owners learn relevant laws. We account for this potential endogeneity by using instrumental variable estimation for probit models.[28] An instrument is needed for knowledge of customs and knowledge of investment law. A good instrument must satisfy two properties: it is correlated with the variable it is instrumenting; and, it is uncorrelated with unobserved factors in the export/subcontract decision equations. We use knowledge of tax law as instrument.[29] Intuitively, managers or owners with 'good' knowledge of customs law would also have 'good' knowledge of other laws; and, knowledge of tax law is less likely to be correlated with unobserved factors in the exporting (subcontracting) decision equation than knowledge of customs (investment) law. There is strong evidence that knowledge of tax law is a valid instrument for knowledge of customs and investment laws in all specifications of the model. The first column of Table 8 shows the coefficients for knowledge of tax law from first stage regressions of knowledge of customs or investment law on the instrument and all exogenous variables in the relevant decision equation.[30] For all three specifications (1–3) used, these show that knowledge of tax law is associated with knowledge of both customs and investment law (statistically significant at the 1 per cent level). The coefficient estimates of the relevant law in the decision equations (main equations, second stage regressions) are in the second column of Table 8. These have the same signs as those in the bivariate (Tables 4 and 5) and single-equation (Tables 6 and 7) random effects (panel) probit regressions. Information in the third column of Table 8 show low to no correlation between the residuals of the decision (main) equations and the residuals of first stage regressions, and we fail to reject the null hypothesis that the correlations are equal to zero (*p-values* for the Wald test of exogeneity are in the last column of Table 8).

[27] It is possible that the high rates in the 2005 survey are in preparation for Viet Nam's entry to the WTO in 2007.

[28] Stata's *ivprob* routine with standard errors clustered at the enterprise level is used. This is an appropriate approach as Professor Jeffrey Wooldridge suggests in a 2014 post at Statalist.

[29] This includes rules on corporate and personal income tax, value added tax, tax administration, and other items.

[30] All coefficient estimates are not shown due to space limitation, but available upon request. We also experimented with other potential instruments. We considered the number of times the enterprise was inspected by government officials for policy compliance (e.g. labor law) or technical compliance (e.g. environmental) and provinces' legal regimes (a component of the Provincial Competitiveness Index). SMEs that have experienced more inspections or are located in areas with weak legal regimes have incentives to learn various laws (thus, satisfying the first requirement of a good instrument: it is correlated with the variable it is instrumenting for), and they are not correlated with the unobserved factors in the exporting or subcontracting equations. The number of inspections and legal regimes might affect enterprise performance, but not necessarily their foreign market entry or mode of operations decisions. These alternative instruments did not satisfy the first requirement for a valid instrument. They are not correlated with either knowledge of customs or investments law.

Table 9
Average marginal effects using single-equation random effects (panel) probit regressions Dependent variables: exporter (yes, no) and subcontractor (yes, no).

	(1)		(2)		(3)	
	exp	subc	exp	subc	exp	subc
Ownership	0.030	0.015	0.030	0.016	0.028	0.012
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Assets (log)	0.023**	0.013	0.023**	0.012	0.020**	0.016
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Labor productivity (log)	0.008	−0.006	0.008	−0.007	0.006	−0.007
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Financially constrained	0.025	0.023	0.026	0.019	0.029*	0.023
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Wages (log)	−0.001	0.010	−0.000	0.010	−0.003	0.010
	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)
Production worker share	0.138**	−0.000	0.140**	0.000	0.147**	0.003
	(0.06)	(0.07)	(0.06)	(0.07)	(0.06)	(0.07)
Age	0.001	0.000	0.001	0.001	0.001	0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Kinh	0.005	0.118*	0.008	0.123*	0.014	0.118*
	(0.04)	(0.07)	(0.04)	(0.07)	(0.04)	(0.07)
Customs law	−0.034***	–	−0.034***	–	−0.032***	–
	(0.01)		(0.01)		(0.01)	
Investment law	–	0.016	–	0.016	–	0.017
		(0.01)		(0.01)		(0.01)
Advertise	–	0.047**	–	0.043*	–	0.047**
		(0.02)		(0.02)		(0.02)
New prod. introduction	0.041	0.006	–	–	–	–
	(0.03)	(0.04)				
Old prod. improvement	–	–	0.008	0.066**	–	–
			(0.02)	(0.03)		
New process adoption	–	–	–	–	0.076***	0.057
					(0.03)	(0.04)
No. of enterprises	434		434		434	
No. of observations	1302		1302		1302	

Notes: Sample: balanced panel. Numbers in parentheses are standard errors calculated using the delta method. Regressions include a complete set of time, location, and industry qualitative indicators. ***, **, * statistically significant at the 1, 5, 10 per cent level. See Table 1 for data source.

We provide the (average) marginal effects from the single-equation random effects (panel) probit regressions in Table 9 (exporter) and Table 10 (direct exporter) to highlight the economic significance of our findings. First, the likelihood of exporting is about 6 percentage points higher in 2015 compared to 2011, 10 percentage points higher for SMEs located in Ho Chi Minh City, SMEs producing leather or wood products have the highest likelihood of exporting with a marginal effect of 0.21, and SMEs in food or furniture manufacturing have the lowest likelihood of working as subcontractors with marginal effects of about −0.12 (not shown in Tables 9 and 10). Second, a one-percentage point increase in the share production workers increase the exporting likelihood by 0.14–0.19 points, and SMEs operated by Kinh managers or owners have a 0.07 higher likelihood of exporting directly. Because the thresholds for exporting directly are higher, SMEs with broader and wider business connections and networks are more likely to 'jump' these thresholds.

Third, exporting decisions are associated with knowledge of customs law. Note that knowledge of customs law for our sample is between 'average' and 'poor' (Table 2). Tables 9 and 10 show that a one-index point drop in knowledge of customs law (e.g. improvement from 'poor' (index value of 3) to 'average' (index value of 2) increases the exporting likelihood by 0.032–0.037. These marginal effects appear small, but considering that only 18 percent (0.18) of the SMEs in the sample are exporters and only 10 per cent (0.10) are direct exporters, these marginal effects, in fact, are economically meaningful. Consider these counterfactuals. If all SMEs' knowledge of customs law is 'good' (index value of 1), the (average) predicted probability of exporting increases to 0.25 (with a standard error of 0.03) up from 0.17 (0.02) when knowledge of customs law is 'poor.' Because of higher thresholds to exporting directly, the probability of exporting directly increases only to 0.19 (0.03) if knowledge of customs law improves to 'good' up from 0.09 (0.01) when knowledge of the law is 'poor.' These estimates highlight the importance of information in entering foreign markets.

Fourth, the propensity to work as subcontractor is associated with improvements on existing products. The likelihood of subcontracting increases by 0.07, *ceteris paribus*. These marginal effects are economically meaningful when compared to the fact that only 14 per cent (0.14) of the SMEs in the sample work as subcontractors. Our results indicate that SMEs that did not make any improvements on existing products have a 0.13 (with a standard error of 0.01) likelihood of working as subcontractors. If these SMEs made product improvements (a counterfactual), the likelihood of subcontracting increases to 0.20 (0.03), a statistically significant increase at the 5 per cent level. This counterfactual highlights the importance of investing in improvements of existing products (independent of contractor demands) in the decision to work as subcontractor. Finally, the likelihood of exporting (broad definition) increase by 8 percentage points for SMEs that adopted new processes or technologies (Table 9). Consider a scenario whereby SMEs that did not adopt new processes (actual) are assumed to have adopted new processes (counterfactual), the likelihood of exporting increases from 0.13 (0.01) to 0.19 (0.04), a statistically significant increase at the 10 per cent level.

Table 10
Average marginal effects using single-equation random effects (panel) probit regressions
Dependent variable: direct exporter (yes, no).

	exp (1)	exp (2)	exp (3)
Ownership	0.036*	0.034	0.038*
	(0.02)	(0.02)	(0.02)
Assets (log)	0.025***	0.025***	0.024***
	(0.01)	(0.01)	(0.01)
Labor productivity (log)	0.005	0.005	0.005
	(0.01)	(0.01)	(0.01)
Financially constrained	0.014	0.015	0.016
	(0.01)	(0.01)	(0.01)
Wages (log)	−0.008	−0.008	−0.008
	(0.01)	(0.01)	(0.01)
Production worker share	0.188***	0.190***	0.187***
	(0.05)	(0.05)	(0.05)
Age	0.002*	0.002	0.002*
	(0.00)	(0.00)	(0.00)
Kinh	0.070**	0.073**	0.071**
	(0.03)	(0.03)	(0.03)
Customs law	−0.037***	−0.036***	−0.037***
	(0.01)	(0.08)	(0.01)
New prod. Introduction	0.010	–	–
	(0.02)		
Old prod. improvement	–	−0.008	–
		(0.02)	
New process adoption	–	–	0.024
			(0.02)
No. of enterprises	434	434	434
No. of observations	1302	1302	1302

See notes on Table 9.

6. Concluding remarks and extensions

In a short time, Viet Nam has become an important merchandise exporter worldwide. It was ranked 26 in 2016 (WTO, 2017b), but more than half of the country's exports in 2015 originated from FIEs while Viet Nam's SMEs only account for 20 per cent of exports (International Trade Center, 2015). Close to 66 per cent of private sector employment was with SMEs in 2012 (Ministry of Planning and Investment, 2014). Given this backdrop, we investigate issues related to SMEs' exporting and subcontracting decisions. We find evidence that knowledge of customs law increases the likelihood of exporting directly. Based on this result, an aggressive informational campaign by government or business associations to increase SMEs' knowledge of customs law is an important precondition to foreign market participation. Because exporting is hard, the subcontracting route has been touted as an option for SMEs worldwide (e.g. International Trade Centre, 2015). Subcontracting traditionally involves large enterprises. Subcontracting as an option for SMEs is a much understudied area in the literature. We uncover some evidence that the likelihood of subcontracting is associated with improvements in existing products while the likelihood of exporting is associated with adoption of new processes or technologies. Thus, expanding programmes that enhance the technical capacity of the SMEs could potentially expand their participation in foreign markets or subcontract work for FIEs operating in Viet Nam.

A comprehensive approach to SME development was put in place in 2009 not only to increase the contribution of SMEs to Viet Nam's total output, but also to make them competitive. SME competitiveness can be looked at in these dimensions: scope (i.e. limited but profitable), market coverage (i.e. national versus local), and scale (small but growing), see International Trade Center (2015). Potential extensions to the current study can touch on these dimensions. A first extension is to investigate the correlates of SME mark-up. Prior studies estimate mark-ups using output (value added or revenue) and input (employment, material usage, and capital stock) data which require strong assumptions on production technology, market structure, and consumer preferences. The surveys contain price, cost per unit, and quantity produced and sold data at the product level useful for mark-up analysis in the tradition of Atkin, Chaudhry, Chaudry, Khandelwal, and Verhoogen (2015). A second extension is based on the observation that not only are the SMEs domestic market focused, their activities are highly localized. The market reach of the SMEs is limited to their home province. What factors contribute to this home market (province) bias? In particular, are there policy biases or regulations at the provincial level limiting access by SMEs from other provinces? A third extension is related to the notion that the bias towards smallness (in size) is explained by ‘fear of growth’ as growth might attract the attention of corrupt officials, or puts the enterprise at risk of unwarranted repeated inspections for compliance with tax, labour, or environmental regulations.[31] The survey asks a series of questions related to government inspections for policy and technical compliance. Do we observe a correlation between enterprise growth and the number of inspections it experiences historically? Studying

[31] Officials have incentives to pursue investigations as their performance evaluations are partly based on the number of investigations they handle (Dau, 2016).

issues related to scope, market coverage, and scale of SMEs might provide some insights on how to eliminate the 'missing middle' in the country's employment distribution.

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