



Trade costs and exportation: A comparison between enterprises in Southeast Asia and Latin America



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ABSTRACT

This paper investigates the impact of trade costs (export customs clearance, subjective assessment of trade obstacles, and input inventory) on the export propensity and intensity of enterprises in Southeast Asia (SEA) and Latin America (LA) using World Bank's enterprise surveys. The results demonstrate that obstacles to trade do not significantly affect export intensity in exporting enterprises. An international comparison between SEA and LA shows that the unfavorable conditions that export-intensive enterprises suffer in LA discourage enterprises' integration into international production networks. Export-intensive enterprises in LA suffer from the burdens of input inventory and customs clearance for exports.

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1. Introduction

Industrial policies are changing considerably; whereas building a complete supply chain domestically was once the norm, a new paradigm is emerging that accentuates the need to combine international supply chains (Baldwin, 2011). Export and import gain importance as mechanisms that link domestic firms with international production networks and promote industrial development. Decreasing transaction costs, including tariff and non-tariff barriers, enables the fragmentation of production networks (Kimura & Ando, 2005) and increases the importing-to-produce and importing-to-export trades (Baldwin & Lopez-Gonzalez, 2013).

International trade positively affects productivity (Hayakawa, Machikita, & Kimura, 2012; Wagner, 2012). Wong (2009) investigates the relationship between trade openness and productivity in Ecuadorian manufacturing industries. Paus, Reinhardt, and Robinson (2003) note the relationships between trade liberalization and productivity growth for seven countries in LA. Alvarez and López (2005) observe plant-level learning by exporting in Chile. Baldwin and Gu (2004) notice that trade liberalization in Canada increases export-market participation. They also identify learning by exporting, exposure to international competition, and increases in product specialization as the main mechanisms through which export-market participation raises productivity. Their findings reveal that entering export markets leads to increases in foreign sourcing for advanced technologies.

Fragmentation of production networks can increase opportunities for developing countries to receive knowledge and technical assistance from

trade partners. Innovation will more likely occur within international production networks than within R&D laboratories in developing countries that lack domestically available resources. Deepening international buyer–supplier relationships and diversifying trade partners encourage firms in the supply chain to transfer technologies and enable them to achieve incremental improvements (Machikita & Ueki, 2011, 2012).

These observations suggest the importance of international initiatives for eliminating tariff and non-tariff barriers such as customs procedures and trade regulations. Wilson, Mann, and Otsuki (2003, 2005) provide evidence that such initiatives expand trade and bring benefits. However, these studies do not mention management practices. Trade barriers and other macro-institutional constraints can affect a firm's business strategies and management practices, and consequently its business performance (Kinra & Kotzab, 2008). For instance, customs clearance procedures cause unnecessary delays that can result in lost business opportunities and incremental inventory and depreciation costs for traders (OECD, 2009). Inventory management may affect a company's insertion into an international supply chain as well as its relationships with international buyers and suppliers (Beamon, 1999).

This paper focuses on the determinants of firm-level export, particularly trade barriers and input inventories, both of which can increase firms' trade costs, and draws an international comparison between SEA and LA. SEA could reap significant benefits from trade facilitation reform (Portugal-Perez & Wilson, 2012), unlike LA; the Global Competitiveness Report (Schwab & World Economic Forum, 2013) and other business environment indicators demonstrate that LA has worse conditions than SEA does.

This paper has the following structure: Section 2: Hypotheses and model. Section 3: Data and summary statistics. Section 4: Results of estimations. Section 5: Summary and conclusions.

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2. Hypotheses and model

Previous studies suggest various determinants of firm-level export performance, each of which emphasizes different factors; for example, the resource-based view of the firm emphasizes unique, internally available resources (Zou & Stan, 1998). The research questions and theoretical background of each study determine which factor is crucial to export performance and which empirical approach is appropriate to examine the questions.

The link between trade costs and economic policy is of serious concern. Transportation costs, tariff and non-tariff barriers, and compliance costs fall under the broad definition of trade costs, which affect export (Anderson & van Wincoop, 2004). According to Hoekman and Nicita (2011), who examine the association between policy restrictiveness and trade volume, non-tariff barriers and compliance costs negatively affect export.

H1. Customs and trade regulations negatively affect export.

Time is also a trade barrier (Hummels & Schaur, 2013). As Nordas, Pinali, and Grosso (2006) suggest that, the exporting and importing times, as well as trade administrative procedures, reduce not only trade volume but also the probability that firms enter export markets with time-sensitive products.

H2. The average number of days for clearing customs for export goods affects export propensity and intensity negatively.

In addition to these trade barriers, internal and external factors affect transportation costs. Transportation costs depend on a firm's logistics management as much as on the business environment, which includes transportation infrastructure, trade regulations, and customs procedures. Lengthy and unpredictable customs clearing procedures force firms to increase inventories.

H3a. Incremental transportation costs erode competitiveness and discourage exports, leading to a negative relationship between input inventories and export propensity and intensity.

However, previous studies show that export increases inventories of raw materials and finished goods (Golini & Kalchschmidt, 2011; Han, Dresner, & Windle, 2008).

H3b. A positive association may exist between input inventories and export intensity, and between input inventories and export propensity.

This study uses two regression models to examine these hypotheses:

$$\Pr(\text{exporter} = 1) = \alpha + \beta_1 * \text{inventory of input} + \beta_2 * \text{trade barriers} + \beta_3 * \text{control variables} + \varepsilon.$$

$$\text{Export intensity} = \alpha + \beta_1 * \text{inventory of input} + \beta_2 * \text{trade barriers} + \beta_3 * \text{control variables} + \varepsilon.$$

The main independent variables for both models are the inventory level of the most important input and trade barriers (customs clearance for export, and subjective assessment of trade obstacle). These models introduce interaction terms between these variables and the dummy variable for SEA to examine their impact on firms' export in SEA and LA. The models also comprise control variables such as import inputs, use of e-mail, foreign ownership, and dummy variables for the exporter, importer, country/region, and industry. Brazil is the reference case for the country/region dummy variable.

The dependent variable for the first model is export propensity, which is equal to 1 if an enterprise is an exporter, otherwise 0. The dependent variable for the second regression model is export intensity. This study uses a binary probit estimation for the first model and uses the ordinary least squares (OLS) method for the second model.

This study makes two efforts to improve the second model. The first deals with the risk of selection bias: only exporting firms report the average number of days to clear customs for export. If the second model

includes export customs clearance as an independent variable, the number of observations decreases from 5502 to 1664. This study employs Heckman's two-step selection model to deal with potential selection bias and uses the binary probit estimation for export propensity during the first stage of estimation, and the export intensity model during the second stage. The second effort for improving the model is an investigation into whether the impact of trade barriers on export intensity varies with export intensity. This study performs quantile regression to satisfy this additional research interest.

3. Data

To be able to establish a comparison between SEA and LA, this paper uses World Bank's 2009 and 2010 Enterprise Surveys. For 2009, the only available surveys for SEA countries with large-scale manufacturing activities concern Indonesia, the Philippines, and Vietnam. Regarding LA, this paper uses the 2009 Brazilian survey and four 2010 surveys from Chile, Colombia, Mexico, and Peru.

The original dataset has 10,080 observations in eight countries. The dataset for this paper's analysis cannot include respondents with null values, and those who had direct exports but did not answer the questions about the average number of days to clear customs for exports. Additionally, the conversion of variables to natural logarithmic forms excludes several other observations as well. Consequently, 5502 observations support this study.

Table 1 shows the summary statistics for the entire sample, and Table 2 presents the means of the variables according to country and region, excluding the variables converted to logarithmic form in Table 1. In Table 2, the observations for each country range from 576 (Vietnam) to 866 (Mexico). The total number of observations for SEA and LA countries is 2006 (36.5% of the entire sample) and 3496 (63.5%), respectively.

Table 1
Summary statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Export intensity	5502	11.66	26.60	0	100
Inventory of input	5502	34.61	50.33	1	730
ln(Inventory of input)	5502	2.77	1.35	0	6.59
Trade obstacle	5502	0.95	1.18	0	4
Trade obstacle (0/1)	5502	0.48	0.50	0	1
Customs for exports	1664	7.92	12.18	1	180
ln(Customs for exports)	1664	1.42	1.08	0	5.19
Foreign inputs	5502	29.98	33.77	0	100
E-mail	5502	0.85	0.36	0	1
Employees	5502	184.26	659.13	1	21,955
ln(Employees)	5502	3.85	1.51	0	10.00
Foreign ownership	5502	11.20	30.03	0	100
Exporter	5502	0.30	0.46	0	1
Importer	5502	0.63	0.48	0	1
SEA	5502	0.36	0.48	0	1
Industry dummy					
ISIC 15 or 16	5502	0.16	0.37	0	1
ISIC 17	5502	0.09	0.28	0	1
ISIC 18	5502	0.13	0.34	0	1
ISIC 19	5502	0.03	0.16	0	1
ISIC 20	5502	0.02	0.13	0	1
ISIC 21	5502	0.01	0.09	0	1
ISIC 22	5502	0.01	0.12	0	1
ISIC 23 or 24	5502	0.13	0.33	0	1
ISIC 25	5502	0.10	0.30	0	1
ISIC 26	5502	0.06	0.24	0	1
ISIC 27	5502	0.01	0.12	0	1
ISIC 28	5502	0.11	0.31	0	1
ISIC 29	5502	0.05	0.21	0	1
ISIC 30 or 31	5502	0.02	0.15	0	1
ISIC 32	5502	0.00	0.07	0	1
ISIC 33	5502	0.00	0.05	0	1
ISIC 34	5502	0.02	0.13	0	1
ISIC 35	5502	0.00	0.06	0	1
ISIC 36	5502	0.05	0.21	0	1

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