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SME Export Performance in Indonesia After the Crisis

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ABSTRACT. Firms in export-oriented sectors with more exporters and more foreign investment, or firms with more access/use of credit, tend to export a higher share of their output, whether they are small or large. The latter points out that the benefits of size-neutral policies that improve the overall business and foreign investment climate and secure access to formal credit for all enterprises produce benefits for the entire economy. Small firms with higher use of machinery and higher use of domestic inputs displayed a higher likelihood to increase the share of their output exported. SMEs show rising productivity with access and use of appropriate production inputs. Decades of protective size-specific policies, such as the reservation scheme for SMEs still in place in Indonesia's manufacturing may have distorted, more than supported, adoption of appropriate technologies among SMEs. These policies may need to be revisited and refocused on more size-neutral policies such as improved access to collateral or reduced cost of business registration and licensing.

KEY WORDS: exports, indonesia, productivity, small enterprises.

JEL CLASSIFICATION: L6, L11, O33, O24, O47, O53.

1. Introduction

The financial crisis hit several Asian countries in the late 1990s. Among the hardest hit economies, Indonesia experienced a decline of its GDP by 13% in 1998 and a large devaluation of its local currency that soared from 2,500 rupiah to the dollar to above 10,000 in the years after the crisis.[1] Economic observers expected this sudden devaluation to bring a large surge in exports [2] so that the economy would quickly bounce back from the crisis. However, the export sector – dominated by large corporations – has yet to lead the country out of the crisis.[3]

In fact, 5 years after the crisis, Indonesia's industrial structure has yet to show signs of a vibrant economic recovery. In 1999, Indonesia's GDP grew modestly less than 1%. In 2000, growth climbed to 4.8, and slowed down to 3.3% in 2001, and again in 2002. Under different scenarios, all forecasts reveal a very low probability of growth rates above 6% for the following years. High growth rates are considered important to reduce poverty significantly in Indonesia, where almost one fifth are classified as poor.[4]

Large enterprises (LEs) and small and medium enterprises (SMEs) responded differently to the Asian crisis. Whereas the former contracted and reduced their exports, the latter grew and expanded their exports. SMEs weathered the crisis better than larger firms, though many have been hit hard too (Berry et al., 2002; The Asia Foundation, 2002).

One of the reasons why large exporters underperformed was that they were simply too dependent on a large proportion of imported inputs. Hence, when the rupiah sank, they also saw their input prices in dollars increase dramatically, making a swift recovery difficult. Moreover, decades of easy access to finance and imprudent banking practices towards corporate Indonesia had left a large burden of non-performing loans in the banking system, and finally affected the recovery of these firms and the conglomerates they belonged to. Most of these conglomerates were established

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as family businesses. In 1996, about 175 groups that originated from family businesses controlled more than half of total assets of the top 300 Indonesian conglomerates. On average, families controlled 67.1% of publicly listed companies in Indonesia, while one single family controlled 16.6% (Zhuang et al., 2001: 45–46). These figures show the extent of power wielded over the corporate sector, and the extent of the disruption when the financial crisis finally hit Indonesia's corporate sector in the late 1990s.

The crisis brought a rather unexpected windfall for SMEs. With a depressed local market and a higher local price for their products, SMEs had to find new markets and many switched to international markets. Their low import requirements reinforced their competitiveness abroad. The SME sector, usually regarded in need of Government support, grew during the crisis despite the collapse of a highly regulated economy like Indonesia's. Being less reliant on formal credit was a bonus in the short term. Because only one in five SMEs had formal bank loans according to several enterprise surveys by technical assistance from the Asia Foundation and the Asian Development Bank,[5] Indonesian SMEs had a small exposure to a banking sector in disarray, and could respond more quickly and flexibly than their larger counterparts burdened by bad debts. The export response of SMEs corroborates the fact that the new and small firms are important participants in international trade (Reynolds, 1999).

Despite their resilience, export-oriented SMEs still face a number of challenges for long term growth. While their start from a low base, compared to their ASEAN counterparts where SMEs are responsible for more than one-quarter of exports, Indonesian SME exporters represent only less than 14% of non-oil and gas exports.[6] The empirical SME literature has noted the above-average disparity in productivity performance between small and large Indonesian firms (Berry and Mazumdar, 1991), let alone their disparity in export performance. The larger the gap, the larger the gain in closing it. So, for example, in Indonesia, an increase in the productivity of SMEs could have important consequences for total exports. If SMEs were to attain the same value of exports per unit of labor as the large sector, total industrial exports would increase by 14%. In comparison, over the period of 1999–2002, total merchandise exports from Indonesia grew on average a meager 4%. It is therefore warranted to examine the factors that explain export success among Indonesian small and large firms.

In this paper we concentrate on exports because they represent the hallmark of productivity, because potential SME exports may contribute significantly to total export growth, and because export performance could allow for the formulation of clear policy measures to help reduce the gap between the actual and the potential capacity of small firms. The increase in exports among SMEs during one of Indonesia's most dramatic economic episodes helps to highlight the reasons why growth in the sector should be supported by economic policies that do not promote SMEs *per se*, but that promote a business environment where vibrant small private enterprises have better chances to survive and flourish into larger, more productive enterprises.

2. The Indonesian industrial sector

The paper uses the latest available data for more than 20,000 industrial enterprises in Indonesia from the *Annual Manufacturing Survey of 1996 and 2000* produced by the Central Bureau of Statistics. The crisis occurred towards the end of 1997 and peaked in 1998. If one takes the five-year span between 1996 and the year 2000 to examine the impact of the crisis, one allows for some time to adjust after the unprecedented contraction of 1998. The Asian Crisis caused a large turmoil in Indonesia's industrial structure, even though in the aggregate the number of firms appeared to be almost unaffected. The surveys recorded 22,997 firms in operation in 1996 and 22,174 in 2000, i.e., an apparently modest decline of 3.5% in the number of firms. However, the first impression when one compares these two snapshots, hides the fact that 6,100 firms (26.5% of all firms in 1996) closed down between 1996 and 2000, and that 5,277 new firms started operations during the same period. These figures serve to show the turmoil in the industrial sector caused by the Asian Crisis in the highly regulated environment of Indonesia. Starting a new formal

business remains a lengthy and costly undertaking in Indonesia. A World Bank study of 111 countries places Indonesia in 110th place with about 160 days to follow all necessary steps to formalize a new business.[7] Other international rankings also point to the need of reducing the control over new businesses.[8]

The surveys exclude manufacturing micro-enterprises with fewer than 20 workers, and, hence, reduce our ability to learn more about the very small enterprise sector in terms of their survival strategies and government interventions in the sector. Our focus will be on SMEs and large enterprises, not these micro-enterprises. First, despite their large contribution to employment,[9] data on micro-enterprises tend to be unavailable in a comparable format to those of more structured businesses, so this, unfortunately, precludes any further comparative work between the very small enterprises and the rest. More importantly, omitting micro-enterprises tends to exclude the impact of their survival characteristics and government protection. First, some micro enterprises tend to be more survival activities than high return economic activities, such as exporting.[10] As Liedholm and Mead (1999) point out, the great majority of micro enterprises are indeed non-growing enterprises that remain fully reliant on unpaid family labor. Hence, many micro-enterprises are established during economic crises as the result of the lack of better employment opportunities elsewhere so that many of the micro-enterprises started during crises are likely to close down during the economic recovery. Further, omitting micro enterprises vis-à-vis other firms tends to reduce the chance of observing the effect of government interventions in the sector. Access to special promotion programs, such as Indonesia's reservation scheme for micro enterprises,[11] depends on the definition used, which are biased in favor of micro enterprises. At present, various ministries apply different definitions for their own promotion of micro enterprises and cooperatives, and revisions to the current legal definitions based on total sales are far from settled.[12]

In order to examine the manufacturing data in greater detail we subdivide our sample by six worker-based size categories.[13] The emerging view confirms a highly dynamic SME sector with many exits and entries. When one defines a finer size breakdown of firms, one observes that, among the smallest firms, 35.7% were forced to close, and the "out-of-business" percentage declines with industry size. Only 6.7% of the largest firms closed between 1996 and 2000. While SMEs recorded the most closures, the SME sector also showed the most vigorous response to the new opportunities presented in the five-year period (see Appendix 1A).

Despite the great upheaval in firm numbers among the smallest firms, the number of jobs in the very small scale sector (small enterprises employing 20–49 workers) remained about the same. Due to firm closures 121,000 jobs were lost; the expansion of the remaining smallest firms led to 28,000 more jobs; and, the new smallest firms created 91,000 jobs. The net result was an employment loss of less than 1%. In all other size categories (except the largest firms), firms showed increments in total employment. The largest firms lost nearly 50,000 jobs primarily as a result of the employment reduction in the surviving very large industries that showed a contraction rather than an expansion (see Appendix B).

The resulting jobs became more productive. Increases in value added with a constant labor force would point to an increase in productivity that might lead to increased exports. The gains in value added proved to be highest for the smallest firms and lower for the remaining sectors (see Appendix 1C). In fact, the increase in productivity registered by small firms probably accounts for the lion's share of the impressive increase in exports by these firms. When one compares the 2000 figures with the 1996 figures, small firms increased their exports by 83% while the exports of largest enterprises decreased by 10 per cent (see Table I). Despite the impressive growth in exports by small firms (those with fewer than 100 workers, i.e., categories Small 1 and 2), their share of total industrial exports continues to be quite minuscule: It grew from 2.8% in 1996 to 4.1% in 2000.[14] When medium firms (those with fewer than 500 workers, i.e., categories Medium 1 and 2) are added, the share of exports from small and medium-sized firms in total exports shows to be more sizeable: it grew from 28.4% in 1996 to 34.4% in 2000.

TABLE I
Exports by firm dynamics, Indonesia, 1996–2000 (Billion of constant 2000 Rupiah)

Worker-based size[1]	Change in exports because of firm exits	Changes in exports because of expansions	Changes in exports because of new entries	Total change in exports in 2000	Total exports in 1996	Export growth (%)	Percentage of total exports in 2000 (%)
	(1)	(2)	(3)	(4) = (1) + (2) + (3)	(5)	(4)/(5)	(6) = (4) + (5)/Total
Small 1	−354	608	579	833	1001	83.2	1.3
Small 2	−448	571	1287	1409	2531	55.7	2.8
Medium 1	−830	2866	3311	5347	7346	72.8	9.1
Medium 2	−1832	3204	4279	5652	23958	23.6	21.2
Large 1	−2793	7170	5608	9985	23440	42.6	23.9
Large 2	−5288	−5486	4540	−6233	64336	−9.7	41.6
Total	−11546	8934	19604	16992	122613	13.9	100.0

Source: 1996 and 2000 industrial surveys.

3. Multivariate analysis of industrial export share: Specification and results

The purpose of this section is to examine and quantify the variables that explain exports at the individual establishment level. We concentrate on exports by firm size. Since the average firm size varies according to sector we define two size classes with respect to the labor employed:

$$\begin{aligned} XSHARE = {} & c_1{}^{*}DS + c_2{}^{*}DL + c_3{}^{*}DS{}^{*}size \\ & + c_4{}^{*}DL{}^{*}size + c_5{}^{*}DS{}^{*}sqsize \\ & + c_6{}^{*}DL{}^{*}sqsize + c_7{}^{*}DS{}^{*}num\exp \\ & + C_8{}^{*}DL{}^{*}num\exp + c_9{}^{*}\sec\exp \\ & + c_{10}{}^{*}DL{}^{*}\sec\exp + c_{11}{}^{*}DS{}^{*}age \\ & + c_{12}{}^{*}DL{}^{*}age + c_{13}{}^{*}DS{}^{*}mach \\ & + c_{14}{}^{*}DL{}^{*}mach + c_{15}{}^{*}DS{}^{*}caplab \\ & + c_{16}{}^{*}DL{}^{*}caplab \\ & + c_{17}{}^{*}DS{}^{*}wagebill/VA \\ & + c_{18}{}^{*}DL{}^{*}wagebill/VA \\ & + c_{19}{}^{*}DS{}^{*}avgwage \\ & + c_{20}{}^{*}DL{}^{*}avgwage \\ & + c_{21}{}^{*}DS{}^{*}imdser + c_{22}{}^{*}DL{}^{*}indser \\ & + c_{23}{}^{*}DS{}^{*}\mathrm{int}\ pd + c_{24}{}^{*}DL{}^{*}\mathrm{int}\ pd \\ & + +c_{25}{}^{*}DS{}^{*}import \\ & + c_{26}{}^{*}DL{}^{*}import + c_{27}{}^{*}DS{}^{*}R\& \\ & + c_{28}{}^{*}DL{}^{*}R\& \\ & + c_{29}{}^{*}DS{}^{*}FDIshare \\ & + c_{30}{}^{*}DL{}^{*}FDIshare + \varepsilon \end{aligned}$$

smaller than the sector average and larger than or equal to the sector average. For ease of exposition we denominate the smaller firms as "small" and the larger ones as "large".

In order to establish the determinants for exports and detect the differences between small and large firms we estimate the following equation for the year 2000, using the ratio of exports to production (a proxy for sales) as available in the Annual Survey of Manufacturing. With the exception of size, age and the sectoral export variables, all other variables listed in the equation are introduced in relative terms, i.e., as ratios of their correspondent values to the entire 5-digit ISIC sector. Thus for example, the use of machinery is measured as the use of machinery by the plant relative to the sector.

where:

XSHARE: ratio of exports to production,
DS: dummy for small enterprises,
DL: dummy for large enterprises,
Size: the size of the enterprise in number of workers,
Sqsize: the size of the enterprise squared,
Numexp: The number of exporters relative to the total number of producers in the 5-digit International Standard Industrial Classification (ISIC) sector,
Secexp: total exports in the 5-digit ISIC sector relative to total manufacturing exports (i.e., sectoral exports),
Age: the age of the enterprise in years,

Mach: Estimated value of the firm stock of machinery in 2000 compared to the 5-digit ISIC sector,

Caplab: Capital labor ratio of the enterprise relative to that of the 5-digit ISIC sector,

Wagebill/VA: The ratio of the production wage bill to the value added for the enterprise relative to the 5-digit ISIC sector,

Avgwage: The average wage per unit of labor for the enterprise with respect to that of the 5-digit ISIC sector,

Indser: Purchase of industrial services by the firm relative to the 5-digit ISIC sector,

Intpd: Expenses for interest paid by the enterprise relative to the 5-digit ISIC sector,

Import: Value of imported inputs by the enterprise compared to the 5-digit ISIC sector,

R&D: Expenses for research and development of the enterprise in comparison to the 5-digit ISIC sector,

FDIshare: Foreign share in the capital structure of the firm relative to the 5-digit ISIC sector.

Following Sterlacchini (2001) and Wagner (1995, 2001), firm size is specified by two dummies (one for the small firms and one for the large firms) to capture the likelihood that a small enterprise will export in comparison to a large enterprise (we eliminate the constant term so that neither the small nor the large size dummies become redundant). The interaction terms between size and the size dummies are introduced to establish whether size makes a difference in the probability of exporting between small and large firms. The interaction term between size square and the dummies is designed to capture the decreasing returns to size. Wagner (1995, 2001) discusses these considerations in detail.

Also, in their decision to export, firms may be influenced by a number of "external" and "internal" forces that promote higher sales to overseas. First, they are influenced by market conditions, by what other firms are selling from Indonesia to export markets or by what foreign buyers and investors are buying from Indonesia. Second, they are influenced by changes of regime, which are exogenous to the firms' behavior. Finally, fims' own productivity and use of inputs will determine the firms' decision to export their production overseas.

The first effect, akin to the well-known "copying effect", would be measured by the relative number of exporters to total firms in the sector. While it might be suggested that small firms are more likely to copy or imitate goods for exports, it is also true that barriers to entry tend to be higher for small firms, especially for export markets. The lengthy business registration and formalization in Indonesia does not stop only entry of new businesses, but a myriad of new regulations controlling industry and trade also prevents newcomers from entering certain production sectors. Nevertheless, it is suggested that this copying or imitation effect might be more important for small firms than for the large ones. This effect might also be associated with the distinction made by Buckley (1999) between absolute and relative smallness of SMEs.

A second effect is the presence of foreign buyers or "buyer effect", which is roughly proxied by sector exports as a fraction of total exports. Thus, the greater the sector exports, the more likely it is that there will be foreign buyers. The buyer effect would have a greater effect on the large firms since larger firms would be easier to spot than small ones from the foreign buyer's point of view. As foreign buyers customize production for export, ownership and technology transfer would occur. It is expected that foreign buyers and investors will have an influential role in increasing a firm's production for export. Entry of foreign investors to Indonesia continues to be highly regulated, and in certain sectors, such as the small business sectors, foreign direct investment is simply prohibited or forced by law to form artificial partnerships. The foregone benefits of international technology transfer through foreign investments may not be substituted by expenses on local R&D.

Local exporting firms will display higher export shares if they exercise their role of local purchasers themselves within Indonesia. Purchasing from other smaller firms locally through subcontracting and integrating other local firms or clusters have been emphasized as a key element in the achievement of export competitiveness by authors such as Porter. Subcontracting is proxied by the value of the purchase of industrial services from other firms. In the case of Indonesia, subcontracting arrangements between exporters

and a myriad of subcontractors has been well-documented (Poot et al., 1991: Sandee et al., 1994; Klapwijk, 1997; Sandee and Ibrahim, 2002), and has added to the flexibility of the SME sector to adapt and try new markets in the midst of the worst economic crisis in recent times for the country.

Time is another key explanatory factor. In the equation designed to explain individual enterprise exports, the variable age was introduced to capture a specific vintage effect or just an increasing tendency to export as Indonesian enterprises age. In a cross-section sample, the aging effect cannot be disentangled from the cohort effects. Cohorts of enterprises set up after the crisis (''post-crisis'' cohorts) appear to be much more export-oriented than the ones that were founded before the crisis (''pre-crisis'' cohorts). As a matter of fact, ever since the start of the on-going yet slow economic liberalization, more and more firms seem to have been set up with an export objective. On the basis of the firms still in existence in the year 2000, Appendix 3 shows how the percentage of export oriented firms increased in stepwise fashion in 1988 and 1998.

Higher firm productivity would help explain exports. However, there are number of difficulties related to this variable. A circular relationship has often been suggested between productivity and exports, at this point we follow Bernard and Jensen[15] that productivity leads to exports and not vice versa. The use of labor productivity or any better measure of productivity (such as total factor productivity measure at the 5-digit ISIC, which goes beyond the scope of this paper) would hence be misleading. However, measures correlated with productivity, such as the relative use of machinery by the enterprise or the capital labor ratio, should be more important to the small firms than to the large. That is, small firms with abundant machinery would be more the exception than the norm and would suggest a clear indication of preparedness for export in terms of high productivity and quality, which determine export activity.

The internal specialization is commonly shown as an SME-specific strength. If production labor is the main component of value added, then the firm has fewer resources to devote to marketing and export activities. Thus, the production wage bill in relation to value added could be used as an imperfect proxy for specialization, and would be expected to have a negative coefficient and affect the smaller enterprises more than the big ones. Higher wages in labor-intensive products would also reduce the export competitiveness, and, hence, the ratio of exports to production. While higher wages might reflect higher skills and productivity, and hence, higher likelihood of exporting, they may have the opposite effect if they reflect higher bargaining power of labor or more forceful minimum wage legislation which may not be in line with increases in labor productivity. The increase in minimum wages, combined with the appreciation of the rupiah, might be becoming a threat to competitiveness for Indonesia. In 2002, compared with the GNP per capita as a rough indicator of productivity, Indonesia's minimum wages do not appear to be out of line with some of its regional competitors in labor-intensive industries.[16]

The lack of key inputs has been identified as one of the major obstacles to the growth of SMEs. In terms of credit, we introduce access and availability of financing, as proxied by the interest paid by firms on loans, to examine the impact of finance on exports. In terms of key imported inputs, the value of imported inputs is considered important in the explanation of exports when specific imports are essential to the production of exports (especially, that related to assembly of imported parts) rather than to domestic production.

Finally it is anticipated that foreign direct investment will play an important role in the determination of exports. The enterprise's parent or partner companies abroad would have an effect on the technology used and the market it would serve. The percentage of foreign ownership of the firm is used to identify this effect. Finally, technology could be produced internally or externally to the enterprise. The enterprise's own expenditures on research and development may play a role in exports.

In the analysis of export performance by enterprise, Table II compares the SME sector to the LE sector, where the equation presented above was estimated by means of a fractional logit procedure[17] and a Tobit regression with lower and upper bounds[18] for the year 2000[19]. The fractional logit procedure was used because,

TABLE II
Results of the fractional logit regressions: share of exports in production

	Fractional logit (smaller and larger than average number of employees)		Double-bounded tobit (smaller and larger than average number of employees)	
Dummy small (DS)	−4.21 (0.09)	***	−3.29 (0.09)	***
Dummy large (DL)	−2.69 (0.09)	***	−1.97 (0.09)	***
DS * size	0.0067 (0.0006)	***	0.0058 (0.0004)	***
DL * size	0.00006 (0.00003)	*	0.00002 (0.00003)	
DS * size * square	−6.53E-6 (9.37E-7)	***	−5.13E-6 (4.74E-7)	
DL * size * square	−1.74E-9 (1.24E-9)		−2.54E-11 (1.35E-9)	
DS * no. of exporters	6.73 (0.19)	***	5.63 (0.18)	***
DL * no. of exporters	6.21 (0.24)	***	5.14 (0.20)	***
DS * sector exports	9.76 (1.16)	***	6.77 (0.87)	***
DL * sector exports	15.36 (1.32)	***	13.26 (1.21)	***
DS * age	−0.0236 (0.0036)	***	−0.0176 (0.0020)	***
DL * age	−0.0124 (0.0030)	***	−0.0091 (0.0024)	***
DS * machinery	2.02 (0.69)	***	1.41 (0.54)	***
DL * machinery	0.32 (0.36)		0.32 (0.34)	
DS * capital/labor ratio	0.001 (0.001)		0.001 (0.001)	
DL * capital/labor ratio	0.019 (0.010)	*	0.016 (0.005)	***
DS * wagebill / VA	−0.011 (0.010)		−0.005 (0.003)	
DL * wagebill / VA	−0.001 (0.004)		−0.001 (0.003)	
DS * average wage	−0.0015 (0.0006)	**	−0.0014 (0.0024)	
DL * average wage	−0.0515 (0.0433)		−0.014 (0.034)	
DS * industrial services	−0.09 (0.47)		−0.33 (0.43)	
DL * industrial services	0.031 (0287)		−0.11 (0.25)	
DS * interest paid	1.83 (0.59)	**	1.43 (0.52)	***
DL * interest paid	1.29 (0.30)	***	1.20 (0.28)	***
DS * import	−0.054 (0.014)	***	−0.22 (0.009)	**
DL * import	0.016 (0.007)	**	0.017 (0.006)	***
DS * R&D	0.11 (0.41)		0.33 (0.36)	
DL * R&D	−0.171 (0.260)		0.20 (0.23)	
DS * FDI-share	0.012 (0.001)	***	0.011 (0.0009)	***
DL * FDI-share	0.010 (0.001)	***	0.009 (0.0009)	***
Number of cases	18132		18132	
Log likelihood	−4958.15		−8357.65	

Note: Standard errors are reported in parenthesis below coefficient estimate *, **, *** represent significance at the 10%, 5% and 1% levels, respectively.

as pointed out by Wagner, it appears reasonable to assume that, at the same time that a firm decides to export, the firm also decides how much to export. Therefore, the more relevant question is how much of its product the firm decides to export, with zero and one as the extreme values.

Wagner (2001) shows that the fractional logit method proposed by Papke and Wooldrige (1996) is superior to the Tobit procedure. We also found that the Papke–Wooldridge procedure is superior to the standard lower-bounded Tobit. However, if a double bounded Tobit is used the results are very much like those obtained with the Papke–Wooldridge procedure. Because of the similarity between the two regressions and because the Papke–Wooldrige results are more amenable to interpretation[20] we limit our discussion to the Papke—Wooldridge results. By its very nature, the Papke–Wooldridge method is better suited to the explanation of exports if the decisions are simultaneous instead of sequential or two-step decisions.

4. Results

The first thing to note in the analysis of the fractional logit coefficients of Table II is that they do not imply a linear relationship with the depen-

dent variable. The precise marginal impact of any of the variables will depend on the actual values of all the other variables.[21] In Table III, we present the summary statistics for the variables employed in the model. Next to the summary statistics, we also present two columns that might describe the "typical" small and large firms, respectively. Thus, the small enterprise would be 5 years old, have 25 employees, one-tenth of the average machinery available to the sector, no credit and no foreign investment. In contrast, the large firm would be 20 years old, have 400 employees, use double the average sector machinery, industrial services and credit services. It would also import more than the sector average, expend twice the sector average on research and development and have an FDI share of 20%. All other variables are set the same for small and large "typical" firms, so the values for the capital – labor ratio, the wage-bill and the average wage have been set at one for convenience; and the values of variables exogenous to the firm, like the relative number of exporters and the sector exports, have been rounded to 0.15 and 0.02.

Using the "typical" values from Table III, we are able to determine the marginal impact of changes in the explanatory variables.

First, the small enterprise defined above would export 4.9% of its output, while the corresponding figure for the large enterprise would be 18.9. These results correspond with expectations that size does matter in the business of exporting, namely because of the economies of scale in shipping and handling, among other aspects of the exporting process.

Entry of more exporters into a specific sector has a strong effect on small and large firms. A 10% increase in the number of exporters would lead small enterprises to increase their export ratio by 10%. The large firm would increase its export ratio by 7.8%. These results show sizeable effects of allowing further competition in the activity, and the coefficients are not significantly different for small or large firms. The concentration of exports in their sector (or the "buyer effect") tends to contributes about 2% to the growth of the firm's export share. A 10% increase in sector exports raises the export ratio for small enterprises by 1.9%, but 2.5% for large enterprises. Foreign direct investment proved to be an important determinant of exports linked to international markets. Despite their different "typical" or average start points (more FDI among large firms), the coefficients for FDI are positive and significant for both small and large enterprises. If small enterprises were allowed a 10% FDI share, their export share would jump by 12% from 4.9 to 5.5% of production. An additional 10% in the share of FDI for large enterprises would also have a significant impact: the export share would increase by 8.3%.

The use of key inputs matters more to small firms. With respect to machinery, if the

TABLE III
Summary statistics and small and large firm vectors

	Mean	Standard Deviation	Minimum	Maximum	"Typical" small firm	"Typical" large firm
Export share of production	0.135105	0.319038	0	1	0.049	0.189
Size	196.9341	695.3329	20	38597	25	400
Size * square	522249.1	15475757	400	1.49E + 09	40000	160000
No. of exporters	0.16569	0.151714	0	1	0.15	0.15
Sector exports	0.017844	0.026961	0	0.081736	0.02	0.02
Age	15.039	13.97374	1	99	5	20
Machinery	0.011745	0.0695	0	1	0.001	0.02
Capital/labor ratio	1.09009	11.19973	0	960.3413	1	1
Wagebill / VA	5.003572	99.58281	0	14172.96	1	1
Average wage	0.927432	12.86445	0.00025	1901.83	1	1
Industrial services	0.010518	0.079684	0	1	0.001	0.02
Interest paid	0.011204	0.072778	0	1	0	0.02
Import	0.732834	15.20918	0	1878.06	0	1.25
R						

small enterprises were to have the average stock relative to the sector −0.01 – they would increase their export ratio by 1.7%. A similar 0.01 increase in the machine stock for the large enterprise sector would only lead to a 0.25 increase in their export ratio. With respect to credit, in the base run (Table III), it was assumed that the small enterprise had no access to credit. If, however, it were granted credit and its interest payments were equal to the national average – 0.01 of the sector total – the export ratio would increase by 1.8%. An increase of 0.01 for the large enterprises would only lead to an increase of 1.0%.

The coefficients for imported inputs of small and large enterprises have opposite signs. Greater use of these inputs would reduce small firms' export shares and increase that of their larger counterparts. If small enterprises were assumed to increase their imports from 0 to 0.25 of the sector average, they would exhibit a 1.7% decrease in their export ratio. An increase of 0.25 in the imports of the large enterprises would raise their export ratio by 0.3%. The purchase and use of imported inputs are expected to have an impact on the production structure of SMEs.

Labor-intensive production has long been considered the classical example of SME production. According to the results, an increase of 10% of the labor force would lead to an increase in the export share of 1.60% for the small firm. That is, the export ratio would increase from 4.9 to 5.1%. In contrast, a 10% increase in the labor force of the large enterprise would only lead to a 0.19% increase in the export ratio. The increase in size would not however be accompanied by a decrease in efficiency because the size of the size-square coefficients is too small.[22]

Passage of time seems to have marked new cohorts of Indonesian firms. The coefficient for the age of the enterprise turned out to be negative and highly significant for small and large enterprises alike. This indicates that the newly established enterprises tend to have a greater export orientation today than their older counterparts. Among the small firms, a firm younger by one year has an export ratio 2.26% higher than its five-year-old counterpart. Among the large firms the difference of one year determines a difference of 1% in the export share in favor of the younger firm.

Since the coefficients for the capital-labor ratio, the wage bill with respect to value added, the average wage, the purchase of industrial services and the expenditures on research and development did not prove to be significant, no simulations were run to examine the differential impact on the export ratio that these variables might have had.

5. Policy recommendations and concluding remarks

Large enterprises tend to export more than their smaller counterparts. Regardless of the variables in the analysis, export shares are significantly lower for small firms than for larger firms. Competition for and presence in international markets make exporting more likely for all firms. Firms tend to export more of their output when there are relatively more exporters in their sector. Also, the presence of foreign buyers or investors increases the share of exports from Indonesian firms. Size of firm matters when one examines the effects of production inputs. Credit and machinery have a stronger positive effect on the small firms that use them, while imported inputs have a negative effect in contrast to domestic inputs such as labor. For large Indonesian firms, more use of imported inputs is correlated with more production being exported, even after controlling for foreign investment. By contrast, for smaller Indonesian firms, more use of domestic inputs – including increases in labor – results in more of their output being exported.

Finally, trends matter and the newer cohorts of firms emerging from the crisis are much more export-oriented than their older counterparts and this points to the change in regime where size neutral policies appear to deliver more benefits to SMEs. For instance, size-neutral policies that promote further entry of participants in the market for exports by lowering the cost of doing business will benefit exports from Indonesia through an increase in business entries with export plans or potential. A complex regulatory environment and lack of financing and business services increase the costs of operating private businesses, especially SMEs in

Indonesia, where the cost of starting a new business already stands out as being one of the highest in Asia.[23] The advent of decentralization has pushed these costs up.[24] Since 2001, following decentralization, regulatory powers have been delegated to the regions. Some provincial and local governments now make their own rules and even raise spurious extra taxes of dubious merit.[25] Access to formal credit constrains growth (and export) potential. Only 25% of Indonesia's total land is registered so physical collateral by all enterprises remains limited, and, hence, its use as collateral.

Other size-neutral policies to further foreign investment tend to support exports, possibly through direct or indirect technology transfer needed to enter international markets, and through the establishment of business linkages with overseas markets. In Indonesia, investment reforms have been sluggish and complicated by internal factors, including decentralization. So, for instance, foreign investment, which has already been declining in absolute terms since the crisis, continues to face one of the world's most complex and unpredictable environments. A key policy in Indonesia's White Paper of 2003 for improving the investment climate is to complete a new unified law on investment, which aims at providing equal treatment to domestic and foreign investors, regulating investment in most sectors through a one-stop shop for investors while providing incentives such as tax holidays and protection of small industries. Although consolidation of the legal framework for investment is welcome, the law's actual implementation will require supporting regulations still to be drafted.

In terms of exports, further competition from other producers in Asia, such as Vietnam and China, will continue to put pressure for a faster internal reforms on the business and investment environment in Indonesia beyond the recent success in stabilizing the economy after the crisis.[26] The size-specific policies of the past such as the current reservation scheme to favor SMEs have large hidden costs for the entire Indonesian economy. In sectors where size considerations prevail, efficiency gains are foregone, and industry participants are unable to reach efficient output levels so that firms cannot access international markets. Policy makers need to measure the net benefits of more size-neutral policies that would have a greater impact on Indonesia's success to export in the face of a highly competitive and globalized economy.

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APPENDIX 1
Establishments, employment and value added, 1996 and 2000

Size	Start 96	Close	Close (%)	Remain	New	New (%)	In 2000
A. The reshuffling in the industrial sector							
1	12,519	4468	35.69	8051	3232	40.14	11,283
2	3798	772	20.33	3026	878	29.02	3904
3	2607	400	15.34	2207	559	25.33	2766
4	2261	304	13.45	1957	400	20.44	2357
5	1007	102	10.13	905	133	14.70	1038
6	805	54	6.71	751	75	9.99	826
Sum	22,997	6100	26.53	16897	5277	31.23	22174
Size	Job losses	Expansion	New jobs	Sum-jobs	Jobs 1996	Change (%)	
B. Job losses due to firm closures, job gains due to expansion and job gains due to new firms (units of labor)							
1	−121,375	27,945	91,227	−2203	363,463	−0.61	
2	−51,988	20,663	59,493	28,168	260,363	10.82	
3	−54,484	39,100	75,677	60,293	365,710	16.49	
4	−93,716	23,957	121,367	51,608	711,553	7.25	
5	−68,675	40,091	91,061	62,477	706,252	8.85	
6	−118,745	−74,705	144,956	−48,494	1807,626	−2.68	

APPENDIX 1
Continued

Size	Start 96	Close	Close (%)	Remain	New	New (%)	In 2000
Sum	−508,983	77,051	583,781	151,849	4214,967	3.60	
Size	VA lost	Expansion	New VA	Sum-VA	VA in 1996	Change (%)	
C. Changes in Value added due to firm closures, firm expansion and the establishment of new firms (billions of Rupiah, billion = 10**9)							
1	−1405	2078	2161	2835	4422	64.10	
2	−1077	1374	3084	3381	6061	55.79	
3	−1853	4634	5526	8306	13,189	62.98	
4	−2420	6841	6519	10,940	27,434	39.88	
5	−2304	9121	8749	15,566	28,836	53.98	
6	−5483	7381	5723	7621	75,153	10.14	
Sum	−14,542	31,430	31,762	48,649	155,095	31.37	

APPENDIX 2
Total values for variables in the SME and large sectors in 2000

	SME	SME %	Large	Large (%)	Total
Establishments	17,984	81.10	4190	18.90	22,174
Labor (units)	966,754	22.14	340,062	77.86	4366816.0
Value added Rp(1000 billion)	39.95	16.87	196.90	83.13	236.85
Production Rp(1000 billion)	95.33	16.63	477.95	83.37	573.28
exports Rp(1000 billion)	16.93	11.27	133.26	88.73	150.19
Value machinery Rp(1000 bill)	48.10	32.38	100.45	67.62	148.55
wagebill Rp(1000 billion)	3.32	18.16	14.96	81.84	18.28
Imported inputs Rp(1000 bill)	13.32	10.72	110.95	89.28	124.27
Indirect services Rp(1000 bill)	0.25	10.82	2.06	89.18	2.31
Interest payments Rp(1000 bill)	0.88	9.71	8.18	90.29	9.06
Research and Dev. Rp(1000 bill) billion = 10**9	0.06	13.95	0.37	86.05	0.43

APPENDIX 3
Export orientation of firms established since 1980 and still in existence in 2000

	No. exports	Export-oriented	Total
1980	611	66	677
	90.25	9.75	
1981	323	53	376
	85.9	14.1	
1982	501	68	569
	88.05	11.95	
1983	418	67	485
	86.19	13.81	
1984	468	80	548
	85.4	14.6	
1985	766	83	849
	90.22	9.78	
1986	593	75	668
	88.77	11.23	

APPENDIX 3
Continued

	No. exports	Export-oriented	Total
1987	577	94	671
	85.99	14.01	
1988	499	112	611
	81.67	18.33	
1989	693	183	876
	79.11	20.89	
1990	1175	214	1389
	84.59	15.41	
1991	894	252	1146
	78.01	21.99	
1992	919	212	1131
	81.26	18.74	
1993	819	160	979
	83.66	16.34	

APPENDIX 3
Continued

	No. exports	Export-oriented	Total
1994	939	214	1153
	81.44	18.56	
1995	985	210	1195
	82.43	17.57	
1996	867	213	1080
	80.28	19.72	
1997	705	205	910
	77.47	22.53	
1998	440	216	656
	67.07	32.93	
1999	344	144	488
	70.49	29.51	
Total	13,536	2921	16,457

Notes

[1] In May 2001, the rupiah-US$ exchange rate was IDR 11,370 to the U.S. dollar. Since then, the trend has been towards a more stable and stronger currency. By June 2003, the rupiah appears to have stabilized around the IDR8200 mark.

[2] Gupta (2000).

[3] By May 2002 export figures remained disappointing with a 3% annual decline, and although much of this was related to a 12.8% fall in oil exports, there are concerns about the underlying export performance in Indonesia. Overall, exports declined in 2002 by–1.1% (ADB, 2003).

[4] Poverty incidence has dropped from the crisis-peak of 23.4% of the population to 18.2% in 2002, according to World Bank estimates (World Bank, 2003: Table 5.1).

[5] Brazier, R. and E. Rodriguez, eds. (2002). *Indonesia: Small Business through the Economic Crisis*. Jakarta: The Asia Foundation. Also, ADB SME TA (2001: Chapter 1), see Policy Paper No. 3 in www.adbtasme.or.id.

[6] In 2000, small firms with fewer than 50 workers exported only 4.1% of all exports (an increase from 2.8% in 1996); SMEs with fewer than 200 workers exported 13.8% (an increase from 8.8% in 1996).

[7] The World Bank Data Base for "Entry Regulations" (1999–2002) refers to formalization of a limited company ("persero" or PT in the case of Indonesia). The results are reported in World Bank (2003a, Table 2.3, p. 18).

[8] ADB SME TA (2001b), Policy Paper No. 7 available in www.adbtasme.or.id.

[9] According to the 1996 census the micro-enterprise sector employs nearly two-thirds of the manufacturing workforce.

[10] In 1996, census data show that out of 242,030 classified as small firms (i.e., micro-enterprises with fewer than 20 workers), only 1,868 had some export activity. See BPS (2000: Table 28.2).

[11] A reservation scheme for small businesses is enshrined in Law 99, which protects key economic sectors such as agricultural tools and shipping.

[12] According to Law 9 of 1995, small enterprises are those with annual sales below IDR1 billion (about US$120,000, at June 2003 exchange rates) with no relation to workforce. The definition appears to correspond more to the international definition of micro enterprises, especially for manufacturing activities.

[13] Small 1 – From 20 to 49 workers; Small 2 – From 50 to 99 workers; Medium 1 – From 100 to 199 workers; Medium 2 – From 200 to 499 workers; Large 1 – From 500 to 999 workers; Large 2 – Above 1000 workers.

[14] Estimates by the Japanese International Cooperation Agency (JICA) based on the Ministry of Industry and Trade (MOIT) of Indonesia are higher but show a similar upward trend, despite a different SME definition. They place SME exports at 6 and 8% of all non-oil and gas exports for 1996 and 2001, respectively. MOIT defines SMEs as those firms with fixed assets below IDR5 billion.

[15] Bernard and Jensen (1999).

[16] World Bank (2003a p. 20).

[17] We thank an anonymous referee for suggesting the use of the fractional logit procedure. We also thank Leslie Papke for the commands to estimate a fractional logit regression in STATA.

[18] Available in STATA.

[19] The data employed are those of the Annual Survey of Manufacturing 2000, and are available from Central Bureau of Statistics (Biro Pusat Statistik or BPS). Data could be made accessible for replication purposes from the authors.

[20] In the fractional logit model there is no need to us *ad hoc* transformations to handle the data at the zero and one extremes.

[21] See Papke and Wooldridge (1996): 268.

[22] Papke and Wooldridge (1996: 630) argue that a size-square correction – usually used in linear models – may not be necessary for the fractional logit.

[23] See World Bank (2003c: 194).

[24] See The Asia Foundation (2001); and ADB SME TA (2001), Policy Paper No.7 available in www.adbtasme.or.id.

[25] World Bank (2003b).

[26] See World Bank (2003d).

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