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Trade Facilitation and Expanding the Benefits of Trade: Evidence from Firm Level Data

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Executive summary

Existing empirical studies on trade costs and trade facilitation largely focus on aggregate impacts of reform due to data availability. We take a step toward filling in this gap in literature. Using the World Bank Enterprises Surveys, the study extends the scope of empirical literature to firm dimension with a focus on SMEs. For Asia countries, we find that improvement in trade facilitation indicators tend to increase the probability that SMEs will become exporter -- as well as their export propensity. In particular, increasing policy predictability and enhancing information technology services are the most effective measures for SMEs in expanding trade. We also find that SMEs are less responsive to improvement in transportation infrastructure, overall, than large enterprises while increasing policy predictability matters more to SMEs. In summary, in order to expand the benefits of trade to SMEs, countries need to make more substantial investments in reform – in particular in the "soft" part of trade facilitation.

Introduction

Two conflicting dynamics in today's international trading system suggest that trade facilitation is particularly important to development prospects. On the one hand, tariffs have been significantly cut through a combination of multilateral, regional, and unilateral efforts. It is important to recognize, however, the increasingly important role of other factors in driving a wedge between export and import prices—and the role of trade facilitation policies in reducing that wedge. The second dynamic relates to the institutional nature of the trade reform process. Ensuring a successful conclusion to the Doha Development Agenda is an important aim for all WTO members.

Progress at the multilateral level, however, is increasingly difficult for a number of reasons including the lack of willingness among some members to engage in substantive reform. Nevertheless, recovery from the current crisis requires addressing trade barriers now. Countries eager to move forward on trade reform seek new agendas at the domestic and regional levels. Trade facilitation represents an increasingly important part of trade reform.

Trade facilitation is a multi-faceted area. Unlike cutting tariffs or eliminating quotas, progress on trade facilitation can involve resource costs related to improving trade-related infrastructure, or streamlining customs administrations. Before investing in these measures, it is important for policymakers to understand the behavior of exporters and to have an idea of what affect their companies and where the priorities are in reform for their countries.

Firms make conscious decision about entering export markets before they decide how many goods or services they want to send abroad. Due to higher costs and risks, only a minority of firms in each country actually exports[1]. Those which do export tend to be larger and more productive. One powerful explanation is the existence of cross-border trade costs. Only the most productive firms are able to make profit withstanding the additional costs associated with exporting. Less productive ones cannot do so and only produce for the domestic market[2]. Scale economy and increased competition due to direct contact with global markets tend to further increase the profitability and productivity of exporters.

This has a number of important implications on the role of trade costs and trade facilitation. First, as trade costs fall, low-productivity firms at the edge of becoming exporters will start to find it profitable to export. Trade facilitation can, therefore, promote the entry of small and medium sized enterprises (SMEs) into export markets. It will expand the number of firms in direct contact with the world market and extend the benefits of trade. Second, lower trade costs tend to increase firms' propensity to export and stimulate the growth of exporters. The overall effect will be the reallocation of resources from low-productivity to high-productivity firms and higher productivity of the economy.

Existing empirical studies on trade costs and trade facilitation largely focus on aggregate impacts of reform due to data availability. We take a step toward filling in this gap in literature. Using the World Bank Enterprises Surveys, the study extends the scope of empirical literature to

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[1] See Bernard et al. (2007) for a survey of the literature.
[2] See Melitz (2003) for a theoretical model.

firm dimension with a focus on SMEs. For Asia countries, we find that improvement in trade facilitation indicators tend to increase the probability that firms will become exporter as well as their export propensity. In particular, increasing policy predictability and enhancing IT services are the most effective. SMEs appear to be less responsive to improvement in transportation infrastructure than large enterprises. On the other hand, increasing policy predictability affects SMEs more. In order to expand the benefits of trade to SMEs, countries need to make more substantial investment as well as to pay attention to the "soft" part of trade facilitation.

SMEs and Exporter Premier

The World Bank Enterprises Surveys provide very valuable information to investigate firms' exports and trade facilitation despite the data's limitations[3]. First, we can distinguish SMEs as well as exporters using the World Bank Enterprises Surveys. The surveys conducted in ten East and Southeast Asian countries and four South Asian countries from 2002-2006 are used [4](Table 1). It includes 14862 firms operating in fourteen manufacturing sectors[5] (Table 2). Among them, sixty percent are SMEs that are defined as firms with a employment less than 100. Firms are also required to disclose their status as exporters and the share of exports to their total sales. Thirty-six percent of firms were exporters when surveyed (Tables 1 and 2).

Exporters tend to be larger and more productive than non-exporters. There exists a premium of being an exporter. Using the Enterprise Surveys from 2002-2006 of all countries, we confirmed this regularity, consistent with various studies[6][7]. Exporters are much larger in size valuated by sales (Figure 1). The magnitude of the premium is greater for SMEs. For all regions, the sales of exporters are 64 percent larger than those of non-exporters among large firms, and double the sales of non-exporters among SMEs. The exporter premium for SMEs is the largest in Asia countries, about 120 percent. Exporters are not that different when they are large firms in South Asia as sales of exporters are only 22 percent larger than those of non-exporters.
Evaluated by sales per labor, labor productivity is higher in exporting companies than in non-exporting ones[8]. An employee of exporters generates 20 percent more sales than an employee of non-exporters if both companies are large. The difference is more significant if the companies are SMEs, almost 50 percent higher. Comparing across regions, the exporter premier on labor

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[3] Some limitations include small number of firms for some countries, and non-panel structure of data.

[4] These countries are Cambodia, China, Indonesia, Lao PDR, Malaysia, Mongolia, Philippines, Korea, the Republic, Thailand, and Vietnam of East and Southeast Asia, and Bangladesh, India, Pakistan and Sri Lanka from South Asia.

[5] These sectors are textiles, leather, garments, food, beverages, metal and machinery, electronics, chemical and pharmaceutics, wood and furniture, non-metallic and plastic materials, paper, auto and transportation equipments, construction, and other manufacturing.

[6] See for instance, Bernard and Jensen (1995), Bernard and Jensen (2007), Mayer and Ottaviano (2007) and the World Bank (2007).

[7] Following previous studies, we obtain export premier by estimating a simple model. The L.H.S. is firm characteristics, including sales and sales per labor. The R.H.S includes a dummy on exporter while controlling for country fixed effects, sector fixed effects and year fixed effects. In order to distinguish between SMEs and large firms, we add a dummy on SME and interact the dummy with the dummy on exporter. The coefficient on the dummy on exporter will imply the exporter premier among larger firms and the coefficient on the interact term will indicate the exporter premier among SMEs.

[8] Due to limited observation on other variables, we cannot compute other measures of productivity for majority of Asian firms.

productivity for SMEs is the highest for countries in Asia, 58 percent for South Asia and 75 percent for East and Southeast Asia.

Trade Facilitation Measures and SMEs' Perception

We also construct country-sector-year specific indicators on trade facilitation, taking advantage of the questionnaires. The surveys ask individual firms to assess the business operating environment. We first select a set of assessments capturing a broader range of trade facilitation measures. As a second step, we take the average of these assessments over country, sector, and year. This has two advantages: first, it helps to alleviate the potential endogeneity problem associated with firm level perception; second, it will extend the coverage to firms which operate in the same country and the same sector at the same year but fail to answer the question. This is especially helpful to include more non-exporters.

In its narrow sense, trade facilitation refers to improving the logistics of moving goods through ports and increasing custom efficiency for cross-border trade. Time is essential to business. Additional delay in shipping could reduce trade by 1 percent[9]. In the Enterprise Surveys, firms are asked to evaluate to what extent that customs and trade regulations are obstacles to business. The scale ranges from 0, no obstacle, to 4, severe obstacle. Exporters or importers also report the average days to clear their goods from the port of exit or the port of entry. We use all three answers as measures on customs efficiency.

A broad view of trade facilitation has emerged in the international development community. At its most general, it includes all measures to improve the environment in which trade takes place and reduce the costs of importing and exporting. Transparency of policy and regulations, good governance, convergence of standards, upgrading of IT services and improvement in other infrastructures have all shown to matter.

Transparency of policy has two dimensions, predictability and simplification. First, transparency through greater certainty can lower trade costs for business. A country with low level of corruption, good governance and effective legal system can offer more certainty in the interpretation and implementation of its trade policy. Transparency through fewer "layers" of trade regulation and better institutions will cut information and compliance costs for business. Helble, Shepherd, and Wilson (2007) construct export and import transparency indices capturing the idea. Based on these indices, improving importer transparency of APEC economies to the regional average can lead to 7.5% ($148bn) increase in intra-regional trade as well as expand global welfare by $406bn[10]. In the Enterprise Surveys, firms also provide their view on corruption, and economic and regulatory policy uncertainty as an obstacle to business (0-4 scale). They also express their confidence in legal system regarding enforcing contractual and property rights. The scale is from 1, fully disagree with effective protection, to 6, fully agree. We use answers to these three questions to capture the essence of transparency of policy and good governance.

Transportation infrastructure and IT services have gained increasing importance in trade facilitation. Poor roads and congested ports limit trade. Improved roads in Eastern Europe and

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[9] See Djankov, Freund, and Pham (2006).
[10] See Helble, Shepherd, and Wilson (2007), and Abe and Wilson (2008).

Central Asia could expand trade by 50%[11]. 10% increase in the capacity of East Asia ports lowers costs by 9%[12]. High quality IT services and competitive IT sectors generate spillovers to all aspects of economic activities, including trade. Considering together with port efficiency, customs environment, and regulatory environment, IT infrastructure improves trade. For Southeast Asia, trade flows are sensitive to IT technology and transport infrastructure. Improving competitiveness in internet services would boost trade by 5.7% ($1.7bn)[13]. We use firms' assessment on transportation infrastructure and telecommunication as obstacles to business as the first set of measures on infrastructure. The Surveys also ask firms to provide evaluation on the affordability (0, not affordable – 1, affordable) and quality of IT services (1, very poor-4, very good). We take the average of the answer to each question over country, sector and year and then multiply the two numbers together to get our measure on IT services. As it incorporates richer information than the answers to business obstacles, we use it as our benchmark measure in impact analysis.

Before proceeding to impact analysis, we first have a look at SMEs' perception on the various aspects of trade facilitations. We use answers to business obstacles to make the comparison (Figure 3). Clearly, the inefficiency in customs and trade regulations, the lack of transparency, and the inadequate infrastructure have been constraints to business operation in all Asian countries. Even looking at the best case, there are still 34 percent of SMEs and 45 percent large firms saying that IT services were obstacles. Interestingly, the proportion of SMEs complaining about all measures was smaller than that of large companies. SMEs are more dynamic and often the source of innovations. In short, they tend to look inward to adapt to the markets when facing obstacles. That might be a reason why we observe less complains from them. Another reason might be that countries have been successful in facilitating the development of SMEs.

Turning to assessment on each policy measure, the proportion of companies regarding transparency of policy as constraints was the largest. For East and Southeast Asian companies, economic policy and regulatory policy uncertainty was the number one obstacle as 63 percent of SMEs and 73 percent of large companies said it constrain their business operation. For South Asian companies, corruption ranked the worst which was followed by policy uncertainty. There were also large portion of companies complaining about inefficient customs and trade regulations. The case of South Asia was more severe, half of SMEs and 70 percent of large enterprises rated it as an obstacle. Infrastructures, especially IT services, have seen rapid development in most Asian countries and some have opened IT sector to foreign competition. The progress seemed to be well perceived by enterprises—the smallest portions of companies complained about infrastructure as constraints. The fact should be kept in mind is that there is still space for improvement when comparing with industrialized countries.

SMEs' evaluation also varies across countries and over time (Figures 5-9). We are aware of the fact that the numbers of observations of surveys are quite different and the simple summary figures should be interpreted with caution. In general, SMEs in countries with higher income complained less. Korea, the Republic, had the smallest fraction of firms saying customs,

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[11] Shepherd and Wilson (2007).
[12] Abe and Wilson (2009).
[13] Mann, Otsuki, and Wilson (2005), and Shepherd and Wilson (2009).

transportation and IT services were somewhat obstacles to business operation. Thailand and Malaysia also tended to have better perceived trade facilitation measures among SMEs. The perception seemed to improve over time, too. Unfortunately, we only include one survey for countries, except India[14]. Looking at the two surveys on India, one in 2002 and the other in 2006, there was a clear fall in the faction of SMEs which saw trade facilitation measures as business constraints. For customs and trade regulations, the faction changed from 57 percent in 2002 to 39 percent in 2006.

Trade Facilitation and Firms' Exports

Now, we turn to investigate the impact of trade facilitation measures on firms' export performance. Following recent theories, the impact can be two folds: first and foremost, trade facilitation should increase the number of firms decide to start exporting by reducing trade costs; second, trade facilitation may stimulate growth of exports by affecting how much exporters sell abroad relative to sell domestically as the costs of trade falls. For an individual firm, we interpret the two aspects as the probability of exporting impact and the export propensity impact. It can be illustrated with a simple model.

Assume a representative firm with fixed cost for producing $F(W_i)$ and a variable cost $c(q_i | W_i)$. Both are affected by firm specific characteristics, such as size, managerial ability, labor productivity, and ownership structure, denoted by W_i. Suppose exporting imposes additional fixed costs to the firm. For instance, completing the documents needed for custom clearance requires at least a one- time investment in learning the documents and maybe an initial cost of contacting external brokers for that purpose. The fixe cost is denoted by $F^E_i = F^E_{cst} + D(W_i)$. The first component of the fixed cost is the fixed cost of exports common to industry s located in country c at time t. The costs may due to compliance with customs and other trade regulations, non-transparent policy, and insufficient infrastructure. The second component represents the firm-wise deviation from the common costs due to the varied impact perceived by each firm, which is potentially affected by firm specific characteristics, W_i.

Subsequently, selling the product abroad also requires additional variable cost. For instance, when exporting perishables longer delays means more losses for each unit exported. As an automotive-component exporter from a small country, the firm suffers if its relationship with foreign customers is interrupted by a sudden change in exchange rates. They do not have many alternative buyers domestically and therefore, have to leverage against the uncertainty of domestic policy for each unit of exports. The variable cost is denoted as $c^E(q^E_i | W_i, c^E_{cst})$. q^E_i is the amount exported. W_i, firm specific characteristics are also included since they may be correlated with its variable export costs. c^E_{cst} represents the costs must be withstood by a firm of industry s located in country c at time t to export each unit of products. These costs may include the time costs due to custom clearance, poor transportation conditions, and IT services, as well as costs incurred to leverage against additional risks due to policy uncertainty.

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[14] Survey on China conducted in 2003 is dropped in this exercise due to limited observations for some questions.

Assuming exogenously determined prices in foreign markets, firm i receives from exports

$$\pi^E_i = p^E \cdot q^E_i - [c(q^E_i \mid W_i) + F(W_i)] - [c^E(q^E_i \mid W_i, c^E_{cst}) + F^E_{cst} + D(W_i)] \text{ or}$$
$$\pi^E_i(q^E_i(W_i, c^E_{cst}), W_i, F^E_{cst})) = \pi^E_i(W_i, c^E_{cst}, F^E_{cst}).$$

It will export if and only if the expected profits from exporting are positive. Define the export status of firm i is given by Y_i then:

$$Y_i = 1 \text{ if } E[\pi^E_i(W_i, c^E_{cst}, F^E_{cst})] \geq 0 \quad \text{. (1)}$$

$$Y_i = 0 \text{ if } E[\pi^E_i(W_i, c^E_{cst}, F^E_{cst})] < 0$$

It implies that the probability of exporting is a function of firm characteristics, and additional fixed and variable trade costs which is industry-country-time specific:

$$prob(Y_i = 1) = f(W_i, c^E_{cst}, F^E_{cst}) \quad \text{. (2)}$$

Once firm decides to export, its total profits will be the sum of the profits from domestic sales $\pi^D_i = p \cdot q_i - [c(q_i \mid W_i) + F(W_i)]$ and those from exports $\pi^E_i(q_i^E(W_i, c^E_{cst}), W_i, F^E_{cst})$. In equilibrium, the share of exports in total sales is a function of firm characteristics, and additional fixed and variable trade costs which is industry-country-time specific. Define the share as export propensity, EP_i:

$$EP_i = EP_i(W_i, c^E_{cst}, F^E_{cst}) = \frac{q_i^{E*}}{q_i^{E*} + q_i^*} = \frac{q_i^E * (W_i, c^E_{cst}, F^E_{cst})}{q_i^E * (W_i, c^E_{cst}, F^E_{cst}) + q_i * (W_i, c^E_{cst}, F^E_{cst})} \quad \text{. (3)}$$

Following the ideas of equation (2) and (3), we estimate the impacts using reduced form specifications. In particular, we assume that the unobservable firm idiosyncratic characteristics are normally distributed. For the probability of exporting, we then follow a probit model:

$$Y_i = 1 \text{ if } a * X_i + \gamma * TF_{cst} + D_c + D_s + D_t + v_i \geq 0 \text{ and } v_i \sim N(0,1) \quad \text{. (4)}$$

$$Y_i = 0 \text{ other wise}$$

For the export propensity, we follow a tobit model taking into account the issue that the share is bounded by zero and one. Define the latent export propensity as

$$EP_i* = \beta * X_i + \theta * TF_{cst} + D_s + D_c + D_t + u_i \text{ and } u_i \sim N(0,1) \text{ then}$$
$$EP_i = 0 \text{ if } EP_i* \leq 0$$

$$EP_i = EP_i * \text{ if } 0 < EP_i* \leq 1 \quad \text{. (5)}$$

$EP_i = 1$ if $1 < EP_i *$.

TF_{cst} represents measures on trade facilitation indicators as explained above. They include measures on the efficiency of customs, the transparency of policy, transportation infrastructure and IT services. All are country-sector-year specific average values. X_i represents firm specific characteristics, including employment size, labor productivity valued by sales per labor, a dummy on management with college education and foreign share in ownership. D_c, D_s and D_t denote a set of country fixed effects, sector fixed effects and year fixed effects. In particular, tariff and non-tariff barriers, and other country and industry specific factors are, hence, taken into account.

The results strongly support the idea that all trade facilitation reforms will increase the probability of exporting by firms as well as export propensity (Table 3, Table 4). In particular, improvement in trade transparency and IT services are indicated to be the most effective. Start with the impact on the probability of exporting. First, we look at the relationship when including one measure at a time. Recall that we use the days to clear exports, the days to clear imports, and firms' perception of customs and trade regulation as business operation obstacles to examine the impact of custom efficiency. For all three indicators, we expect the estimated coefficients to be negative if custom efficiency facilitates entry. The results are consistent with the expectation (Columns 3 -5 of Table 3). Firms tend to start exports when there are reductions in days to clear exports or imports. The same is true when there is perceived improvement in customs and trade regulations—less of an obstacle.

Three indicators are used to measure transparency of policy: firms' perception on corruption as operation obstacles, their perception on uncertainty of economic and regulatory policies as obstacles, and their confidence in legal system. If transparency matters, we would expect the coefficients on the former two variables as negative and the coefficient on the last as positive. Again, the results offer support to the hypothesis (Columns 6 -8 of Table 3). Less corruption and more predictability certainly encourage firms to enter export markets. The impact of legal protection is not significant. Finally, we use firms' perception on transportation as obstacles and their assessment of the affordability and quality of IT services to evaluate infrastructure. The former term should have negative impact and the latter should have positive impact. The coefficient on IT services is consistent with the hypothesis, indicating IT services stimulate entry into foreign markets while the coefficient on transportation does not matter in this case (Columns 9 -10 of Table 3).

In practice, all trade facilitation policies interact with each other. Customs regulation reforms will only stay on the paper if the officials are highly corrupted. Overall predictability of trade policy will enhance the impact of customs modernization by reducing additional risks. Improvement in transportation infrastructure tends to affect exports more when trade regulations and good governance make exporting possible for more firms. IT services, on the other hand, helps to improve efficiency overall and reduce costs. In order to take into account those correlations, we consider all aspects of trade facilitations together. The results confirm the idea that the various measures interact with each other and that reducing policy uncertainty and enhancing IT services are relatively more effective measures in reform than others examined here (Columns 1-2 of Table 3).

Improving the efficiency of customs clearly matters. Reducing days to exports by half will increase the probability of exporting by 7.5 to 12 percent. The role played by policy transparency becomes clearer and stronger. When considering with days to exports together, firms' perception on corruption as obstacles seems to matter less while firms' perception on policy uncertainty show greater impact, and firms' evaluation on legal protection has significant impact, too. Combining with results from using individual measures, it may imply the following. First, the results on days of exports have incorporated the impact of corruption and therefore, reducing corruption is effective in increasing customs efficiency. Second, policy uncertainty adds additional risks on top of customs efficiency and dominates customs and trade regulations in affecting firms' entry decision. Finally, legal environment plays a role but it is builds upon the effectiveness of other trade facilitation policies. Better data and more sophisticated method are needed to confirm these implications.

Interestingly, the impact of transportation infrastructure is shown to be significant and the impact of IT services more than doubles. Analogous to the idea of policy transparency, it may have the following indications. The improvement in transportation infrastructure matters but is highly correlated with other policy measures. Progresses in IT services tend to encourage entry alone as well as through other trade facilitation measures.

The impact of trade facilitation on export propensity shows a similar pattern (Table 4). Policy predictability and IT services are shown to be the most effective while all trade facilitation reforms encourage more exports. Custom efficiency matters while the impact is correlated with the level of corruption and the level of policy uncertainty. Reducing days to clear exports by half may increase the share of exports in total sales by 1.6 to 4.5 percent. Increasing policy predictability leads to substantial increases in exports propensity. Legal environment seems to matter when all other factors are controlled for. Improvement in transportation infrastructure would encourage exports while it is highly correlated with the effectiveness of other measures. Enhancing IT services is a very effective trade facilitation measure and its impact tends to work through other measures, too.

Trade Facilitation and Impact on SMEs

We further investigate the impact on SMEs' probability of exporting and export propensity. In order to do so, we create a dummy on SMEs and interact it with all measures on trade facilitation. The coefficient on each trade facilitation measure imply the impact on large firms, and the sum of the coefficient on each measure and the coefficient on the interacted term shows the impact on SMEs. The dummy on SMEs is omitted as we have employment size as covariate. In other words, we measure the impact of trade facilitation among SMEs and the impact among large firms separately. An implicit assumption is that firm individual characteristics and other aggregated fixed effects will have same impact for the two groups.

The estimated impacts on SMEs of all trade facilitation measures are in line with the results when considering firms of all sizes. However, SMEs' exporting behavior seems to be significantly less responsive to improvement in transportation infrastructure but much more responsive to policy predictability. In other words, this measure is probably the most effective in encouraging the entry of SMEs as well as increasing their export propensity.

We investigate the impact of each trade facilitation measure by itself as well as together with other factors. The pattern across measures when only considering SMEs is the same as that for all firms (Tables 5 and 6). Focusing on the results from using all trade facilitation measures, the impact on SMEs tends to be smaller than that on firms of all sizes for transportation infrastructure and IT services (Figures 10 and 11). Policy uncertainty, however, affects SMEs more. For comparison purpose, we convert the estimated coefficients of Column 2 of Table 5 and Comlun 2 of Table 6 into positive measures. In other words, we consider how improvement in each measure will affect the probability of exporting and export propensity even. The negative coefficient on firms' perception on customs as obstacles, for instance, is converted into positive coefficient of the same magnitude.

Firms' perception on transportation increase by 1 unit only leads to 29 percent increase in the probability of exporting among SMEs while the same change can increase the probability by 60 percent among firms of all sizes (Figure 10). The difference of impacts on exports propensity is also significantly large. The same improvement can only increase SMEs' export propensity by 1.8 percent while it can lead to 34 percent increase in the export propensity when considering all firms (Figure 11). The case of IT services is similar though the differences are much smaller. Interestingly, reducing policy uncertainty tends to affect SMEs more than it does to firms of all sizes. When firms' assessment on policy uncertainty improves by 1 unit, the probability of exporting for SMEs increases by 66 percent while the probability for all firms increases by 62 percent (Figure 10). The same change leads to 53 increases in SME's export propensity, in comparison of 42 percent in all firms' export propensity. Legal environment is a factor which tends to affect SMEs and large firms in the same magnitude (Figure 11).

In summary, for Asia countries, we find that improvement in trade facilitation indicators tend to increase the probability that SMEs will become exporter as well as their export propensity. In particular, increasing policy predictability and enhancing IT services are the most effective. SMEs appear to be less responsive to improvement in transportation infrastructure than large enterprises. On the other hand, increasing policy predictability affects SMEs more. In order to expand the benefits of trade to SMEs, countries need to make more substantial investment as well as to pay attention to the "soft" part of trade facilitation.

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Figure 1: Exporter Premier on Sales, by Firm
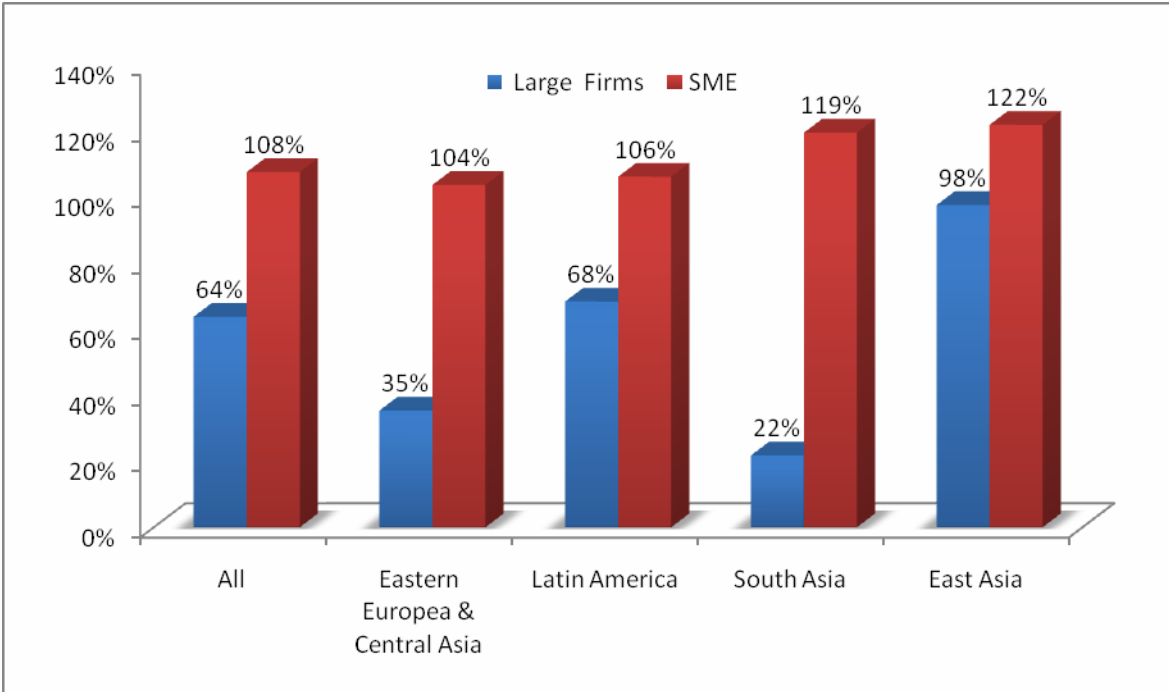
Data Source: Enterprise Surveys, the World Bank

Figure 2: Exporter Premier on Sales/Labor, by Firm Sizes
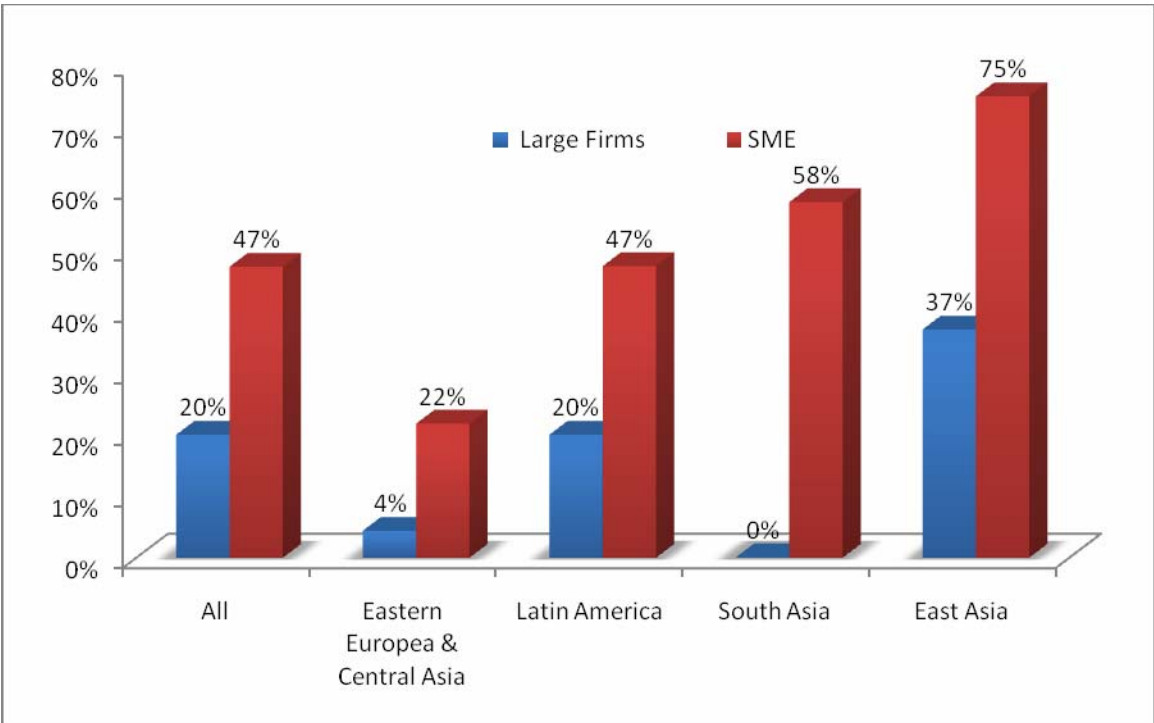
Data Source: Enterprise Surveys, the World Bank

Figure 3: Firms Perception on Obstacles to Business East Asia, by Firm Sizes
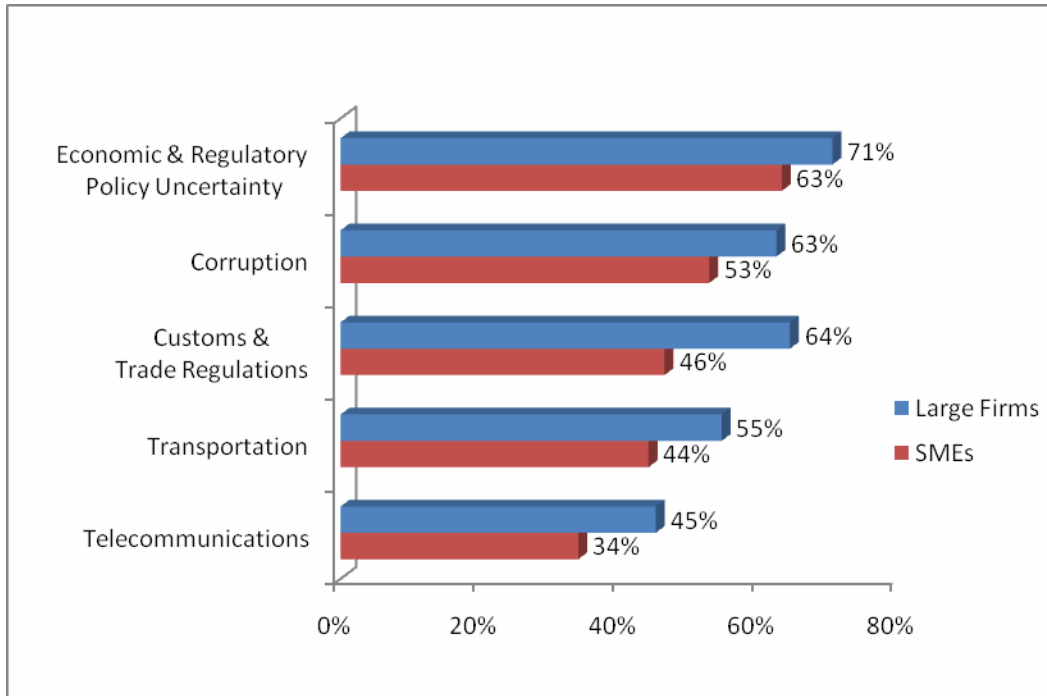
Data Source: Enterprise Surveys, the World Bank

Figure 4: Firms Perception on Obstacles to Business South Asia, by Firm Sizes
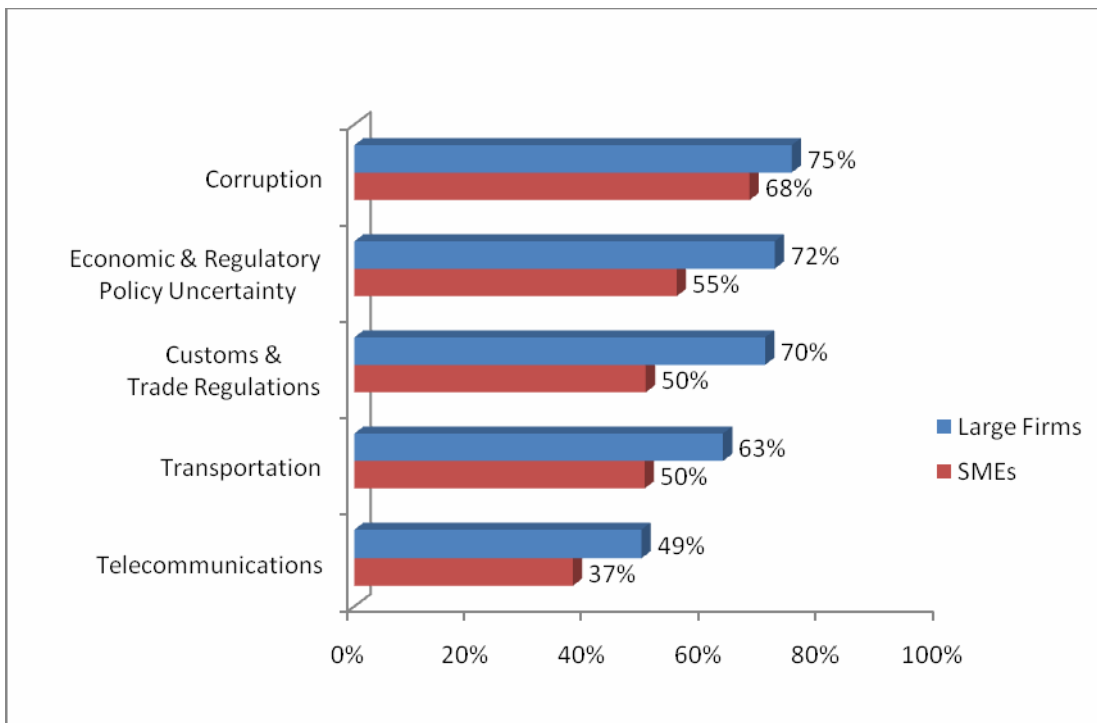
Data Source: Enterprise Surveys, the World Bank

Figure 5: Firm Perception on Customs and Trade Regulations, SMEs
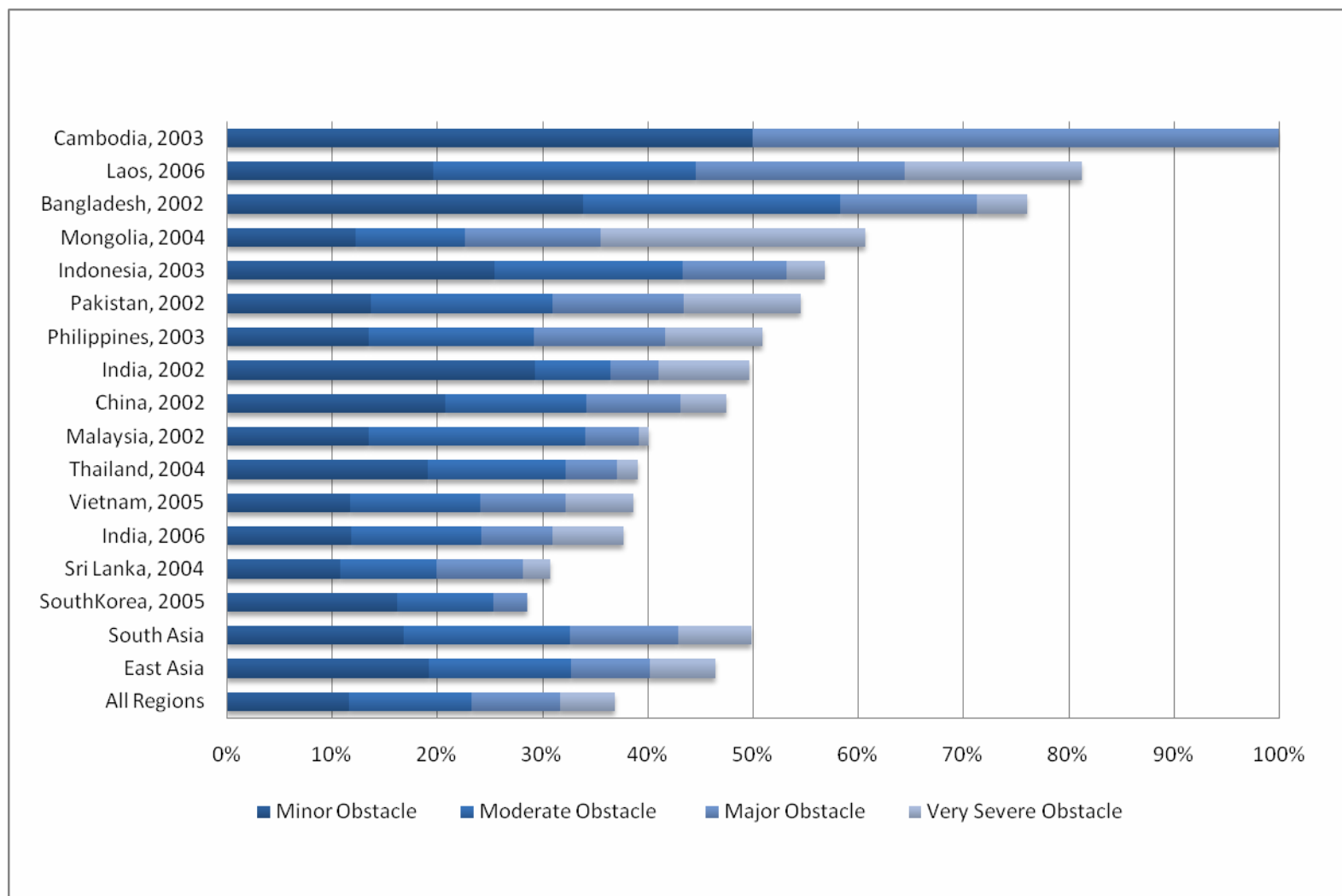
Data Source: Enterprise Surveys, the World Bank

Figure 6: Firm Perception on Corruption, SMEs
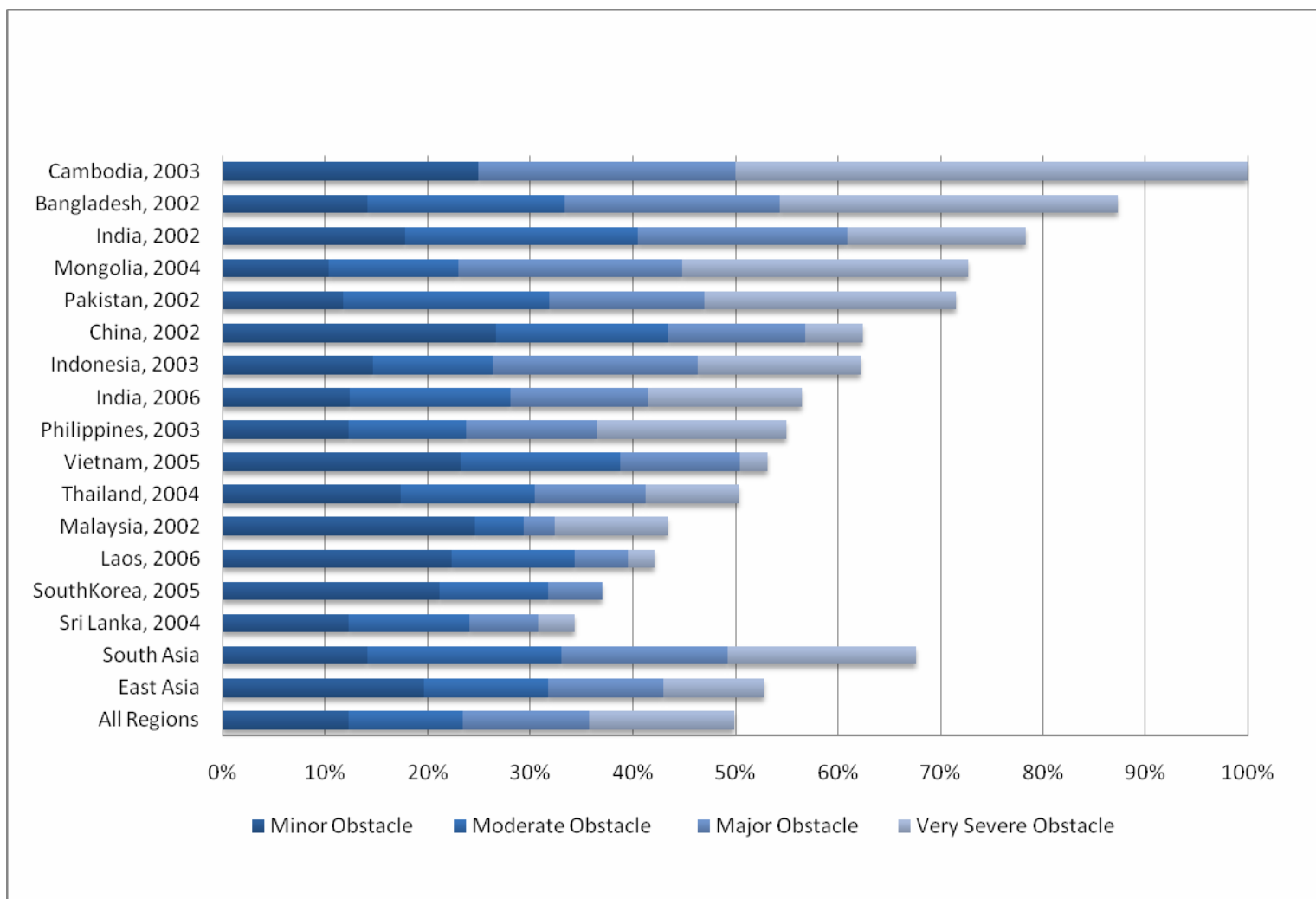
Data Source: Enterprise Surveys, the World Bank

Figure 7: Firm Perception on Economic & Regulatory Policy Uncertainty, SMEs
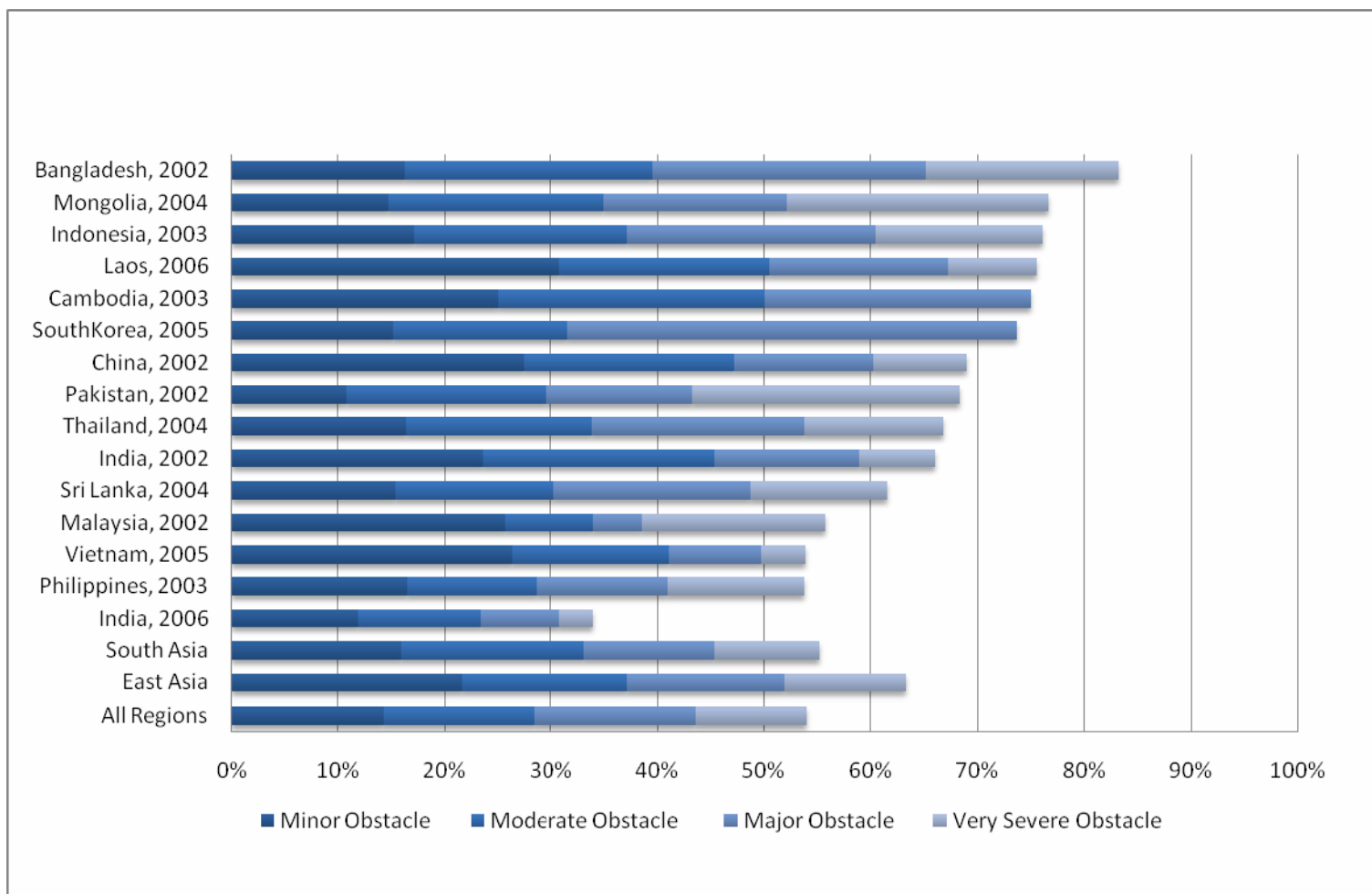
Data Source: Enterprise Surveys, the World Bank

Figure 8: Firm Perception on Transportation, SMEs
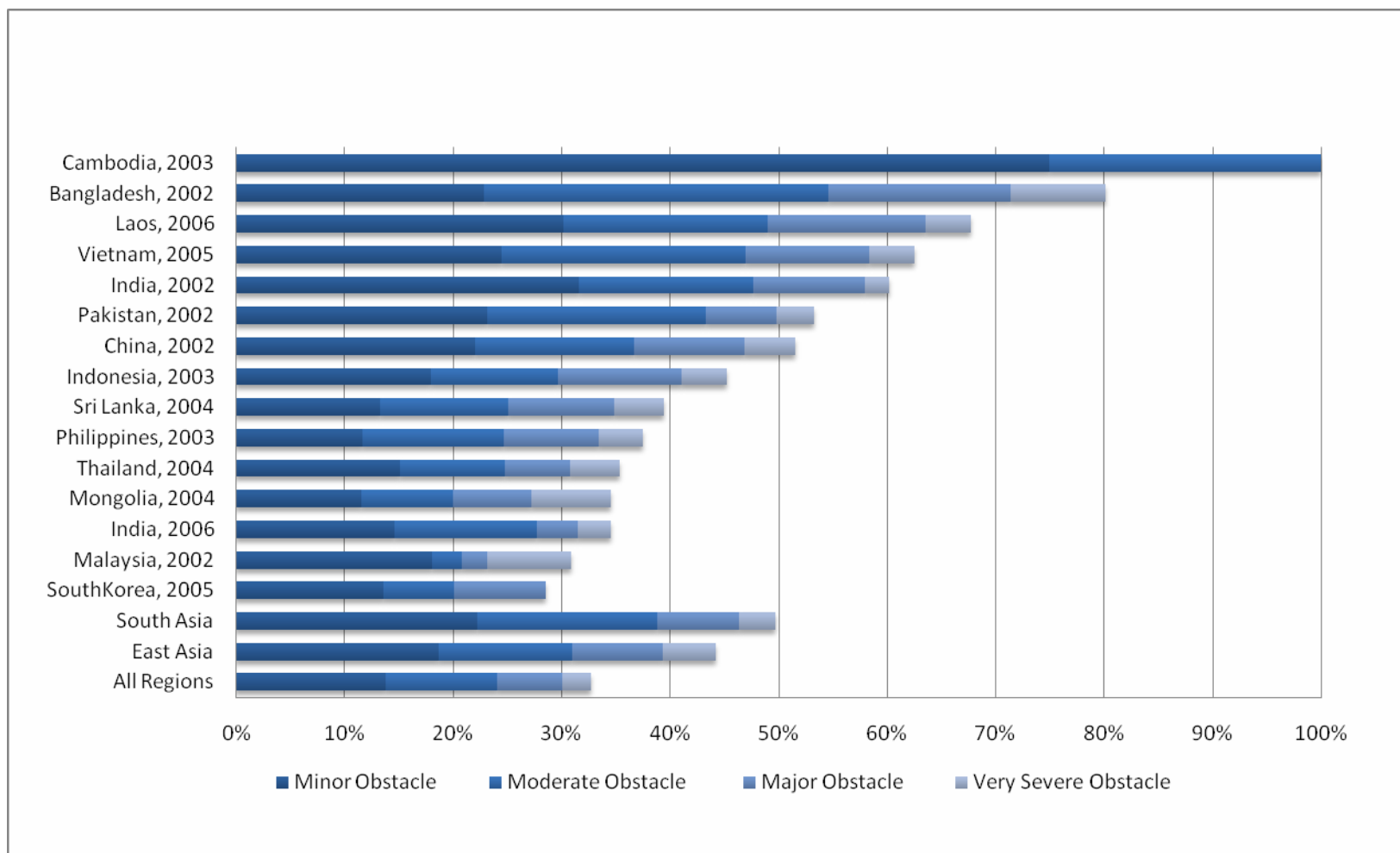
Data Source: Enterprise Surveys, the World Bank

Figure 9: Firm Perception on Telecommunications, SMEs
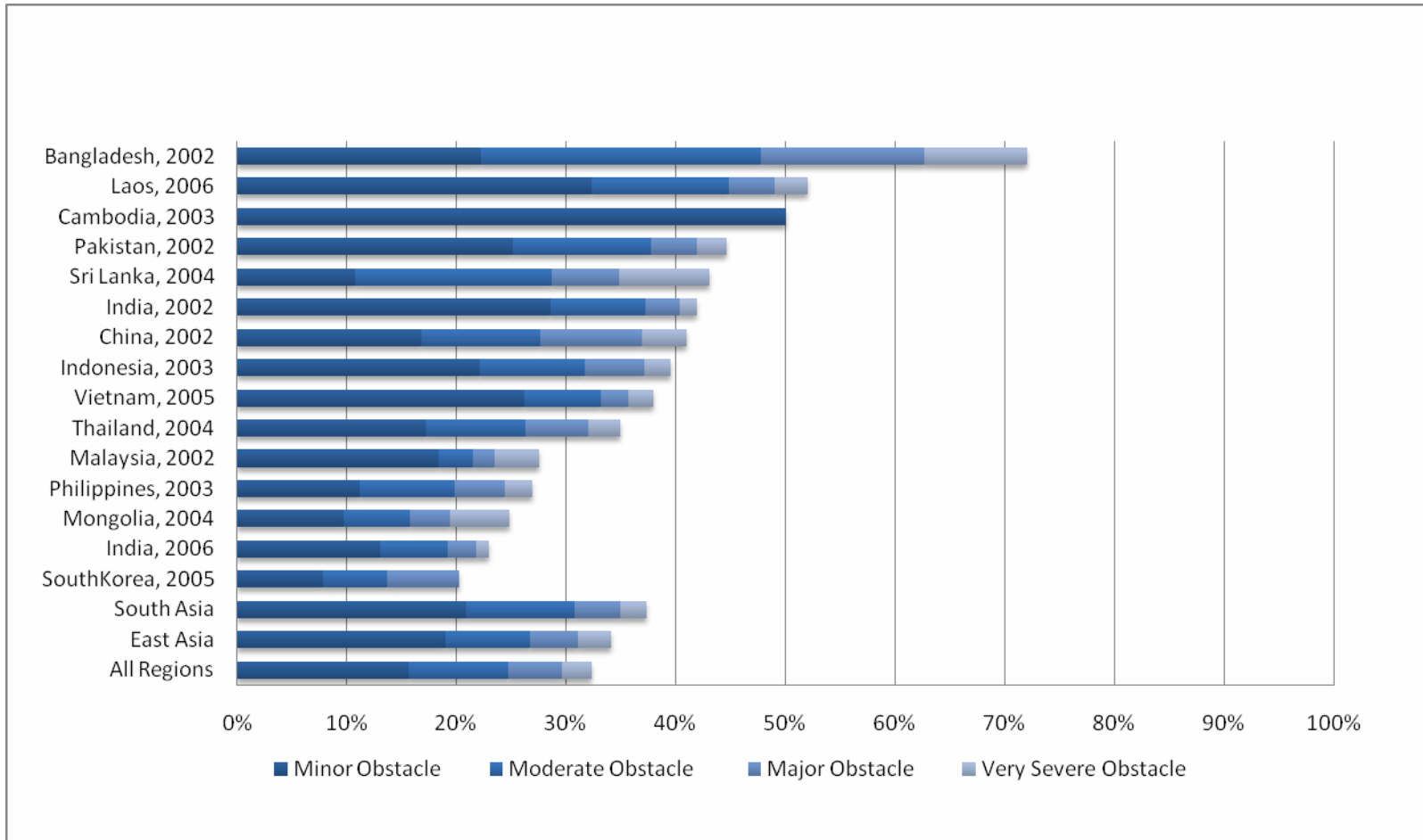
Data Source: Enterprise Surveys, the World Bank

Figure 10: Impact on Probability of Exporting
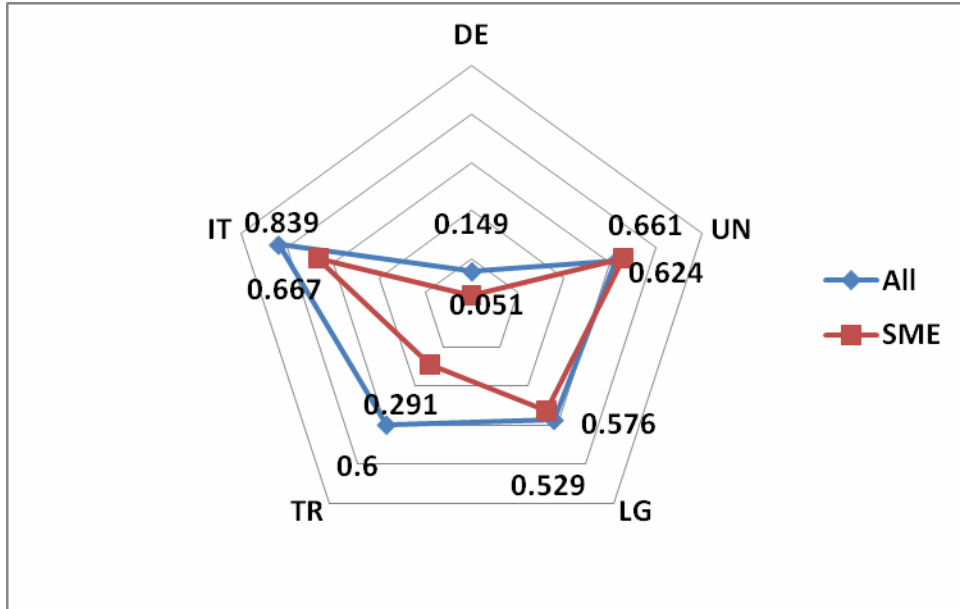
Source: Author calculation.
DE: Days to clear exports, UN: Uncertainty of Economic and Regulatory Policies, LG: Legal Protection, TR: Transportation as obstacles, IT: Affordability and quality of IT services.

Figure 11: Impact on Probability of Exporting
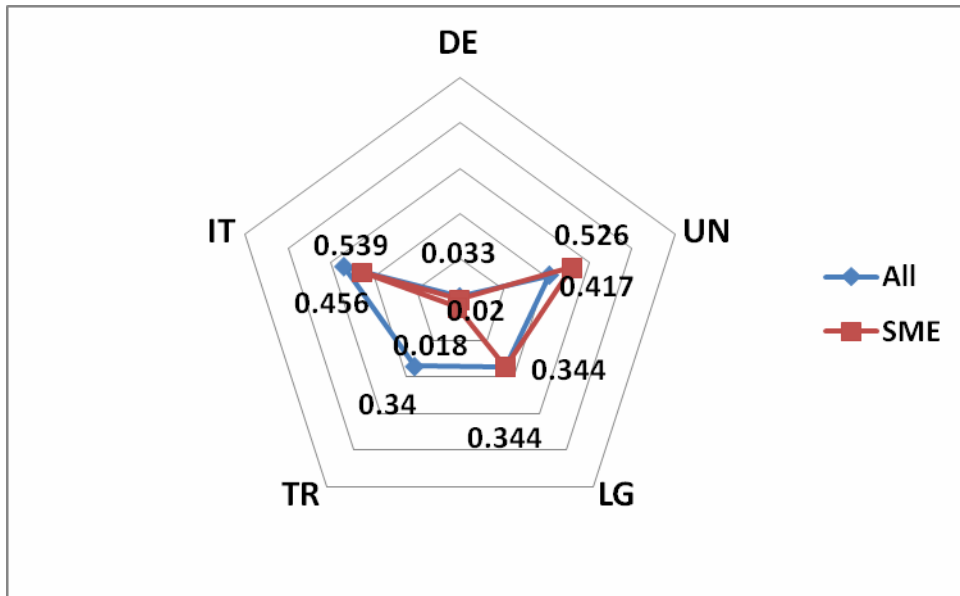
Source: Author calculation.
DE: Days to clear exports, UN: Uncertainty of Economic and Regulatory Policies, LG: Legal Protection, TR: Transportation as obstacles, IT: Affordability and quality of IT services.

Table 1: Distribution of SME and Exporters, by Country

country	year	All					SMEs		Large Firms	
		No. of Firms	No. of Exporters	Share of Exporters	No. of SMEs	share of SME	No. of Exporters SME	Share of Exporters SMEs	No. of Exporters Large	Share of Exporters Large
Cambodia	2003	63	58	92%	4	6%	3	75%	55	93%
China	2002	1020	517	51%	341	33%	105	31%	412	61%
China	2003	1609	266	17%	774	48%	57	7%	207	25%
Indonesia	2003	695	295	42%	334	48%	43	13%	252	70%
Laos	2006	246	87	35%	192	78%	38	20%	49	91%
Malaysia	2002	902	484	54%	600	67%	251	42%	233	77%
Mongolia	2004	193	48	25%	167	87%	27	16%	21	81%
Philippines	2003	716	261	36%	416	58%	78	19%	183	73%
SouthKorea	2005	215	99	46%	156	73%	51	33%	48	81%
Thailand	2004	1385	853	62%	582	42%	225	39%	628	78%
Vietnam	2005	1410	634	45%	681	48%	165	24%	469	64%
Bangladesh	2002	1001	424	42%	336	34%	69	21%	354	54%
India	2002	2218	493	22%	1774	80%	243	16%	114	45%
India	2006	1824	370	20%	1525	84%	315	18%	176	54%
Pakistan	2002	914	168	18%	809	89%	129	16%	39	37%
SriLanka	2004	451	316	70%	195	43%	93	48%	200	88%
Total		14862	5373	36%	8886	60%	1892	21%	3440	58%

Table 2: Distribution of SMEs and Exporters, by Industry

Industry	All					SMEs		Large Firms	
	No. of Firms	No. of Exporters	Share of Exporters	No. of SMEs	share of SME	No. of Exporters SME	Share of Exporters SMEs	No. of Exporters Large	Share of Exporters Large
Textiles	1772	599	34%	1013	57%	209	21%	382	53%
Leather	398	186	47%	275	69%	96	35%	89	75%
Garments	2523	1402	56%	1226	49%	417	34%	975	78%
Food	1932	612	32%	1230	64%	209	17%	396	61%
Beverages	97	21	22%	66	68%	4	6%	17	55%
Metals and machinery	1731	456	26%	1236	71%	211	17%	242	52%
Electronics	2083	736	35%	1120	54%	186	17%	547	59%
Chemicals and pharmaceutics	1210	269	22%	836	69%	121	14%	143	41%
Construction	68	2	3%	66	97%	1	2%	1	50%
Wood and furniture	505	249	49%	317	63%	91	29%	158	84%
Non-metallic and plastic materials	896	396	44%	568	63%	193	34%	199	63%
Paper	151	33	22%	96	64%	13	14%	20	38%
Other manufacturing	224	92	41%	139	62%	52	37%	40	49%
Auto and transportation equipments	1272	320	25%	698	55%	89	13%	231	41%
Total	14862	5373	36%	8886	60%	1892	21%	3440	58%

Table 3: Impact of Trade Facilitation Indicators on Probability of Exporting

	1	2	3	4	5	6	7	8	9	10
Days to Clear Exports	-0.240***	-0.149*	-0.179***							
	(0.082)	(0.085)	(0.052)							
Days to Clear Imports				-0.240***						
				(0.055)						
Customs & Trade Regulation as Obstacles					-0.193***					
					(0.065)					
Corruption as Obstacles	-0.173					-0.309***				
	(0.125)					(0.065)				
Uncertainty of Policies as Obstacles		-0.624***					-0.402***			
		(0.123)					(0.064)			
Legal Protection	0.358**	0.576***						-0.014		
	(0.150)	(0.161)						(0.081)		
Transportation as Obstacles	-0.952***	-0.600***							-0.132	
	(0.206)	(0.205)							(0.085)	
Quality of IT Services	0.686***	0.839***								0.267***
	(0.120)	(0.117)								(0.086)
No. of Obs	5926	5926	13298	13320	11867	11867	11867	11867	11867	7412
Log-likelihood	-2788	-2775	-6065	-6062	-5567	-5560	-5551	-5572	-5571	-3321
Chi-Square	1670	1669	3523	3533	3223	3219	3239	3223	3221	2084
R-squared_pseudo	0.319	0.322	0.306	0.307	0.298	0.299	0.3	0.298	0.298	0.336

Probit mordel, marginal effects are reported. Standard errors are reported. * significant at 10%, ** at 5%, *** at 1%. All Regressions include firm specific characteristics: employment size, sales per labor, a dummy on manager with a college-level education, and foreign share in ownership. All regressions include country fixed effects, industry fixed effects and year fixed effects.

Table 4: Impact of Trade Facilitation Indicators on Export Propensity

	1	2	3	4	5	6	7	8	9	10
Days to Clear Exports	-0.091**	-0.033	-0.049*							
	(0.039)	(0.040)	(0.027)							
Days to Clear Imports				-0.126***						
				(0.031)						
Customs & Trade Regulation					-0.107***					
					(0.034)					
Corruption	-0.182***					-0.195***				
	(0.061)					(0.035)				
Uncertainty of Economic & Regulatory Policies		-0.417***					-0.250***			
		(0.057)					(0.035)			
Legal Protection	0.210***	0.344***						-0.008		
	(0.071)	(0.074)						(0.044)		
Transportation as Obstacles	-0.524***	-0.340***							-0.093**	
	(0.081)	(0.078)							(0.042)	
Quality of IT Services	0.465***	0.539***								0.201***
	(0.057)	(0.051)								(0.049)
No. of Obs	5889	5889	13008	13030	11587	11587	11587	11587	11587	7365
Log-likelihood	3137	3137	8007	8033	6935	6935	6935	6935	6935	4263
Chi-Square	0	0	0	0	0	0	0	0	0	0
R-squared_pseudo	2752	2752	4652	4652	4652	4652	4652	4652	4652	3102
Log-likelihood	-4024	-4001	-7401	-7387	-7401	-7387	-7376	-7407	-7404	-4833
F statistics	157	159	265	266	265	266	272	264	266	202
R-squared_pseudo	0.261	0.265	0.262	0.263	0.262	0.263	0.265	0.261	0.262	0.26

Tobit model, censored at 0 and 1. Standard errors are reported. * significant at 10%, ** at 5%, *** at 1%. All Regressions include firm specific characteristics: employment size, sales per labor, a dummy on manager with a college-level education, and foreign share in ownership. All regressions include country fixed effects, industry fixed effects and year fixed effects.

Table 5: Impact of Trade Facilitation Indicators on Probability of Exporting, by Firm Sizes

	1	2	3	4	5	6	7	8	9	10
Days to Clear Exports	-0.425***	-0.315***	-0.222***							
	(0.102)	(0.106)	(0.055)							
Days to Clear Exports*SME	0.336***	0.264***	0.065***							
	(0.094)	(0.090)	(0.023)							
Days to Clear Imports				-0.279***						
				(0.057)						
Days to Clear Imports*SME				0.065***						
				(0.022)						
Customs & Trade Regulation					-0.237***					
					(0.068)					
Customs & Trade Regulation* SME					0.070**					
					(0.035)					
Corruption	-0.03					-0.343***				
	(0.143)					(0.067)				
Corruption*SME	-0.223*					0.054*				
	(0.131)					(0.030)				
Uncertainty of Economic & Regulatory Policies		-0.482***					-0.429***			
		(0.139)					(0.066)			
Uncertainty of Economic & Regulatory Policies*SME		-0.179					0.041			
		(0.124)					(0.030)			
Legal Protection	0.446***	0.634***						-0.023		
	(0.157)	(0.166)						(0.082)		
Legal Protection*SME	-0.144***	-0.105***						0.019		
	(0.032)	(0.035)						(0.013)		
Transportation as Obstacles	-1.518***	-1.142***							-0.170*	
	(0.240)	(0.243)							(0.088)	

	1	2	3	4	5	6	7	8	9	10
Transportation as Obstacles*SME	0.984***	0.851***							0.067	
	(0.212)	(0.188)							(0.041)	
Quality of IT Services	0.976***	1.112***								0.265***
	(0.133)	(0.132)								(0.087)
Quality of IT Services*SME	-0.517***	-0.445***								0.005
	(0.112)	(0.113)								(0.032)
No. of Obs	5926	5926	13298	13320	11867	11867	11867	11867	11867	7412
Log-likelihood	-2768	-2759	-6061	-6058	-5565	-5558	-5550	-5571	-5569	-3321
Chi-Square	1639	1641	3466	3469	3185	3180	3212	3194	3187	2085
R-squared_pseudo	0.324	0.326	0.306	0.307	0.299	0.3	0.3	0.298	0.298	0.336

Probit mordel, marginal effects are reported. Standard errors are reported. * significant at 10%, ** at 5%, *** at 1%. All Regressions include firm specific characteristics: employment size, sales per labor, a dummy on manager with a college-level education, and foreign share in ownership. All regressions include country fixed effects, industry fixed effects and year fixed effects.

Table 6: Impact of Trade Facilitation Indicators on Export Propensity, by Firm Sizes

	1	2	3	4	5	6	7	8	9	10
Days to Clear Exports	-0.101**	-0.027	-0.045							
	(0.041)	(0.042)	(0.028)							
Days to Clear Exports*SME	0.084*	0.007	-0.008							
	(0.045)	(0.041)	(0.012)							
Days to Clear Imports				-0.126***						
				(0.031)						
Days to Clear Imports*SME				0.001						
				(0.011)						
Customs & Trade Regulation					-0.104***					
					(0.035)					
Customs & Trade Regulation* SME					-0.005					
					(0.019)					
Corruption	-0.053					-0.176***				
	(0.064)					(0.035)				
Corruption*SME	-0.283***					-0.032**				
	(0.064)					(0.016)				
Uncertainty of Economic & Regulatory Policies		-0.292***				-0.249***				
		(0.060)				(0.035)				
Uncertainty of Economic & Regulatory Policies*SME		-0.234***				-0.001				
		(0.061)				(0.016)				
Legal Protection	0.231***	0.344***						-0.01		
	(0.072)	(0.075)						(0.044)		
Legal Protection*SME	-0.051***	-0.004						0.004		
	(0.015)	(0.018)						(0.006)		
Transportation as Obstacles	-0.737***	-0.553***							-0.088**	
	(0.086)	(0.086)							(0.042)	

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Transportation as Obstacles*SME	0.663***	0.535***							-0.01	
	(0.100)	(0.091)							(0.022)	
Quality of IT Services	0.550***	0.635***								0.220***
	(0.056)	(0.052)								(0.048)
Quality of IT Services*SME	-0.232***	-0.179***								-0.044***
	(0.050)	(0.050)								(0.016)
No. of Obs	5889	5889	13008	13030	11587	11587	11587	11587	11587	7365
No. of Obs left censored	3137	3137	8007	8033	6935	6935	6935	6935	6935	4263
No. of Obs right censored	0	0	0	0	0	0	0	0	0	0
No. of Obs not censored	2752	2752	5001	4997	4652	4652	4652	4652	4652	3102
Log-likelihood	-3995	-3978	-8123	-8118	-7401	-7385	-7376	-7406	-7404	-4829
F statistics	139	140	269	271	257	259	263	256	258	195
R-squared_pseudo	0.266	0.27	0.263	0.264	0.262	0.264	0.265	0.261	0.262	0.261

Tobit model, censored at 0 and 1. Standard errors are reported. * significant at 10%, ** at 5%, *** at 1%. All Regressions include firm specific characteristics: employment size, sales per labor, a dummy on manager with a college-level education, and foreign share in ownership. All regressions include country fixed effects, industry fixed effects and year fixed effects.