

# Technical and Marketing Support Systems for Successful Small and Medium-Size Enterprises in Four Countries

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A healthy business and incentive environment is the main determinant of whether small and medium-size enterprises will succeed. But a liberalized private marketplace will not necessarily ensure industrial development. For many firms, subsectors, and countries, well-functioning collective support systems for marketing and technology accelerate industrial success.



## Summary findings

Studies of successful small and medium-size enterprises (SMEs) and their marketing and technical support systems were undertaken for Colombia, Indonesia, Japan, and the Republic of Korea. Three to four subsectors were examined in each country. The sample worldwide amounted to 445 firms.

Mechanisms to support export marketing varied across countries and subsectors. How they varied depended greatly on whether SMEs operated within well-developed private networks. When market penetration begins, transaction costs are high and collective marketing support can be important. As markets "thicken," initiatives by foreign buyers become more important. Generally the most effective collective marketing support was of the kind that can be provided more effectively by decentralized organizations — such as industry associations or local governments and chambers of commerce (to support firms' participation in trade fairs, for example) — than by central government institutions.

Private mechanisms were more important than collective mechanisms for helping firms improve their

technological capability. Demand for collective mechanisms tended to be greater when technological requirements of production were complex or when the endowments of private technological networks in certain countries or industries were weak.

Broad-based collective technical support facilitates the emergence of an information-rich environment for firms, and may be worth pursuing in many settings. Examples of such support include:

- Sponsoring courses on specialized topics.
- Facilitating the use of expert consultants (either directly, by making a consultant available to a broad array of firms, or indirectly, by providing financial support for the use of consultants).
- Promoting information-sharing among firms.

Countries that already have strong broad-based collective support and that are moving into technologically more advanced activities might consider "high-intensity" support, but should proceed with caution.

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This paper analyzes comparatively the results of country studies of successful small and medium enterprises (SMEs) and their support systems in Indonesia, Japan, Korea and Colombia. The objective of the research was to shed empirical light on the policy question of what should be the appropriate role of government in the development of marketing and technological support systems for SMEs.<sup>1/</sup> We begin by describing the research issues and methodology, and some background features of the countries, subsectors and firms in which field research was conducted. Thereafter, we present in turn for each of the three support systems the major results of the research, and their implications for policy. We conclude by highlighting some general themes that emerge from the analysis of individual support systems.

## **I: RESEARCH BACKGROUND**

### **I.1: Research Issues and Methodology**

**Issues.** Two presumptions underlie the decision to focus the research on government and SME support systems. The first presumption is that the micro-environment of private, governmental and NGO (non-governmental organization) market and institutional supports external to the firm is an important determinant of SME success.<sup>2/</sup> Large firms can use non-market mechanisms to internalize within the firm many of the functional technical and marketing skills that that they need to conduct business. SMEs, by contrast, lack the resources and in-house

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<sup>1/</sup> The research examined also financial support systems in Japan and Korea. The results are reported in the individual country studies.

<sup>2/</sup> This idea is implicit in the literature which highlights the role of the entrepreneur in large firms in developing countries as a "gap filler". See Jones and Sakong (1980); Kilby (1971); and Leibenstein (1963, 1968). For the link between the development of private and public support systems and SME participation, see Jacobs (1969); Piore and Sabel (1984); Ranis and Schive (1986); Rhee (1988); and Levy (1991).

functional diversification of their larger counterparts, and depend more on external sources to acquire technological and marketing capability. Acquiring the resources they need involves transactions costs. It follows that the less developed are technical and marketing support systems, the higher will be the transactions costs to SMEs, with a corresponding impairment in their competitive position. So one key goal of the research is to learn what are the characteristics of well-functioning support systems.<sup>3/</sup>

The second presumption is that the social returns of well-functioning SME support systems — and, more broadly, of SME success — exceed the private returns to individual firms. This presumption can be defended via four distinct lines of reasoning. First, and most familiar, is the argument that there exist informational and other market failures associated with the provision of technical and marketing support to SMEs.<sup>4/</sup> Second, a proliferation of rapidly-growing SMEs holds the promise of providing a seedbed for the emergence of dynamic and efficient large-scale national firms, and consequently a more flexible and competitive domestic economy.<sup>5/</sup> Third, there can be important political economy advantages of broadening the base of private sector participation. A broader private base implies less concentration of economic power, which can reduce the risk of the emergence of a mutually beneficial, but socially unproductive, rent-seeking relationship between business and government. Moreover, broad-

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<sup>3/</sup> Note that this goal is substantially narrower than that of learning what are the determinants of SME success (which could include a myriad of policy and human capital variables), with important implications for the design of the research.

<sup>4/</sup> For marketing and technical support, the public good character of information implies that the socially optimal supply of information exceeds what would be supplied privately. Collective action problems could inhibit firms from organizing to jointly supply "intra-industry" public goods.

<sup>5/</sup> Technically, this argument can be viewed as one of "inter-temporal" spillovers. Investments today which expand the number of successful firms make the economy more capable in the future for responding flexibly to shocks, and taking advantage of new (currently unknowable) opportunities as they emerge. See Bruton (1985, 1989, 1993) for a conceptual discussion which makes the case that it is socially desirable for developing country governments to pursue interventions which lead to a more flexible economy.

based participation in the private sector can ease social tensions, especially in countries where there are strong divisions between the economically dominant group, and other groups in society. Fourth, there is some evidence that a substantial role for SMEs contributes to a more equitable distribution of income.<sup>6/</sup> Given these four lines of reasoning, the corollary follows that if government can intervene in a cost-effective manner to improve the prospects of SME success beyond what would be achieved in a wholly private marketplace, it should do so.

Taken together, the two presumptions shift the terrain of debate as to whether governments should intervene to strengthen marketing and technological support systems from an ideological to an empirical one. Surprisingly, while there is ample documentation of failed attempts at intervention, there has been remarkably little empirical research as to whether collective (governmental, business association and NGO) interventions have been important for the successful development of support systems.<sup>7/</sup> The research summarized here is the fruit of a sustained effort to fill this gap.

**Methodology.** Our starting point for analysis of the role of collective interventions was with the SMEs themselves. We sought to learn from structured field interviews how these firms took care of their marketing and technological tasks, to what extent they drew on external supports to undertake these tasks, and what was the relative utilization and usefulness (as perceived by the firms themselves) of private and collective supports. Our goal in adopting this approach, rather than studying directly specific interventions made by collective institutions, was to anchor any broader judgements as to the role of government in an understanding of the dynamics of the private marketplace itself.

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<sup>6/</sup> See, for example the analysis in Fei, Ranis and Kuo (1979) of the relation between the evolution of income distribution in Taiwan and the role of SMEs.

<sup>7/</sup> For some studies of the role of technical and marketing support, see Hogan, Keesing and Singer (1991); Schmitz and Musyck (1993); Cortes, Berry and Ishaq (1987); Berry and Mazumdar (1991); and Nugent (1990). Rhee, Ross-Larson and Pursell (1984) used a methodology similar to the present one to examine the acquisition of technical and marketing capability by large firms.

How we selected our sample of firms was crucial for the broader validity of our policy judgements. The key decision was to target the empirical analysis on successes: successful countries, successful subsectors, successful firms. The underlying presumption was that the economic institutions identified by firms as important for successful outcomes are themselves at least reasonably efficient.<sup>8/</sup> The research followed the lead of other analyses,<sup>9/</sup> and used direct or indirect participation in export markets as the primary criterion of success (although, as will be seen, in conducting the research it was not possible to adhere rigidly even to this criterion of export-orientation).

While in general the presumption that the institutions identified by firms as efficient were indeed so seems reasonable to us, the reader can continually test any policy judgements we draw from our evidence by posing questions as to the counterfactual. Key questions to keep in mind include: Given that the SMEs surveyed indeed appear efficient is it probable that, in the absence of some collective institution identified as important, their performance would have worsened? Alternatively, should there be reason to question whether the surveyed firms indeed are economically efficient, is it nonetheless probable that any collective institution deemed to be making a positive contribution would still be socially useful in an environment populated by economically efficient firms?

In principle, variations across subsectors in their technologies and patterns of industrial organization might influence the role of collective supports. Similarly, their role could be affected by variations across countries in the levels of development of their private sectors, and the manner of their integration into the world economy. To account for these variations, we sampled across a broad range of countries and subsectors.

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<sup>8/</sup> This presumption is standard in the economic analysis of institutions. See, for example, Oliver Williamson's (1985, 1975) analyses of transactions costs, and Douglass North's (1981) analysis of the relationship between property rights and economic growth. While at the limit applications of the presumption can degenerate into tautologies, with careful design it is possible to formulate empirically testable propositions.

<sup>9/</sup> For example, Pack and Westphal (1986), Krueger (1984), and the World Bank's recent (1993) study of the East Asia miracle.



**The sample.** Ideally, the sample of countries and subsectors would have been large enough to make it possible to analyze cross-country variations in support systems for a particular subsector, as well as cross-sectoral variations in support systems within individual countries. In practice, as Table 1 summarizes, budget limitations restricted the research to four countries; 3-4 subsectors were examined in each country, with the sample worldwide amounting to 445 firms. Details of sampling decisions with respect to subsectors and firms are contained in the individual country studies.

While all four countries presently are judged to be relatively "successful" examples of development, they were intentionally chosen to encompass a wide spectrum of development experiences. They vary radically in 1991 per capita incomes – from \$610 for Indonesia, to \$1,260 for Colombia, \$6,330 for Korea and \$26,930 for Japan. Two of the countries are located in North-East Asia, one in South-East Asia, and one in Latin America.

Unavoidably, given the wide variety of levels of development (and resource endowments), and the desire to focus on export-oriented subsectors, it was not possible to achieve much overlap in the subsectors studied across countries. Yet the costs of limited overlap are less than they might first appear. For one thing, even within seemingly identical subsectors, there are substantial variations across countries in both the specific products produced and in the patterns of industrial organization.<sup>10/</sup> For another, as the analyses of marketing and technical support systems will reveal, it is not product-type per se that is the crucial basis for comparison. For marketing support systems, what turns out to be crucial is the distinction between subsectors in which SMEs are embedded in pre-existing private networks,

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<sup>10/</sup> To cite one example, Levy (1991) compares the footwear export industries of Korea and Taiwan. Not only are there differences in their mixes of products (Taiwan produces relatively more plastic footwear, Korea relatively more leather), even when the product is identical (e.g. running shoes with leather uppers) there have historically been radical differences in their patterns of industrial organization, with large firms dominant in Korea and SMEs in Taiwan.

**TABLE 1: THE SAMPLE OF COUNTRIES AND SUBSECTORS  
(NUMBER OF FIRMS SAMPLED IN BRACKETS)**

<b>INDONESIA (91)</b>	<b>COLOMBIA (125)</b>	<b>KOREA (122)</b>	<b>JAPAN (107)</b>
<b>Garments (34)</b>	<b>Garments (47)</b>	<b>Woven Textiles (42)</b>	<b>Woven Textiles in Fukui (33)</b>
<b>Rattan Furniture (33)</b>		<b>Automotive Components (20)</b>	<b>Automotive Components in Ohta (34)</b>
<b>Carved Wooden Furniture in Jepara (24)</b>		<b>Electronic Components (20)</b>	
	<b>Machinery (44)</b>	<b>Factory Automation (40)</b>	
	<b>Leather Products (34)</b>		<b>Silverware in Tsubame (40)</b>

and activities where no such networks exist; six of the subsectors selected fit into the former category, and seven into the latter. For technical support systems, a crucial distinction is between simple, craft-based and complex, engineering and science based technologies.

### I.2 Some Background Characteristics of Subsectors, Entrepreneurs and Firms

Here we highlight three sets of characteristics of the firm samples: the rates of growth of the firms surveyed; the education and experience of entrepreneurs; and the relation between the firms surveyed and patterns of subcontracting in their respective subsectors.

Not surprisingly, given our focus on success, the Indonesian, Colombian and Korean firms sampled all have enjoyed very substantial expansion since start-up.<sup>11/</sup> As Table 2 shows, the start-up size of the Colombian firms sampled was very small, with 76 percent of them having 20 or fewer employees, and only 10 percent 50 or more employees. By the time of the survey, however, these proportions had virtually reversed, with 54 percent in excess of 50 employees, and only 14 percent with fewer than 20. The average start-up size of firms sampled in Indonesia was larger; even so, 48 percent of them commenced with fewer than 50 employees, and only 23 percent with more than 250. But by survey time only 9 percent still had fewer than 50 employees, while 56 percent had 250 or more. As for Korea, Table 2 documents substantial firm growth, though less than in the other countries. However, for Korea in particular these employment data substantially underestimate the growth of firms, since Korean wages have risen very rapidly and firms have responded by substituting capital for labor, while achieving very rapid increases in value added.

As Table 3 shows, the levels of education of these successful SMEs are strikingly high. In both Korea and Colombia, over 80 percent of the entrepreneurs sampled had completed at least some university; and, at 75 percent, the proportion was almost as high for Indonesia's garment and rattan entrepreneurs. Half of the Korean sample had undertaken their university studies in the field of science or engineering. And prior to starting their firms, over 90 percent

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<sup>11/</sup> The Japanese firms are substantially older, and we do not have comparable data.

TABLE 2: THE GROWTH OF FIRMS

	% FIRMS WITH NO MORE THAN A "SMALL" NUMBER OF EMPLOYEES <sup>a/</sup>		% FIRMS WITH A "LARGE" NUMBER OF EMPLOYEES <sup>b/</sup>	
	START-UP	CURRENT	START-UP	CURRENT
INDONESIA	48%	9%	23%	56%
COLOMBIA	76%	14%	10%	54%
KOREA <sup>c/</sup>	81%	34%	4%	36%

## NOTES:

a/ "Small" is defined differently for the three countries. For Indonesia and Korea it is 50, and for Colombia 20 employees.

b/ "Large" is defined differently for the three countries. For Indonesia it is at least 250, for Colombia it is 50, and for Korea it is 100 employees.

<sup>c/</sup> Excluding woven textiles, where employment increases were limited as a result of a shift to automatic looms.

TABLE 3: EDUCATION AND EXPERIENCE OF ENTREPRENEURS

## PERCENTAGE OF ENTREPRENEURS SAMPLED WITH:

COUNTRY	HIGH SCHOOL EDUCATION OR LESS	SOME UNIVERSITY EDUCATION OF WHICH:			PRIOR EXPERIENCE IN RELATED BUSINESS
		AT LEAST SOME	GRADUATE LEVEL	SCIENCE OR ENGINEERING	
<b>INDONESIA</b>					
Garments and Rattan	25%	75%	-	-	-
Jepara	71	29	-	-	-
<b>COLOMBIA (ALL)</b>	17	83	19%	-	-
<b>KOREA (ALL)</b>	13	87	11	50%	91%

of the Koreans had experience in a related business, almost 60 percent of them in a management position. A substantial majority of the Japanese sample also reported having had prior experience in a related business.

The exceptions to the overall pattern of high education are revealing. The export entrepreneurs from Jepara, Indonesia are shown in Table 3 to be substantially less educated than in the other countries and subsectors; uniquely among the subsectors studied, their source of competitive advantage lies in unusually well-developed wood-carving skills. Also, although not shown in the table, the owners of the Japanese SMEs sampled, especially those in their fifties or older, tend to have no more than high school education. However, as the discussion of marketing support systems below will highlight, they appear to face fewer marketing demands than the other entrepreneurs, insofar as they operate within a well-developed network of inter-firm relations.

Finally, subcontracting relations are ubiquitous in all four countries. As the country case describes in detail, all of the Japanese firms surveyed are embedded in vertical, multi-tier production and marketing relations. In Korea, 82 percent of the firms surveyed subcontract out either specific production tasks or fabrication of the entire product; the corresponding figures for Indonesia and Colombia are 76 percent and 67 percent. What is remarkable about the Korean experience in particular is the rapidity of change in the role of subcontracting in industrial production. In 1973, only 25 percent of all Korean SMEs earned any revenue from subcontracting; by 1990, subcontracting was a source of revenue for 70 percent of Korean firms, and fully 90 percent of these earned over 80 percent of their revenue in this manner.

For all of the pervasiveness of subcontracting, and for all that its expansion (as in Korea) doubtless multiplies the opportunities available to small business, the results of the Indonesian and Colombian firm surveys sound a note of caution as to whether subcontracting can serve straightforwardly as a stepping-stone to SME success in export markets. Fewer than 14 percent of the Colombian SME exporters surveyed, and fewer than 22 percent of the Indonesian SME exporters, had themselves had prior experience as subcontractors prior to becoming direct exporters. Considered together with the evidence on education levels, these

data point to the possibility of substantial dualism among SMEs, with an educated minority successfully "graduating" to become direct exporters, and the majority more-or-less permanently engaged in the international marketplace, if at all, only indirectly as subcontractors.

## **II: EXPORT MARKETING AND ITS SUPPORT SYSTEMS**

Even with favorable market conditions, exports do not proceed spontaneously, but through the medium of institutions, and via exchanges which involve both ex ante and ex post transactions costs. Ex ante transactions costs comprise the costs of search by buyers and sellers to identify a party with whom to transact. Ex post transactions costs comprise the costs to one party that result from non-performance by the other. SME success in export markets thus requires the presence of mechanisms which reduce the costs of search to SME suppliers and to their buyers, and which can reliably signal the reputation of suppliers to putative buyers (and vice versa).

A central goal of this study is to learn what was the role of collective marketing support systems – how extensively they were used by SME exporters, how much value SMEs ascribed to them, and what specific kinds of collective support were most highly valued by SMEs. Yet firms do not make their decisions on the use of collective marketing support in a vacuum. There also exist a range of private channels which reduce the transactions costs to firms of participating in export markets – trading intermediaries, search efforts by foreign buyers, opportunities for indirect exporting via subcontracting, and the presence of other pre-existing private networks that can ease entry into export markets. Where they exist, these private networks represent substitute channels which reduce SME demand for collective support. Additionally, SMEs eager to export can make direct efforts of their own to win orders – although collective support (if it is available) is likely to complement, rather than substitute for, such efforts.

The next subsections analyze comparatively for Indonesia, Japan, Korea and Colombia the supply of private mechanisms of export support, and the impact of their availability on the

use of collective support. Thereafter, we describe in some detail the specific kinds of collective marketing support have proven useful in the sample countries, and the specific institutional mechanisms that have been most effective in delivering them.

## II.1: Leading Mechanisms of Export Marketing

The field research uncovered very substantial variation in the mechanisms of export marketing across countries and subsectors. Taken together, three propositions appear to summarize much of this variation:

\* Variations in industrial organization influence the mechanisms of export marketing. In some instances, SMEs are embedded in well-developed, pre-existing private networks, with low transactions costs of entering export markets, and with virtually no role for collective support. In others, the challenge of linking into the international marketplace is more formidable, involves higher transactions costs to SMEs and calls for distinctive marketing mechanisms.

\* Intertemporal variations within individual industries influence the mechanisms of export marketing. In the initial period of market penetration of a new export industry, transactions costs are high and domestic resources play an important role. Subsequently, markets "thicken", initiatives by foreign buyers become more important, and the transactions costs of export entry by SMEs decline. (A parallel pattern is evident over the life cycle of firms, regardless of the timing of first export entry.)

\* Variations across countries in the extent of their engagement in the international marketplace influence the mechanisms of export marketing. The challenges and mechanisms of export marketing are very different, and the transactions costs of penetrating these markets are lower, for SMEs active in countries that are already "on the map" as export suppliers, than for those active in countries whose export drive is still in its infancy.

Table 4 offers capsule summaries of the experiences of the four countries studied in relation to these propositions. The experiences of Japan and Indonesia illustrate the impact on marketing patterns of industrial organization and related pre-existing networks, and those of Korea and Colombia (plus Indonesia again) illustrate both the evolution of marketing mechanisms from the pioneering export phase onward, and the impact on this evolution of a country's profile in the global marketplace.

### Japan and Indonesia: The Power of Pre-existing Private Networks



**TABLE 4: THE IMPACT OF COUNTRY CHARACTERISTICS AND INDUSTRIAL ORGANIZATION ON MECHANISMS OF EXPORT MARKETING - A SUMMARY OF COUNTRY EXPERIENCES**

	<b>INDUSTRIAL ORGANIZATION</b>	<b>COUNTRY'S EXPORT PROFILE</b>
<b>JAPAN</b>	No direct marketing; SMEs embedded in dense, pre-existing private networking	Not Applicable
<b>INDONESIA</b>	Extended Chinese community confers marketing advantages on non-Pribumi Firms. Pribumis use substitute mechanisms	Nascent reputation as export supply source
<b>KOREA</b>	Emergent network of export traders (inter-temporal Dimension)	Strong reputation as exporter simplifies direct export marketing for SMEs (subsequent to initial market entry)
<b>COLOMBIA</b>	Limited pre-existing networks	Limited exposure to export marketplace complicates marketing for SME exporters

In different ways, the Japanese and Indonesian studies highlight the power of pre-existing private networks in facilitating SME participation in the export marketplace.

Japan. Across the gamut of Japanese industry, the marketing of SME products is taken care of virtually automatically by pre-existing private production and trading networks, with no direct interface between the firm and its foreign buyer, and virtually no role for collective support. The three subsectors examined in the Japan case study illustrate the wide variety of patterns of industrial organization that yield this outcome.

Multi-tier subcontracting relations among Japanese SMEs engaged in the production of automobile components in the town of Ohta comprise a by-now familiar example of a pre-existing private network. Fuji Industries (assembler of the Subaru automobile) is located in the region, and half of Ohta's first-tier subcontractors supply parts to the company. Sales to Fuji Industries account for 43 percent of sales of these firms, with virtually all other sales going to other automobile assemblers in Japan. Dependence on a dominant parent firm grew for the technically less-sophisticated second-tier and lower-tier subcontractors, with 75 percent of sales of second-tier subcontractors going to their parent firms.

In Japan's silverware and textile subsectors, the pre-existing private networks comprised interactions with trading houses and with input suppliers. Tsubame's silverware exports have long been channelled through the country's export trading houses; indeed, as of the time of our survey these trading houses continued to account for 80% of export sales. And SME weavers of synthetic textiles in Fukui-Ishikawa are embedded in center-satellite relations to an even larger degree than their silverware counterparts: about 85% of textile weaving takes place under "service fee contracts" in which trading houses or yarn-producing chemical companies supply yarn to SME weavers, which is woven and dyed, and then returned to the yarn supplier for subsequent sale.

In all, indirect exporting through pre-existing private networks was so pervasive in Japan that it proved infeasible to systematically sample firms as to the relative value of different kinds of marketing support for direct exports.

Indonesia. In Indonesia, the impact of another kind of pre-existing network is highlighted by sharp differences in the mechanisms of export marketing of pribumi and non-pribumi (Chinese) firms. These differences appear to be the result of linkages among an extended Chinese community that transcend national boundaries and provide an informal private network into which Indonesia's entrepreneurs of Chinese origin -- but not their pribumi counterparts -- can straightforwardly connect.

As Table 5 suggests for rattan furniture exporters, pre-existing linkages translate into a superior ability on the part of non-pribumi firms to make initial export contacts outside of Indonesia: 63% of initial export contacts of non-pribumi Indonesian firms were made outside the country (via a business trip abroad, or a friend or agent based abroad), as compared with only 15% for pribumi firms. As the table shows, the disparity in the role of contacts made abroad continues even as firms become established in export markets. In garments, too, 53% of the most recent export contacts for non-pribumi firms -- but none for pribumi firms -- were made abroad.<sup>12/</sup> Lacking both contacts abroad and ready access to buyers visiting Indonesia, pribumi garment and rattan furniture firms made use of substitute mechanisms. Thus over half the pribumi firms in Table 5 (but under 20 percent of the non-pribumi) used collective mechanisms to link up with export markets.

Korea, Colombia (and Indonesia again): Penetrating the Export Marketplace de Novo

Unlike Japanese and non-pribumi Indonesian firms, SMEs in Korea and Colombia generally lacked access to pre-existing private networks, as did Indonesia's pribumi SMEs. Consequently, empirical analysis of these settings holds the promise of showing how marketing mechanisms start-up and evolve as specific new export activities take hold, with resultant declines in the transactions costs of export entry by SMEs. Additionally, the radically different export profiles of Colombia on the one hand, and Korea and Indonesia on the other, provides

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<sup>12/</sup> Note, though, that despite extensive search it was only possible to identify six pribumi garment firms for inclusion in the sample. The third Indonesian case, that of carved furniture exports from Jepara, does not shed any useful light on the role of pre-existing networks; all but one of the firms surveyed were pribumi, and they were not embedded in any pre-existing network.

<b>TABLE 5: MARKETING CONTACTS AMONG RATTAN FURNITURE EXPORTER (NUMBER OF FIRMS)</b>				
	<b>INITIAL CONTACTS</b>		<b>CURRENT CONTACTS</b>	
	<b>Pribumi</b>	<b>NonPribumi</b>	<b>Pribumi</b>	<b>NonPribumi</b>
<b>PRIVATE</b>				
<b>In Country</b>	4	3	13	13
<b>Abroad</b>	2	10	4	26
<b>COLLECTIVE</b>	7	3	18	6
<b>TOTAL</b>	13	16	35	45

an opportunity to explore how much impact a country's broader profile in the international marketplace has on the development of export marketing mechanisms.

**Korea.** The way in which Korean SMEs have been incorporated into that country's industrial economy is different from the Japanese pattern. Whereas Japanese industrial organization is characterized by a dense network of interaction between large and small firms along the lines described above, Korea's industrial success in the 1960s and early 1970s was built on its giant industrial conglomerates, with SMEs playing an increasing role only after 1977. Moreover, the ties between large and small firms have been looser in Korea than in Japan, with a correspondingly greater extent of direct participation in exports among Korean SMEs.<sup>13/</sup>

As Table 6 shows, large firms tended to be the export pioneers, but direct SME exports expanded rapidly in all four subsectors studied. While in the woven textile and electronic parts subsectors exports were substantial already in 1983, in the remaining two subsectors the move by SMEs into export markets took place only in the latter half of the 1980s. For woven textiles the pioneering phase of SME exports actually predates the export start-up of most of our sample firms.

Table 7 details for each subsector the relative importance of four mechanisms of export marketing at various points in time. For Korea, export "subcontracting" refers to manufacture against specifications for export by traders, not to production of components for assemblers who export finished products. As Table 7 confirms, in all periods marketing of woven textiles is dominated by a network of specialist export traders/subcontractors with headquarters or branch offices clustered in the area of Taegu, the location of almost 80 percent of Korea's woven textile firms. As noted, woven textile SMEs already had established a position in export

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<sup>13/</sup> In the automobile and electronic components subsectors, the majority of firms surveyed were embedded in subcontracting relations with large assemblers. Sales to assembler-principals accounted for over 90% of sales for 14 of the 20 Korean auto parts firms surveyed, and for 9 of 20 electronic parts firms. However, even in these sectors over 60 percent of surveyed firms manufactured at least some products directly for export markets; these direct exports were the focus of the analysis of export marketing in the Korean case study.

**TABLE 6: EXPORTS BY KOREAN SMEs IN FOUR SUBSECTORS  
(MILLION OF US\$)**

	WOVEN TEXTILES	AUTO PARTS	ELECTRONIC PARTS	METAL CUTTING EQUIPMENT
<b>1983</b>				
SME Export Value (USMillions)	- 349	4	199	21
SME Shares of Total Exports	21.3%	9.6%	19.5%	
<b>1988</b>				
SME Export Value (USMillions)	1,454	83	134%	68
SME Shares of Total Exports	42.8%	25.9%	22.9%	
<b>1991</b>				
SME Export Value (USMillions)	3,453	184	2380	123
SME Shares of Total Exports	60.6%	44.1%	24.8%	

**TABLE 7: KOREA - THE RELATIVE USEFULNESS OF EXTERNAL  
MARKETING SUPPORT (ALL FIRMS 1 = LEAST USEFUL; 5 = MOST USEFUL)**

	DIRECT MARKETING	BUYER INITIATIVE	SUBCONTRACTING PRINCIPAL	COLLECTIVE SUPPORT
<b>Woven Textiles</b>				
Start-up, Pioneers	2.4	3.2	4.2	1.2
Start-up, Followers	2.5	2.4	4.0	1.3
Current, All	2.5	2.8	3.7	1.3
<b>Auto Parts</b>				
Start-up, Pioneers	2.5	1.0	3.3	2.2
Start-up, Followers	1.5	3.8	2.2	2.0
Current, All	3.0	3.6	2.8	1.3
<b>Electronic Parts</b>				
Start-up, Pioneers	2.0	1.8	2.8	3.3
Start-up, Followers	1.6	1.8	3.0	2.4
Current, All	3.4	3.9	1.6	1.5
<b>Factory Automation</b>				
Start-up, Pioneers	3.2	2.7	2.8	1.5
Start-up, Followers	2.3	3.6	2.2	2.0
Current, All	4.0	3.6	2.0	2.0

markets by the late 1970s, and there is very little variation across periods in the relative importance of the various export marketing mechanisms. The export marketing patterns for this subsector parallel more those of Japan and non-pribumi Indonesian firms than they do those of the remaining three Korean (and the Colombian) subsectors. For the rest, the Korean survey results illustrate vividly how export marketing channels evolve -- how SME exports get going in individual subsectors, and how the transactional environment for export marketing "thickens" as the number of SME exporters proliferates.

Table 7 organizes the subsectoral data on the relative importance of various marketing mechanisms into three time-related subgroups -- the time of the field survey; and firms' initial period of entry into export markets, with initial export entry in turn disaggregated between pioneer SME exporters and SMEs that moved into international markets only once the industry had established its role as an exporter. As the table shows, the initial impetus for exports in the three subsectors came primarily from resources already within the country -- from export traders, from collective marketing support institutions, and from exporting firms themselves. Traders/subcontractors played the leading pioneer role for auto parts SMEs, and the second most important role in electronic parts and factory automation SMEs. Their prominent early role can be interpreted as an important spillover for Korean SMEs from being active in a country with a strong export profile, insofar as it was the country's earlier export success (typically by larger firms) that brought these traders/subcontractors onto the scene. Collective marketing support leads among pioneer electronic parts SME exporters, and has a significant subsidiary role in auto parts. Direct marketing efforts by firms provided the critical initial impetus in the factory automation subsector, and also scored high among autoparts pioneers. In all three subsectors the role of direct marketing declines for the export start-up of follower exporters, but picks up again for current exports.

Over time, initiatives of foreign buyers come to the fore. Buyer initiatives are identified in Table 7 as the least important mechanism for initial export entry by pioneer SMEs in the auto and electronic parts subsectors, and second least important for factory automation. But information appears to spread rapidly as Korean firms come on line as a primary international



supply source for yet another product. Indeed, in the later periods initiatives by foreign buyers emerge in all three subsectors as the leading mechanism for facilitating participation in export markets.

In all, then, the evidence from Korea on export marketing suggests that "export entry begets export entry", that a cumulative process can take hold.<sup>14/</sup> In all three subsectors for which we have data, local actors (presumably prompted by numerous export incentives) led the pioneering phase of SME exports. Their activity took place against the backdrop of Korea's strong overall reputation as a reliable and cost-effective supplier of exports. Once exports of a new product were underway, foreign buyers came onto the scene, and the momentum of sustaining the export drive shifted increasingly into their hands, with complementary efforts by increasingly committed export suppliers. Throughout the process, the transactions costs of linking into export markets progressively declined, with corresponding increases in opportunities for export entry by SMEs.

Colombia. Like their Korean (but unlike their Japanese or non-pribumi Indonesian) counterparts, Colombian SMEs lacked access to pre-existing private networks to link into the export marketplace. The Colombian garment industry experienced an export surge in the 1970s with exports in 1980 amounting to over \$110 million already in 1980, too early for the pioneering export phase to be depicted adequately by our firm sample. The export take-offs in the leather products and machinery subsectors came over a decade later<sup>15/</sup> and so offer evidence of the pioneering phase of export marketing of new products.

As was observed for Korea domestic resources played a leading role in the pioneering export efforts of Colombian firms in the leather and machinery subsectors. Direct marketing

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<sup>14/</sup> Hirschman (1958) was a pioneering study of the role of cumulative processes in economic development. Levy (1989) modelled formally the role of cumulative processes in the development of export markets.

<sup>15/</sup> Garment exports subsequently declined to a low of \$40 million in 1983, but expanded later in the decade to reach \$449 million by 1991. In the machinery subsector, too, exports peaked at \$39 million in 1980, subsequently declined to \$12 million, but then expanded in recent years to reach \$102 million by 1992. Leather product exports got underway only in the 1980s, rising from \$14 million in 1984 to \$106 million by 1991.

efforts of firms emerge in Table 8 as the leading mechanism of export market penetration for pioneer firms in both subsectors. Collective marketing support plays a significant subsidiary role for pioneer exporters, as well as a continuing useful (though diminished) role as the subsector matures.

Aside from this central similarity, there also are some striking differences between Colombia and Korea in the marketing mechanisms of pioneer exporters, differences which plausibly result from the divergent export profiles of the two countries. For all that Colombia has the reputation of being one of the few Latin American countries to have maintained a relatively liberal trade regime for a sustained period of time, until very recently Colombian industrial policy placed nowhere near the emphasis on exports as did Korea's, and Colombian firms have had nowhere near the sustained presence in manufactures export markets as have the Koreans. One consequence of this limited history which is evident in Table 8 is the virtual absence of trading and subcontracting ties as a mechanism of export market penetration for Colombian SMEs; by contrast, such ties were of central importance for pioneering Korean firms.

A second and somewhat more puzzling difference is in the role of foreign buyers: despite Colombia's lower export profile, foreign buyers are relatively more important at the pioneering phase for Colombian than for Korean SME exporters. One plausible resolution of this apparent paradox may be that, by comparison with their Korean counterparts, Colombian firms historically have been less interested in international opportunities at the early stages of export market development, and so have left relatively more of the (modest in absolute terms) early running to foreign buyers. Further, whereas in Korea the relative importance of direct marketing efforts and initiatives by foreign buyers shifted sharply in favor of foreign buyers as the export drive deepened, in Colombia direct marketing initiatives play the leading role even in the current period. Plausibly, this tardier responsiveness of foreign buyers to emerging opportunities to source from Colombia is a consequence of the lower profile of the country in the global marketplace. Put differently, the evidence suggests that the cumulative process of increasing participation by foreign buyers, declining transactions costs of export marketing, and

**TABLE 8: COLOMBIA - THE RELATIVE USEFULNESS OF EXTERNAL MARKETING SUPPORT (ALL FIRMS 1 = LEAST USEFUL; 5 = MOST USEFUL)**

	<b>DIRECT MARKETING</b>	<b>BUYER INITIATIVE</b>	<b>SUBCONTRACTING PRINCIPAL</b>	<b>COLLECTIVE SUPPORT</b>
<b>Leather Products</b>				
Start-up, Pioneers	4.4	3.5	1.8	2.6
Start-up, Followers	3.5	3.7	2.3	1.8
Current, All	3.9	3.4	1.4	2.5
<b>Garments</b>				
Start-up, Pioneers	3.7	3.9	1.4	3.0
Start-up, Followers	3.7	3.6	1.2	1.3
Current, All	3.8	3.6	1.1	2.4
<b>Machinery</b>				
Start-up, Pioneers	3.9	3.0	1.0	2.5
Start-up, Followers	4.2	3.6	1.3	1.9
Current, All	3.8	3.2	1.2	2.2

increasing participation by SMEs has not yet taken hold in Colombia with anything like the vigor that we observe for Korea.

Indonesia (again). For all three Indonesian subsectors, our surveys yielded evidence on the evolution of export channels. As Table 9 shows, relative to both Korea and Colombia, initiatives by buyers turn out to be unusually dominant in all time periods.

For the pioneering periods, the explanation for buyer dominance varies across subsectors. For garments, the presence of pre-existing networks among the extended Chinese community along the lines noted earlier provides sufficient explanation, since the vast majority of that industry's garment exporters are Chinese in background. By contrast, most of the wooden furniture exporters in the sample were pribumi, based in the traditional woodcarving center of Jepara, who took advantage of the area's abundant supply of carving skills to produce reproduction antique furniture for export markets. Paralleling the pattern hypothesized for Colombia, Jeparan producers had not initially set their sights beyond the domestic market. So, as the case study details, and as is signalled by the score for buyer initiatives in Table 9, the initial impetus for exports came from outsiders.

For rattan furniture, it is necessary to distinguish between the "prehistory" and the actual period of export take-off. In the 1970s and early 1980s, rattan furniture exports were pioneered by a small number of predominantly pribumi entrepreneurs. They are the firms grouped in the "pioneer" category and, as can be seen in Table 9 and consistent with the discussion earlier, were disproportionately dependent on collective support for the initial export efforts. However, take-off of rattan furniture exports came only in the latter 1980s, at about the time the Indonesian government banned the export of raw and semi-processed rattan. The majority of new exporters during this phase were Chinese (many of them former traders in raw rattan) who, as in garments were able to rely on their extended network to penetrate export markets. Thus, as Table 9 shows, at export start-up non-pribumi "follower" firms identified buyer initiatives as their most important source of support. To be sure, some of the "follower" entrants were pribumi. However, they lacked access to the network and hence, as is evident in

TABLE 9: INDONESIA - THE RELATIVE USEFULNESS OF EXTERNAL MARKETING SUPPORT (ALL FIRMS 1 = LEAST USEFUL; 5 = MOST USEFUL)				
	DIRECT MARKETING	BUYER INITIATIVE	SUBCONTRACTING PRINCIPAL	COLLECTIVE SUPPORT
<b>Garments</b>				
Start-up, Pioneers	3.4	4.1	2.3	2.1
Start-up, Followers	3.1	3.4	2.5	2.1
Current, All	3.3	3.9	1.8	1.7
<b>Carved Wooden Furniture from Jepara</b>				
Start-up, Pioneers	1.8	3.4	2.4	2.0
Current, All	1.3	4.7	1.9	1.7
<b>Rattan Furniture, All</b>				
Start-up, Pioneers	2.5	3.5	1.0	4.8
Start-up, Followers	3.4	3.7	1.4	2.8
Current, All	3.1	4.3	1.1	3.1
<b>Rattan Furniture, Non-Pribumi</b>				
Start-up, Pioneers	-	-	-	-
Start-up, Followers	3.0	4.2	1.1	2.6
Current, All	2.8	4.5	1.1	2.9
<b>Rattan Furniture, Pribumi</b>				
Start-up, Pioneers	2.5	3.5	1.0	4.8
Start-up, Followers	4.1	2.9	1.8	3.1
Current, All	3.6	4.1	1.1	3.3

Table 9, depended disproportionately on their own efforts and collective support to penetrate export markets.

Turning to the high scores for buyer initiatives in the current period, while in the early 1980s Indonesia barely had any presence on international markets for manufactures, manufactures exports subsequently expanded at an astonishingly rapid rate to reach \$14.7 billion by 1991. By that time, like Korea but unlike Colombia, the country had achieved a high export profile and foreign buyers were flocking in to take advantage of its low production costs. Hence the dominant role of buyer initiatives in the current period evident in Table 9 for all three subsectors.

## II.2: Cumulative Processes and the Role of Collective Marketing Support

Using a simple demand and supply framework, we summarize the previous discussion in a way that highlights the sources of variation in the demand and use of collective marketing support across countries and subsectors. The three propositions highlighted earlier account for much of the observed variation.

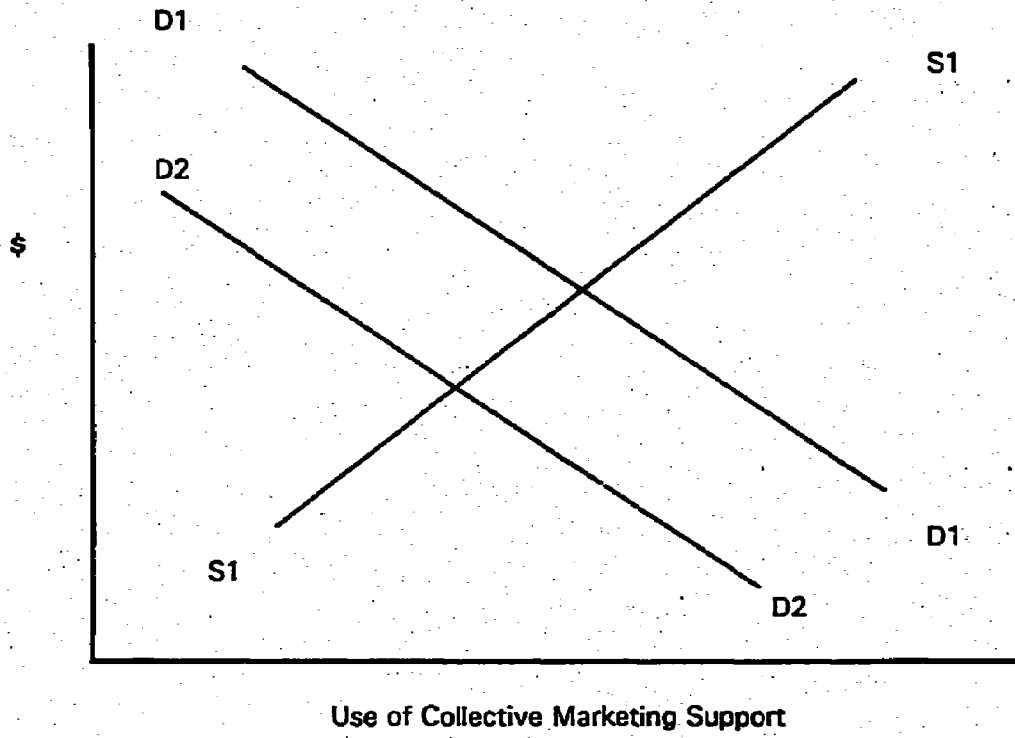
The first proposition was that, insofar as private and collective marketing mechanisms are substitutes, the presence of pre-existing private networks at the initial stages of expansion into export markets is an important determinant of the demand for collective marketing support. Heuristically, D1D1 in Figure 1 represents those countries, subsectors and firms which lack access to pre-existing private networks and hence might demand quite substantial collective marketing support, while D2D2 represents countries, subsectors and firms which enjoy access to pre-existing networks and so have less demand for collective support.<sup>16/</sup> In seven subsectors reviewed above, private networks already were in place as of the time of export entry of the firms surveyed:

\* silverware, auto parts and textiles in Japan;

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<sup>16/</sup> Formally,  $Q_d = f(X_p, X_2, \dots, X_n)$ , where  $Q_d$  is the demand for collective support,  $X_p$  is the cost to the firm of using that support, and  $X_2$ - $X_n$  are other determinants of demand. As the figure shows, we make the standard assumption as to the negative relation between price and quantity demanded. In the text, we explore three of potentially many non-price determinants of demand for collective support.

Figure 1



- \* nonpribumi garment and rattan exporters in Indonesia;
- \* Korea's textile SMEs in the industrial district of Taegu; and
- \* Colombia's garment SMEs.

By and large, SMEs in these subsectors had relatively less use for collective support than did SMEs in the remaining seven subsectors, where pre-existing private networks were underdeveloped:

- \* pribumi rattan and furniture exporters in Indonesia;
- \* Korea's auto parts, electronic parts, and factory automation SMEs; and
- \* Colombia's leather and machinery SMEs.

Evidence from these latter seven subsectors offers strong support for a second proposition highlighted earlier, namely that intertemporal variations within individual industries influence the mechanisms of export marketing. Table 9A presents in summary form some key patterns that were evident in Tables 7-9. The data are normalized, with the average usefulness scores for "buyer initiative" set at one for each subsector. Each subsector's average score for collective marketing support is recalculated as a ratio of the "buyer initiative score". Averaging these normalized scores across subsectors (within countries), and across all subsectors and countries yields the patterns evident in the table.

Table 9A highlights the powerful cumulative processes at work in the evolution of the mechanisms of export marketing. The usefulness of collective marketing relative to buyer initiative is highest for an industry's export pioneers as they start-up their export efforts, and then subsequently declines as foreign buyers come onto the scene and the transactional environment for export marketing "thickens", with a corresponding fall in the transactions costs of using entirely private mechanisms of export marketing. As Table 9A shows, in general this pattern is evident not only over the industry life cycle (compare the relative scores at entry for export pioneers and export followers), but also over the firm life cycle (compare the current scores versus the scores at entry for all firms). The decline in use of collective mechanisms can be illustrated as a continuing leftward shift of the demand schedule, D1D1 in Figure 1.



**TABLE 9A: CHANGES IN PRIVATE VERSUS COLLECTIVE MARKETING SUPPORT OVER INDUSTRY AND FIRM LIFE CYCLES IN SEVEN SUBSECTORS**

	RELATIVE USEFULNESS SCORES: COLLECTIVE SUPPORT/BUYER INITIATIVE		
	Pioneer Firms, Entry	Follower Firms, Entry	All Firms, Current
All Countries and SubSectors	1.2	0.7	0.6
KOREA	1.5	0.8	0.4
INDONESIA	1.0	0.8 <sup>a/</sup>	0.6
COLOMBIA	0.8	0.5	0.7

<sup>a/</sup> For Jepara, this score was estimated as the midpoint between the Pioneer and Current Scores.

The powerful empirical pattern evident in Table 9A should not be interpreted as implying that collective support, though evidently helpful in the initial stages, is a necessary catalyst for the take-off of a new export industry. Indeed, as is evident in Tables 7-9, only in two of the seven subsectors -- electronic parts in Korea, and rattan exports from Indonesia by pribumi-owned firms -- did collective efforts comprise the leading source of support for export pioneers. In three subsectors -- factory automation in Korea, and leather products and machinery in Colombia -- direct marketing efforts by firms themselves were crucial to the initial penetration of export markets. In one subsector (Korean auto parts) traders played the crucial catalytic role. And in the final subsector, exports of carved wooden furniture from Jepara, notwithstanding the overall pattern evident in Table 9A, buyer initiative comprised the crucial catalyst.

The third proposition highlighted earlier was that inter-country variations in the extent of engagement in the export marketplace influence export marketing mechanisms. The relevant comparisons here are between Colombia with its relatively low export profile on the one hand, and Korea and Indonesia with their higher profiles on the other. Colombia's lower export profile, and consequently weaker visibility to foreign buyers, might be hypothesized to correspond with a higher demand for collective support -- D1D1 in Figure 1, versus D2D2 for Korean and Indonesia. Surprisingly, Korea's higher export profile than Colombia's did not translate into more foreign initiative in the pioneering phase of SME exports in a new industry, with a correspondingly lower demand for domestic resources, collective or otherwise. But, as Table 9A summarizes, subsequent to the initial phase of export entry, the predicted differences were evident, with a sharper relative decline in the usefulness of collective marketing supports in Korea than in Colombia. These differences can perhaps be interpreted as signalling the failure thus far of Colombia to "lock-in" its presence in the international marketplace, and set in motion the cumulative process of increased participation by both foreign buyers and domestic suppliers which has proven so crucial for Korea's economic success.

### II.3: The Delivery of Collective Marketing Support

In all four country studies, private mechanisms of export marketing support turn out to be more important than collective ones. Yet, at least some firms, subsectors and countries benefit quite substantially from the presence of collective marketing support. So, given a policy decision to support SMEs, the question arises as to how to provide such support. We answer this question in two steps. First, we examine what specific kinds of collective support have proven most useful to SMEs. Thereafter, we examine what kinds of institutions have proven most effective in delivering this support.

Collective support: what works? The Colombian, Indonesian and Korean field surveys collected detailed information from firms as to the relative usefulness of different types of collective marketing support for their export efforts. Table 10 reports the results for each specific type of support that was used by at least 20% of the firms sampled in an individual subsector. The results are strikingly similar across countries.

First, firms ascribe a high value to participation in trade fairs at home and abroad as a means of penetrating export markets. Trade fairs emerged as the leading or second most valued collective source of export marketing support in seven of the nine subsectors for which data are reported in Table 10. Moreover, as we shall see in the analysis of technical support systems, trade fairs also turn out to be an important source of technological learning.

Second, only in the garment and textile industry (but within that industry systematically in all three countries) do firms identify information on export opportunities, rather than participation in trade fairs, as the most important source of marketing support only in the garment and textile industries. This result reminds us that international trade is conducted in different ways for different industries: for some, high profile fairs are the high points of the trading season, for others an ongoing search by individual buyers and sellers for trading partners matters more.

Third, SMEs ascribe very limited value to direct introduction of buyers by official export agencies. Efforts along these lines played virtually no role in either Colombia or Indonesia. In Korea, the electronics parts subsector provides a partial exception to the general pattern – even though it is noteworthy that recipients of this kind of support (every single one

TABLE 10: COLLECTIVE MARKETING SUPPORT: WHAT WORKS?

A: AVERAGE USEFULNESS FOR ALL RESPONDENTS  
 B: SERVICE USERS AS PERCENTAGE OF RESPONDENTS  
 C: AVERAGE USEFULNESS FOR USERS ONLY  
 (1 = LEAST USEFUL; 5 = MOST USEFUL)

		TRADE FAIR ABROAD	TRADE FAIR HOME	INFORMATION ON EXPORT OPPORTUNITIES	INTRODUCE BUYERS
<b>COLOMBIA</b>					
Leather	A	2.7	3.1	1.8	-
	B	53%	68%	41%	-
	C	4.3	4.1	2.9	-
Garment	A	2.2	2.5	2.5	1.7
	B	40%	49%	60%	34%
	C	4.0	3.9	3.5	3.1
Machinery	A	2.8	2.8	1.9	1.5
	B	57%	64%	41%	32%
	C	4.1	3.9	3.2	2.6
<b>INDONESIA</b>					
Rattan Furniture	A	3.0	2.7	1.9	1.9
	B	58%	76%	33%	52%
	C	4.3	3.2	2.4	2.8
Garments	A	1.8	1.9	2.0	1.7
	B	34%	50%	53%	28%
	C	3.3	2.8	2.9	3.4
<b>KOREA</b>					
Woven Textiles	A	-	-	1.8	-
	B	-	-	32%	-
	C	-	-	3.5	-
Auto Parts	A	-	-	-	1.5
	B	-	-	-	25%
	C	-	-	-	2.9
Electronic Parts	A	1.6	2.0	1.7	2.9
	B	20%	40%	27%	100%
	C	3.9	3.5	3.5	2.9
Factory Automation	A	2.4	2.2	2.4	1.8
	B	50%	50%	57%	43%
	C	3.9	3.5	3.5	2.9

of the sample firms!) ascribe it only moderate value. The Korea Trading Company played an exceedingly limited role. For all that its explicit mandate was to serve as the "general trading company" for SMEs, only 4 of 72 direct Korean exporters in the sample actually made their export sales through its channels!

Collective support: who should provide? Any suggestion that governments should support the collective provision of marketing support has to confront the reality that the institutional capability to deliver such support is weak in most developing countries. Indeed, the developing world is littered with failed export support programs and 'white elephant' export institutions.

The hopeful message of the present study is that there may be institutional alternatives to elaborate export agencies. The empirical evidence highlights the benefits of interventions with a "light touch" that provide firms with the wherewithal to find buyers for themselves, rather than attempt to substitute for efforts by putative exporters. Moreover, the evidence suggests that the delivery of export marketing support might usefully be decentralized, tailored to the specific realities of individual marketplaces so as to be able to respond to the enormous diversity of players and market mechanisms across subsectors.

All three country studies offer empirical support for the proposition that delivery of export marketing support to SMEs should be decentralized.<sup>17/</sup> Korea's flagship export agency, KOTRA, has developed elaborate export information systems, multiple tools for promoting national exporters, and extensive international networks of offices. Yet as Table 11 shows, aside from the electronics subsector, there is virtually no difference in the extent of support provided by KOTRA and by industry associations.<sup>18/</sup> Of 72 direct exporters included in the sample, 29 reported using KOTRA's services, and 23 reported receiving support from their

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<sup>17/</sup> In Japan, too, industry associations and chambers of commerce were the primary direct channels of export marketing support for those few firms who sought to market directly.

<sup>18/</sup> It is worth noting explicitly that no judgement is intended here as to the nett benefits to Korea of KOTRA, whose goals went well beyond providing support specifically for SMEs. The point is rather that a KOTRA-like agency is not necessary for the effective provision of SME support.

**TABLE 11: THE RELATIVE USEFULNESS OF EXPORT MARKETING SERVICES  
OF INDUSTRY ASSOCIATIONS  
AND NATIONAL EXPORT AGENCIES IN KOREA**

	Number of Firms	Number of Exporters	Average Score (all firms)		Number of users		Average Score (Users)	
			KOTRA	Associa-tion	KOTRA	Associa-tion	KOTRA	Associa-tion
Woven Textiles	42	31	1.5	1.5	8	9	3.4	3.2
Auto Parts	20	14	1.2	1.3	4	4	1.8	2.5
Electronic Parts	20	15	1.7	1.2	8	1	2.8	5.0
Factory Automation	40	12	1.5	1.5	9	9	3.4	3.1
<b>TOTAL</b>	<b>122</b>	<b>72</b>			<b>29</b>	<b>23</b>	<b>3.0</b>	<b>3.1</b>

trade association. Moreover, the average rating of the value of the services of the two sets of suppliers was virtually identical.

The Indonesian experience offers three lessons – one cautionary, one mixed and one hopeful. The cautionary lesson concerns the role of centralized export institutions. Like many other developing countries, Indonesia erected in the 1970s two elaborate export institutions – NAFED, whose prime responsibility is to promote trade fairs with Indonesian participation, and the International Trade Promotion Center, an international network of commercial offices located in Indonesian embassies abroad. Yet by 1985, fairs aside, the perception was widespread that these institutions were of limited usefulness.

The mixed lesson concerns the role of industry associations. Parts of Indonesia's furniture and garment associations emerged in the firm surveys as useful sources of collective support. Yet in general Indonesia's industry associations tend to be exceedingly weak. They are not professionally staffed; they are rarely accountable to their members; they tend to be captured by powerful players in their industries; and their umbrella organization lacks credible autonomy from government. As the country study makes clear, it will be no simple matter to re-orient a substantial number of the country's industry associations to play a constructive promotional role.

The hopeful lesson concerns the experience of the Export Support Board, created in 1985 in response to the perception of failure of the existing export institutions. The ESB represents an intriguing departure from the institutional model adopted earlier in that its role was to finance marketing support, not deliver it directly: it provided partial subsidies to nascent exporters who sought to participate in trade fairs abroad, to develop export promotional material, and (as discussed further under the rubric of technical support systems) to employ technical consultants from abroad. Its complement of professional staff never exceeded 10 persons, yet its services were more widely used, and were rated more highly among the firms surveyed, than those provided by the elaborate, central export edifices.

The performance of Colombia's national export agency, PROEXPO (created in 1967), in providing direct marketing support to firms also has been less than impressive.<sup>19/</sup> Relatively few of the Colombian firms which used collective support (Table 10), reported that it came from PROEXPO. The industry associations, by contrast, show considerable promise in this area, especially those in the leather and (more recently) garments industries. Working closely with their member firms, these industry associations are developing the sort of sector-specific knowledge and skills which cannot realistically be expected from general purpose agencies like PROEXPO. A successful hybrid form which is beginning to take hold is for PROEXPO and other public sector agencies to work collaboratively with industry associations – with the public agencies providing some funding to help organize fairs and assist visits abroad by potential exporters.

#### II.4: Public Policy towards Export Marketing.

For decades, countries have used high profile national export agencies to support their export efforts. Comparative empirical analysis in Indonesia, Japan, Korea and Colombia suggests that, viewed from the SME perspective, and judging by the experience of successful exporters, initiatives along these lines may be misplaced. For one thing, private networks turn out to be the dominant means whereby SMEs enter into export markets. For another, for the subgroups of firms for whom collective marketing support has proven to be useful, it has generally been of a kind that can more effectively be provided by decentralized organizations such as industry associations, or local governments and chambers of commerce. Whether these decentralized organizations indeed provide useful support to SMEs appears to depend in part, however, on whether they are dominated by large firms, or whether SMEs have a significant voice. A number of levels of government plausibly could play a usefully role in facilitating the development of decentralized organizations capable of sponsoring participation in fairs and offering SMEs other forms of effective marketing support.

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<sup>19/</sup> Although note that its primary focus has been on the provision of credit for exporters, an activity which it apparently has undertaken impressively.



Turning specifically to national authorities, aside from facilitating a supportive business and incentive environment for exporting, is their appropriate role in supporting export marketing? One task is to "market the country" -- to raise international awareness of the potential advantages of doing business, including export business, with the emerging export nation.<sup>20/</sup> What emerges from this study is that a case can also be made to encourage through partial subsidies -- as opposed to directly deliver -- the use of export marketing supports. Consideration could also be given to using the lure of financial support to encourage the development of decentralized delivery of export marketing services -- to facilitate the establishment of subsector specific industry associations that are responsive to SME concerns, to encourage those that function primarily as lobbying organizations to develop the capability to provide export marketing and other services to their members, or to encourage the emergence of private providers of export marketing services, including for-profit sponsors of trade fairs.

Finally, looking beyond specific collective services, public policy may have some role to play in nurturing the private networks that have emerged in this comparative study as the bedrock of export marketing efforts. Although not studied in any depth, the case studies uncovered tantalizing hints of pro-active government efforts to promote such networks: public support for the development of private trading companies in Korea and, earlier, in Japan; Japanese legislation to protect the interests of small firms embedded in subcontracting relationships; actions in Korea to designate specific lines of business for subcontracting rather than vertically integrated production. To be sure, as is documented by both the individual case studies and the voluminous literature on the determinants of inter-firm contracting arrangements,<sup>21/</sup> the development of these networks has largely been the result of spontaneous private forces, often deeply rooted in national history and culture. Yet, insofar as incentives can encourage subcontracting or entry by export traders (both large and small) the opportunities

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<sup>20/</sup> For a detailed discussion of how to proceed with this task, see Wells and Wint (1990).

<sup>21/</sup> For one key contribution, see Williamson (1985).

for SMEs to participate in export markets would be substantially enhanced, with significant social returns.

### III: THE ACQUISITION OF TECHNOLOGICAL CAPABILITY AND ITS SUPPORT SYSTEMS

Developing new products and acquiring new production capabilities, and improving upon those that a firm already has at its disposal, are crucial to success in export markets and in all four countries most of the SMEs surveyed reported substantial technical improvements. One important influence on technical effort and performance is the extent to which policies expose firms to domestic or international competition, and thereby act as a spur to improve capabilities. Another important influence comprises education policy, including importantly education in science and engineering, and its impact on the supply of technologically-useful human capital. Also influential are management processes within firms and their impact on on-the-job technological learning (including through reverse engineering).

The present study focuses on a fourth influence, namely the micro-environment of private, governmental and NGO market and institutional technological supports external to the firm, on which it can draw as it seeks to build technological capability. A central goal is to evaluate the impact of collective technical supports. In principle, their impact could be substantial: inter-firm spillovers of knowledge are pervasive, so individual firms do not capture for themselves all the benefits of their investments in knowledge, and in the absence of solutions to classic problems of collective action may rationally underinvest. However, the challenges of collective provision can also be substantial, since for information to be useful, it may need to be tailored to the specific needs of an individual industry, if not an individual firm. Moreover, as with export marketing, there exists a variety of external private mechanisms which support a firm's technological effort. Consequently, we embed our analysis of collective technical support within the broader context of the range of private and collective mechanisms which can aid technological effort.

Three broad categories of external technological support can be distinguished. The first category comprises technological learning that occurs as a byproduct of a firm's transactions

with its buyers and suppliers. The second category comprises technological learning that is facilitated by a firm's being embedded in an "information-rich" environment, one replete with other firms engaged in similar activities, with a menu of courses that address its specific business problems, and with access to a network of specialized consultants. The final category comprises "high-intensity" technological support, including formal technology transfer agreements with other private firms engaged in a similar line of business, and sustained joint work with specialist technology institutions. Note that while the channels for learning in the first category are entirely private, in the latter two categories the channels might be either private or collective.

We first review comparatively the empirical results from the four country studies as to which sources proved most useful in helping firms to acquire technological capability. Thereafter, we evaluate in some depth the specific role of collective technological support.

### III.1 Leading Sources of Technological Capability

Five of the subsectors (garments in Indonesia and Colombia, both furniture subsectors in Indonesia, and leather products in Colombia) use craft-based technologies; two (woven textiles in Korea and Japan) use simple, engineering-based technologies; and five (machinery in Colombia, automotive components in Korea and Japan, and electronic products and factory automation equipment in Korea) are examples of more complex, engineering-based technologies.<sup>22/</sup> While craft-based and engineering-based activities pose distinct technological challenges, each can be met in distinctive ways. Indeed, as the comparative review which follows will highlight, and for reasons that are closely analogous to those identified earlier for export marketing, there turn out to be distinctive national patterns in the external mechanisms of technological support for both craft- and engineering-based activities.

Japan. As Table 12A reveals, the leading external sources of technological capability are remarkably similar for Japan's silverware, woven textile and auto parts SMEs, despite very substantial subsectoral differences in the technological challenges. Paralleling export marketing,

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<sup>22/</sup> Japan's silverware subsector is a hybrid, with strong roots as a craft-based industry but with increasing application of science-based technologies to sustain competitive advantage.

vertical relations with large firms emerge as a crucial source of external capability in all three subsectors: chemical companies and (to a lesser extent) trading houses are crucial sources of technological capability for woven textile SMEs; and silverware and auto parts SMEs receive important technological support from their immediate principals in the multi-tier subcontracting chain.

More broadly, the Japan study highlights the power of inter-firm flows of information within industrial districts as an important source of technological capability. All three subsectors dominated the economic base of a narrow geographical area – silverware in Tsubame city, synthetic woven textiles in Fukui-Ishikawa prefecture and auto parts in Ohta city. Vertical linkages represent one example of inter-firm information flows in these industrial districts. In addition, Table 12A identifies similar firms and public agencies (organized, as discussed further below, at the district level) as useful sources of capability. And equipment suppliers – many of which are themselves located within the specialized, product-centered industrial districts – emerge in all three subsectors as an external source of technological capability second only to subcontracting principals.

Indonesia. Interactions with the international marketplace emerge in Table 12B as the most important source of technological capability for Indonesian SMEs. While both pribumi and non-pribumi firms have thus gained technologically from export expansion, Table 12B also points to distinctive advantages enjoyed by non-pribumi firms. In both the rattan and garments subsectors, expatriate employees play a disproportionately important role as a source of technological capability for non-pribumi firms vis-a-vis their pribumi counterparts. While half of the non-pribumi users recruited expatriates from Hong Kong and Taiwan, both Chinese centers, no pribumi users drew expatriates from these sources. Pribumi firms rely disproportionately on substitute channels of technical learning. For furniture firms (both rattan producers and those from Jepara), technical literature has played an important role. As for pribumi garment firms (whose role in the garment industry is an exceedingly small one), Table 12B suggests that they have not reaped any direct technological benefits from Indonesia's export success, but instead rely on the local diffusion of technological capability by private

**TABLE 12: LEADING EXTERNAL SOURCES OF TECHNOLOGICAL UPGRADING  
(AVERAGE USEFULNESS SCORE FOR ALL FIRMS - BRACKETS: 1 = LEAST IMPORTANT;  
5 = MOST IMPORTANT)**

	PRIVATE SOURCES			COLLECTIVE SOURCES	
	LEADING SOURCE	SECOND SOURCE	THIRD SOURCE	PUBLIC AGENCY	INDUSTRY ASSOCIATION
<b>A: JAPAN</b>					
Silverware	Subcontracting Principal (2.5)	Equipment Supplier (1.8)	Similar Firms (1.7)	1.8	1.4
Woven Textiles	Subcontracting Principal (4.0)	Equipment Supplier (2.9)	-	2.0	1.0
Auto Parts	Equipment Supplier (2.8)	Subcontracting Principal (2.7)	Similar Firms (1.6)	1.5	1.4
<b>B: INDONESIA</b>					
Rattan (NonPribumi)	Buyers (3.6)	Expatriate (3.4) Employees	Similar Firms (2.3)	1.0	1.7
Rattan (Pribumi)	Buyers (3.6)	Technical Literature (2.6)	Expatriate (2.1) Employees	1.5	2.1
Garments (NonPribumi)	Buyers (3.0)	Expatriate (3.0) Employees	Technical Literature (2.2)	1.0	1.0
Garments (Pribumi)	Similar Firms (3.8)	Subcontracting (3.3)	Equipment (3.0)	1.0	1.0
Jepara	Buyers (3.2)	Technical Literature (2.0)	Subcontracting (1.8)	1.1	1.7
<b>C: KOREA</b>					
Woven Textiles	Similar Firms (2.4)	Buyers (2.0)	Equipment Suppliers (1.8)	1.4	1.2
Auto Parts	Subcontracting Principal (3.7)	Formal Technology Transfer (2.6)	Equipment Suppliers (2.4)	2.6	1.1
Electronic Parts	International Exhibition (3.0)	Equipment Suppliers (2.3)	Subcontracting Principals (2.0)	1.5	1.2
Factory Automation	International Exhibition (2.2)	Buyers (1.8)	Foreign Professionals (1.7); Formal Technology Transfer (1.7)	2.1	1.2
<b>D: COLOMBIA</b>					
Leather	Foreign Buyers (2.7)	Equipment Suppliers (2.6)	Similar Firms (2.4)	1.1	2.1
Garments	Equipment Suppliers (3.0)	Technical Literature (2.3)	Similar Firms (2.1)	1.3	2.0
Machinery	Technical Literature (3.9)	Equipment Suppliers (2.9)	Local Buyers (2.5)	2.0	1.6

participants in the industrial districts where much of Indonesia's garment export industry is located.<sup>23/</sup>

**Korea.** In both Japan and Indonesia the leading external mechanisms of technological capability are those with which SMEs interact as a by-product of their core business activities. By contrast, as Table 12C summarizes, only among Korea's auto parts SMEs do vertical linkages with procuring principals emerge as anywhere near as important a source of technological capability as they are in Japan.<sup>24/</sup> Instead, for the three subsectors with relatively complex technological requirements (that is, all but woven textiles), a disproportionately large number of leading external mechanisms involve the transfer of technological capabilities from abroad, with the transfer requiring conscious technological effort by firms. Thus:

- \* international exhibitions are the most important external source of capability in both the electronic parts and factory automation subsectors;

- \* formal technology transfer agreements are among the three most important private external sources in both the auto parts and factory automation subsectors; and

- \* moonlighting over weekends by Japanese engineers is an important source of capability for the factory automation subsector.

Also noteworthy is support from public agencies, which is the second most important external support in both the auto parts and factory automation subsectors.

Overall, Korea's strategy of technology acquisition in the three complex subsectors appears strikingly purposeful, both at the firm and the industry level. Viewed against the backdrop of the Japanese experience, these purposeful efforts to learn from abroad can be interpreted as a substitute for the relative weakness of vertical inter-firm relations as a channel for technological learning.

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<sup>23/</sup> Garment production for exports is concentrated in Bandung (where it is the dominant industry) and in Jakarta, both in West Java.

<sup>24/</sup> The relatively weak performance of subcontracting as a channel of learning for Korea vis a vis Japan has been observed by Porter (1990); see also Kang and Park (1990) and Joo Hoon Kim (1991).

Even for woven textiles, where technology is simpler, it is noteworthy that vertical relations with buyers emerge in Table 12C as nowhere near as important for Korean SMEs as they are for SMEs in comparable industries in the other countries. Rather, horizontal linkages among firms in the textile industrial district of Taegu are most useful.

Colombia. By comparison with Japan and Indonesia, Colombia's SMEs receive strikingly little support from buyers downstream. While in Korea, too, the evidence pointed to weak vertical ties, unlike Korea, Colombian firms do not appear to have purposefully used substitute private mechanisms to learn from abroad. Rather, the overall picture in Table 12D is one of rather ad hoc patterns of technological learning. This overall sense of technological isolation is moderated somewhat by evidence in the table of horizontal inter-firm flows of information among garment and leather firms, and of some significant technological support role on the part of industry associations (on which more below).

Overview. In all four countries, private rather than collective mechanisms emerge as the leading external sources of technological capability. Yet, underlying this aggregate similarity there are substantial cross-country (and cross-sectoral) differences in mechanisms of technological acquisition. While our number of subsectoral observations is limited (especially given the need to distinguish between craft-based and engineering-based activities), we nonetheless find it heuristically useful to identify in Table 13 distinctive country patterns of technological acquisition.

Paralleling export marketing, a striking feature of Table 13 is the influence of country "endowments" on the mechanisms of technological acquisition by SMEs. In Japan, strong vertical and horizontal inter-firm relations drive the technology acquisition process. In Indonesia, the crucial drivers are international linkages, both longstanding ones within an extended Chinese community and the more recent inflow of foreign buyers. In Taegu, Korea (which apparently is something of an exception on the Korean scene) horizontal linkages within an industrial district play an important role.

Where endowments are limited, the challenge of technological acquisition is a formidable one, and as Colombia's machinery industry illustrates, the consequence can be

**TABLE 13: MECHANISMS OF EXTERNAL TECHNICAL SUPPORT  
IN FOUR COUNTRIES - AN OVERVIEW**

	<b>CRAFT-BASED ACTIVITIES</b>	<b>ENGINEERING-BASED ACTIVITIES</b>
<b>JAPAN</b>	Vertical inter-firm relations plus industrial district	Vertical inter-firm relations plus industrial district
<b>INDONESIA</b>	Linkages through international marketplace	-
<b>KOREA</b>	Horizontal flows within industrial district	Activist Technology strategies at firm and industry level
<b>COLOMBIA</b>	Limited industrial district phenomenon	Ad Hoc Technological Learning



technological isolation and ad hoc learning. Yet the experiences of both Korea's engineering-based SMEs, and (to a lesser extent) Colombia's craft-based leather and garment SMEs suggest that it is possible to successfully surmount this challenge via activist strategies at both the firm and collective level. It is to this collective dimension of the technology acquisition process to which we now turn.

### III.2: Collective Technical Support: Its Demand and Use

Private and collective mechanisms of technical support can be viewed as partial substitutes. SMEs might be hypothesized to initially meet their technological needs internally, as a by-product of their core business activities, or through existing business contacts. Only if they still perceive<sup>25/</sup> unmet technological needs are they likely to demand collective technical support. Thus, building on the previous section:

\* Demand for collective support is likely to be higher the more complex are the technological requirements of production – lowest for craft-based technologies, higher for simple engineering technologies, and higher still for complex engineering technologies.

\* Demand for collective support is likely to be higher the weaker are the country- and industrial organization-related "endowments" of private technological networks available to a firm.

A straightforward extension of these hypotheses is that, within a given subsector, there can be variations in the technology-related endowments of individual SMEs, with the demand for collective technical support greater for poorly-endowed firms.<sup>26/</sup>

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<sup>25/</sup> There is abundant evidence that many technologically primitive firms do not perceive their own limitations. See, for example, evidence from Sri Lanka and Tanzania in Levy (1993).

<sup>26/</sup> Viewed in relation to the first hypothesis, it might be argued that the relevant variable is technological complexity relative to a firm's internal capabilities, and thus that demand for collective technical support will be greater for firms with weaker capabilities. Viewed in relation to the second hypothesis, SMEs within a given subsector might plausibly vary in their access to private technological networks, and hence in their demand for collective technical support.

Evidence in the country studies enables us to group our country-subsector observations to correspond with the three schedules of demand for collective technical support depicted in Figure 2:

\* Demand is lowest (i.e. corresponds with D1D1) for SMEs in the six Japanese and Indonesian subsectors studied, and for Korea's woven textile SMEs. Their technologies are relatively simple, and they have good access to private technological supports (among Indonesian firms, especially so for the non-pribumi).

\* Demand is somewhat higher (i.e. corresponds with D2D2) in Colombia's two craft-based subsectors. While technologies are relatively simple, their access to private technological supports is weaker than for their Indonesian and Japanese counterparts.

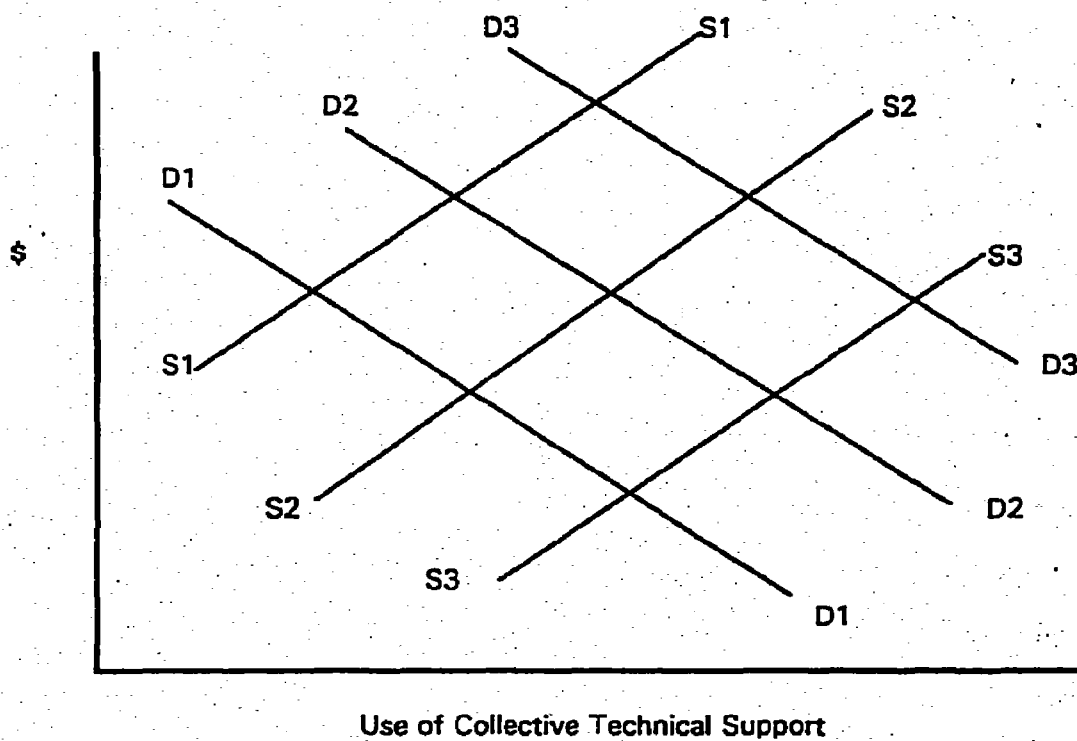
\* Demand is highest (i.e. corresponds with D3D3) for Colombia's machinery SMEs, and for SMEs in Korea's three engineering based subsectors.

Additionally, within individual subsectors, smaller and less-well-connected firms might be hypothesized to be on a higher demand schedule than their larger counterparts.

As will be discussed further below, there also are substantial cross-country (and cross-sectoral) variations in the supply capabilities of collective institutions. Consequently, there can be formidable identification problems in distinguishing between supply-side and demand-side explanations for cross-country (and cross-sectoral) differences in the use of collective technical support.

Demand-side variations alone seem sufficient to account for two of the empirical patterns observed. First, as is evident in Table 12C, in Korea collective technical support was valued most highly for the technologically-complex automotive parts and factory automation subsectors, and least highly for the technologically-straightforward woven textile subsector, a pattern which is consistent with the first hypothesis presented above. Second, both the Colombian and Indonesian case studies present evidence that within individual subsectors collective technical support was more highly valued by firms which were "marginal" at start-up. Thus, in Indonesia's rattan and wood furniture subsectors, collective technical supports were utilized disproportionately by smaller pribumi firms with less-educated entrepreneurs, though even for this group the role of collective supports has been modest. In Colombia

Figure 2



collective support was more highly valued by the smaller leather firms -- with the average usefulness score declining monotonically from 3.0 for the smallest firms to 1.0 for the largest. In both Indonesia and Colombia, the field surveys uncovered substantial subsequent success, including export success, by these initially "marginal" firms.

On the supply-side, evidence presented in the next subsection suggests that it is reasonable as a first approximation to distinguish between three supply schedules:

- \* S1S1, corresponding to Indonesia, whose institutional capabilities to supply support appear weakest among the four countries studied;
- \* S2S2, corresponding to Colombia, which appears to have an intermediate level of collective supply capability; and
- \* S3S3, corresponding to Korea and Japan, where the institutional capabilities for collective supply are strongest.

As is illustrated in Figure 2, taken together the above propositions as to supply and demand imply that, among the countries and subsectors studied, the use of collective technical support will be highest for SMEs in Korea's three engineering-based subsectors, and will be lowest for Indonesian firms (especially the non-pribumi).<sup>27/</sup> By and large, this pattern is evident in Table 12.

### III.3: The Delivery of Collective Support

Collective technical support takes on one of two very different forms. It can be "broad-based", and work to facilitate the emergence of an "information-rich" environment. Alternatively, it can try to promote "high-intensity" technological learning by supplying technical inputs directly to firms. While it is reasonably straightforward to distinguish between the supply of "broad-based" and of "high-intensity" support for Colombia, Indonesia and Japan, the two types of support are provided jointly in Korea. Consequently, the Korean experience is presented separately.

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<sup>27/</sup> The relative importance of collective technical support among the remaining seven subsectors depends on the magnitudes of shifts in demand and supply schedules, and hence cannot be depicted unambiguously.

**TABLE 14: THE USEFULNESS OF BROAD-BASED COLLECTIVE TECHNICAL SUPPORT IN SELECTED SUBSECTORS AND COUNTRIES**

COUNTRY-SUBSECTOR	USERS/ RESPONDENTS	AVERAGE SCORE AMONG USERS	NUMBER OF FIRMS SCORING	
			3, 4, OR 5	4 OR 5
<b>INDONESIA</b>				
<b><u>RATTAN</u></b>				
Courses	15/33	-	-	-
Industry Association	15/33	3.1	10	5
Consultants	9/33	3.0	5	4
<b><u>JEPARA</u></b>				
Courses	12/24	-	-	-
Industry Association	13/24	2.2	5	3
<b>COLOMBIA</b>				
<b><u>LEATHER PRODUCTS</u></b>				
Courses	21/34	-	-	-
Industry Association	17/34	3.2	?	7
<b><u>GARMENTS</u></b>				
Courses	32/42	-	-	-
Collective Providers	20/42	3.4	?	9
<b><u>MACHINERY</u></b>				
Courses	27/44	-	-	-
Public Technology Agency	16/44	3.8	?	7
Product Standards Agency	12/44	3.5	-	8
<b>JAPAN</b>				
<b><u>TSUBAME/SILVERWARE</u></b>				
Technical Center	18/36	2.5	10	4
Industry Association	13/35	2.2	6	2
<b><u>FUKUI/TEXTILES</u></b>				
Technical Center	14/29	3.0	8	7
Industry Association	3/30	3.7	2	2
<b><u>OHTA/AUTO PARTS</u></b>				
Technical Center	6/33	3.8	5	4
Industry Association	5/30	3.2	2	2

**Broad-based collective support in Indonesia, Colombia and Japan. "Broad-based"**

collective support works to enhance the overall availability of usable information, leaving firms to judge what information sources might be most useful, and how they might be adapted to a firm's specific needs. Examples include: sponsoring courses on specialized topics; facilitating the use of specialized consultants (either directly by making a consultant available to a broad array of firms, or indirectly by providing financial support for the use of consultants); and promoting information-sharing among firms. Supports along these lines are relevant across all levels of technological complexity, and the institutional demands of provision are relatively light. As Table 14 summarizes, such support was used -- and reported to be quite useful -- in Indonesia, Colombia and Japan.

In Indonesia, just under half (27 of 57) of the firms surveyed in the rattan and carved wooden furniture subsectors attended courses that focused on specific technical subjects relevant to their businesses (e.g. wood-drying and finishing). Virtually all of these were offerings by the furniture industry association (ASMINDO) or by independent non-governmental organizations, and about half of the participants gave a score of three or higher to collective support as a source of technological capability. Use of technical consultants was confined to less than twenty percent of the firms. However, half of the users gave scores of four or five to the support provided by consultants -- and eighty percent of the users reported that the costs of using consulting support were at least partially subsidized by collective providers.

There was more diversity in Colombia in the sources of broad-based collective support, although courses predominated. In leather products, the collective lead has been taken by a dynamic industry association, ASOCUEROS, which has offers a wide variety of courses, sponsors technical consultants, and in general encourages networking and information-sharing among firms. Half of the 34 leather firms received technical support from ASOCUEROS, and seven firms (over twenty percent of the sample) gave this support a usefulness score of 4 or 5. In the garment industry, over three-fourths of the firms sampled had taken technical courses relevant to the business -- with the leading providers being the national training organization,

SENA, the economy-wide small business association, ACOPI, and the garment industry association. The non-electrical machinery industry is technologically more complex than the others and, perhaps reflecting this difference, specialist technology agencies rather than industry associations emerge as the leading collective providers. However, even for this subsector, courses (rather than high-intensity support) emerge as the dominant source of collective support, with SENA the leading provider.<sup>28/</sup>

In Japan, technical centers under the umbrella of local governments are the primary providers of broad-based collective technical support. Their role was most significant in two of the three subsectors surveyed,<sup>29/</sup> where (as Table 14 shows) about half the firms surveyed used their services, with 56% of these conferring upon them a usefulness score of 3 or higher. While in the past the technical centers also provided high-intensity support, at present their efforts appear largely to be confined to sponsoring courses, providing testing and inspection services, and providing assistance on common technical problems that arise from normal business practices, including a modest number of firm visits.

A further function of Japan's collective technical support system — difficult to measure but, by all accounts, very useful — is as a node in an information-rich network. The Japan silverware case study includes one especially vivid example of how this network functions. A Tsubame entrepreneur came up with the idea of making silverware with handles whose shape could adjust to fit the needs of individual disabled users. The collective support network (in this instance the local business association) helped him identify a range of seminars and exhibitions held throughout Japan which plausibly could provide him with useful information. Eventually he came upon a company which was developing precisely the material he needed for his

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<sup>28/</sup> Interestingly, 27% of the Colombian machinery firms sampled (12 of 44) also reported support from Colombia's product standards certification agency — with an average usefulness score among users of 3.5. There was no evidence of standards agencies playing any useful role in Indonesia. These agencies apparently are important in both Korea and Japan — however, their roles were not examined systematically in the Korean and Japanese case studies.

<sup>29/</sup> In the third subsector — auto parts in Ohta — only 18% of firms surveyed ( 6 of 33) used the center; however, the average usefulness score for these six users was 3.8.

product. However the company was part of a large group. Ordinarily, such a company would have had little incentive to work with a small Tsubame firm. Again, however, collective support providers (in this case a public research center) intervened to help open doors. The product was successfully developed, has won several awards for innovation, and is being marketed successfully.

Overall, a consistent feature in Indonesia, Colombia and Japan was that broad-based collective support was most effectively delivered by decentralized institutions -- either by industry associations, independent non-governmental organizations, or by local governments in specialized industrial districts. The record of centralized institutions in delivering services was more uneven. Financing, though, sometimes was provided by center institutions -- the Export Support Board (for technical consultants) in Indonesia, the central government in Japan, and PROEXPO in Colombia. This pattern of central financing and decentralized delivery reflects the wide diversity across activities in the kind of information that is useful, and consequently the need for deliverers of broad-based collective technical support to be close to -- and familiar with the needs of -- reasonably homogenous client groups.

High-intensity technical support in Colombia, Indonesia and Japan. The goal of high-intensity collective support is to meet those specific technological needs of firms which are not adequately addressed through other channels. Demand for support along these lines is likely to emerge only at relatively substantial levels of technological complexity. Similarly, the insitutional demands of supplying useful high-intensity support are likely to be substantial -- the collective agency supplying such support needs to have more competence on very specific problems (at quite sophisticated levels of technology) than do the firms themselves.

In neither Indonesia nor Colombia did sample firms report benefiting on any significant scale from public programs to provide direct high-intensity technical assistance. Indonesia's Ministry of Industry has in place a network of technical extension services which in principle might have been intended to provide such support, but which in practice supplied virtually nothing of benefit to the surveyed firms. The only Colombian public agency identified as



directly providing technical support on any significant scale was SENA. However, as we have seen, virtually all of this support was broad-based, complementary to SENA's primary mission as a vocational training institute. (SENA presently is in the midst of a radical restructuring of its training function, involving a substantial shift to decentralized mechanisms of delivery.)

During earlier periods, Japan's technical centers indeed appear to have provided substantial high-intensity support. The Fukui technical center, for example, played an important role between 1910 and 1930 in introducing the technology for rayon production into the area. And back in the 1700s Tsubame's local government invited producers from Tokyo to teach nail production to village manufacturers, an initiative which was the forerunner of the silverware industry which dominates the area today. Presently, the role of these centers is predominantly the broad-based one outlined above although, as the example of handle innovation illustrated, in a modest way all three technical centers continue to support the efforts of leading firms.

The case of Korea. By contrast with the other three countries, the Korean firms reported receiving substantial benefits from that country's network of state-owned support institutions. Table 15 summarizes the survey results on the utilization of collective technical support in Korea. Sixty-eight percent of the firms sampled use at least one type of collective support, with the utilization rate ranging from a low of 26% for woven textiles, to 85% and 90% for electronic and auto parts respectively, to a high of 93% among factory automation firms. The table distinguishes among four types of collective technical support. Provision of technology information can be viewed as "broad-based" support, and joint and contract technology development as "high-intensity" support, with technology assistance and training falling in between. Collective support is most common for purposes of training, and least common for joint contract technology development. Support for joint technology development appears to be valued most highly. Unlike the patterns in Colombia and Indonesia, the firms which use the Korean system tend to be disproportionately large and export-oriented, suggesting that Korea's collective technical support is rather more on the "high-intensity" end of the spectrum. The larger role for high-intensity support corresponds to the higher proportion in the Korean sample of activities requiring complex engineering technologies.

**TABLE 15. UTILIZATION OF KOREA'S LEADING SPECIALIST TECHNOLOGY INSTITUTIONS IN FOUR SUBSECTORS**

	WOVEN TEXTILES (n=42)			AUTO PARTS (n=20)			ELECTRONIC PARTS (n=20)			FACTORY AUTOMATION (n=40)				
TECHNOLOGY INSTITUTION (BY LEADING USE)	LEADING USE			LEADING USE			LEADING USE			LEADING USE			ALL	
	NUM- BER	AVE. SCORE	NO. SEC. USE	NUM- BER	AVE. SCORE	NO. SEC. USE	NUM- BER	AVE. SCORE	NO. SEC. USE	NUM- BER	AVE. SCORE	NO. SEC. USE	NUM- BER	AVE. SCORE
TECHNOLOGY INFO. & ASSISTANCE														
SMI PROMOTION COMPANY	4	3.5	0	6	2.8	3	5	3.8	2	8	2.4	6	34	3.2
INDUSTRIAL ADVANCEMENT ADMINISTRATION	0	-	0	5	4.2	0	1	-	0	4	3.5	0	10	3.9
SUBSECTOR-SPECIFIC INSTITUTIONS	9	4.1	2	2	4.0		5	3.6		12	3.6		30	3.8
TRAINING														
KOREA STANDARD ASSOCIATION	0	-	0	4	3.5	2	7	3.1	0	11	3.7	2	26	3.6
KOREA PRODUCTIVITY CENTER	2	4.5	0	8	4.1	1	3	3.7	6	8	3.8	6	34	3.6
JOINT AND CONTRACT TECHNOLOGICAL DEVELOPMENT														
KOREA ACADEMY OF INDUSTRIAL TECHNOLOGY	0	-	0	3	4.3	3	2	4.5	1	3	3.0	7	19	4.0
KOREA INSTITUTE OF SCIENCE & TECHNOLOGY	0	-	0	2	4.5	0	2	3.0	1	4	4.3	1	10	4.3
NUMBER OF FIRMS USING AT LEAST ONE OF THE ABOVE (AND AVERAGE SCORES WEIGHTED AVERAGE OF)	(11)	4.0		(18)	3.8		(17)	3.5		37	3.5		(83)	3.7

As Table 15 reveals, a central feature of the Korean technology support system is its institutional pluralism. Support is provided by six leading parastatals, plus subsector-specific institutions. For woven textiles, the leading specialist institution is the Korea Textile Industries Technology Institute, which provides a full range of broad-based support, and for factory automation it is the Korean Association of Machinery Industry, one of the most well-developed trade associations in Korea, and for electronic parts it is the Korea Electronics Technology Institute.

By contrast with the pattern for the other three countries, no single institution reaches more than 30% of the firms surveyed (and two service fewer than 10%), but viewed as a single system with multiple components the overall coverage is impressive. Moreover, the usefulness scores (as rated by users) are relatively high for all institutions: on a five-point scale, none averaged below 3. Indeed, the average score was 4 for the two institutions which provided the most intensive support.

A further contrast with the other countries is the predominant role of centralized parastatals in delivering technical support. Even so, there is debate within Korea as to whether this centralized delivery mechanism remains appropriate, and in recent years a number of industry-specific technology support institutions have been established.<sup>30/</sup> Moreover, comparative empirical research on parastatal behavior has revealed Korea to be an outlier in its ability to establish and sustain a relatively efficient parastatal sector. Further, in none of the other countries studied was the delivery of technical support by centralized parastatals anything near as successful as in Korea. For countries that lack an overall record of strong performance by parastatals, an effort to establish a high-intensity network of collective technical support along Korean lines would appear to carry substantial risks.

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<sup>30/</sup> The present parastatal-driven support infrastructure resulted in part because of a general predisposition towards centralization in Korean society, and in part because all but one of the parastatals initially were established for other purposes and only after some years broadened their missions to include technical support for SMEs. Increasingly Korea is experimenting with more decentralized approaches to providing support, with KOTITI a leading example.

#### III.4: Public Policy Towards the Acquisition of Technological Capability

As with export marketing, a central lesson of the comparative research is that private mechanisms play the leading role in the efforts of firms to acquire technological capability. Consequently, the priority task for public policy is to ensure that the business environment facilitates -- rather than obstructs -- the private-to-private flow of information. Key measures here might include:

- \* an openness to expatriate workers and technology transfer from abroad;
- \* investment in human capital, including engineering education; and
- \* a spatial policy which nurtures the emergence of urban industrial districts.

Yet once a friendly business environment is in place, the question remains as to whether there might be pro-active interventions at the micro level which can accelerate technological upgrading by firms. The comparative analysis of four countries suggests that there are -- that there exist identifiable categories of firms, subsectors and countries for which the benefits derived from collective technical support are substantial.

The analysis uncovered two distinctive approaches to collective technological support -- broad-based and high-intensity support. The goal of broad-based support is to contribute to an information-rich environment, and its delivery mechanisms characteristically are decentralized, with the role of central government limited to that of partial financier. It can be a useful aid to the technological efforts of firms of all levels of technological complexity. By contrast, the goal of high-intensity support is to offer direct technical assistance to firms, typically by parastatal providers. Its role becomes increasingly salient as industrial development begins to encompass technologically complex activities.

While it is possible that -- if successful -- the returns from high-intensity support can be very substantial, on all other counts the advantages would appear to lie with broad-based support. Costs are likely to be lower, since unlike high-intensity support, provision of broad-based support does not require erection of an elaborate physical and personnel infrastructure. Being institutionally less elaborate, the organizational demands of broad-based support are fewer, and the risks of organizational failure lower. And being decentralized in delivery,

broad-based providers are more likely to gauge accurately what kinds of technical support firms would indeed find useful.

In sum, the country studies imply that "broad-based" collective technical support may be worth pursuing in many settings. Countries that already have in place a well-function system of broad-based collective support, and are moving into technologically more advanced activities could consider also the option of "high-intensity" support, but in doing so should proceed with caution.

#### IV: SOME COMMON THEMES

We conclude by highlighting three key themes which cut across the analyses of technological and marketing support systems.

First, the leading source of support comes from private channels – from buyers and traders, from similar firms, suppliers and subcontracting principals, and from the determined efforts of SMEs themselves. It follows that the first order of business for SME support policy is to ensure that the private marketplace can work, that liberal rules govern the international flow of technical and marketing resources.

Second, the benefits of private support mechanisms are not available equally to all, but vary with an SME's "endowments": whether SMEs are embedded in pre-existing private inter-firm or community-based networks; whether firms are pioneers in a new activity or one of many participants in an already mature subsector; whether the country in which they are active has a high profile in the export marketplace. Collective marketing and technological supports turn out to be used and valued disproportionately by less well-endowed – though subsequently successful – firms.

Third, the record of delivery of collective technical and marketing support is a chequered one, but some promising new approaches appear to be coming to the fore. The most promising interventions are those with a "light touch": their delivery mechanisms generally are decentralized; and their goals are to support, rather than supplant, the private marketplace – to co-finance SME efforts to tap the marketplace for new marketing and technical resources, to

make available additional sources of technical information, and to facilitate communication between firms, including between SMEs and international buyers.

In all, the empirical results suggests that, consistent with the emphasis of the previous decade, the overall business and incentive environment is the most important determinant of the effectiveness of marketing and technological support systems for SMEs. However, the results also caution against complacency, against the presumption that a liberalized private marketplace will be sufficient to secure industrial development.

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