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HOW DID THE CRISIS AFFECT SMALL AND MEDIUM-SIZED ENTERPRISES? FROM A FIELD STUDY OF THE METAL-WORKING INDUSTRY IN JAVA

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I. INTRODUCTION

THE impact of the crisis in Indonesia's national economy is often described as a modern manufacturing, urban, and Javanese crisis. As the statistics show, the manufacturing and other urban-centered sectors like construction and financial business recorded double-digit negative growth in 1998. Poverty increased more sharply from 1996 to 1998 in urban areas than in rural areas when measured by the increased number and percentages of poor people, although the absolute number of the poor was larger in the rural areas (BPS 1999a, pp. 44–46; 1999b, p. 87). In the manufacturing sector, all the subsectors except oil refining recorded negative growth in 1998 (see Thee's paper in this volume, p. 430, Table V). Of these subsectors, the hardest hit was the metal-working and machinery industry (ISIC 38) which declined by 52 per cent and which was characterized by imported-inputs dependence, domestic-market orientation, and Jabotabek[1] concentration. In contrast, the least-hit subsector with a 2 per cent decline was the food industry (ISIC 31) which included the processing of domestically produced primary commodity like cacao, coffee, palm oil, and fishes. Such a processing industry was mainly or partly export-oriented and mostly located on islands other than Java. Thus a broad picture of the crisis shows that the impact was quite heterogeneous by sector, industry, location, and market orientation.

This paper is part of the outcome of research I conducted during a stay in Indonesia from 1996 to 1999 as an overseas senior research fellow of the Institute of Developing Economies. For help in conducting field studies, I would like to express special thanks to all the respondents who cooperated in the interviews, as well as Ms. Krisni Murti M.S. and Mr. Yohanes Sancahyohadi of the Astra Dharma Bhakti Foundation in Jakarta, Mr. Jon Haloho of UIUKK (Information Unit for Small Enterprises and Cooperatives) in East Jakarta under the Astra Dharma Bhakti Foundation, Mr. Umardani N. H. of the industrial cooperative in Ceper, Central Java, and Mr. Budi Santoso and Mr. Cuk Sutoyo of PT Agrindo in Surabaya.

[1] Jabotabek is an abbreviation for the extended metropolitan area covering Jakarta, Bogor, Tangerang, and Bekasi.

But this picture does not show how the crisis affected small and medium-sized enterprises (SMEs). Was the impact on SMEs similar to or different from that on large-scale enterprises? The general perception is that small-scale sectors were less affected or even well-performing because most of the enterprises were engaged in rural-based, agriculture-related, and less modern sectors and were debt-free, in contrast to most large-scale enterprises which were heavily burdened by debt and reliant on modern urban markets where demand collapsed. This perception has provided a basis for advocates of SME-driven economic recovery.[2] However, there are some researchers who assert that SMEs were more seriously affected than large-scale enterprises, at least in the manufacturing sector. This argument is supported by statistics which show a larger decrease in the number of establishments and workforce of small and cottage enterprises compared with those of large and medium-sized enterprises between 1996 and 1998 (BPS 1999b, p. 42; see Thee's paper, p. 439, Table XI). Others have argued that the size of enterprises is not related to the degree of crisis impact; what has mattered has been the type of industry, products produced, location, and market orientation. However, the varification of this argument has been difficult because of limited detailed statistics and studies on the production and performance of small enterprises in subsectors of the manufacturing sector, while large and medium-sized enterprises are covered by comprehensive annual industrial statistics. This paper is an attempt to fill in some of that lacking information on how Indonesia's crisis affected SMEs.

The study presents two hypotheses. One is that the performance of SMEs showed wide variation that could not be explained by a difference in the type of industry, product, or location. SMEs in the same industry in the same location could show quite different performance. Even in the worst-hit metal-working and machinery industry, there could be surviving and even well-performing SMEs. If this hypothesis is true, the question would be what factors caused the variance in performance. The second hypothesis is that one of the determinants that caused such variance of performance was the "linkages" that each SME had formed with buyers of its products.

The structure of the paper is as follows. The next section reviews the relevant statistics and studies on the impact of Indonesia's crisis on SMEs and then explains the methodology of this study. The third section discusses the findings of this study, and examines SME performance, the factors affecting their performance, and their responses in order to survive the adverse conditions. The last section provides a summarizing conclusion.

[2] See Jellinek and Rustanto (1999) who describe the crisis as "an unprecedented economic boom in the small-scale sector" and surmise "the rediscover of people's economy."

II. REVIEW AND METHODOLOGY OF THE STUDY

A. *Review of Relevant Statistics and Studies*

As of mid-2000, there are not many statistics or studies concerning SMEs since the outbreak of Indonesia's economic crisis. Tables I through III provide a summary of statistics compiled by the Ministry of Cooperatives and Small and Medium Entrepreneurs (MCSME) in cooperation with the BPS-Statistics Indonesia (BPS) showing changes in the number of enterprises, in workforce size, and in the value added of small, medium, and large-scale enterprises by economic sectors for the period of 1997 to 1999. The ministry determines size by annual turnover per enterprise, and this differs from the BPS definition which is determined by the size of the

TABLE I

NUMBER OF SMALL ENTERPRISES BY SECTOR, 1997–98

Sector	Total No. of Enterprises (1,000 Unit)		Share of Small Enterprises (%)		Growth Rate, 1997–98 (%)			
	1997	1998	1997	1998	Small	Medium	Large	Total
1. Agriculture, livestock, forestry, and fishery	22,613	23,099	56.6	62.7	2.6	1.2	1.8	2.6
2. Mining and quarrying	205	138	0.5	0.4	–32.8	10.2	9.8	–32.7
3. *Manufacturing*	*2,829*	*2,115*	*7.1*	*5.7*	*–25.3*	*–9.1*	*–9.1*	*–25.2*
4. Electricity, gas, water supply	14	8	0.0	0.0	–45.5	1.4	0.0	–44.1
5. Construction	207	130	0.5	0.3	–38.3	–9.1	–9.4	–37.2
6. Trade, hotel, and restaurant	10,014	8,348	25.1	22.6	–16.6	–18.1	–17.9	–16.6
7. Transport and communication	1,855	1,510	4.7	4.1	–18.6	–15.1	–15.4	–18.6
8. Financial, rental, and business services	78	23	0.2	0.1	–74.0	–26.6	–26.5	–70.2
9. Services	2,053	1,444	5.2	3.9	–29.7	–3.1	–3.1	–29.7
Total	39,767	36,815	99.8	99.9	–7.4	–14.2	–12.7	–7.4
Small enterprises	39,705	36,762						
(%)	(99.8)	(99.9)						
Medium enterprises	60	52						
(%)	(0.2)	(0.1)						
Large enterprises	2.1	1.8						
(%)	(0.0)	(0.0)						

Source: MCSME (1999).
Note: Small enterprises are defined as those with annual turnover of less than Rp 1 billion. Medium enterprises are those with annual turnover of over Rp 1 billion and less than Rp 50 billion. Large enterprises are those with annual turnover of over Rp 50 billion.

TABLE II

WORKFORCE SIZE IN SMALL, MEDIUM, AND LARGE ENTERPRISES, 1997–99

	Total Workforce (1,000 Persons)		Share of Small Enterprises (%)		Share of Medium Enterprises (%)		Share of Large Enterprises (%)		Growth Rate (%)			
	1997	1999	1997	1999	1997	1999	1997	1999	Small	Medium	Large	Total
1. Agriculture, livestock, forestry, and fishery	29,932	34,670	44.6	52.0	0.9	1.0	0.1	0.1	16.0	6.1	11.4	15.8
2. Mining and quarrying	480	383	0.5	0.4	0.2	0.2	0.0	0.0	–30.5	9.0	8.9	–20.0
3. *Manufacturing*	*10,310*	*8,582*	*9.7*	*7.7*	*5.6*	*5.1*	*0.4*	*0.3*	*–21.7*	*–8.7*	*–8.9*	*–16.8*
4. Electricity, gas, water supply	142	125	0.1	0.1	0.1	0.1	0.0	0.0	–33.1	4.5	4.5	–12.5
5. Construction	1,020	713	1.0	0.6	0.5	0.5	0.0	0.0	–40.9	–9.0	–9.0	–30.1
6. Trade, hotel, and restaurant	16,097	14,923	21.9	20.6	2.6	2.2	0.1	0.0	–6.1	–17.4	–17.7	–7.3
7. Transport and communication	2,674	2,228	3.7	3.3	0.4	0.3	0.0	0.0	–17.2	–12.3	–11.6	–16.7
8. Financial, rental, and business services	702	302	0.7	0.2	0.4	0.2	0.0	0.0	–70.4	–33.4	–33.3	–57.0
9. Services	4,245	3,414	5.4	4.1	1.1	1.1	0.0	0.0	–23.4	–1.0	–1.3	–19.6
Total	65,602	65,340	87.6	88.7	11.8	10.7	0.6	0.6	0.8	–9.3	–7.0	–0.4
			57,483	57,965	7,726	7,009	393	365				

Source: Same as for Table I.

TABLE III

SHARE OF SMALL, MEDIUM, AND LARGE ENTERPRISES IN GDP, 1997–99

(%)

Sector	Share of Small Enterprises			Share of Medium Enterprises			Share of Large Enterprises		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
1. Agriculture, livestock, forestry, and fishery	12.5	15.5	15.4	2.7	3.3	3.3	0.8	0.8	0.8
2. Mining and quarrying	1.1	0.6	0.5	0.6	0.5	0.4	7.1	12.2	9.5
3. *Manufacturing*	*3.9*	*4.5*	*4.9*	*5.5*	*4.0*	*4.3*	*17.5*	*16.4*	*17.8*
4. Electricity, gas, water supply	0.0	0.0	0.0	0.1	0.1	0.1	1.1	1.1	1.1
5. Construction	1.8	2.4	2.3	2.0	1.4	1.3	3.7	2.1	2.0
6. Trade, hotel, and restaurant	11.9	11.8	12.6	3.3	3.0	3.2	0.7	0.5	0.5
7. Transport and communication	2.3	1.9	2.0	1.5	1.3	1.4	2.3	1.7	1.8
8. Financial, rental, and business services	1.4	1.3	1.2	3.5	3.3	3.1	3.8	2.6	2.5
9. Services	3.1	2.9	3.1	0.6	0.5	0.5	5.2	4.4	4.8
Total	38.0	40.1	41.9	19.8	17.3	17.5	42.3	41.8	40.6
GDP[a] (Rp trillion)	238	386	450	124	163	188	265	394	437

Source: Same as for Table I.
Note: Values in 1999 are based on BPS projections.
[a] GDP at market prices.

workforce per establishment (one enterprise can own multiple establishments). According to the ministry's statistics, small enterprises with annual turnover below Rp 1 billion raised their share during the crisis period in terms of every indicator, though the absolute number of enterprises decreased. The share of value added in GDP (in market prices) for small enterprises increased from 38.0 per cent in 1997 to 41.9 per cent in 1999, switching positions with large enterprises (having annual turnover of over Rp 50 billion) which decreased from 42.3 to 40.6 per cent during the same period. In the manufacturing sector, the ratio of the number of enterprises and workforce size, unlike the absorbent agricultural sector, continually declined in all three size categories during the period. However, in manufacturing's share of value added, that of small enterprises continued to increase, though still low, from 3.9 to 4.9 per cent between 1997 and 1999, whereas that for medium and large-scale enterprises decreased in 1998 then recovered in 1999. The same picture can be seen in Table IV which shows the changing ratios among the enterprise size categories in the manufacturing sector using two different sources of statistics. Both statistics showed the growing share for small manufacturing enterprises. This finding naturally arouses research interest in which manufacturing subsector small enter-

TABLE IV

SHARE OF SMALL, MEDIUM, AND LARGE ENTERPRISES IN MANUFACTURING VALUE ADDED, 1996–98

(%)

Size Category	(A)		(B)	
	1997	1998	1996	1998
Small enterprises	14.5	18.0	22.4	31.6
Medium enterprises	20.3	15.9	77.6	68.4
Large enterprises	65.1	66.1		
Total	100.0	100.0	100.0	100.0
Manufacturing value added (Rp billion)	168,178	234,503	120,233	140,821

Sources: (A): same as for Table I. (B): calculated from BPS (1999b, Tables 4.3 and 4.10).
Note: Definition of size category for (A) is as in Table I. Definition of (B) is as follows; Small enterprises = 1–19 workers per establishment; Large and medium-sized enterprises = 20 and more workers per establishment.

prises showed the growing shares. But there are no detailed statistics available at this moment to enable a subsector-cum-size analysis.

Filling the statistical vacuum to some extent are surveys on small enterprises that have been conducted with varying coverage of sectors and locations.[3] A survey by the Ministry of Cooperatives and Small and Medium Entrepreneurs (1998), which may have the largest sampling (175,903 small enterprises) covering various sectors throughout the country, showed that 86 per cent of the samples had sustained a negative impact (had closed/stopped operations/declined) in 1998, and the worst-hit sectors were livestock raising, mining, and manufacturing. A survey by AKATIGA and the Asia Foundation (1999) monitored the performance of 701 small enterprises (with assets of less than Rp 200 million) in eighteen subsectors in 1998. They measured performance with the volume of production and profits and found that 33 per cent of the samples and six subsectors (including one manufacturing subsectors) showed a continuous decline, 39 per cent and six subsectors (four manufacturing) showed a decline with the potential for improvement, and 28 per cent and six subsectors (two manufacturing) showed an improving performance.[4] This survey also showed that improving performance was observed more outside Java than in Java, and in rural areas than in urban areas. Thus these surveys with relatively wide

[3] For a useful review, see Tambunan (2000, pp. 143–53) and Thee's paper in this volume, pp. 438–40.

[4] Six subsectors continuing to decline are the sugar refining, sidewalk food stalls in Java, floating-net fishing, *becak* (tricycle) transportation, urban/rural transportation, and the photo copy service industry; six declining subsectors with the potential to improvement are coffee refining, rattan manufacturing, shoe manufacturing, embroidery manufacturing, sidewalk food stalls outside of Java, and pushcart vendors; six improving subsectors are cacao plantations, paprika plantations, clove plantations, sidewalk vendors of imported second-hand clothes, pottery manufacturing, and furniture manufacturing.

coverage showed that as of 1998 more than 70 per cent of small enterprises were negatively affected by the crisis in the broad sense.

There were two crucial factors affecting small enterprises according to AKATIGA and the Asian Foundation (1999, pp. 24–36). One was final market demand and the other was the rise in prices of input materials. The survey found that, while all the export-oriented small enterprises showed improving performance, that of domestic-market-oriented small enterprises varied partly because some benefited from increasing local demand for cheaper substitutes. Regarding input materials, especially imported inputs, small enterprises had an obvious disadvantage compared with larger enterprises due to their limited capacity to withstand price increases and their weaker position for accessing materials. An additional third affecting factor was the scarcity and high cost of bank loans (Tambunan 2000, p. 150), and a fourth factor was the withdrawal of purchasing credit by material suppliers (only cash purchases were accepted) and delayed payments by product buyers (JICA 2000, p. 7). But other studies pointed out that bank credit was not a basic problem for small enterprises, mainly because of their limited exposure to the banking sector (Musa 1998; A-AF 1999, p. 63).

A study by Sandee, Andadari, and Sulandjari (2000) focused on small enterprises engaging in export-oriented furniture manufacturing in Jepara, Central Java. The cluster of small enterprises recorded a pronounced expansion during the crisis in which the number of enterprises, size of workforce, and value of furniture exports grew on an annual average of 13.2 per cent, 11.6 per cent, and 31.8 per cent respectively between 1996 and 1998. Although this case seems an exception in the overall gloomy picture as reviewed above, and the key to their success lies no doubt in their export orientation rather than size of enterprise, it provides some insights into the dynamism of small enterprises. This study describes why the cluster could take effective advantage of the rupiah's substantial depreciation, attributing it to the export capacity that these small enterprises had established before the crisis, to the effects of clustering, and to the buyer-driven subcontracting network where local and foreign exporters dominated decision making on quality, design, and delivery. During the crisis this network flourished as small enterprises that switched from local markets to exports became involved as second-tier subcontractors in the export trade. The foreign buyers also tried to attract small subcontractors by offering longer-term contracts and trade financing.

The AKATIGA and Asia Foundation survey (1999) looked at how small enterprises responded in order to survive. These included substitution of imported raw materials with local alternatives having lower prices and quality (e.g., pottery and sidewalk food vendors), and the establishment of their own production facilities (e.g., fish pellets made by fishery enterprises). However, the survey concluded that most responses were not effective for survival. Moreover, collective responses by small enterprises in the same subsector rarely took place (in only two out of eigh-

teen subsectors) because of their tendency to act individually rather than to participate in formal organizations (A-AF 1999, pp. 46–50).

The above review indicates that although manufacturing was a fairly hard-hit sector compared with the agricultural sector, small enterprises in the manufacturing sector were relatively better off than larger enterprises. Some multi-sectoral surveys showed evidence that a great majority of small enterprises was adversely affected by the crisis, although a single-subsector study on the export-oriented industry in Jepara showed a flourishing economic situation. According to these surveys, factors affecting the performance of small enterprises included market demand, the rise in prices of input materials, and the availability of bank and trade credit. Most of the studies reviewed above have been multi-sectoral analyses, and there have been few studies focusing on the manufacturing sector, especially the domestic-market-oriented subsector. Thus the existing studies have not revealed why the impact of the crisis on individual enterprises has varied, even among enterprises in the same manufacturing subsector.

B. *Methodology of the Study*

The aim of this study is to investigate how the crisis affected SMEs based on this author's field study. The main points examined are (1) the impact of the crisis on enterprise performance, (2) factors affecting performance, and (3) enterprise responses to the crisis.

This study is rather unique since it focuses on the metal-working and machinery component industry. This focus is firstly to test the first hypothesis on varied SME performance in the same industry. While there seemed little variation in performance among enterprises in the Jepara example which enjoyed an export boom, the domestic-market-oriented industry showed a wider variation as indicated by the AKATIGA and Asia Foundation study. The focus on the industry is also to check the second hypothesis that linkages matter. The metal-working and machinery component industry is characterized by the divisibility of the production process and the decomposability into accountable component units, therefore being amenable to transaction linkage formation. Thus this study also examines how the linkages of each enterprise related to the way it was affected by and was able to survive the crisis.

The field studies were conducted by the author through direct visits to the production sites of enterprises and interviews with the owners. It was carried out periodically from the end of 1997 through early 1999 in four selected locations in Java: (1) East Jakarta, (2) Sukabumi, West Java, (3) Surabaya to Malang, East Java, and (4) Ceper, Central Java.[5] Studies were made of fifty enterprises which included

[5] The outer islands could not be covered in this study. Although 67 per cent of the value-added production of the machinery component industry is concentrated in Jabotabek and 80 per cent in Java (Sato 1998, p. 116), this study could not be free from a "Java-bias" because of its lack of outer island samples.

inactive ones but did not cover those that had totally closed down or had switched over to other business. Thus there is the possibility of a sampling bias toward surviving enterprises.

Most of the surveyed enterprises can be categorized as "small enterprises" under the definition of having annual turnover of less than Rp 1 billion, or as "small and medium-sized establishments" based on the number of workers (five to nineteen persons and twenty to ninety-nine persons respectively), though some enterprises that are smaller and larger than this range are also included. Therefore, this paper adopts the term "small and medium-sized enterprises (SMEs)" regarding the category of enterprises sampled, implying that cottage-scale enterprises with less than four workers are not a main object of this study.

III. IMPACT OF THE ECONOMIC CRISIS ON SMEs

A. *Performance of the Industry and the Surveyed SMEs*

Table V illustrates how the crisis adversely affected the metal-working and machinery industry. The industry's real value added started to drop in 1997 ahead of other manufacturing subsectors, and continued to record negative growth in 1999. Growth in 1998 dropped by 52 per cent, over 20 points more than the second worst-hit subsectors, cement and basic metals. The industry was one of the subsectors that experienced the greatest contraction in the number of establishments and size of

TABLE V

GROWTH RATES FOR THE METAL-WORKING AND MACHINERY INDUSTRY, 1996–99

	1996	1999	Growth Rates (%)			
			1996	1997	1998	1999
Metal-working and machinery industry (ISIC 38):						
Nominal value added (Rp billion)	15,899	15,403	30.5	38.6	–39.1	14.8
Real value added (Rp billion)	11,191	4,756	4.6	–1.1	–52.3	–9.9
Establishments (units)	2,596	2,298	8.7	–2.0	–9.6	n.a.
Workforce (1,000 persons)	523	419	4.6	–0.3	–19.2	n.a.
Total Manufacturing (ISIC 31–39):						
Nominal value added (Rp billion)	136,426	285,513	24.4	23.3	45.9	16.3
Real value added (Rp billion)	102,260	96,928	11.6	5.3	–11.9	2.2
Establishments (units)	22,997	20,422	6.7	–2.7	–8.8	n.a.
Workforce (1,000 persons)	4,215	3,536	1.0	–1.1	–15.2	n.a.

Source: BPS, *Pendapatan nasional Indonesia* [National income of Indonesia] (Jakarta), 1999 and 2000 editions; BPS (1999b).

Note: The figures given for the number of estahblishments and workforce size are those for large and medium-sized enterprises and do not include those for small and cottage enterprises.

TABLE VI

VARIANT IMPACT OF THE CRISIS ON THE SMEs SURVEYED

	Level of Crisis Impact	Key Measurements (Changes in 1997–98)	Number of SMEs Surveyed	Percentage of Total (%)
1.	Highly positive	Profit increase	8	16
2.	Positive	Production volume increase, profit constant or decrease	6	12
3.	Constant	Production volume constant	3	6
4.	Negative	Production volume decrease, profit decrease	23	47
5.	Highly negative	Profit decrease to zero	7	14
6.	Extremely negative	Production volume decrease to zero	2	4
	Total		49[a]	100

Source: Author's field study.

[a] Excluding one sample which closed for reasons unrelated to the crisis.

workforce. The hardest-hit products in the industry were air conditioners and refrigerators (–96 per cent in production indices in 1997–99), internal combustion engines (–87 per cent), automobile assembly (–80 per cent), motorcycles assembly (–64 per cent), and electric and telephone cables (–54 per cent) (BPS, various issues); all are products where large-scale assemblers dominate the value-added production.

Compared to the gloomy picture of the industry in aggregate, the SMEs in this study, which all belonged to this industry, showed a variety of performance. This is summarized in Table VI where the impact of the crisis on the performance of the surveyed SMEs is graded into six levels from "highly positive" to "extremely negative," judging from the changes in profit and production volume between 1997 and 1998. While almost half (47 per cent) of the enterprises suffered "negative" impact and 65 per cent of the total fell into the broad negative range (levels 4 to 6), it is also a fact that 35 per cent fell into the broad positive range in that the SMEs had positive growth or at least kept their production level constant. A notable point is that the sample distribution is bimodal, having two peaks: one at the "negative" and "highly negative" samples and another at the "highly positive" and "positive" samples.

The performance of the SMEs was measured using such indicators as the growth rate of assets, production volume, turnover, profit,[6] and the number of workers, and the time frame was from 1997 to 1998 (Table VII). The indicators of the "negative" category, i.e., the mode of the sample, show the most prevailing performance among SMEs in this industry. The volume of production dropped sharply by 51 per cent in

[6] Profit here is operating profit, namely, turnover minus production costs and other operating expenses including debt repayment.

TABLE VII

PERFORMANCE OF SMEs: GROWTH RATES OF INDICATORS, 1997–98

(%)

Level of Crisis Impact	Assets	Production Volume	Turnover	Profit			Workforce
				Value	Change of Profit Ratio	Profit Ratio in 1998	
1. Highly positive	0.4	8	289	66	5	27	3
2. Positive	0	33	62	–39	–26	20	31
3. Constant	0	0	3	–21	–5	26	–15
4. Negative	0	–51	–43	–60	–13	16	–23
5. Highly negative	–4.8	–70	–68	–100	–17	0	–31
6. Extremely negative	0	–100	–100	–100	–30	0[a]	–25
Total	–0.4	–21	43	–33	–12	18	–9

Source: Author's field study.

Note: Assets, turnover, and profit are calculated at nominal value. Profit is operating profit, meaning turnover minus production costs and other operating expenses including debt repayment. Profit ratio = operating profit / turnover.

[a] Regarding profit in the "extremely negative" level, see footnote 7.

1998 compared with a year earlier as orders received dropped due to the contraction of demand. Although the fall in turnover was slightly smaller owing to a rise in the selling price of products, profits decreased as much as 60 per cent in nominal value since the cost of raw materials and other inputs upsurged during this time. In order to cut production costs, the SMEs reduced their number of paid workers by 23 per cent. Their profit ratio fell by 13 points to a level of 16 per cent, which still allowed them to keep their pre-crisis asset level without any disposal sales of production facilities. In the "highly negative" category, every indicator showed a sharper drop, and the profit level of the enterprises reached the break-even point. This category included one sample which sold some machine tools to raise working capital. The SMEs in this "highly negative" category were those which had lower profit ratios than the other SMEs even before the crisis, as the profit figures indicate. Enterprises in the "extremely negative" category had no orders and no production activities at the time they were studied although they were still operating.[7]

In marked contrast, the SMEs in the "highly positive" category enjoyed turnover almost four times higher in nominal value than the year before. This category included two sampled enterprises in which turnover jumped by over nine times. The average growth of profits for this category was 66 per cent, and profit growth was

[7] There is a possibility that the enterprises in the "extremely negative" category were suffering losses, but it was difficult to gauge the magnitude of their losses accurately by means of interviews. Therefore the profits/losses of the enterprises in this category were considered to be "at least" zero. This consideration, however, does not influence the results of the analysis in this study.

still positive in real term deflated by the wholesale price index in manufacturing (65 per cent in 1997–98). Given the low growth in production volume (8 per cent) and in the number of workers (3 per cent), a shift to higher value-added production was one key for the success of this category.

The "positive" category, though seemingly in a similar boom like the "highly positive" category, was actually a different story. The production volume of SMEs in this category increased by 33 per cent and turnover by 62 per cent as price per unit rose. However, these SMEs suffered a sharp drop in profits of almost 40 per cent and a relatively large fall in profit ratio of 26 points on average. This was because each component of production costs was pushed up by a rise in unit cost multiplied by an increase in volume: costs of raw materials, either imported steel or domestically procured steel or aluminum scrap; energy costs such as electricity for machinery processing and coke (all imported) for casting; wage payments as the number of workers increased (by 31 per cent on average); and costs of borrowed working capital as interest rates rose. This category suffered the irony that an expansion in production under the crisis produced negative results in profitability. The SMEs in this category were the group with the highest profit ratios before the crisis occurred.

Compared to the "positive" category, the "constant" category seemed more secure in their survival, although only 6 per cent of the samples belonged to this category. Given no significant fluctuation in production volume, the SMEs in this category succeeded in keeping a relatively high 26 per cent ratio of ex-post profit, despite the same upsurge in input costs and fall in profits as the other categories experienced.

Then the next question is why the performance of SMEs in the same industry varied so much and what factors caused the variation. How the "highly positive" category could enjoy such a jump in turnover and how the SMEs in the "positive" category obtained their increased volume of orders will also be investigated.

B. *Factors Affecting the Performance of SMEs*

There could be many factors affecting the performance of SMEs during the crisis and they could vary depending on individual enterprises. Five possible factors are taken up in this study: (1) market orientation, (2) enterprise size, (3) location, (4) linkages, and (5) exposure to debt, and it will examine how and to what extent these factors affected the performance of the SMEs. Of these factors, four are selected (linkages are excluded) because their explicability was indicated in the surveys reviewed above. Linkages are a new factor introduced by this study. Another factor raised in the review is the rise in prices of input materials. Since the conditions of material prices for the sampled SMEs in the same subsector are regarded as not so varied, and the input costs are contained in the calculation of SME performance indicators, this factor is not covered as an explanatory variable in this study.

1. *Market orientation*

Exporting was "a door to heaven" (in the words of one SME owner interviewed) for most Indonesian enterprises as the depreciation of the rupiah accelerated in 1998. In the metal-working and machinery industry which is basically domestic-market-oriented, except for a portion of the electronic appliances subsector, we have to examine the extent that the SMEs had access to the exporting business and whether the SMEs weathered the crisis because of their export business. Although the sample size of the study is too small to generalize results, it can give some insights into this matter.

Table VIII shows the correlation of the selected factors with an SME performance indicator. The performance indicator here is represented by an average of two key indicators, namely, the growth rates of production volume and profits. Among the factors, "export orientation" exhibits the highest correlation. It means that the SMEs in this study have access to exporting to some extent and that exporting was able to raise the performance of the SMEs. "Export orientation" here is measured by the degree that the SMEs have undertaken export-related business in a broad sense. As many as 48 per cent of the SMEs have had some export-related experiences in the past, but the major portion was of a temporary or unsustainable nature. The SMEs which exported as a business on a regular basis at the time of the crisis and which were able to weather the crisis because of this business—"export orien-

TABLE VIII

CORRELATION OF SELECTED FACTORS WITH SME PERFORMANCE

Level of Crisis Impact	Performance Indicator	Possible Factors Affecting Performance				
		Export Orientation	Size of Enterprises		Urban Proximity	Exposure to Debt
			Workforce (Persons)	Turnover (Rp Million)		
1. Highly positive	37	2.6	52	807	2.1	2.0
2. Positive	–3	2.3	59	1,037	1.7	2.7
3. Constant	–11	1.7	27	241	2.7	1.7
4. Negative	–55	1.5	39	813	3.2	2.1
5. Highly negative	–85	1.4	68	1,372	3.6	3.6
6. Extremely negative	–100	1.0	9	109	4.0	2.0
Correlation coefficient (*R*)		0.93	0.31	0.08	–0.91	–0.36

Source: Author's field study.

Note: Performance indicator: an average of the growth rates of production volume and profits in the sample average for each level.

Export orientation: measured on a scale of 1 to 5; 1 = no experience in export-related business, 3 = have experiences moderately committed to, 5 = have experiences highly committed to export-related business.

Urban proximity: 1 = rural, 5 = urban. See footnote 8.

Exposure to debt: 1 = no debt, 3 = moderate debt burden, 5 = heavy debt burden.

tation" in a narrow sense—accounted for only 18 per cent of the sample. Of this percentage, direct exporting accounted for 6 per cent and the remainder was indirect exporting and supplying facilities to industries for export production.

Table IX shows the distribution of sampled SMEs for which market factors had a decisive effect on performance during the crisis. Export orientation was found to be a major market factor positively affecting performance. One example of direct exporting is that of an SME that just before the crisis succeeded in switching from supplying the domestic market to exporting its casting components for heavy equipment to Japan through a Japanese trading company. The switch necessitated investment for upgrading and standardizing products, but eventually it brought a jump in turnover in U.S. dollar terms, and which was nine times higher than a year earlier in rupiah terms, despite a significant decrease in production volume. Another SME has been indirectly exporting pressing parts for speakers since before the crisis through a Japanese joint-venture assembling audio-video appliances. Other SMEs are providing production facilities for export industries, such as water pumps for the shrimp-breeding industry, pumps for gold mining, and pipes for the petroleum industry. Samples in the "positive" category include a direct exporter of metal antique furniture and a producer of casting gearwheels for sawmills that were shipped to the Jepara furniture industry during its export boom. As indicated, there was no sample that opened up a new export-related business after the crisis occurred.

TABLE IX

SAMPLE DISTRIBUTION BY MARKET FACTORS POSITIVELY AFFECTING SME PERFORMANCE

Level of Crisis Impact	Export Orientation			Import Substitution	Inferior Goods/ Necessities	Govt. Projects	Large Enterprise Substitution	Total
	Direct Export	Indirect Export	Providing Facilities for Export Industries					
1. Highly positive	1	1	3	2	1	1	2	11
2. Positive	1	—	1	2	—	2	—	6
3. Constant	—	—	1	—	1	—	—	2
4. Negative	1	—	—	—	1	—	—	2
5. Highly negative	—	—	—	—	—	—	—	0
6. Extremely negative	—	—	—	—	—	—	—	0
Total	3	1	5	4	3	3	2	21
		9						

Source: Author's field study.

Notes: 1. One sample can be applicable to multiple factors.
2. Export orientation here, unlike Table VIII, is in a narrow sense and refers only to the samples which had export-related business on a regular basis at the time of the crisis.

Other than export orientation, there were other market orientations that had a positive effect on SME performance (Table IX). One was import substitution. Imported products and components rose in price, decreased in volume, or almost stopped as the exchange rate dropped, and this created a vacuum in the domestic market which substituted local products filled. The opportunity was enjoyed by producers of petroleum pipes, medical equipment, and most prominently, machinery spare parts such as motorcycle components, gearwheels, and cylinder liners for motors and diesel engines, which had been dominated by the People's Republic of China because of the highly competitive prices of its products. One of the SMEs in the "positive" category enjoyed the "import substitution boom" by producing casting products on which it engraved the brandname "Donfen," a popular brand in China. Another positive market orientation was producing inferior goods to meet market demand that was shifting toward necessities and used goods rather than luxuries and new goods as the crisis lowered the level of people's real income. The replacement market for motorcycles and agricultural machinery was relatively lively for the same reason. This situation helped the SMEs that had originally produced inferior goods and spare parts to keep their production at least constant. A third market orientation was for government or foreign donor-financed projects such as those related to social safety net programs during the crisis. Two SMEs in this study indirectly received a bulk order for weighing machines related to a project under the Ministry of Education and Culture, and one SME supplied components for electricity transmission equipment related to a project for the state-owned electricity company (PLN) financed by the World Bank. The latter case in the "highly positive" category enjoyed a jump in turnover of over nine times with a good profit margin because of this project, after a big drop of regular orders for automobile accessories that had a far smaller profit margin.

This study found that export orientation, import substitution, and market orientation toward inferior goods and government-related projects were major market factors that had a positive effect on SMEs. In addition, a collapse of larger producers in the same product line favored the SMEs, such as for petroleum pipes and casting components. It could be called "large enterprise substitution" where SMEs stepped in to replace larger enterprises. Of these factors, the SMEs in the "highly positive" category were successful in export-related businesses, or in shifting to high-priced products for projects, or in shifting to low-cost inferior goods, while keeping their total volume of production at moderate growth or constant. This is why they could raise profitability. SMEs that supplied booming exports or government projects by vigorously expanding volume without changing product line and cost composition suffered a profit decrease. Even including this latter unprofitable pattern, however, less than a half of the SMEs studied had a chance to utilize the five above favorable market factors.

TABLE X

PERFORMANCE OF SMEs BY SIZE, 1997–98

(%)

Workforce Size (Persons)	Turnover in Average (Rp Million)	Sample Size (No.)	Assets	Production Volume	Turnover	Profit			Workforce
						Value	Change of Profit Ratio	Profit Ratio in 1998	
1–19	253	21	0	–43	–32	–42	–14	18	–20
20–49	632	16	0	6	15	–27	–10	20	–10
50–99	1,343	8	–4	–20	–7	–40	–22	17	33
100–	3,380	6	0	–20	2	–39	–6	8	–21

Source: Author's field study.

2. *Enterprise size*

According to Table VIII, there is no correlation between SME performance during the crisis and their size either in terms of workforce size or turnover. Rather, the table shows that the larger SMEs separated into two groups, "positive" or "highly negative," while the smaller SMEs showed "extremely negative" or "constant" performance.

In Table X the indicators of SME performance are arranged by size. The table indicates two implications. First, the smallest SMEs, those with less than twenty workers and pre-crisis annual turnover in 1997 averaging Rp 253 million, were the most adversely affected. The decline in production volume, turnover, and profit was the largest of all the size categories. As many as 86 per cent of the SMEs in this category showed "negative" or worse performance, which indicates the existence of disadvantages for SMEs in this smallest category. This also suggests that size can matter.

Second, the profit ratio for the SMEs including the smallest ones remained relatively high even after it fell by double digits due to the crisis, while larger enterprises with over 100 workers saw their profit ratio fell to below half the level of smaller category SMEs. This fact indicates the high income-generating capacity of the SMEs.

The above analysis on size provides no firm indication that smaller enterprises were better off or suffered more than larger enterprises.

3. *Location*

The four locations covered in the field studies were widely scattered and ranged from the industrial agglomeration in metropolitan Jakarta to a rural cluster in Central Java. If the degree of urbanization is measured on a scale of 1 (rural) to 5 (urban),[8] "urban proximity" and the performance of SMEs exhibit a negative corre-

[8] 1 = Ceper (Central Java), 2 = Malang (East Java), 3 = Sukabumi (West Java) and outskirts of Surabaya, 4 = Surabaya (a provincial city in East Java), and 5 = Jakarta (the metropolitan area).

lation (Table VIII), meaning that the more urban the location, the lower the performance. However, with only this result it would be difficult to generalize that rural SMEs suffered less than urban SMEs, because Ceper alone cannot be representative of rural areas in general. What can be affirmed from the analysis here is that the SMEs in Ceper were relatively well-performing and those in Jakarta were the most negatively affected.

The question is how to explain the relatively good performance of SMEs in Ceper. One reason may be that production costs in Ceper were lower compared with the equivalents in Jakarta, and Ceper's products could meet the demand shift toward lower-priced products during the crisis. But this reasoning cannot explain why the majority of SMEs in Ceper were also adversely affected despite having the same conditions as the good performers. Another reason may be that the purchasing power in rural markets around Ceper decreased less than that in metropolitan Jakarta. But this is also refutable because markets for Ceper's products are not limited to the surrounding rural markets but also reach Jakarta and the outer islands.

4. *Linkages*

Linkages here refer to the direct transaction relationships established by the SMEs with buyers of their products through any form of ex ante contract.[9] Since the SMEs under study produce components and metal products, they supply these products to such customers as assemblers (A), user-factories (U), wholesalers (W), and retailers (R). The aspects of linkages examined in the interviews included the number of customers an SME supplied, the type of largest customer, the degree of dependency on the largest customer in terms of the share of turnover, the length of continuous business relations with customers, and assistance the SMEs have received from customers in such areas as technology, management, and finance.

Table XI summarizes the relationship between the performance of the SMEs and some aspects of their linkages. The performance is better as the period of continuous business relations lengthens, and to a lesser extent as the dependency on the largest customer is lower. The ratio of subcontracting linkages (i.e., the percentage of the enterprises that have linkages with assemblers as the largest customer) and the degree of assistance provided by customers have no correlation with performance, because the high indicator is split between the upper and the middle to lower level of performance. There is also a correlation between longer period of relationship and lower urban proximity (coefficient = 0.92). What do these results imply?

In Jakarta, subcontracting linkages in automobile and motorcycle manufacturing

[9] Forward linkages with buyers of products are discussed here because the SMEs under study are basically producers of components and metal products, not assemblers. SME backward linkages with subcomponent suppliers are outside the scope of this study, although some of the sample have such linkages.

TABLE XI

CORRELATION OF LINKAGE FACTORS WITH SME PERFORMANCE

Level of Crisis Impact	Performance Indicator	Linkage Factors Affecting Performance			
		Length of Business Relations (Year)	Dependency on the Largest Customers (%)	Ratio of Subcontracting Linkages (%)	Degree of Assistance
1. Highly positive	37	17	0.59	0.63	1.9
2. Positive	–3	18	0.47	0.17	1.1
3. Constant	–11	16	0.68	0.75	1.2
4. Negative	–55	11	0.54	0.57	1.5
5. Highly negative	–85	12	0.76	0.57	2.2
6. Extremely negative	–100	4	0.75	0.50	1.4
Correlation coefficient (*R*)		0.86	–0.62	–0.01	–0.21

Source: Author's field study.

Note: The "degree of assistance" from customers was measured in the areas of technology, management, and finance based on a scale of 1 to 5 (1 = no assistance, 3 = moderate assistance, 5 = intensive assistance). The three values were averaged into one for each SME. Each SME evaluated the degree of assistance it received and this was converted by the auther into a value.

have emerged in the last decade. The subcontractors are agglomerated in the "extended East Jakarta" area where almost all the assemblers are located, while the subcontracting linkages reach West and East Java including Sukabumi and Surabaya. The structure of backward linkages is hierarchical with assemblers at the apex and with two or three tiers of subcontractors below. Some of the first-tier subcontractors are Japanese joint-ventures or locally owned large-scale component manufacturers and the rest, especially the second- and third-tier subcontractors, are locally owned SMEs (Sato 1998, pp. 127–31). Thus the linkages of SMEs in the urban agglomerate machinery component industry have some common features: subcontracting linkages with assemblers as major customers, linkages newly developed in the 1990s, high dependency on a single assembler or an upper-tier subcontractor, and a relatively high degree of assistance provided by assemblers particularly in technology and quality control.

On the other hand, Ceper, a rural cluster of over 300 small and medium-sized home foundries, provides another view of SME linkages. Subcontracting linkages of the urban modern machinery industry in Jakarta and Surabaya have reached the top-tier firms in this cluster. At the same time, many SMEs have formed linkages with wholesalers located in smaller cities outside the cluster who function as putters-out and who intermediate orders, transmit market information, and offer trade credits to the SMEs. Thus a subcontracting system and a putting-out system coexist in Ceper (Sato 2000, p. 161). Some common features of the SME linkages in this rural cluster are: the relatively long period of business relationships with their re-

TABLE XII

PERFORMANCE OF THE SMEs BY TYPE OF LIKAGES, 1997–98

(%)

Type of Linkage/ Market Orientation	Sample Size (No.)	Assets	Production Volume	Turnover	Profit			Workforce
					Value	Change of Profit Ratio	Profit Ratio in 1998	
Government projects (G1)	9	0	55	322	–21	–21	27	69
Export orientation (E)	3	0.4	–1	151	13	–4	17	0
Wholesalers (W)	7	0	–17	5	–3	–5	21	0
Retailers (R)	4	0	–33	–27	–44	–2	16	–20
Assemblers (A)	19	0	–47	–38	–63	–24	19	–42
User-factories (U)	6	0	–67	–59	–92	–9	12	–19
Government projects (G2)	2	–9.5	–90	–87	–100	–10	0	–20

Source: Author's field study.

spective customers; the lower dependency on a single customer due to diversity of products; and low degree of assistance provided by customers except for financial support by wholesalers-cum-putters-out in the form of trade credit. Given the previous finding that the SMEs in Ceper are relatively better off than those in Jakarta, this explains the correlations between longer business relationships, lower dependency on a single customer, lower urban proximity, and better performance.

The above discussion indicates that linkages can be influenced by the location with its own business history, and that linkages can influence the market orientation and performance of SMEs. In order to examine the relation between the type of linkages and performance, Table XII is arranged so as to exclude two types of market orientation with deviant performance, namely, export orientation (E) and government-related projects (G), and then calculates each performance indicator by type of linkages with assemblers (A), user-factories (U), wholesalers (W), and retailers (R). The table shows that of the four types the impact of the crisis was most serious on A and U in terms of the decrease in production volume, turnover, and profit. Meanwhile, those with trade linkages with W and R were relatively less affected. Especially the W type suffered the least decrease in production volume and profit and kept their profit ratio high during the crisis. This is because some of the SMEs with W-type linkages could swiftly switch their products to import substitution or inferior goods by obtaining timely market information from wholesalers. Meanwhile those with A- and U-type linkages with high dependency tended to produce customer-specific products which limited their flexibility to switch prod-

ucts in a short period of time. Such SMEs tended to suffer badly once the assembler or user-factory started to decrease production levels. On the other hand, if the assembler was engaged in an export-related business, the SMEs automatically perform well, as shown by the split in the indicator for the ratio of subcontracting linkages in Table XI. Some subcontractors who had minor linkages with wholesalers before the crisis shifted their priority after orders from the assemblers dropped and successfully compensated for the drop by shifting to import substitution goods with enhancing their linkages with wholesalers. Thus the linkages which the SMEs formed with buyers became an important determinant of performance and behavior for survival during the crisis.

Another finding pointed out in Table XII is that government-related projects could have a double-edged effect on the performance of SMEs. On the one hand SMEs could experience a significant upsurge in turnover (G1), but they could suffer more seriously than SMEs with other ordinary business linkages by a sudden termination of projects, as shown by the indicators of G2.

5. *Exposure to debt*

The last factor to be examined is exposure to debt. In this study 38 per cent of the samples had some debts at the time of the crisis in the form of loans from state and private banks, state-owned enterprises, and rural financiers, and 8 per cent had financing from private venture capital companies.

According to Table VIII, there is no correlation between debt exposure and performance, because debt exposure was high in both the "positive" and "highly negative" categories of performance. However, if a distinction is made between debt for investment and that for working capital, then 75 per cent of the indebted SMEs in the "negative" and "highly negative" categories used the fund for investment, while the ratio was only 29 per cent in the "positive" and "highly positive" categories. This fact indicates that as interest rates rose significantly during the crisis, the debt burden greatly affected the profitability of SMEs with debts for investment because they could not repay in the short term unlike debt for working capital. Some SMEs expended their whole gross profit to repay investment debt and some stopped repayment.

The field studies brought to light two types of SMEs heavily affected by investment debt. The first type were the SMEs, mostly subcontractors, which had grown rapidly during in the last few years before the crisis and had expanded their installed production capacity relying on the growth projections for orders from assemblers. The second type were those which had imported high-tech facilities without any clear order projections or market information from order providers. Although the performance of these two types looks similar, the latter is not a debt problem arising from the unexpected crisis but one caused by weak financial management which allowed excess investment not driven by the market.

C. *SMEs' Responses to the Crisis*

The AKATIGA and Asia Foundation survey (1999) found that SMEs had not responded effectively to the crisis, but this study noted some effective responses.

One successful survival measure taken by some SMEs was a flexible switch in products or business lines. In order to do this, they effectively utilized their existing linkages rather than forming new linkages. Some SMEs switched their products to goods for the replacement market or the import substitution market, and benefited from the wholesaler's capability to search markets. Wholesalers sometimes helped in the switch by providing materials in kind and by raising the amount of advance payments. Some other SMEs started to sell raw materials that were left over after the decrease in their production to upper-tier subcontractors, or began to remake and resell various kinds of used components to wholesalers.

Another measure was a sharpened awareness of cost reduction. One sample SME increased its employment of school trainees to minimize wage costs. Another SME, which obtained a good deal of project-related orders after a temporary drop in production, only increased the number of its contracted day-workers and not its regular employees to make it easier to adjust its workforce to fluctuations in orders. A subcontractor of components carrying a heavy burden of debt decided to "rationalize" his inventory of products reducing it from two months to half a month. To do this, the firm requested the assemblers to provide the procurement schedule beforehand and to fix it without any sudden change in the volume of orders.

This study also found that all of the SMEs responded to the crisis in individual ways: Collective responses were very limited despite some SMEs being located in agglomerations or clusters. In utilizing their existing linkages, they relied on bilateral vertical relationships formed by individual enterprises which did not give rise to collective horizontal cooperation among the SMEs. This observation may be related to the inclination of the SMEs toward self-support rather than collectivity as indicated also in the AKATIGA and Asian Foundation survey. However, a further study is needed to examine whether and under what conditions collectivity effectively works.

SMEs' responses for survival varied by individual enterprise and did not depend on the degree of suffering or on size. Some of the well-performing SMEs still sought for more markets or tried to cut costs further, while some heavily affected SMEs with almost no orders seemed to be only waiting for new orders to come in.

IV. CONCLUSION

This paper has concentrated on analyzing the impact of Indonesia's economic crisis on SMEs based on field studies of the metal-working and machinery component industry in Java.

The study found that 65 per cent of the aggregate sample of SMEs in this worst-hit subsector were affected negatively, but that performance showed wide variation, ranging from those with almost no profit and no production activities to those enjoying a jump in turnover several times higher than their pre-crisis level. Thus the sample distribution by performance became bimodal with the first peak at the "negative" / "highly negative" category and the second peak at the "highly positive" / "positive" category. The fact that the variation in performance was observed in the same industry, product, and location indicates that there are some other factors affecting the performance of these SMEs. The important factors were market orientation at the time of the crisis and the linkages that each SME had formed with buyers of its products in the years before the crisis. Export-related businesses and government-related projects were market factors that contributed to making SMEs profitable by assuring them of good markets. Other positive market orientations were producing import substitution goods or inferior goods, or substituting for larger enterprises. The well-performing SMEs were flexible in switching their product lines toward such markets as import substitution or inferior goods by effectively utilizing their long-standing linkages with wholesalers-cum-putters-out who were capable of searching for markets. The fact that such linkages with wholesalers-cum-putters-out are prevalent in Ceper in Central Java explains the correlation between better performance and lower urban proximity. On the other hand, SMEs which had linkages with assemblers and user-factories with high dependency suffered badly, except for export-related businesses, because of the limited flexibility they had in shifting to products with better markets. This pattern included the SME subcontractors in the industrial agglomeration in East Jakarta that had developed rapidly in the last decade. Thus this study found evidence that the linkages in which each SME was embedded determined to a great extent the degree that an SME was affected by the crisis and the way it survived the crisis. Some SMEs manifested their business capability in the way they utilized their existing linkages. Also, the difference of SME performance by location proved to be greatly influenced by the difference in types of linkages prevailing in the area, rather than that in production costs and market conditions. Other findings of this study are that the SMEs with high exposure to debt for investment, and in the smallest size category suffered more in the crisis, but that there is no linear correlation between size and performance.

The findings of this study should alter the perception of SMEs and how their problems should be dealt with. First, it is important to realize that SMEs are far from uniform. Their performance as well as responses during the crisis demonstrate their individual variation. These were not primarily determined by size, product, or location. A uniform perception of seeing them as "weak SMEs," "badly suffering SMEs," or "flourishing SMEs" will hamper perceiving the actual state of SMEs.

Second, if there are external causes which widen the variation of performance

among SMEs, something should be done to remove these. These causes could include uneven accessibility to needed materials, funds, or market information, and unequal opportunity for upgrading their capabilities through training and education. This study showed that linkages can function as a connection to markets, as a channel of information for the SMEs, and in some cases as a shock absorber in adverse situations. Given such benefits, there is a natural tendency for the government to step in to promote linkage formations for SMEs. However, linkage formation is essentially a market-driven process, not a policy-led one, so that the role of government should be carefully limited to preparing a business environment where linkages work effectively. One example is a situation where SMEs have disadvantage in linkages because of their weak bargaining power vis-à-vis order providers. Some of the SMEs in this study claimed that payments from large-scale assemblers and user-factories, which took about one month after delivery in the pre-crisis days, were delayed by more than one or two or even three months during the crisis. The role for the government is to have accurate knowledge of the problems facing SMEs, especially in adverse situations, and to provide an institutional framework for removing disadvantages due to their smallness.

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