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Export Catalyst in Low-Income Countries

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EXPORT CATALYSTS IN LOW-INCOME COUNTRIES

Preliminary Findings from a Review of Export Success Stories in Eleven Countries

November 1989

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The information on Bangladesh's garment export success and Indonesia's plywood export success was collected as a by-product of World Bank operational support missions in which Yung Whee Rhee participated, and during which time he conducted field interviews. The information on India's small diamond exports was collected by Chandi Batliwalla (consultant) through field interviews. The information on the eight other success stories was collected by Therese Belot, mainly through telephone interviews.

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EXPORT CATALYSTS IN LOW-INCOME COUNTRIES
PRELIMINARY FINDINGS FROM A REVIEW OF EXPORT SUCCESS STORIES IN EL..N COUNTRIES

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EXECUTIVE SUMMARY

Introduction

i. There is no dispute that outward-looking development strategies are needed to carry out efficient industrial development and restructuring, both vital to reducing debt burdens and lessening the poverty and stagnation in the Third World. However, our knowledge on the intricacies of the industrial development process under an outward-oriented strategy, particularly in low-income countries, is sketchy. Therefore, operationally oriented research is needed toward the design and implementation of outward-looking development strategies in low-income countries, recognizing that the supply response must come from individual firms. What instruments and integrating mechanisms have worked to generate significant export growth? How have companies in the non-NICs pulled the pieces together to generate exports successfully?

ii. The export success stories summarized here are part of IENIN's background work for a research and assistance project dealing with the design of effective outward-looking development strategies. The companies examined are located in eleven countries that are not East Asian superstars. The stories are anecdotal and perhaps imperfect in some instances, in that the information was obtained through a brief desk review and series of interviews. The findings are preliminary, intended as illustrative. Nevertheless, the work, conducted and reported without theoretical preconceptions, permits the drawing of tentative and early hypotheses as to the key factors in export success. These hypotheses can be tested through more rigorous, in-depth research.

iii. The firm-level success stories are chosen from countries and product sectors not associated with overall success in the export of manufactured products. The countries and products are: Bangladesh/garments, Indonesia/plywood, Colombia/flowers, Zambia/uniforms, Honduras/condiments, India/diamonds, Cote d'Ivoire/semi-processed cocoa, Jamaica/garments, Guatemala/shoes, Hungary/software, and Brazil/aircraft.

iv. Based on the preliminary review of the eleven export success stories, some important hypotheses emerge that merit further study, with careful attention to their relation to outward-oriented development strategies. The following is a summary of the implications of the preliminary findings.

Catalyst as Creator and Transmitter of the Supply Responses

v. The most critical ingredient for successful entry into the international markets in the eleven success stories was almost always the presence of a catalyst, defined as an individual or company (domestic or foreign) or a public agency, or a combination of these, that (a) pioneered the process of development in an outward-oriented direction before anybody else in a sector, (b) packaged the needed know-how with domestic endowments and external financing, and (c) diffused the experience and know-how it learned in

that initial development process. Using the terminology of supply response, the catalyst served as "creator" and "transmitter" of the supply response. The fact that the supply response can be created and transmitted by a catalyst (rather than stemming spontaneously from all firms simultaneously in response to world market demands and rational policies) suggests that the assumptions underlying the conventional view are incomplete.

The Role of Foreign and Domestic Catalysts

vi. The specific role played by catalysts, foreign and domestic, in the ten success stories differed according to whether local catalysts had the capacity to package the critical factors that are needed for entering the world market. In the cases of countries at the lower end of industrial development with respect to a given export product, where local capacity to package the critical assets needed to initiate development was inadequate--Jamaica, Zambia, Cote d'Ivoire, Bangladesh, Colombia and Indonesia--foreign catalysts from either NICs or OECD countries provided the package of technical, marketing and managerial know-how in addition to capital resources. In these cases, the role of local catalysts was to attract the right foreign catalysts. These foreign catalysts succeeded in speeding up the timetable for outward-oriented development. In the cases of Hungary and Brazil, competent local catalysts were able themselves to package the elements for export success. As a result, the role of foreign collaborators was smaller. However, foreign agents still were integrally involved in the export process in those countries with relatively sophisticated technological bases; their role was more that of supplier of specific missing ingredients. Examples are the Honduran food processing, Guatemalan shoe manufacturing and Indian diamond manufacturing for export, where foreign catalysts simply supplied specific elements missing from the accumulated know-how of local catalysts.

vii. The vital part played by foreign catalysts in the eleven stories is quite consistent with the emerging view on the critical role of transnational corporations (TNCs) in the transfer of technical, marketing and managerial know-how to developing countries--a role more important than the transfer of financial resources associated with DFI by TNCs. However, the eleven stories described here reveal that there are many other modes for achieving collaboration between foreign and domestic catalysts than the conventional DFI from TNCs. First, individuals unassociated with TNCs can act as catalysts. Second, technical and marketing agreements, subcontracting arrangements, and many other modes can be facilitators. Third, smaller TNCs can play a role whereby firms with specific competitive advantage are successful in exploiting those advantages in a transnational setting.

Diffusion of Foreign Know-how

viii. It is noteworthy that most foreign catalysts in the eleven success stories had an important impact beyond the success of an individual company. They also had a powerful diffusion and learning effect on many other companies and entrepreneurs in a given industry and in other industries. This effect may have been more important to the developing country than the initial exports themselves, in that they were often the genesis of a rapid and reinforcing expansion of an export industry. Often efficient diffusion of

know-how was not a deliberate objective of a catalyst. Success bred success through demonstration and movement of managerial and technical staff who brought technical know-how with them. These findings are clearly evident in the success of Bangladesh's garment exports, Indonesia's plywood exports, and Columbia's flower exports, and contrast with criticisms levelled at assembly-type, off-shore DFIs because of concern over the depth of technical transfer.

ix. The critical importance of on-the-job training (OJT) in skill formation, as found in our case stories, confirms important studies on Japanese DFI factories. These indicated that the depth of skill formation in developing countries can be achieved only through OJT under the guidance of highly skilled personnel. In turn, the transfer of skills occurs most effectively through mobility of foreign technical personnel and domestic skilled workers who have worked in other factories. Similarly, the role of foreign buyers and foreign machinery suppliers in technical transfer should not be overlooked, as evident in the case of the Korean export industries.

Inducement to Foreign Catalysts

x. Even if the foreign catalysts had wanted to become involved in developing country exports, they would not have done so unless there had been a good prospective match with a domestic collaborator or the possibility of setting up and operating a subsidiary effectively. In the case of Indonesia's plywood exports and Jamaica's garment exports, the foreign catalysts were interested in expanding and taking advantage of production possibilities not feasible at home. They had the technology, know-how, management, market base and experience to produce certain types of exports but diminishing domestic opportunities to exploit those assets competitively.

xi. At the same time, Jamaica and Indonesia had a comparative advantage in those export areas but no domestic companies able to exploit the opportunities for want of experience, know-how, and financing, the same assets the foreign catalysts possessed. Good matches were made. In the cases of Zambia and Cote d'Ivoire, their demand for inputs was matched by the supplies of OECD firms. In sum, foreign and domestic catalysts were agents able to take the initiative to capitalize on potential new inter-dependencies stemming from changing comparative advantages.

xii. Given the critical role of local catalysts, cultivating them should be an important part of an outward-oriented development strategy. Realizing that a lack of information on opportunities for collaboration between small and medium size TNCs and local businessmen in developing countries could be a major constraint on effective collaboration, the 1988 UN report on TNCs suggests that one role of multilateral development institutions is to develop the necessary information systems.

Policy Environment

xiii. Given initial conditions of large policy distortions and underdeveloped institutions, the developing countries studied here could rarely afford to wait until perfectly rational policy environments were achieved to promote development in an outward-oriented direction. Regardless of the

ability of catalysts to succeed under poor policy regimes, a rational policy environment helps their emergence and the diffusion of their success.

xiv. What, in the context of the growth of exports, constitutes a rational policy environment? The majority of the anecdotal cases indicates that as far as export incentives are concerned, unrestricted access to imported inputs at world market prices, to financing at appropriate costs, to investment licensing, and realistic exchange rates are the most important factors in putting exporters on an equal footing with foreign competitors. In a few cases, however, catalysts succeeded in initiating exports even in the absence of those minimum conditions. In other cases, catalysts were instrumental in getting the government to implement rational policies. In turn, efficient administrative arrangements were critical in implementing rational export policies.

xv. It is encouraging that there has been marked improvement in developing country policies towards DFI from TNCs. The conventional attitude of confrontation is being replaced by a pragmatic approach, and the assumption of conflict has largely given way to acceptance of mutually beneficial cooperation between host developing countries and TNCs.

Implications for Development Strategy

xvi. Further in-depth research into the issues raised by this anecdotal review of export success stories in eleven developing countries would contribute significantly to the design of a workable and realistic industrial development strategy for countries in the very early stages of manufactured exporting. Pursuit of an outward-looking development strategy will not occur automatically or simultaneously at all firms in an economy that lacks not only technical, marketing and managerial know-how, but also the capacity to package the various elements needed for initiating exports.

xvii. Based on the eleven success stories reviewed here, a catalyst model of development emerges that can serve as a hypothesis for future research. The catalyst model of development aims at providing feasible and practical answers to questions about workable development strategies, particularly for a developing country facing the three most unfavorable initial conditions: (i) the absence of the critical factors needed to enter the international markets; (ii) the non-availability of a local capacity to package those factors; and (iii) extremely distortionary policies and underdeveloped local institutions, including market and administrative mechanisms.

xviii. Development is a dynamic process in which self-generating mechanisms may emerge once action is initiated. However, when initial conditions are unfavorable, movement toward development can hardly be activated by all firms in an industry and all sectors in a country spontaneously, as the conventional view presumes, no matter how successful the country is in correcting the policy distortions. To ignite development in an outward-oriented direction, a first spark must occur. In several of the case studies reviewed here, that spark was the collaborative effort of local catalyst, who mobilized necessary local resources, and foreign catalysts who brought the technical, marketing and managerial know-how to produce and sell manufactured

export goods. The foreign catalytic agents packaged those factors with the local resources and initiated entry into the international markets using their established marketing networks and company names. After the initial success, the catalysts transferred the success ingredients to other companies in the sector. Foreign and local catalysts can even influence the policy environment required for exporters to compete in international markets. In short, the catalyst model of development is a model for initiating development in an outward-oriented direction; for transmitting development throughout the entire economy; and for sequencing realistic policy reforms (starting from equal footing export-incentives, in parallel with increasing industrial competence gained through world market competition). This model is applicable in developing countries with very unfavorable initial conditions, based on the pioneering efforts of foreign and local catalysts.

I. INTRODUCTION

1.01 Despite the increasingly protectionist environment in some developed economies, there is no dispute that expanded world trade will be one of the most critical factors in renewed and sustained growth in both developed and developing countries. Further, despite the pessimism many developing countries feel because of protectionist threats and market limitations abroad, most agree that outward-looking development strategies are needed to carry out efficient industrial development and restructuring, both vital to reducing debt burdens and lessening the poverty and stagnation in the Third World.

1.02 Significant research is needed in the design and implementation of outward-looking development strategies, recognizing that the supply response must come from individual firms. What instruments and integrating mechanisms have worked to generate significant export growth? How have companies in the non-NICs pulled the pieces together to generate exports successfully?

1.03 The export success stories summarized here are part of IENIN's background work for a research and assistance project dealing with the design of effective outward-looking development strategies. The companies examined are located in eleven countries that are not East Asian superstars. The stories are anecdotal and imperfect in some instances since most information was obtained through a desk review and series of interviews. The findings are preliminary, intended as illustrative. Nevertheless, the work, conducted and reported without theoretical preconceptions, permits the drawing of tentative and early hypotheses on key factors in export success. These hypotheses can be tested through more rigorous, in-depth research.

1.04 In studying industrial development policy issues, often one becomes a victim of a preconceived model, leaving out the most critical aspect i.e., real world experience in the intricacies of the industrial development process in low-income countries. The approach taken here is an attempt to avoid this kind of error by giving the highest priority to finding the real stories on the development process at the firm or factory level.

1.05 The success stories were chosen from countries with different characteristics but with the common feature of not being associated with overall success in the export of manufactured products. The countries are Bangladesh, Jamaica, Zambia, Guatemala, Honduras, Cote d'Ivoire, India, Indonesia, Colombia, Hungary and Brazil. The experience of Bangladesh's garment industry is provided in particular detail in Chapter II. Indonesia plywood success is described in Chapter III. Chapter IV summarizes nine other stories of export performance. It gives a brief history of how each company became an exporter and highlights factors that seemed pivotal to the company's successful penetration of export markets--with particular attention to catalytic forces.

1.06 Chapter V summarizes the potential implications of the preliminary findings for future research. Lessons learned from these types of export success stories may be more relevant to most developing country problems and prospects than the experience of East Asian NICs, where success is common.

II. BANGLADESH'S SUCCESSFUL GARMENT EXPORTING [1/]

Export Performance

2.01 In recent years, Bangladesh has achieved resounding success with garment exports. This success has been a bright spot for a country that has among the lowest per capita income in the world.[2/] Because a high level of exports from a country with very unfavorable conditions is so striking, the lessons learned may be much more useful than those from East Asian economies where success has not been unusual.

2.02 The degree of Bangladesh's success can be seen in the growth of garment exports, expanded employment and related gains in social welfare, and the increase in confidence within the business community. Table 1 shows the average annual growth rates in current US dollars from 1980/81 to 1986/87 for the country's major exports. International sales have been dominated by jute-related products, but their exports declined over the last six years, while the performance of other primary exports such as tea was equally disappointing. The trends in non-jute primary resource-based exports, such as leather products and frozen food, were more encouraging, but their initial export bases in 1980/81 were relatively high.

2.03 In contrast to the performance of those products, the record for ready-made garment exports from Bangladesh over the six years is unprecedented. This picture holds true in comparison with all the other products in Table 1 and in comparison with the growth of East Asian manufactured exports from the 1960s through the 1980s. Given that garment exports were negligible prior to the 1980s, their almost US$300 million in foreign sales in 1986/87 is extremely impressive. With an average annual growth rate of 106% over the last six years, the share of garments in Bangladesh's total exports rose from 0.5% in 1980/81 to 28.3% in 1986/87. Garment and textile exports of Bangladesh in 1987-88 amounted to US$431 million, a 44% increase from 1986-87. This was an increase in export share to 35% of the total country exports (US$1,231 million), exceeding the export share of jute goods (24%).

1/ This material is taken from Yung Whee Rhee, "The Catalyst Model of Development: Lessons from Bangladesh's Success with Garment Exports," World Bank, 1988.

2/ According to the World Bank (1988), Bangladesh's per capita GNP in 1988 was US$160.

Table 1: EXPORT TRENDS IN BANGLADESH, 1980/81 - 1986/87
(millions of US$ and %)

	1980/81		1981/82		1982/83		1983/84		1984/85		1985/86		1986/87		Average Annual Compound Growth
	Value	Share	Value	Share	Value	Share	Value	Share	Value	Share	Value	Share	Value	Share	1980/81-1986-87
Raw Jute	118.9	16.8	101.59	16.2	109.81	16.0	117.19	14.5	150.81	16.1	123.89	15.1	99.29	9.4	-3.0
Jute Coods	366.56	51.6	291.14	46.5	319.69	46.6	356.99	44.0	389.8	41.7	293.14	35.8	301.54	28.4	-3.2
Leather	56.67	8.0	63.02	10.1	58.46	8.5	85.26	10.5	69.8	7.5	60.73	7.4	134.82	12.7	15.5
Frozen Food	39.96	5.6	52.76	8.4	72.06	10.5	76.99	9.5	86.85	9.3	113.16	13.8	133.82	12.6	22.3
Tea	40.69	5.7	37.9	6.1	46.58	6.8	68.9	8.5	61.02	6.5	32.79	4.0	29.66	2.8	-5.1
Garments and Textiles	3.9	0.5	7.53	1.2	11.46	1.7	31.91	3.9	116.52	12.5	132.2	16.1	299.71	28.2	106.2
Nephtha, Furnace Oil and Bitumen	48.1	6.8	42.45	6.8	30.83	4.5	25.84	3.2	20.79	2.2	16.76	2.0	10.82	1.0	-22.0
Agriculture Products	2.43	0.3	10.62	1.7	7.02	1.0	8.78	1.1	9.32	1.0	20.55	2.5	22.89	2.2	45.3
Chemical Products	20.1	2.8	7.09	1.1	15.98	2.3	18.63	2.3	16.64	1.8	12.82	1.6	15.56	1.5	-4.2
Handicraft	3.45	0.5	2.86	0.5	2.48	0.4	2.37	0.3	1.91	0.2	1.93	0.2	3.96	0.4	2.3
Engineering Products	0.03	0.0	0.06	0.0	2.82	0.4	7.55	0.9	1.34	0.1	1.65	0.2	0.61	0.1	65.2
Others	9.06	1.3	8.87	1.4	9.41	1.4	10.59	1.3	9.63	1.0	9.59	1.2	8.74	0.8	-0.6
Total Exports	709.84	100.0	625.89	100.0	686.6	100.0	811.00	100.0	934.43	100.0	819.21	100.0	1,061.42	100.0	6.9

Source: Export Promotion Bureau.

(D-286a)

2.04 Garment exports' contribution to Bangladesh's foreign exchange earnings is tremendous even though net foreign exchange earnings are still relatively low because of the heavy dependence on imported fabrics and other inputs. Nearly a quarter of a million workers have been trained and employed as skilled and semi-skilled workers in the garment export sector. About 90% are female, a remarkable situation given that women had not been allowed to work in factories before because of Moslem tradition. As important as the foreign exchange earnings or employment generated by garment exports is the swelling confidence in Bangladesh, a country that was thought incapable of breaking into world markets in manufactures.

THE BIRTH OF A COLLABORATION BETWEEN TWO CATALYSTS

2.05 This section reviews the collaborative arrangement behind the two catalysts who initiated Bangladesh's garment exports--Daewoo of Korea and Desh of Bangladesh. Daewoo and Desh collaborated as foreign and local catalysts, the pioneers for Bangladesh's garment export success. The foreign catalyst embodied the critical ingredients that were necessary for entering international markets and had the capacity to transfer them to initiate export activity in a developing country that lacked such ingredients. In turn, the local catalyst, with a vision for the country's development, actively sought collaboration and was able to mobilize local resources.

2.06 The next section, on implementing the collaborative arrangement, sketches perhaps the most vital element in the success--the on-the-job training of Desh workers in garment making and management skills at a Daewoo factory in Korea. This next section also deals with the trainees' mastering of production, marketing and management skills at Desh after returning from Korea. Desh's success and the subsequent diffusion of skills throughout the country and acceleration of garment exports, are covered, in a separate section.

(a) Daewoo's Overseas Market Strategy

2.07 The Daewoo Corporation of Korea is well-known for its innovative strategies to expand its overseas market presence--strategies that have been carried out by an elite staff under the leadership of the Chairman, Kim Woo-Choong. Daewoo, founded in 1967, has been at the forefront in Korea's outward-oriented development strategy, although it has the shortest history of all of Korea's chaebols (conglomerates, most of which own general trading companies), which have been key to Korea's entry into the international market. These chaebol exporters were pushed to make innovative adjustments in their overseas market strategies in response to the 1973 oil crisis, increasing protectionism in developed countries against imports of light manufactured goods (garments, textiles and footwear) and the rising wages of domestic workers in those industries.

2.08 Daewoo's interest in Bangladesh arose at the end of the 1970s as part of its global strategy. Becoming engaged in the Bangladesh garment industry was a way to maintain Korea's market shares for fabrics in the face

of increasing import restrictions against Korean textile products in the US and other OECD markets. Bangladesh was not subject to garment quotas at that time and needed imported fabrics for garment exports. Daewoo had only to transfer its accumulated production and marketing expertise to Bangladesh to maintain its international market for fabrics and to expand machinery exports.

(b) The Genesis of Desh

2.09 Bangladesh's public and private sectors were particularly interested in the garment venture because of their failure to exploit the country's potential for garment exports--low wages and absence of import quotas characterized the sector. Bangladesh was totally lacking in production technology and marketing know-how for entering the world market and had no apparent means for acquiring them from overseas. Domestic entrepreneurs were not ready to seize the initiative.

2.10 Fortunately, a catalyst appeared in 1978. Noorul Quader had been exposed to the foreign business world as a senior official in the previous Bangladesh government and was currently an agent dealing with a project funded by a foreign government. During an official visit to France, Quader visited Daewoo's branch. It is not clear whether he did so before or after Daewoo's proposal to the Bangladesh government, but the outcome was that Quader expressed the desire to collaborate with Daewoo in a new garment venture in Bangladesh. The Desh Garment Company was established in 1979 after Quader and Daewoo signed a collaborative agreement.

2.11 Quader and Daewoo opted not to enter into a joint venture. Instead, they signed an agreement to collaborate--in specific ways--in the areas of technical training, purchases of machinery and fabric, plant start-up, and marketing. The collaboration agreement, which was to run five years, involved several key elements: six months of training for Desh workers in Korea; start-up activities, to involve certain purchases of machinery by Desh from Daewoo--which would handle the installation and supervise and advise on the actual star-up; production, to be managed by Desh, with consultation and supervision by Daewoo; and marketing, which was to be handled by Daewoo. Desh would make royalty payments to Daewoo for the technical training and supervision, equal to 3% of its sales (based on ex-factory costs), as well as pay a sales commission for marketing services, equal to 5% of the sales value during the contract period. The agreement did not include any investment capital transfer in the form of a loan or direct foreign investment except for fabric and other intermediate inputs purchased on short-term credit.

IMPLEMENTING THE COLLABORATION AGREEMENT

2.12 The element that turned out to be the most critical to Desh's success--and ultimately to the expansion and success of Bangladesh's entire garment export industry--was on-the-job training, both the formal on-the-job training in Korea and the learning-by-doing that took place at Desh's facilities in Bangladesh. The agreement to train Desh workers at one of Daewoo's export manufacturing factories in Korea was unusual.

(a) Cadre of Trainees

2.13 Desh recruited 130 workers for training at Daewoo's Pusan plant where they received some of the most intensive on-the-job training ever experienced in developing countries. The trainees would eventually fill 4 management positions, 97 production supervisory positions, and 29 actual production slots--as well as become the future managers of much of the Bangladesh garment export industry. The intent of training for these personnel was to develop a capacity not only to handle their jobs effectively but also to train future Desh employees. The 130 trainees had no previous experience with garment manufacturing. English was required for purposes of communications during the training, as was the equivalent of at least a junior college education. A noteworthy feature of the cadre was that 14 trainees were women. Moslem tradition had precluded females from working in factories in Bangladesh. However, Quader had been so impressed by the efficiency and sheer numbers of women at Daewoo and other garment factories in Korea that he persuaded the Bangladesh government to support female trainees and obtained permission from parents and spouses.

(b) Training at Daewoo

2.14 As summarized in Table 2, the eight months training program was carefully organized so that the trainees, despite their lack of experience with garment production, would emerge as fully qualified workers and supervisors able to produce exportable products. The emphasis was on providing actual experience in running a factory that produced world class exportable products. Daewoo's preparation of an English manual for garment manufacturing showed how seriously it took the training program. Moreover, every two trainees had a separate machine to practice with, and Daewoo used the actual production lines at the factory for on-the-job training, an indication of the importance it attached to practical work.

Table 2: TRAINING CURRICULUM AT DAEWOO'S PUSAN GARMENT FACTORY, APRIL 1, 1979 TO NOVEMBER 30, 1979

Sequence	Subject	Training Methods	Weeks
1.	General Orientation	Lectures	1.5
2.	Introduction to Machine Operations	1 machine per 20 trainees	2
3.	Practice of Machine	1 machine per 2 trainees	2
4.	Introduction to Garment Manufacturing	Morning session: Lectures Afternoon session: Exercise using 4 machines per 2 trainees	1
5.	Specialized Training	4 specialized areas: cutting, sewing, finishing and machining	4
6.	Specialized on-the-job Training	On-the-job training in the 4 specialized areas	40
7.	In-depth on-the-job Training and Actual Production	Production of various types of finished garments on actual factory production lines	13
8.	Evaluation	Evaluation of the training	0.5

Source: Daewoo Company.

2.15 In addition to the skills training they received, Desh workers got a valuable expanded education: a look at the entire operations of a highly successful, multifaceted international company and the corporate culture that created and supported its superior performance (Table 3). That part of the educational process can perhaps best be understood by looking at a statistical summary of Daewoo's performance in textile, garment and overall exports in the last 20 years.

2.16 Daewoo had started in 1967 as a garment manufacturer/exporter, a specialization maintained for about the next five years. As late as 1978, the year the Desh-Daewoo collaboration agreement was signed, about 50% of Daewoo's exports were textiles and garments, having grown at an annual average rate of about 78% from 1967 to 1978. That rate declined drastically (to less than 7%) during 1978-86 because of Daewoo's product diversification and switch to exporting heavy industry products (Daewoo is now a well-known producer of ships, automobiles, rolling stock and machinery), but in recent years the annual export value of garments and textiles still has exceeded a half-billion dollars, equal to about one-fifth of Daewoo's total exports.

2.17 Desh workers learned not only production skills but also the whole system of production, marketing and management that Daewoo had developed or accumulated over the preceding 10 to 12 years through its pioneering activities in international markets. This broad experience was invaluable both for Desh trainees, who were to become the future managers of the Bangladesh garment industry.

(c) Start-up of the Desh Factory

2.18 In December 1979 the 130 Desh workers returned to Bangladesh, along with three Daewoo engineers assigned to install the machinery and assist in starting up the factory. Within five months (April 1980), garment production began, with 450 machines and 500 workers. In 1979/80 Desh exported its first products (43,000 shirts at an export value of about US$56,000).

2.19 In March 1980 Daewoo sent a replacement team of machine installation experts. The new team emphasized quality control and the training of workers who had not been to Korea. Three export production lines were initially operated using the first group of trainees, while an additional three production lines were used to educate new recruits, with the help of the Daewoo team and Desh workers who had acquired their skills in Korea. In all, Daewoo sent 15 people to Bangladesh--three machine experts, nine production line experts, and three administrative personnel--each staying three to six months, until March 1981. As discussed later, one of these experts, J.H. Koh, would play an extended role in Bangladesh's garment export industry. Mr. Koh was Daewoo's field supervisor of the 15 experts it sent to Desh.

Table 3: EXPORT TREND OF DAEWOO CORPORATION, 1967-86

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	Average Ar Growth (1967-78) Total Export	Textile & Garmer
Total Exports (million US$)	0.6	2.7	3.7	8.5	24.2	52.7	85.7	124.3	179.8	318.8	507.6	684.2	1,125.1	1,415.2	1,903.9	1,970.8	2,497.1	2,577.1	3,009.3	2,758.0	89.6	
Textile and Garment Exports (million US$)	0.6	2.7	3.7	8.5	21.9	49.8	74.3	101.7	142.6	229.8	190.4	336.5	348.2	447.3	583.1	486.6	475.8	524.8	478.9	556.0		77.8
Share of Textile and Garment Exports in Total Exports (%)	100	100	100	100	90.5	94.5	86.7	81.8	79.3	72.1	37.5	49.2	30.9	31.6	30.6	24.7	19.1	20.4	15.9	20.2		

Source: Daewoo Corporation.

(D-286e)

(d) Access to Imported Inputs and Import Financing

2.20 Daewoo and Desh realized that speedy access to imported inputs at world market prices would be critical to Desh's garment export production. Because Bangladesh's local producers of fabric and other inputs were inefficient and unreliable, the collaboration agreement included provisions for Daewoo to serve as supplier of intermediate inputs, including fabric. Even so, the project had to contend with the government's trade regime, which imposed severe import restrictions (import bans, quotas and high import duties). Moreover, the duty exemption system was ineffective.

2.21 Daewoo and Desh considered an effective duty-free and restriction-free regime for the imports used in export production to be vital to the competitiveness of their operations. It appears that the two companies had a large hand in introducing efficient administrative arrangements for assuring free-trade status for 100% export-oriented garment factories. Consequently, the government introduced a Special Bonded Warehouse System [3]/ for 100% export-oriented garment factories.

2.22 Although there is no documented evidence, it appears that Daewoo's intimate knowledge of the nuts and bolts of the successful bonded warehouse system in Korea, its ability to import that knowledge to Desh staff, and the advice that Desh's senior manager gave to administration officials on the effective system were instrumental in the design and implementation of the Special Bonded Warehouse system. The system has been very effective in administering duty-free and restriction-free imports of intermediate inputs for garment exporters.

2.23 Easy import financing also was necessary to give Bangladesh exporters equal footing with foreign competitors who had access to financing through commercial banks at competitive market interest rates. Desh had no access to foreign exchange, and Bangladesh does not have a foreign currency loan scheme designed to meet the import financing needs of exporters. Given that policy environment, Daewoo's extension of short-term supplier credits for its fabric and other supplies was critical in allowing Desh to import inputs.

2.25 Although the government was not providing any import financing, it allowed local commercial banks to open back-to-back time import letters of credit (L/Cs) based on garment manufacturers' export L/Cs, under the system of strict foreign exchange controls. It seems here again that Daewoo/Desh's

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3/ Unlike the usual bonded manufacturing system, this one allows customs officers to make unscheduled inspections rather than remaining at a factory to check the "inflow of inputs to" and "outflow of outputs from" the factory without paying duties. The system is administered using import and export passbooks, input-output coefficients, and a stock accounting book. For a further explanation of this system and other duty exemption and drawback systems in Bangladesh, see Rhee (1986).

knowledge of the back-to-back L/C system 4/ was helpful in arranging the system in Bangladesh.

2.26 In short, technology transfer from Daewoo to Desh included more than skills, management training and the like. It also included the administrative arrangements for the basic export incentives (i.e., automatic access to inputs at world market prices and trade financing at appropriate costs) that were critical in allowing export production to start under a rational policy regime. In turn, the government policy of maintaining realistic exchange rates, evident in the 17% devaluation in fiscal year 1980, was very important in ensuring exporters equal footing with foreign competitors.

(e) Marketing Desh Products

2.27 Initially it would have been impossible for Desh to sell garments in international markets without Daewoo's brand names and marketing network. Overseas buyers purchased garments from Daewoo because of its reputation. The chain of export orders, involving overseas buyers and Daewoo and Desh, can be classified as "triangular trade." First, Daewoo received an L/C from an overseas buyer. It then opened a back-to-back L/C addressed to Desh. Finally, Desh shipped the manufactured garments directly to the overseas buyer but received payment from Daewoo. This triangular trade system was the only way Desh could have started exporting quickly. In selling to the overseas markets, Desh could rely on Daewoo's: (i) established marketing network; (ii) credibility as one of the leading garment manufacturers; and (iii) capacity to take risks stemming from potential claims for deficient products.

2.28 Through triangular trade and by observing Daewoo's overseas sales activities, Desh staff also learned export marketing skills. Daewoo's technological and quality upgrading and marketing assistance laid the foundation in the international markets for Desh's developing a reputation as a producer of quality garments. Eventually foreign buyers were comfortable approaching Desh, or other Bangladesh garment manufacturers, directly.

2.29 Because its credibility was at stake and it wanted to minimize the risk of poor products, Daewoo was dedicated to assuring product quality through its production line supervisors and quality inspection staff. Thus, Daewoo's marketing service was highly interlinked with its technological and quality control work. In sum, Daewoo was the catalyst--in everything related to export manufacturing and marketing.

AFTER DAEWOO: DESH AS CATALYST FOR THE BANGLADESH GARMENT EXPORT INDUSTRY

2.30 As Desh mastered production, marketing, and management know-how, it was able to expand its capital, labor force, production and exports dramatically. That Desh was able to cancel its collaborative agreement on

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4/ Ibid.

June 30, 1981, after about a year and a half of factory operations, suggests the quality of Daewoo's involvement and the speed with which Desh mastered production and marketing.

2.31 Table 4 shows Desh's export performance since its creation in 1979. Export value in 1986/87 was more than US$5 million as a result of six years' average annual growth rate of more than 90%, a rate higher than Daewoo's in its first nine years (compare Tables 3 and 4). Desh also experienced a significant increase in product quality during its first six years: the export value per piece rose from US$1.30 in 1979/80 to US$2.30 in 1986/87. Desh won the President's Award for Best Exporter in 1982/83 and 1983/84 (creation of that award is yet another transfer of know-how from East Asia). Between 1979 and 1987, Desh's workforce went from 500 to 1,400, its capital facility from 450 machines to 750. Desh expected its exports in 1987/88 (at the time of our interview) to reach US$10 million, double the previous year's performance.

Table 4: EXPORT PERFORMANCE OF DESH GARMENTS, LTD., 1979/80-1986/87

	1979/80	1980/81	1981/82	1982/83	1983/84	1985/86	1986/87	Average Annual Growth of Export Value 1979/80-1986/87 (%)
Export Quantity (thousand pieces)	43.2	284.5	758.8	886.5	1,770.0	1,145.5	2,265.0	
Export Value (thousand US$)	55.5	615.6	1,950.0	2,456.4	4,403.8	2,792.7	5,283.0	91.71
Export Value per Pieces (US$)	1.29	2.16	2.57	2.77	2.49	2.44	2.33	

Source: Desh Garments Ltd.

2.32 This record is extremely impressive, particularly in the short timespan. What is most striking, however, is that much of it was accomplished by Desh on its own. It had cancelled its collaborative agreement with Daewoo about three months after Daewoo's production line technicians had finished their Desh assignment. Moreover, 115 of the initial workers trained by Daewoo in Korea left Desh at different times after the end of the Desh-Daewoo agreement to set up their own--often competing--garment export firms. Desh was handling all its own export marketing and was getting its raw materials from non-Daewoo sources. (In 1987 Desh employed three non-Daewoo Korean production technicians to upgrade product quality and diversify export products and markets.) Clearly, Desh had learned its lessons well and had been able to institutionalize them, ensuring success even after the initial cadre of workers and Desh advisors was largely gone.

(a) Mushrooming Export Garment Industry

2.33 By 1985, before the US imposed import quotas on Bangladesh garments, there were more than 700 garment export manufacturing factories in Bangladesh. The Daewoo-trained workers who left Desh had been a powerful medium for transferring know-how throughout the whole garment sector and for recreating "miracles" with exports. The extraordinary speed with which the Desh workers transmitted their production, marketing and management know-how to hundreds of factories spurred the rapid expansion of capacity in export garment manufacture. Figure 1 indicates the export performance of Bangladesh garments in comparison with jute exports and Daewoo's performance with garments and textiles over a seven year period. (Note that Daewoo's exports include textiles, while Bangladesh exports are only garments.) Changes in the government's investment sanctioning system supported this expansion by declaring in 1980 the garment export industry a free sector (i.e., free from investment licensing).

2.34 Capital was not one of the major constraints for development in light manufacturing sectors. The story of one company, Mohammadi, discussed below, illustrates the powerful impact that mobility of skilled workers and managers has had on the diffusion of know-how. At the same time, their mobility and entrepreneurship were supported by investors, who were aware of the profits reaped by Desh. Some firms collaborated with companies in the NICs, following the model of the Desh-Daewoo collaboration, but without training at the foreign partner's plants. Still, the real foundation of Bangladesh's expanding garment industry was the workers who left Desh.

(b) Mohammadi and the Impact of Skill Diffusion

2.35 Mohammadi Apparels Ltd., specializing in shirts, was established in January 1985, with 134 Japanese sewing machines. The key start-up staff were 12 former Desh workers, including two production line supervisors who had trained at Daewoo. The three senior staff of Mohammadi at that time were a production manager, formerly a production manager at Desh and trained at Daewoo; a marketing manager, formerly a marketing manager at Desh; and an administrative manager who had handled export and import procedures and documents at Desh. These former Desh workers provided two months' intensive training to the 220 Mohammadi workers.

2.36 In March 1985, Mohammadi started exporting garments. After just one year of operations, the company paid off its start-up loan from the Bangladesh National Bank. Table 5 shows that average monthly value of exports increased from US$70,000 in 1985/86 to more than $750,000 in 1987, and US$5 million-plus in exports after 31 months of operations. Employment went from 240 in 1985 to 900 in 1987 and was expected to reach about 1,500 very soon (at the time of our interview).

Figure 1 Export Trends of Bangladesh Garment vs. Jute Goods in Comparison with Daewoo Garment and Textiles, 1980 – 1987

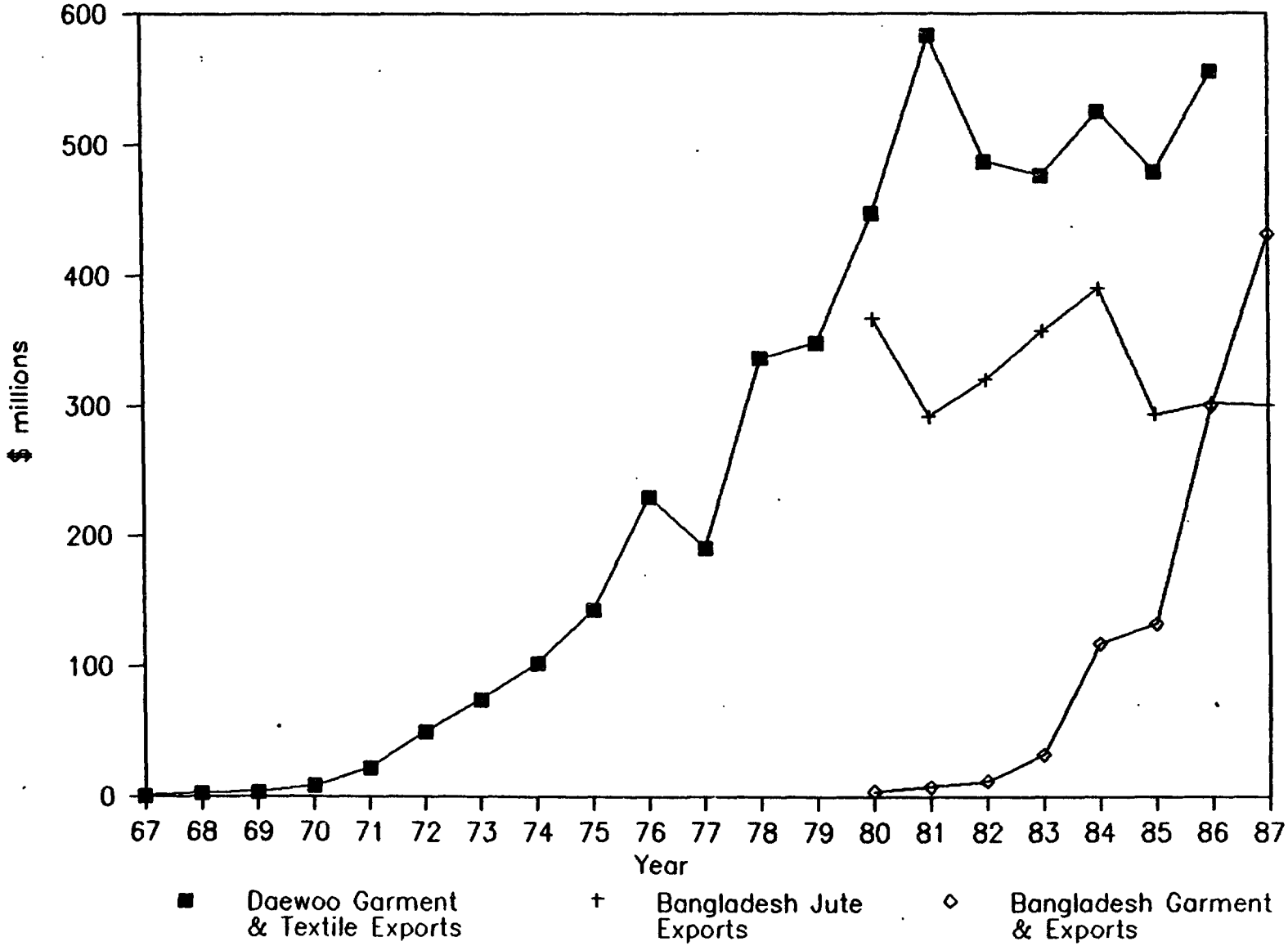


Table 5: EXPORT PERFORMANCE OF MOHAMMADI APPARELS LTD.
(March 1985 to September 1987)

Period	Exports ($'000	Average Monthly Exports ($'000)
March 1985 to June 1986 (16 months)	1,110.8	69.4
July 1986 to December 1986 (6 months)	1,324.3	220.7
January 1987 to September 1987 (9 months)	3,082.6	342.5
Total (31 months)	5,517.7	178.0

Source: Mohammadi Apparels Ltd.

2.37 Another impressive aspect of Mohammadi's operations has been its ability to respond to diverse markets, even though it specializes in shirts only. Mohammadi's major market is Europe, with Norway the biggest customer: it exports 30,000 dozen shirts to Norway annually, a level that exceeds Norway's entire Korean quota. Mohammadi also sells to Denmark, Sweden, the Federal Republic of Germany, France, Belgium and England.[5]/ Mohammadi's success in the European market was generated by personal contacts during frequent field visits by the dynamic and energetic marketing manager.

2.38 Mohammadi's upbeat view of its prospects and its impressive growth are evidence of the power of the skills mastered at Daewoo and Desh and then diffused.

(c) Expatriate Assistance

2.39 Many Bangladesh garment firms have been able to handle production and marketing without expatriate or foreign assistance because they have been staffed with former Desh workers who had mastered production and marketing know-how. The speed and depth of the mastery of technical and marketing know-how by Mohammadi, however, could hardly be copied by all 700-plus factories. Many other new garment firms have needed external assistance. The story of J.H. Koh illustrates the continuing need for many of these new factories to collaborate to some degree with foreigners in the areas of marketing and technology.

2.40 Koh was the leader of Daewoo's team of machine installation specialists and production line experts assigned to Desh from November 1979 to

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5/ The company hopes to enter Japan and the USSR. The US market is minor for Mohammadi because the US quota, 27,000 dozen, is barely two months' production capacity.

March 1981. Through that assignment, Koh formed personal ties with the former Desh workers who became managers and presidents of numerous garment firms. Koh also supervised the installation of 70-80 production lines at new garment firms in Bangladesh in his role as supervisor at Daewoo's Dhaka branch.

2.41 In 1984, Koh resigned from Daewoo and opened his own firm in Seoul. It is engaged exclusively with the import and export trade of Bangladesh's new garment factories. Its major activity is import sourcing of some 20 raw materials, including fabrics; it also intermediates export sales. Koh carries out the import and export intermediation in Seoul and travels frequently to Bangladesh, while Bangladesh garment company managers visit him often for business contacts and consultation. Koh's business grows with Bangladesh's garment exports. Although his customers change as old ones learn to do their own intermediation, they always seem to be replaced by customers who have just opened for business and are looking for intermediaries for importing inputs and selling finished garments. New firms often need this expatriate technical and production guidance.[6]/

2.42 Even large firms frequently employ expatriate production line experts for product upgrading and diversification. While the learning-by-doing of production line technology and external marketing of large firms is mature now, further expatriate inputs from Korea and other NICs will be needed for some time because of changes in clothing fashions and the pressure to upgrade and diversify products, as well as the need for new markets.

(d) US Quotas and Product and Market Diversification

2.43 Responding to external market and non-market factors that constrain the continuing expansion of exports is an integral part of mastering technical and marketing know-how. The Bangladesh garment industry's response to US quotas has been such a learning process. The US imposed import quotas in 1985 in response to the rapid and successful exporting being done by Bangladesh's garment industries.[7]/ The unexpected imposition of the quotas shocked Bangladesh and caused massive plant failures and psychological setbacks. About 80% of Bangladesh's garment exports had gone to the US market before the quotas. They had increased from US$37 million in 1984 to $115 million in 1985. Even though the share of imports from Bangladesh to total US garment imports in 1983/85 was 0.1-1.75%, the annual growth rates for eight

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6/ In addition to Koh's operation, about 30 other Korean firms are engaged in garment-related import and export trade intermediation. Moreover, 60-80 Korean production line experts are active in Bangladesh. Technicians and firms from the other NICs also are involved in similar activities in Bangladesh. The Korean technicians, however, dominate, in that the majority of the production lines in Bangladesh garment factories are the Korean type, known to be more effective for high-volume production than are the types from other NICs.

7/ As of the middle of 1987, 13 complaints were filed stating that the import surge from Bangladesh was disrupting the US market (Washington Post, August 30, 1987).

items ranged from 105% to 5,766% during 1983/85. These exceptional growth rates resulted in import shares that surpassed some of the leading Asian garment exporters in selected categories (Table 6).

Table 6: MAJOR ASIAN GARMENT EXPORTERS WHOSE SHARES IN TOTAL US IMPORTS OF CERTAIN CATEGORIES WERE SURPASSED BY BANGLADESH'S SHARE (1985)

Categories	Countries
Cotton Gloves	Taiwan Province
Other Coats, MB	Taiwan Province, Korea
Coats, WGI	Taiwan Province, Korea
Non-knit Shirts, MB	Taiwan Province, Korea, China
Non-knit Blouses, WGI	Taiwan province, Korea, China
Trousers, MB	Korea, China
Trousers, WGI	Korea

Notes: MB = Men/Boys
WGI = Women/Girls/Infants

Source: Spinanger (1986).

2.44 The result of the quotas was a drastic decline in Bangladesh's garment exports to the US and negative growth. Of the more than 700 garment factories operating in 1985 (about 80% were established in 1985), about 500 closed by the end of the year.[8/] Massive factory failures led to serious bank loan defaults, even though the total investments in the garment export industry were estimated to have been well below US$100 million.

2.45 In 1986, however, the US raised the level of the import quotas on Bangladesh exports, which immediately almost tripled. Bangladesh became the sixth largest garment exporter to the US after Hong Kong, Singapore, Taiwan Province, Korea and China.[9/]

2.46 After the quota situation eased in 1986 and 1987 and the Bangladesh garment industry adopted strategies to diversify its markets and products, about 300 factories reopened. Efforts are under way to open markets in the USSR, Japan, Australia and the Middle East, in addition to many European countries. Further, as a result of its product diversification--for example, in the EEC countries over the last four years--Bangladesh now exports 35 categories of garments made of cotton, wool and synthetics, for men, women, boys, girls and infants.

8/ Britain, France and Canada also imposed import quotas after the US action. However, their import quotas were not binding on Bangladesh because its market penetration in these countries was not so extensive as in the US.

9/ Bangladesh's position in the US quota negotiations was that "Helping in trade is much better than helping in aid." (Washington Post, August 30, 1987.)

GENERALIZATION

(a) Garment Exports: A Special Case?

2.47 A frequent question is how important success with garment exports is in the industrialization of a developing country, in view of the relatively unsophisticated technology involved. To answer this, it is instructive to return to Tables 1 and 3, which summarize the export performance of Bangladesh and Daewoo.

2.48 As indicated above, Daewoo started as a 100% garment export manufacturer. The share of garment and textile exports to its total exports during its initial nine years of operations was 80%. The average annual rate of growth of Daewoo's garment and textile exports was about 78%, which provided total export growth for the company of about 90% during the same period. Only in the subsequent 10-year period did the growth of Daewoo's exports of non-garment and textile products outpace those of garments and textiles. Even so, in recent years the latter have held about a 20% export share.

2.49 From garments to fabrics, fabrics to yarn, yarn to man-made fiber --this was the sequence of technologies mastered, along with marketing skills. That accumulated know-how in light-manufacturing textiles was in turn transferred to such heavy industry products as shipbuilding and steel and from these to such technology-intensive items as electronics. That is, as Korea moved from one stage of specialization to the next, it was building on what was learned before. All the successful East Asian economies have started with garment and textile exports, a fact whose importance cannot be overlooked.

2.50 Bangladesh's garment exports, starting with the catalytic role played by Desh-Daewoo, may shortly surpass in value the garment and textile exports of Daewoo, currently about half a billion dollars, as one can conjecture from Figure 1. Bangladesh's garment exports mark a giant first step in the country's outward-oriented industrial development. There can be no subsequent advances in industrialization without this first step, and advances may not occur automatically unless the lessons learned in the first step are exploited fully by the public and private sectors.

(b) Initial Quota-Free Status of Bangladesh: A Special Case?

2.51 Another often-asked question is whether Bangladesh's garment export success is not a special case, in that Daewoo's involvement was motivated by Korea's difficulties with garment quotas and Bangladesh's quota-free status. The answer is that the lessons to be learned from catalysts in the development of the successful garment export trade can be separated from the question of how to induce foreign catalysts' assistance or how to cultivate local catalysts. Daewoo might have become involved in garment export manufacturing in Bangladesh even had Korea not had garment quota difficulties, provided there were equally attractive opportunities in terms of domestic and external market access for its products and know-how.

III. EXPORTS OF INDONESIAN PLYWOOD

3.01 One of the most important national resources of Indonesia is its 122 million hectares of tropical evergreen forests. (Indonesia's total land area is 191 million hectares.)

3.02 Logging. To meet the plywood industry demand from Japan, Korea, and Taiwan Province in the 1960s and 1970s--after the introduction of mechanical logging in 1960--logging, predominantly from the virtually untouched jungles on the large islands of Kalimantan and Sumatera, accelerated from an annual average of less than one million m^3 in the 1960's to more than 10 million m^3 by 1970. During 1973/1979, no fewer than 20 million m^3 of logs per year were produced, most exported as raw material for the booming plywood industries in Japan, Korea, Taiwan Province, and Singapore. This logging development has made the forestry sector Indonesia's second largest foreign exchange earner, after oil and gas.

3.03 Plywood industry development. The World Forestry Congress in Jakarta in 1979, with its theme "Forest for People," was a turning point in the Indonesian government's policy regarding conservation of forestry resources and development of local plywood industries.

3.04 Beginning in 1981, the government gradually decreased the export of logs, and logging rights became linked to investments in plywood manufacturing facilities. Log exporting was totally banned in January 1985. Analysis of the log export ban policy is not an objective of this review.[10]/ Instead the aim is to examine the critical role of catalytic agents in transferring technical, marketing, and managerial know-how, which have been essential for exporting Indonesian plywood to the world market.

10/ For an evaluation of the economic impact of this policy, see Takeuchi (1983).

Export trends. Table 7 shows that in the 1970s plywood exports negligible, while some local demands were met by imports. However, the n of plywood exports during the 1980s was impressive, averaging more than nnual growth in quantity and value and resulting in US$2 billion of ts in 1987 (Tables 7 and 8). In less than a decade Indonesia moved from an importer to being the world's leading hardwood plywood exporter unting for almost 70% of the world market share). Plywood export also is ding foreign exchange earner, second only to oil and gas exports, in a ry that sets non-oil export promotion as one of its most important nal goals.

Table 8: EXPORTS OF INDONESIAN PLYWOOD BLACKBOARD, AND VENEER, 1981 - 1987

	Export Volume (million m3)	Export Value ($ million)
1981	0.774	
1982	1.251	
1983	2.023	483.229
1984	3.021	663.627
1985	3.784	810.936
1986	4.618	1102.194
1987	6.279	2006.39
Average Annual Growth Rate (1981-87)	41.75%	42.71%

Source: APKINDO, "Directory of the Plywood Industry in Indonesia," 1986, and P.T. Data Consult, Inc., "Business Surveys and Reports.," May 30, 1988.

Table 7: TRENDS OF INDONESIAN PLYWOOD PRODUCTION CAPACITY AND EXPORT 1973 - 1987

(year)	Number of Factories (units)	Production Capacity (million m3)	Export (million m3)	Import (million m3)
73	2	0 028	0.002	0.014
74	5	0.103	0.000	0.010
75	8	0.305	0.002	0.007
76	14	0.405	0.010	0.005
77	17	0.535	0.017	0.004
78	19	0.799	0.083	0.003
79	21	1.809	0.126	0.001
80	29	1.949	0.283	0.000
81	40	2.601	0.774	0.000
82	61	3.292	1.250	0.000
83	79	4.477	2.000	0.000
84	95	5.327	3.010	0.000
85	101	6.228	3.783	0.000
86	111	6.500	4.000	0.000
87	108	7 005	6.000	0.000
Average Annual Growth Rate (1980-87)	20.66%	20.05%	54.70%	0.00%

Source: APKINDO, "Directory of the Plywood Industry in Indonesia," 1986 and APKINDO Files.

3.06 Table 9 shows that, in turn, Indonesian plywood markets are very diversified, and the relative importance of such markets as the U.S. and Japan has increased.

Table 9: DESTINATION OF INDONESIAN PLYWOOD (INCLUDING VENEER AND BLACKBOARD) EXPORTS, 1981 AND 1986

	1981		1986	
DESTINATION	million	rank	million	rank
Middle East	0.131	1	0.458	4
Singapore	0.142	2	0.419	5
Hong Kong/China	0.127	3	0.853	2
U S.A./Canada	0.094	4	1.136	1
U.K.	0.064	5	0.264	8
Korea	0.054	6	..	9
Taiwan Province	0.037	7	0.297	7
Japan	0 031	8	0.601	3
Europe	0.022	9	0.353	6
Australia	0.016	10	..	9
Africa	..	11	..	9
Others	0.038		0.238	
Total	0.774		4.618	

Source: APKINDO, "Directory of the Plywood Industry in Indonesia," 1986.

3.07 Table 10 shows plywood factories concentrated in non-Java Islands such as Kalimantan and Sumatra, where the raw materials are located.

Table 10: GEOGRAPHICAL DISTRIBUTION OF INDONESIAN PLYWOOD FACTORIES, 1987

Region	Number of Factories (units)	(share)	Installed Annual Production Capacity (million m3)	(share)
Sumatra	27	25%	1.832	26%
Java	6	6%	0.589	8%
Kalimantan	62	57%	3.860	56%
Sulawesi	3	3%	0 083	1%
The Moluccas	10	9%	0.642	9%
Total	108	(100%)	7.005	(100%)

Source: P.T. Data Counsultant Inc. "Business Surveys and Reports," September 26, 1988.

3.08 Besides increasing national income, generating employment, and spurring regional development--and in addition to foreign exchange earnings--plywood export success has built confidence in the business community in terms of acquiring skills needed to manufacture and export non-traditional manufacturing items. (Such confidence is important in achieving the objective of the government to diversify exports in such areas as garments, leather goods, and engineering products.)

CATALYSTS

3.09 KORINDO and KODECO. One of the most critical factors for Indonesia's quick success with plywood exports was the transfer of technical, marketing, and managerial know-how through joint ventures with firms from Korea and Taiwan Province. This transfer process also involved employment of skilled workers and managers from these economies, and imports of used plywood manufacturing equipment from these economies as well as from Japan. In this process, KORINDO and KODECO acted as catalysts, transfering skills from Korea.

3.10 KORINDO is the largest plywood export manufacturer in Indonesia, with three factories and 17 production lines employing about 8,000 workers. It produces more than a half-million m^3 of plywood annually; its exports account for more than US$150 million annually. It was one of the three pioneering plywood manufacturers in the export market. KODECO was the first Korean investor in Indonesia's forestry development (in fact, Korea's first overseas investor) in the 1960s, and the value of its plywood exports (including timber products) exceeds US$50 million annually. The combined export volume of these two firms is close to one-tenth of Indonesia's total plywood exports, but more important is their catalytic role in transferring technical, marketing, and managerial know-how from the Korean plywood industry.

3.11 Choi Keh Wal. The founder of the Korean Development Corporation, Choi Keh Wal is a legendary figure in Korea's overseas investment and exploration. Choi's Indonesia connection stems from his Japanese military service during the Second World War. When former President Sukarno of Indonesia was a prisoner in a Japanese military camp, Choi, a prison guard at the camp, became friendly with him. Ultimately because of this friendship, Choi ventured to Indonesia in the early 1960s. Although residing in Japan, Choi was seeking an opportunity to be involved in Indonesian forestry development. In fact, he had established Korea Development Corporation in 1963 in Korea to further the opportunities he foresaw in Indonesia.

3.12 Although Korea initiated its outward-oriented development strategy, focusing on light manufactured exports, in the early 1960s, Choi's bold idea to invest in forestry development in South Kalimantan Island was surprising, even to President Park of Korea, who was farsighted about Korea's development. However, Choi managed to obtain Korean government financial support to invest in Indonesia. KODECO was established for forestry development in South Kalimantan in 1968, signaling follow-up investments by other Korean businessmen. KODECO and the subsequent Korean investors in the

Indonesian logging business supplied part of the logs for Korea's plywood export manufacturing in the 1970s.

3.13 As with other joint venture firms in Indonesia's forestry development, KODECO's investment in plywood manufacturing occurred in the early 1980s to follow the government's guideline to link the logging industry with plywood manufacturing. (Earlier, KODECO had opened a wood processing factory in Korea to use imported logs.)

3.14 Seung Chang Ho. Seung Chang Ho, late president of KORINDO, is the third son of the founder of DONGWHA, a successful Korean wood processing firm in Inchon, Korea. Following KODECO's pioneering involvement in Indonesia's logging venture, DONGWHA started forestry development in Indonesia (on about 120,000 hectares) with some financial support from the Korean government and with the intention of supplying logs for Korea's plywood export manufacturing.

3.15 Seung joined DONGWHA in Indonesia in 1972, interrupting his graduate work in Los Angeles. In 1975 Seung set up KORINDO, using funds borrowed from Japan (channeled through Hong Kong) for more aggressive logging on about a million hectares on East Kalimantan. Seung's business savvy was demonstrated by his prompt move into plywood manufacturing and export. He became one of the first three plywood exporters in 1980, encouraged by government policy. Furthermore, his pioneering effort to bring in Korean skilled workers and to train Indonesian workers alongside Korean personnel was critical for successful entry into the world market, not only by his own company but by other plywood producers.[11]/ In turn, Seung was quick to capture a strong niche in the international market--the Middle East, in which KORINDO took a major share of exports, was the prime market for Indonesia's plywood exports in the early 1980s (Table 9).

3.16 Skill transfer. As part of their outward development strategies in the 1960s and 1970s, Korea and Taiwan Province became the dominant plywood "explorers." There were 13 large plywood exporters at the ports of Pusan, Inchon, and Kunsan in Korea, when Korea's plywood exports were at their peak in the mid-1970s. Two of three firms established during the Japanese colonial period (1920s and 1930s), Tong Myung and Dae Sung, were the largest Korean plywood exporters, employing 5,000 workers each in the mid-1970s.[12]/ Four firms out of 13 were established between 1946 and 1960, the remaining six in the late 1960s and early 1970s when plywood exports were becoming a major export activity.

11/ Seung's innovative management also resulted in diversified business activities in such areas as newspaper manufacturing (which uses scrap paper imported from the U.S. and other countries) for the domestic market and sport shoes for both export and local markets. In these manufacturing activities, skilled workers from Korea also were critical for start-up the operations and for training other local workers, just as in the case of plywood manufacturing.

12/ Korea Plywood Industries Association, Plywood Statistics in Korea, 1976.

3.17 Even before Korea's outward-looking strategy in the early 1960s, Dae Sung was an export catalyst: it completed its first particle board plant in 1960 and became the country's first exporter in 1961. After those first exports, plywood became the most important export item of Korea in 1965, 1970, and 1971, taking 11%, 12%, and 12% share of Korea's exports, respectively. Consequently, Korea was the fifth largest plywood producer (after the U.S., Japan, the U.S.S.R and Canada) and the top exporter (Taiwan Province, the U.S., Finland, and Singapore were second, third, fourth and fifth) in 1974, taking about 20% share of total world exports.[13]/

3.18 With its plywood industry completely reliant on imported logs, how could Korea become so successful in plywood exports by the mid-1970s? To a question on their sources of technology in 1976, Korean plywood manufacturers responded that the firms established during the colonial period already had acquired basic production know-how by the time Korea was aiming at the world market. Of course, the Korean government's rational export policies, implemented in early 1960s, were critical as well. Restriction-free and duty-free imports of capital goods, intermediate inputs and raw materials, as well as access to trade financing and investment licensing for export activities, were important in rapidly expanding the production capacity of plywood exporters.

3.19 Accumulated skills in Korea and Taiwan Province. It is very important to recognize that modern production know-how--added to conventional know-how accumulated during the Japanese colonial period--gained through technical assistance from capital goods producers in Japan, was critical in producing exports on a large scale (Table 11). In turn, some Korean plywood factories imported used machinery from Japan, with associated production technology, when Japan's plywood industries were losing their competitiveness.

13/ Korea Development Bank (1976).

Table 11

Source of Technology for Korea's Plywood Export Manufacturers in Mid-1970s

Sources	Percent Composition of Ranking as "Important" and "Very Important"
Domestic Private Sources	50.0
Direct purchase or assistance	0.0
Licenses or technical agreements from Korean firms	0.0
Technical assistance from Korean parent company	0.0
Technical assistance from Korean joint-venture partners	0.0
Technology embodied in Korean labor and management	50.0
Technical staff who previously worked with other Korean producers	7.1
Local technical know-how	42.9
Korean suppliers of capital equipment or raw materials	0.0
Korean buyers	0.0
Foreign Private Sources	42.9
Direct purchase or assistance	0.0
Licenses or technical agreements from foreign firms	0.0
Technical assistance from foreign companies	0.0
Technical assistance from foreign joint-venture partners	0.0
Foreign technology embodied in Korean labor and management (technical staff with experience in foreign factories)	0.0
Foreign suppliers of capital equipments or raw materials	42.9
Foreign buyers	0.0
Government-Supported R&D or Information Sources	7.1
Technical assistance from the Korean Institute of Science and Technology	7.1
Technical Information from the Korean Science and Technology Information Center	0.0
Other Sources	0.0
Total	100.0
Aggregate frequencies	14
Number of products or processes	6
Number of firms responding	3

Source: Yung Whee Rhee, Bruce Ross-Larson, and Garry Pursell, Korea's Competitive Edge: Managing the Entry into World Markets. Baltimore: The John Hopkins Press, 1984, pp.100-101

3.20 The movement of skilled workers from factories that had acquired skills from Japan also was instrumental in transferring accumulated skills to Korea's new firms. Meanwhile, foreign buyers provided considerable assistance on production know-how for differentiated products. In short, in the process of becoming the leading plywood export manufacturer of the world, Korean plywood industries have accumulated critical technical, marketing, and managerial know-how.

3.21 Taiwan Province was similar to Korea in accumulating technical, marketing, and managerial know-how critical for its success in plywood exports, except that the size of plywood factories in Taiwan Province was not as large as Korea's (about 80 factories, mostly medium size were in operation in Taiwan Province compared to 13 large export manufacturers in Korea in the mid-1970s). It is very instructive to see that Korea and Taiwan Province overtook Japan's dominant position in the plywood export market in 1970 (Table 12 and Figure 2.)

3.22 Transfer of Know-how to Indonesia. As shown in Table 12 and Figure 2, Korea's plywood exports peaked (in value) first in 1973, then declined significantly in the subsequent two years due to the depressed world market caused by the recession after the first oil crisis. Korea's plywood export recovery peaked a second time, in 1979. Ever since, Korea's plywood exports have fallen drastically, to far below US$100 million in 1983 and to a negligible level thereafter.

3.23 In parallel to the drastic decline of exports from Korea and Taiwan Province in the early 1980s, Indonesia's plywood exports increased impressively, exceeding 6 million m^3 and US$2 billion in 1987 (Tables 7 and 12, and Figure 2). Indonesia's surge in exports in such a short period might have been impossible without the enormous decline in Korean and Taiwanese exports and the transfer of know-how with skilled workers who moved from Korea and Taiwan Province to Indonesia.

3.24 Plywood manufacturing is very labor intensive; therefore Korea and Taiwan Province gradually have lost their competitive edge in plywood exports because of domestic wage increases as well as decreased world market demands and constraints on raw material supplies.[14/] Indonesia overtook Korea's and Taiwan's dominant position in the plywood world market in the early 1980s just as the latter two did from Japan in 1970 (Figure 2).

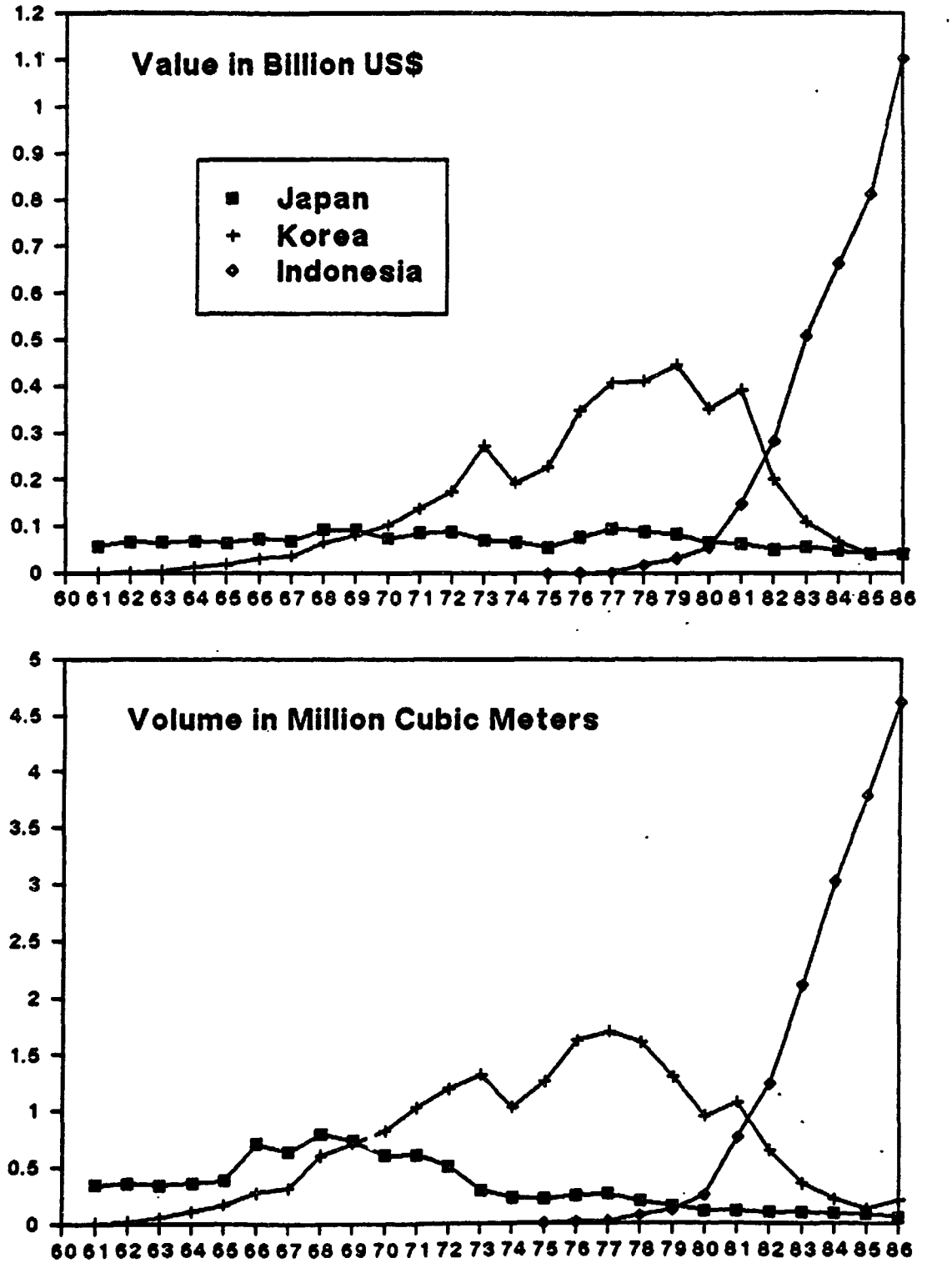
14/ Indonesia banned log exports, but log supplies from other countries such as Malaysia and the Philippines are available in the international market. It is interesting to note that the Japanese plywood industry still meets a significant share of domestic demand, even though it lost its competitive edge in the world market in 1970 when Korea and Taiwan became the major exporters (Table 12).

Table 12: PLYWOOD EXPORT TRENDS: JAPAN, KOREA, TAIWAN PROVINCE AND INDONESIA

	Japan		Korea		Taiwan Province	Indonesia	
Year	(m^3)	($1,000)	(m^3)	($1,000)	(1,000m^3)	(m^3)	($1,000)
48	2						
49	9						
50	16						
51	49						
52	22						
53	58						
54	165,000						
55	234,000						
56	260,000				1		
57	328,000				2		
58	345,000				10		
59	425,000				16		
60	354,000				20		
61	344,900	58,369	11,700	1,217	52		
62	358,100	67,659	17,800	2,284	72		
63	341,700	66,036	54,100	6,309	133		
64	360,300	68,750	104,400	12,550	208		
65	382,400	64,906	169,600	19,055	222		
66	707,600	73,397	277,000	29,880	263		
67	632,100	68,792	311,400	36,448	269		
68	796,300	93,032	600,000	65,570	377		
69	737,200	92,755	709,000	81,758	576		
70	604,300	74,578	822,000	102,400	682		
71	613,500	86,187	1,027,900	138,720	781		
72	507,000	89,008	1,195,400	175,240	1,116		
73	291,410	72,022	1,321,600	273,990	1,116		1.5
74	231,300	66,759	1,030,000	192,600	804		0
75	217,200	56,121	1,258,000	228,750	761	600	64
76	250,700	76,539	1,623,000	347,590	862	13,000	867
77	261,600	96,554	1,703,300	408,720	946	2,137	16,500
78	197,000	88,907	1,605,000	411,950	1,240	69,800	18,330
79	151,500	83,621	1,297,000	447,930	1,078	117,100	31,720
80	103,500	66,345	945,600	352,200		245,000	55,736
81	106,800	62,427	1,068,100	391,650		759,500	147,900
82	93,700	52,246	641,700	201,130		1,232,300	282,270
83	99,600	57,997	348,000	109,860		2,106,100	509,720
84	82,900	47,550	211,000	66,579		3,021,000	663,120
85	78,100	42,388	127,000	39,807		3,784,000	810,940
86	54,100	43,098	200,000	51,000		4,618,000	1,102,200
87						6,279,000	2,004,390

Source: Figures on Japan, Korea, and Indonesia from FAO, Yearbook of Forest Products Standards Tapes, 1961-1986; Japanese Volume data during 48-60 and Taiwan Province data are from World Bank, Case Studies on Industrial Processing of Primary Products, 1983, p.267.

Figure 2 Plywood Export Trends of Japan, Korea and Indonesia, 1961 - 1986



Source: FAO

3.25 KORINDO and KODECO were two of the catalysts that expedited the transfer of know-how from Korea and Taiwan Province to Indonesia. Perhaps about a thousand skilled workers from Korea and Taiwan Province are involved in Indonesia's plywood manufacturing and related log processing activities (the share of Korean and Taiwanese skilled workers may be in the range of 7 to 3). Virtually all Indonesian plywood factories employ some skilled workers from Korea or Taiwan Province. The largest exporting firm and a leading catalyst, KORINDO employs about 300 Koreans.

3.26 The role of these foreign skilled workers has been to help manufacture and organize exports of quality products and provide on-the-job training for local workers. Skilled workers trained in one firm transfer their accumulated skills to another firm through labor mobility.

3.27 Skilled workers, as well as the used machinery from the two largest Korean plywood manufacturers, Tong Myung and Dae Sung, were catalysts in the transfer of accumulated know-how to Indonesia, just as these firms were the catalysts for transferring the technology from Japan to Korea. Many other Korean plywood firms also participated in skill transfer activities.

3.28 Other factors. Skill transfer initiated by foreign catalysts in the plywood export sector has been facilitated by Indonesia Government efforts to provide equal footing with foreign competitors in access to inputs and financing at world market prices and interest rates. The government also has made efforts to maintain realistic exchange rates. The 1982 Export Policy and subsequent export policy reforms were important in this regard. The activities of foreign companies have been allowed to expand, and the inflow of DFI and skilled workers has been liberalized considerably. Also, the Indonesia Association of Plywood Manufacturers (APKINDO) established in 1976 was instrumental in coordinating export manufacturing and sales activities as well as collecting and disseminating overseas market information.

IV. NINE OTHER STORIES OF EXPORT SUCCESS

A. Colombian Floral Exports

4.01 Summary. Floramerica, a Colombia-based company that got its start exporting cut fresh flowers to the US and Europe, has become one of the largest flower export companies in the world. The catalytic role was played by Thomas Kehler, a US businessman, and his team of entrepreneurs. They provided the right combination of know-how and resources to build the business: solid technical and management skills; marketing know-how; capital, land and labor; and desire to find ways to improve, expand and diversify. While Floramerica has been creating its own successes, it has been sparking a boom in Colombia's flower industry as a whole. The demonstration effect of Floramerica's success has been powerful. Other companies have copied Floramerica's production and marketing methods; this dynamic process has been facilitated by the movement of key staff who embodied the know-how accumulated at Floramerica. The end result is that Colombia's flower export industry has expanded dramatically.

4.02 Export performance and other benefits. In less than two decades, flowers have become Colombia's fifth largest export, generating US$155 million in foreign exchange earnings in 1986. Colombia is now the second largest supplier of fresh cut flowers to the world market, after the Netherlands. The US and, to a lesser extent, Western Europe are Colombia's biggest customers. Colombia's carnations, chrysanthemums, pompoms, and roses accounted for US$129 million of total US flower imports of $221 million in 1983. The flower industry, very labor-intensive, employs 70,000 people, including 50,000 women, and generates many jobs in related industries.

4.03 Floramerica has played a critical role in transmitting know-how throughout the country, through the mobility of people once involved with Floramerica. David Cheever, one of the founders of Floramerica, left the company after two years to become a consultant to the growing Colombian flower industry. By assisting in the start-up of many new flower companies, he has been a driving force in diffusing know-how accumulated in Floramerica throughout the country. Second, two salesmen at Floramerica's Miami sales office left the company after a few years, having gained experience in overseas marketing; they used that experience to set up a brokerage firm, the Colombian Flower Exchange, which now provides a marketing channel in the US for Colombian flower growers. The Colombian Flower Exchange has become the second largest flower importer after Sunburst Farms, Floramerica's brokerage office. This diffusion of technical and marketing know-how from Floramerica was instrumental in the emergence of about 250 flower export enterprises in Colombia, the vast majority of which are 100% Colombian owned. The diffusion of Floramerica's technological know-how has extended beyond the flower industry to transportation, packaging and chemicals and is now being applied in Colombia's fruit production and exports.

4.04 Background. A seemingly unlikely entrepreneur, until the 1960s Kehler taught and travelled. While on a teaching assignment in Uganda, his fishing hobby expanded into a commercial fishing venture which resulted in

exports to Kenya and the UK. This experience led him to see the creative potential of business, and to develop a strong interest in economic development. Kehler earned a MBA from Harvard. He then moved to Colombia, attracted by: its inexpensive and easily trained labor pool, a variety of stable tropical microclimates, the proximity to the US, and new government policy to promote exports.

4.05 The Catalyst. Kehler adjusted to the Colombian culture and business environment while he searched for a suitable business opportunity involving high value export crops. He decided on flowers. He recruited Harmon Brown, a flower grower in California who was concerned about the increasing price of land and energy which would erode the profitability of his enterprise. Kehler and Brown were joined in the venture by Bill Mott, an economist, and David Cheever, an agronomist who had done a study on a floriculture export firm in Colombia as a university project.

4.06 When a feasibility study carried out by the four participants indicated a flower export business was feasible, the four men pooled their talents in agronomy, marketing and management, and their resources. Each provided an equal share of the initial US$100,000 investment required to establish Floramerica. Established in 1969, within six months, the company was shipping flowers to the US. Within a year, it had 150 employees. Within three years, it had 15 hectares under greenhouses and was employing 400 workers. Within seventeen years, by 1986, the initial investment of $100,000 had turned into $50 million in annual sales.

4.07 In selecting his team, Kehler put together the ingredients needed to undertake the new venture; drive, ambition, technological expertise, marketing expertise, management skills, research skills. In his approach to doing business in Colombia, Kehler demonstrated the leadership quality a catalyst must have: he developed a comprehensive package of the elements needed for success by mobilizing the expertise of others, notably the technical know-how which be lacked.

4.08 The partners realized that marketing would be a critical part of the business, since flowers are highly perishable and need an efficient sales and distribution system involving fast, reliable transportation, conservation, and infrastructure. Typically, flower companies use a third-party for marketing and distribution. However, as Floramerica had the necessary expertise internally, it was able to eliminate the intermediary and set up its own sales office, Sunburst Farms, in Florida. It now also has a sales office in the Netherlands to handle European business.

4.09 Also key to Floramerica's success was its continuous emphasis on improving its cultivation technology: new varieties of flowers, selection of farm sites, irrigation, and pre-treatment of water and soil. It has continued to expand and diversify, with an operation in Ecuador, a subsidiary in California, and the start-up of a salmon farming operation in Chile. Floramerica is considering diversifying into deciduous fruits in an integrated system that would coordinate seasonal fruit production in different countries to offer a constant supply to the US market.

4.10 Other factors. Kehler and his team's decision to set up a flower company was timely in terms of a favorable domestic and external environment:

- o Policy environment. New export promotion policies of the Colombian government provided: incentives through PROEXPO, the Colombian export promotion institution, with funding from the proceeds of a levy on imports; a creative arrangement involving lines of credit from the Central Bank and PROEXPO that has resulted in commercial banks becoming allies in the export strategy; duty rebates on imported components and raw materials; a 14% tax credit certificate based on the FOB invoice value; and streamlining of export and import procedures.

- o Endowments. Colombia had a competitive advantage in flower production, due to climate, labor costs and quality.

- o Market demand. The market for flowers in the US was growing.

B. German-Zambian Joint Venture Exports in Uniforms

4.11 Summary. Serioes Ltd., a German-Zambian private joint venture manufacturing menswear in Zambia since 1973, has survived several setbacks to become a successful exporter. One serious obstacle was the sharp contraction in Zambia's domestic demand in the early 1980s that cost Serioes much of its market. Serioes emerged as a successful exporter by exploiting a special niche in the international market--military uniforms. Building on an initial sale to Tanzania, Serioes was able to broaden its export base. The catalyst in this success was a father-son combination from the Federal Republic of Germany--father Heinrich Peine and son Markus--who served as catalysts by providing strong management practices, state-of-the-art technology and know-how and the ability to transfer it, quality consciousness, superior marketing skills and international contacts. They were able to apply this package of critical ingredients effectively in Zambia.

4.12 Export performance. In 1987, Serioes Ltd., a German-Zambian joint venture that manufactures mens suits, trousers, military uniforms and safari clothing in Zambia, exported US$7 million and received an order to supply about $3 million in uniforms to the army of the Federal Republic of Germany. Serioes' export represented about 70% of its 1987 output, with exports providing the basis for the company's expansion. By end 1986, employment was 727. manufactured exports, including garments are scarce in Sub-Saharan Africa. Serioes was able to recover from the decline in domestic demand in the early eighties; instead of going out of business, Serioes moved to expand export sales.

4.13 Background. While on safari in Zambia in the early 1970s, Heinrich Peine, founder of a medium-size West German menswear manufacturer, realized the potential for business in Zambia and began exports to Zambia. After two years of successful operations, new import restrictions virtually eliminated this trade. Peine set up a garment factory in Zambia to serve the domestic market. Serioes, Ltd. was established in 1973 as a joint venture, with Peine holding 50.8% of the shares, DEG, the German development agency,

22.4%, Booker McConnel, a British firm, and SIFIDA, a Swis-based finance corporation, 8.9% each, and local investors, 9%.

4.14 In the late 1970s, the domestic market shrank significantly, and it became increasingly difficult for Serioes to obtain critically needed foreign exchange to import the fabrics on which it relied heavily. By 1983, Serioes had to lay off about half its work force.

4.15 The Catalyst. Serioes survival depended on exporting. Srioes had no direct export experience, and the international market was competitive. It would be difficult for Serioes to succeed against European and Asian garment exporters, particularly given its relatively high production costs and its generally less sophisticated products. Serioes managed to find an unusual opening--sales of military uniforms to Tanzania. Serioes succeeded in this niche, and used it as a base for exploiting that same market in other African countries. Serioes moved into airline uniforms, still within Africa. In 1987, Serioes entered the European market, getting through Peine CmbH a US$3 million order from the West German Army for uniforms.

4.16 What were key ingredients of the Reines' success? First was Heinrich Peine's ability to see and exploit business opportunities. A critical factor was a capacity to package the various elements needed to establish Serioes. Next came an exceptional ability to solve problems. Both ingredients were backed by a strong belief in the business and a willingness to persevere. The Peines brought to Serioes technological know-how accumulated through their firm's years of experience in West Germany. They installed at Serioes high quality equipment; German technicians provided on-site training.

4.17 An experienced Sri Lankan was hired as company manager and demonstrated the flexibility to adapt effectively to the African business environment. Such flexibility was important since, as Markus Peine comments, German entrepreneurs often lack the flexibility needed to conduct business in Africa. Another vital ingredient was superior marketing know-how, which, again, Peine GmbH had accumulated through its years of exporting out of Germany. When Serioes faced serious domestic market difficulties, it undertook a detailed study of the international market finding a small, seemingly unlikely niche on which to build. The sale of military uniforms was suitable, since the company could produce on a large scale and therefore relatively cheaply. Later, Peine GmbH's own established marketing channels in Europe resulted in a sizable contract in West Germany.

4.18 In short, the Peines served as catalysts by putting together the package of ingredients needed for export success: vision, management, modern equipment, technological know-how and a capacity to transfer it, particularly through training, a creative marketing strategy, and a strong belief in their business.

4.19 Other factors. It seems that Serioes succeeded despite relatively unfavorable external conditions. While recent devaluations and streamlining of the duty-free import administration have improved the policy environment, unfavorable conditions existed when Serioes began exporting. There was little

in the external and domestic environment that aided Serioes successful export drive.

C. Honduran Condiments

4.20 Summary. Fabrica Industrial de Alimentos de Honduras (FIAH) has moved to become a significant processor of condiments in Honduras. It now produces for both the domestic and US markets. A local catalyst, Henry Fransen, Jr., FIAH's founder, brought to the company an ability to take realistic risks, a good understanding of consumer demand, an ability to respond rapidly to diversification opportunities, and the initiative and capacity to enlist the talents and assets of foreign companies and individuals through joint ventures, licensing agreements and consultation.

4.21 Export performance. FIAH, food processor in Honduras producing condiments--Worcestershire sauce, pepper mash, tabasco sauce, soya sauce, pickles and mayonnaise--has become an exporter. In 1987, FIAH sold US$240,000 to the US, mainly from sales of peppers and sauces, up from $150,000 in 1985.

4.22 Background. In December 1974, Henry Fransen, Jr. was working in the small packing plant linked to his father's supermarket. The Fransens received an order for hot sauce equal to over half the factory's yearly production. That order sparked in Fransen, Jr. a vision of bigger possibilities in the wholesale business. Moreover, from observing sales in his father's supermarket, Fransen believed he knew that those possibilities were. After spending a couple of years at the small family plant to familiarize himself with condiment production and sales, in 1976 Fransen, Jr. founded FIAH, helped by $20,000 in seed capital and an old building from his family.

4.23 Once having set up his company, Fransen, Jr. proceeded, as funds permitted, to expand production from hot sauce into other lines. He relied heavily on licensing agreements with foreign manufacturers. In 1977, Fransen, Jr. again showed his ability to exploit opportunities. A shortage of pepper mash in the US threatened FIAH's operations, since it was buying from the US. After failing to persuade a small Honduran producer of pepper mash to supply FIAH, Fransen went directly to some Honduran pepper growers. By 1982, FIAH had acquired not only the know-how to process tabasco peppers, but also was exporting pepper mash to its former supplier in the US. This business led to record exports of US$500,000 for that year. As a result of that operation, FIAH picked up yet another sales line, pickles, one of FIAH's most promising export items to the US.

4.24 The Catalyst. The driving force behind FIAH's export success was local businessman, Henry Fransen, Jr. He had a good sense for business opportunities and was also a realistic strategist, recognizing the need to build up his company slowly. For example, when he purchased significant equipment in 1979, it was on the basis of careful market research and an established local sales base. Fransen, Jr. also had the necessary confidence in his decisions; when he bought new equipment, it was over the strong opposition of a risk averse father.

4.25 A further ingredient in Fransen's success was his ability to find and use foreign collaborators to fill the gaps in technology, know-how and support. For example, he arranged for licensing agreements with R.J. Reynolds (US), Lea and Perrins (UK) and National Oat Company (US). As a result of a licensing agreement with W.B. Reiley (US) for mayonnaise production, be captured 40% of the Honduran market within three years. He also successfully enlisted the support of organizations in the US and Honduras that promoted small enterprises and provided training and expertise. Contacts with Honduras' Foundation for Business Research and Development (FIDA) resulted in advice from IRC, a California group, on packaging and marketing for the US. IPAC, a US marketing consulting group and former division of Sears World Trade, is assisting in setting up a joint venture between FIAH and a US company to expand and diversify FIAH's pickle exports and to launch production of sweet banana chips on a larger scale. Project SUSTAIN (Sharing US Technology for Aid and Nutrition) helped Fransen, Jr. with training at Vlasic foods inn the US for the manufacture of pickles. During that training, Fransen, Jr. secured a contract to supply Vlasic with four million pounds of baby dills a year. Based on FIAH's aggressive but sound business management, OPIC has provided Fransen, Jr. with three loans for purposes of expansion. Several joint ventures in the pipeline are likely to give a further boost to FIAH's exports.

4.26 Other factors. FIAH's successful exports are the result of the catalytic role of Henry Fransen, Jr. Other factors helped:

- o Policy environment. Business incentives were favorable relative to other countries in the region; however exchange rates and duty-free access to imported inputs have not been adequate to assure equal footing with foreign competitors.

- o Endowments. Honduras has abundant resources, notably agricultural land, a pool of inexpensive and easily trained labor.

- o Market access. Honduras proximity to the US market is an advantage.

D. Small Diamond Exports from India

4.27 Summary. India has become the world's largest exporter of cut and polished small diamonds. Its success can be traced largely to indigenous businessmen who have served as catalysts in this dynamic industry. The community of diamond merchants in Bombay and Gujarat was the first to organize and promote diamond industry and trade. In 1949, several members of this community set up the Diamond Trading Company of India, which, in collaboration with a foreign specialist, conducted initial technical training of artisans. Subsequently, several members of that group moved to Antwerp, Belgium, the world's diamond center, where they built an extensive and vital network of suppliers and buyers. These individuals served as catalysts by successfully adapting to the changes in India's diamond industry and the world market, they exploited India's comparative advantage in small diamond cutting and polishing, while surmounting the policy constraints that affected the industry inn its early years. These private catalysts also were able to establish the

network of international connections needed for reliable diamond supplies and for a solid customer base.

4.28 Export performance and other benefits. India has emerged in recent years as the world's largest exporter of cut and polished small diamonds, surpassing Israel and Belgium. International sales of these diamonds, India's fastest growing major export, reached about US$1.5 billion in 1986/87; net foreign exchange earnings were about $400 million. Exports increased substantially from 1985/86. In 1970, India had a 2% world share of cut and polished diamond sales; today India's share is 25%. India's diamonds go to more than 40 countries; the US, Japan, Hong Kong and Belgium, which account for 80% of India's diamond exports.

4.29 The success of the diamond exports has inspired efforts to diversify production. India is now aiming for part of the trade in "sawn" diamonds, again in competition with Israel and Belgium. Sawn diamond production will require modernized production techniques and equipment, and significant new capital. India also hopes to manufacture studded jewelry (tiny stones set in gold); however this is a business that faces more constraints, including restrictions of the Gold Control Act on the manufacture of gold jewelry.

4.30 The diamond export industry is a significant source of employment, accounting for about half a million full-time and seasonal diamond cutters and polishers.

4.31 Background. India has a long history in the diamond trade. Until the 18th century, the only source of large diamonds in the world were its Hyderabad mines. Over the centuries, a flourishing industry emerged around the mines, with Indian artisans developing specialized skills in diamond-cutting and jewelry-making.

4.32 Although the mines are no longer productive, India has continued putting its skills to use, this time by specializing in the cutting and polishing of small, rough diamonds. As these stones are not suitable for machine cutting, the industry is labor-intensive. India's large pool of low-cost artisans gives it a strong competitive advantage inn this industry; the cost of cutting and polishing a diamond in India is US$5, versus $35-40 in Belgium. The capital requirements are small, with most cutters and polishers working in small workshops or at home, using relatively inexpensive equipment costing about $100 per worker.

4.33 The Catalyst. How did India become the largest exporter of small cut diamonds? The first catalyst was the original group of far-sighted Indian businessmen who formed the community of diamond merchants in Bombay and Gujarat. As their industry changed, they were able to adapt and maintain profitable operations. After India's independence, the promotion and organization of India's diamond industry and trade were carried out by a small group of that community of diamond traders, prominent among whom were H.H. Jhaveri, H.B. Shah and M. Raichand and Sons, who together set up the Diamond Trading Corporation of India in 1949. As part of that project, they brought in a Belgian technical advisor, Pierre de Weiuv, and arranged training in cutting

and polishing diamonds for about 300 artisans. Although the Diamond Trading Company of India is no longer in existence, it contributed significantly to generating an awareness of the potential of the diamond industry, as well as providing the initial base of technical know-how.

4.34 Some of that group of promoters, notably the Jhaveris and the Shahs, eventually moved to Antwerp, Belgium, the world's leading diamond center. There they paved the way for the development of Indian export channels. The complementary role that the community in Antwerp and India played in India's diamond business--as an intermediary for importing roughs and for marketing Indian polished diamonds--was a key factor in the industry's expansion. Moreover, through Antwerp, Indian businessmen had access to financing, an essential element in the diamond trade.

4.35 Another vital factor in the phenomenal growth of the industry was the close relations that Indian traders and manufacturers established with the Beers' Central Selling Organization (CSO), the leading brokerage house. In this regard, Benjamin Honas played ann important role in the early 1960s; his faith in the Indian diamond industry helped build trust between CSO and Indian diamond traders.

4.36 In parallel with this development of external networks, Indian institutions were established including the Gem and Jewelry Export Promotion Council in 1966. Its members, all registered exporters, grew from 238 in 1966 to 2,500 in 1986. The Council has established gem laboratories in Jaipur and Delhi and has training schools in Surat and Jaipur. In collaboration with the Ministry of Commerce, the GJEPC set up a Indian Diamond Institute at Surat which provides a variety of training courses, and cultivates contacts with the Antwerp diamond and other export centers. The institute also developed a jewelry export project in the free trade zones of Bombay and Delhi; the project has resulted in Indian diamond manufacturers entering the fine jewelry export market, in association with such groups as Cartier and Pierre Cardin.

4.37 Other factors. The small-diamond industry has benefited from other supporting factors:

- Policy environment. In the early years, the Indian Government provided little support to the diamond industry. However, as it came to realize the industry was an important source of jobs and foreign exchange earnings, the Government gradually initiated arrangements to promote the industry. Duty-free imports of rough diamonds and polishing powder made from very small diamonds were permitted. Pre-shipment export financing was made available, while the banks and the Reserve Bank of India were persuaded to extend loans based on the reputation of the borrowing firm, rather than requiring collateral. Foreign exchange settlements were expedited. Finally, to encourage efficient cutting, Government reduced the duty on imports of equipment from 40% to 25% ad valorem. The policy environment appears to have come close to assuring Indian diamond manufacturers equal footing with competitors.

- o Endowments. The wages of Indian diamond workers were low.
- o World market demand. The demand for small diamonds rose, as consumer preference shifted toward less expensive jewelry and lower value diamonds.
- o Supply of raw materials. The world supply of rough diamonds was growing.

E. Semi-Processed Cocoa Exports from Cote d'Ivoire

4.38 Summary. Cote d'Ivoire has entered the semi-processed cocoa export market, as a way of earning foreign exchange from low-grade beans, which did not have a market in unprocessed form. The initiative came from the Cote d'Ivoire Government. The Government set up two joint ventures with a private French company, Barry Sucres et Denrees (the Barry Group), which became the backbone of a now thriving cocoa processing industry. The Barry Group has provided the expertise and marketing channels that have enabled local companies to take advantage of policy breaks and to find and exploit niches in the highly competitive international processed cocoa market.

4.39 Export performance and other benefits. Processed cocoa products account for about 20% of Cote d'Ivoire's annual cocoa exports and have become the third major source of export earnings. In 1986, the cocoa processing industry earned about US$200 million in foreign exchange, up from about $132 million in 1980. In 1987, Chocolaterie-Confiserie de Cote d'Ivoire (CHOCODI) , one of the main cocoa processing companies, exported 17,500 tons of chocolate coating to the competitive European market and to African markets.

4.40 Background. Exporting processed cocoa products is a difficult and risky business; international competition is fierce, technology requirements are high, and strong marketing expertise and networks are required. To maximize the chances for success, Cote d'Ivoire decided to take advantage of the expertise of foreign multinationals that had the ability to transfer needed technology and bring to bear well-established international marketing channels. The first joint venture with Barry was Societe Afaricaine de Cacao (SACO), created in 1965 with 65% Barry ownership and 35% Cote d'Ivoire Government ownership. Cote d'Ivoire first and largest cocoa processing plant, SACO, is involved in primary processing and turns fragile, unexportable cocoa beans into cocoa liquor, butter and cakes. The second joint venture was CHOCODI, established in 1976, with the Cote d'Ivoire government taking a 49% shareholding, the Barry Group 51%. CHOCODI is involved in chocolate manufacturing.

4.41 The Catalyst. The catalyst for Cote d'Ivoire's breakthrough in semi-processed cocoa exports is an interesting partnership: the Cote d'Ivoire Government and the French, privately owned Barry Group, on the other. The Government was instrumental in setting the stage; it made the decision to pursue cocoa processing, arranged for Barry's involvement, and created a policy environment which encouraged the industry.

4.42 The Barry Group brought to SACO and CHOCODI: expertise on international marketing and price negotiations; leverage with buyers and suppliers; and the capacity to respond effectively to rapidly changing world demand, due to its direct access to customers and extensive marketing network, including its industrial and commercial operations in ten countries. Barry also brought excellent operating techniques (including methods for control of raw material supplies, storage and packaging) and strong financial management. The Barry Group paid special attention to acquiring necessary state-of-the-art technology; SACO recently purchased new processing equipment, and CHOCODI has plans to modernize its cocoa butter processing equipment.

4.43 Also vital to the success of the joint venture was that the Barry Group provided extensive training to young Ivoirians from the higher technical and commercial schools on Barry's management and operational methods.

4.44 In choosing the Barry Group as its joint venture partner, the Cote d'Ivoire Government was getting an experienced, technically competent and well-managed exporter with excellent international contacts--a company that embodied the ingredients of export success. What ensured that success, however, was the ability of the Barry Group to transfer that experience and know-how to Cote d'Ivoire. These assets of the Barry Group were severely tested by the depressed cocoa market of the early eighties, in addition to the challenges peculiar to the industry--the technological difficulties of processing low-grade cocoa beans and the highly competitive export market. It passed the test.

4.45 The role of other factors. While the integrating function clearly was critical to this export success story, other factors contributed:

- o Policy environment. Government incentives included favorable tax treatment, duty rebates and tax breaks on exports of semi-processed products. Cote d'Ivoire's export incentives, implemented under the Structural Adjustment Program, have encouraged the more advanced processing industries. The Ministry of Agriculture and the Caisse Centrale de Stabilisation et de Soutien des Prix des Produits Agricoles (CSSPPA) have made special arrangements that allow for a reliable supply of cocoa beans and have offered rebates on purchases of lower grade beans for processing for export.

- o Endowments. Cote d'Ivoire is one of the major producers of cocoa and has a tradition of exporting cocoa beans.

F. Jamaican Garment Exports

4.46 Summary. United Fashions Ltd. of Jamaica has succeeded in exporting finished garments of high quality to the US market. This success can be traced to the effective collaboration of two catalysts: a local public agency that promotes foreign direct investment and an established Korean company with accumulated know-how and experience in export manufacturing and marketing. On the one side was Jamaica National Investment Promotion Agency Ltd. (JNIP), which conducted a well-crafted campaign to attract direct foreign

investment to Jamaica and then assured delivery of its promises. On the other side was SeBang Industries, Ltd., a major Korean garment manufacturer. SeBang had a good nose for business opportunities and the ability to exploit them. The collaboration of these two entities resulted in projected gross garment exports by United Fashions Ltd. of US$4 million in 1987--after just a year and a half of operations. What makes this success story remarkable is that unlike most other Jamaican garment producers, United Fashions handles all stages of the manufacturing process, from cutting to finishing (the CMT, or cut, make and trim method), increasing the local value added and advancing the Jamaican garment industry.

4.47 Export performance and other benefits. In 1986, United Fashions, a Jamaican manufacturer of fashion ladieswear--including skirts, blouses, jackets and shirts under a number of designer labels such as Jordan and Hana Sung II--grossed about US$1 million in export sales. In 1987, it was expected to gross $4 million. United Fashions has carved its own niche among the top garment manufacturers in Jamaica producing for the export market. Ninety-five percent of its exports go the US department stores such as Macy's and J.C. Penney, the rest to buyers in the UK.

4.48 SeBang opted to handle all stages of the manufacturing process, from cutting to finishing (the CMT method), even though doing so precluded it from benefiting from duty-free entry into the US, available under Sections 806 and 807 of the US Tariff Code. SeBang's approach may, however, have resulted in a higher net benefit to the company and to Jamaica because it has increased the local value added. A major factor in United Fashion's ability to pursue the CMT approach has been its access to inputs from East Asia that are favorably priced in comparison with those it would have had to import from the US.

4.49 United Fashions' export earnings contributed significantly to the growth in Jamaican garment exports, which rose from US$11 million in 1983 to $98 million in 1986, with further increases expected by the end of 1987; export sales totalled US$73 million in the first six months. Employment at United Fashions reached 500 between May 1986, when the company started, and September 1986, a significant contribution to improving conditions in a country that has been beset by major economic problems and a high level of unemployment. Most important, perhaps, is that through training, SeBang has transferred know-how in advanced garment manufacturing technology into Jamaica.

4.50 Background. What makes this performance compelling is that the company was only an idea in March 1986. By May 1986, it had begun operations, engaging in a very competitive export industry, with its targets the US and Europe. The story began early in 1986 in Korea, when JNIP, a dynamic government investment promotion agency set up in 1981, approached Korean businessmen about opportunities in Jamaica. Subsequently, Mr. Chang, general manager of SeBang Industries, Ltd., a major Korean garment manufacturer, declared that his company was "so impressed by the JNIP presentation in Korea that we decided to choose Jamaica over other locations in the Caribbean." United Fashions Ltd. was set up as a wholly-owned company of SeBang in May 1986.

Start-up was expeditious by any country's standards--two months--and immediately United Fashions was on its way in the export business.

4.51 The Catalyst. SeBang and JNIP, a private foreign company and a local Jamaican public agency, made this story a success. JNIP set the stage with what proved a compelling marketing effort. It then made sure those advantages were realized by helping SeBang establish its subsidiary quickly and efficiently. JNIP identified factory space in the Naggo Head Industrial Park, applied for the utilities, obtained approvals and delivered the government incentives. The speed and ease of start-up stood in marked contrast to the complicated, cumbersome and very lengthy administrative and legal procedures which prevailed until recently in Jamaica, and which are still common in most developing countries.

4.52 SeBang provided United Fashions with a package of the ingredients critical to successful exporting--highly effective management, effective training in advanced technology, efficiency of operations, and marketing skills and channels. Twenty-four SeBang technicians were brought to United Fashions to train local employees and help start operations. Utilizing its accumulated know-how and business experience, SeBang moved quickly and effectively to capitalize on the profit potential described by JNIP.

4.53 The quality of United Fashions' products has been excellent, due largely to the accumulated know-how in garment-making by the Korean firm. Inspectors of the Society Generale de Surveillance, the Geneva-based quality control agency, ranked United Fashions as one of the best factories i the Caribbean. Because SeBang had its own favorably priced supply of fabrics, which United Fashions could import duty-free into Jamaica, it decided to forego the 807 program associated with importing cut fabric inputs from the US and to pursue instead the CMT method of production. For a company to do its own cutting, sewing and total finishing seems overall to have been the most profitable approach. While United Fashions' garments are subject to higher duties on entering the US market, they yield greater total profit because it costs United Fashions substantially less to cut its own fabrics than to import them from the US.

4.54 Other factors. The core cause of United Fashions' success has been in the combined forces of JNIP and SeBang in taking advantage of Jamaica's assets:

- Policy environment. The Jamaican government assured an attractive foreign investment policy environment, in combination with the programs of JNIP. For example, export industries benefited from duty-free status for imported inputs.

- Endowments. The Jamaican labor force was English-speaking, cost-competitive, and rapidly trainable.

- Access to international markets. Some Jamaican manufacturers enjoyed flexible entry into the US market through the CBI programs and under Section 807 of the US Tariff Code, as well as to the European market through the Lome Convention. While United

Fashions did not take advantage of the 807 provision, it did benefit from easy access to the US and European markets.

- o NIC's industrial redeployment efforts. A number of East Asian NICs are engaged in industrial redeployment efforts involving a shift to more sophisticated high technology industries. They have accumulated technology and know-how available for transfer to other countries, including those in the caribbean basin. From 1983 to December 1987, Jamaica successfully lured some 18 Asian apparel manufacturing concerns that are employing about 11,000 Jamaicans, or about 50% of Jamaica's industrial work force. Asian investment in this industry represents about US$22 million, or nearly one-third of foreign direct investment.

G. Guatemala Shoe Exports

4.55 Summary. The export success of J.C. Torrebiarte, the general manager of COBAN, a Guatemalan mens shoe manufacturer specializing in basic shoe models, illustrates that ambitions to enter the world market, backed by a good quality product, a serious effort at developing external contacts, marketing and persistence, can succeed. COBAN has become a shoe exporter to the US market, on a modest scale. COBAN's US market entry was the sole result of Torrebiarte efforts--in the absence of a favorable policy environment or effective mechanisms to introduce potential foreign collaborators or buyers.

4.56 Export performance. COBAN, a Guatemalan shoe manufacturer, succeeded in selling approximately US$1.2 million of its products to the US in 1987, about 30% of its production. The export business has paid added dividends: a better corporate image, greater employee motivation, and buyers' interest in footwear from Latin America. Finally, other businessmen in Guatemala should benefit from GREXPO, a private exporters' association Torrebiarte and others in the private sector started, based on their experiences entering the world market. GREXPO is now pushing to get a more favorable policy environment and more effective institutional support for Guatemalan exporters.

4.57 Background. COBAN, a family business established in 1914, is the largest show factory in Guatemala, specializing largely in basic mens and work shoes. COBAN employs about 400 people. For most of its life, COBAN produced mainly for the local market. In the early 1970s, its manager, J.C. Torrebiarte, began looking at the possibility of exporting work shoes to the US market. With low labor costs, the company thought it could exploit a potential competitive advantage in basic shoe models since costs are the key in this market segment. Exploiting these potential advantages was difficult. COBAN lacked marketing expertise and contacts in foreign markets. The Guatemalan exchange rate was unfavorable, and under the country's trade regime, COBAN faced a 4% tax on exports. Duties on imported inputs were also high. COBAN's production scale was relatively small and its technology uncompetitive. Finally, international buyers generally perceived most Latin American footwear to be of low quality.

4.58 The Catalyst. In the mid-seventies, Torrebiarte decided to attend a US shoe exposition as a first step in a search for buyers. COBAN got some small orders from US buyers; having to ship small quantities to several low volume purchasers proved an administrative nightmare. Torrebiarte, now more familiar with the US market, called on a friend in the US shoe business and asked him to find COBAN a US distributor. The arrangement with a small distributor in Miami, Florida, simplified and stabilized COBAN's export marketing operation and aided the expansion of its export business. What the Torrebiarte story highlights is the importance of entrepreneurial vision--and persistence in overcoming obstacles.

4.59 Other factors. COBAN's success came about despite relatively unfavorable factors in the environment. Torrebiarte's accomplishments are all the more remarkable given that he faced a policy environment that failed to assure equal footing with foreign competitors in terms of the exchange rate, duty-free imported inputs and easy access to trade financing.

H. Software from Hungary

4.60 Summary. Hungary is now on the map in computer software. The Institute for the Coordination of Computer Techniques (SZKI), a major government R&D facility, played a catalytic role in developing Hungary's software programs and facilitating exports--now worth multi-millions of dollars--by overcoming many obstacles. Hungary's solid technological base enabled SZKI to adapt foreign technology for domestic and, eventually, international use. However, given Hungary's late start in computers, its ban on imports of hardware from the west, and its weak image, its export success with software--which requires effective marketing and technological superiority--is noteworthy.

4.61 Export performance. Hungarian software achieved an international presence in the 1980s, particularly its computer games and M PROLOG, an artificial intelligence programming with language based on symbolic logic. Software exports in hard currency increased from UF$4.7 million in 1983 to $14.3 million in 1986. Nearly 70% of these exports were geared to markets in neighboring Austria and the Federal Republic of Germany.

4.62 Background. Official doctrine banished computer technology from Hungary's laboratories in the early 1950s; computer science was only rehabilitated in the late 1960s, in the wake of the economic liberalization movement and the "New System of Economic Management." Hungary's international competitiveness was constrained by a lack of adequate management and marketing techniques and by inadequate and outdated hardware. The country's breakthrough into the software export market came about somewhat unexpectedly. In 1981, the Fifth-Generation Computer Project of Japan chose PROLOG as the kernel language for its new computer family. PROLOG had been devised in the early 1970s by a French scientist, but almost no major practical applications had emerged by the early eighties--except in Hungary. Experts there had developed some applications, particularly pharmaceutical research and architectural design. When PROLOG was selected for the Japanese project, Hungary's computer specialists already had extensive experience with the computer language, and some of their products were nearly ready for sale.

4.63 The Catalyst. SZKI, which had developed a significant technological base in the software field, entered the international market with M PROLOG (modular PROLOG), a simplified version of PROLOG that offered numerous applications: scientific information retrieval; software generation and analysis; computer architecture design; and manipulation of knowledge data bases. The first buyers were universities already involved with PROLOG; soon leading European industrial and government research institutions became interested, followed research departments of computer manufacturers. M PROLOG was sold in Japan under a licensing agreement with the sole agent of DEC in Japan. M PROLOG, now sold mainly in Europe, also is exported to North America, Japan and Australia, primarily by local distributors.

4.64 The fact that Hungary was able to enter the international software market can be traced largely to the innovative research capacity of SZKI and its efforts to market its products. SZKI continues to pursue new applications for M PROLOG, and undoubtedly will respond to other areas of potential competitiveness, such as knowledge-based systems, for which it already has the tools and some encouraging early results in the development of expert systems. Another promising area is educational software.

4.65 Other factors. SZKI was able to benefit from some positive factors, in particular:

- Policy and institutions. In 1968-69, the Government, which had banned computer science, shifted its policy to encourage development of computer science and the software industry. It initiated a program to promote computer technology and its applications. Under the program, institutions such as SZKI were created. In addition, it set up SZAMALK, one of four R&D informatics institutes. SZAMALK has a computer education center that trains approximately 1,000 specialists a year. More recent reforms have led to a gradual shift from a centrally controlled, planned economy to a more market-oriented one. These reforms are partly a result of Hungary's extensive dependence on foreign trade; 50% of GNP comes from exports.

- Endowments. Hungary developed a solid base of scientific and mathematical skills. It has housed inventors, pioneering in such areas as transformers as well as the Rubik's cube. It has also been the home of mathematicians and engineers such as Koizma and Wigner, who played decisive roles in the development of electronics and computer science. Hungary also has developed a specialization in software diagnosis. Given the ban on technology imported from the west, Hungary has had to make the best of its antiquated hardware. That constrained environment required effective software diagnosis, to be able to check how efficiently programs were operating. The Hungarian software industry has also shown an ability to deal with major constraints, including: the lack of adequate and up-to-date hardware; generally inadequate management and marketing methods; and the negative image that

high-tech products from communist countries face in western markets.

- o Market demand. The world software market was large and buoyant. In the US alone, this market went from US$14 billion in 1985 to $17 billion in 1987.

I. Brazil's Aircraft Exports

4.66 Summary. Brazil has come up with an export winner--aircraft--a product that NICs have had great difficulty selling internationally. The catalyst was Empresa Brasileira de Aeronautica (EMBRAER), a local joint public-private company that proved adept at exploiting market niches and utilizing foreign technology. It pursued realistic product development and sales strategies. EMBRAER specialized in producing simple, inexpensive and reliable aircraft, particularly well-suited to third world conditions. This strategy provided a reliable sales base, and offered export potential. EMBRAER was also flexible in taking advantage of foreign technology and know-how through licensing arrangements and joint ventures reflecting specific needs.

4.67 Background. Brazil's first attempts at designing aircraft date back to 1910. Not until the 1970s did the aeronautical industry take off, with the creation and achievements of EMBRAER. Its success is remarkable, given that most NICs rarely do more than assemble imported parts and manufacture for the domestic market under licensing agreements. EMBRAER developed a successful aircraft industry thriving internationally in a very competitive, high technology industry. In the late 1960s, the Bandeirante, a small airplane originally was designed by Centro Tecnico Aerospacial (CTA) for the Brazilian Air Force. It became apparent that the demand for small, economical commuter planes and that the Bandeirante could be modified for that market.

4.68 The Catalyst. The prospect of this commercially viable aircraft project, together with the Brazilian government's goal of achieving greater self-sufficiency in high technology industries, led to the creation of EMBRAER in 1969. Two organizational features contributed to EMBRAER's success: (a) it was set up as a mixed company (51% government, 49% privately owned) that was to operate according to rational economic criteria and to be self-sufficient; and (b) it was to benefit from private investment.

4.69 EMBRAER, with the assistance of a French aircraft designer, adapted the eight-passenger Bandeirante to larger sized versions, including a popular 20 passenger model. By 1975, EMBRAER was exporting 5 Bandeirantes and 10 Ipanemas (a small agricultural spraying plane) to Uruguay, with sales of US$5 million. Togo and Chile were the next international customers. EMBRAER decided to participate in the 1977 airshow at Le Bourget, France; it won international recognition in the small-size aircraft category--and new clients, including France, the UK and Australia.

4.70 In 1978, EMBRAER obtained US Federal Aviation Administration (FAA) certification, and was able to enter the US market. It set up its own sales and support facilities in the US in 1980. By 1984, it had sold over 100

Bandeirantes to the US, adding to the 100 other international sales and 200 in the Brazilian market. EMBRAER continued to diversify for exports. The Brazilia, a wide-body 30-passenger turbo prop aircraft designed primarily for the international market, had its first deliveries in 1985. Brazil also won the UK Royal Air Force trainer competition with its military aircraft, such as the Tucano prop trainer, which it is now building in England. The Tucano is also being sold on a large scale to Egypt. A joint venture with Aeritalia and Aermacchi, both Italian companies, to produce a military jet fighter, the AMX, is expected to produce its first deliveries in 1988. A licensing agreement with Piper to produce general aviation aircraft did not result in any exports, but it has been selling domestically.

4.71 How did EMBRAER succeed where others failed? A key factor was its efficient and realistic corporate strategy in product development and marketing. EMBRAER focused on aircraft that were adapted to brazil's needs, thereby ensuring itself of at least a viable domestic sales base. At the same time, it looked for aircraft that also had export potential. Another striking factor was the speed with which EMBRAER seized on market opportunities in areas where it had a potential competitive advantage and could exploit product niches.

4.72 Another notable feature was EMBRAER's capability in unbundling technological packages, begun with the Bandeirante. EMBRAER was able to identify the missing elements of foreign technology and know-how that it could purchase through licensing and joint venture agreements, such as the offset arrangement with Northrop, the joint ventures with Aeritalia and Aermacchi, and the licensing agreement with Piper.

4.73 Other factors. EMBRAER's success stemmed from:

- Policy environment. The Brazilian Government's strategy was followed by a creative, yet hands-off approach toward EMBRAER. It offered incentives for exports, including export financing and duty-free imports of inputs for the industry, including equipment and raw materials. It provided some protection to the aircraft industry, particularly in the Piper Project. The Government required EMBRAER to operate as a commercial venture without subsidies. An important measure in promoting private investment was a successful tax incentive. About 95% of total investment in 1983 was from private sources.

- Market demand. The oil price increases and deregulation of the US airline industry contributed to the growth in demand for small-size, economical commuter aircraft.

- Endowments. The wages of skilled workers in the Brazilian industry were relatively low and the skills strong.

V. IMPLICATIONS OF THE PRELIMINARY FINDINGS FOR FUTURE WORK

5.01 Based on this preliminary review of export success stories in eleven non-East Asian countries, some important hypotheses emerge that merit further study, with careful attention to their relation to outward-oriented development strategies.

A. Catalyst as Creator and Transmitter of the Supply Response

5.02 The assumptions often underlying the conventional view of the supply response by developing countries moving from an inward-oriented to an outward-oriented development strategy are that: (a) well-defined international markets for specific products exist that can be exploited; and (b) companies are hindered from entering those markets by inappropriate domestic policies (overvalued exchange rate, high domestic protection, imperfect financial markets, etc.). It is assumed that once the policies are corrected (through devaluation, trade liberalization, financial sector liberalization), then firms in developing countries are able to respond to world market demands.

5.03 Based on the eleven success stories presented here, this view appears to overlook other elements critical to initiating outward-oriented development, particularly in countries weak in international marketing, technical and management experience, and know-how, and without a capacity to package this know-how and combine it with local resources and external financing. The most critical ingredient for successful entry into the international markets in these success stories was almost always the presence of a catalyst, defined as an individual or company (domestic or foreign) or a public agency, or a combination of these, that (a) pioneered the process of development in an outward-oriented direction before anybody else in a sector, (b) packaged the needed know-how with domestic endowments and external financing, and (c) diffused the experience and know-how it learned in that initial development process. Using the terminology of supply response, the catalyst served as "creator" and "transmitter" of the supply response. The fact that the supply response can be created and transmitted by a catalyst (rather than stemming spontaneously from all firms simultaneously in response to world market demands and rational policies) suggests that the assumptions underlying the conventional view are incomplete.

5.04 What are some of the key elements in the success of the exporters described here that the conventional view on outward-oriented development tend to overlook or underestimate? What were the characteristics of the catalysts in the eleven success stories, and how did they overcome obstacles to initiate development in an outward-looking direction? The key elements appear to include:

- Technical, marketing and managerial know-how. This factor was critical in starting up the manufacture of exportable goods and in entering the international market on a competitive basis. Some of the catalysts already embodied this know-how and had the capacity

to transfer it effectively to a new export activity in a developing country. Others did not have all the necessary ingredients but were still able to create the necessary package by drawing on other foreign and domestic resources.

- o Capacity to package that know-how in combination with capital and local resources. The effective application of know-how to a specific export endeavor in a developing country was what ultimately resulted in actual production of exportable products and their overseas sales. This capacity was as critical as the know-how itself. All the catalysts embodied that capacity.

- o Better access to information. Companies in the third world are hindered often by inadequate information on world market demand. The catalysts described here were able to provide access to good information through existing channels or were able to establish the necessary flows of information. Where competition in the world market was imperfect, in some instances the catalysts created the demand through such means as product and market differentiation or their own established marketing network.

- o Capacity to undertake export activities despite unfavorable conditions in the surrounding environment. Perfectly rational policies are desirable. However, developing countries can rarely afford to wait until they are achieved before initiating outward-oriented activities. The catalysts in several of the success stories reviewed here initiated exports under the most unfavorable policy environments. In still other instances, the catalysts were instrumental in creating the minimally required policy environment.

- o Diffusion of know-how and the importance of experience. Outward-oriented activities by companies in developing countries do not occur, as noted, spontaneously in all firms, particularly if they have had little experience in the world market. While this hypothesis runs counter to conventional wisdom, it is supported by the ten success stories reviewed here. The role of catalysts was not only to create a supply response but also to transmit that response to other firms in a given product group.

5.05 Technological and managerial know-how, a capacity to package the ingredients that are critical to initiating outward-oriented development, access to good information, an established network of marketing channels, and name recognition in the world market typically are the products of an individual, private company or public agency's accumulated experience. The catalysts generally had long track records, although in some cases they served as catalysts by virtue of being able to put to use the required experience of other individuals or companies. The minimum requirement for classification as a catalyst is a capacity to put togetner a package of the critical factors for outward-oriented development.

B. The Role of Foreign and Domestic Catalysts

5.06 In the eleven export success stories, the catalyst was a pioneer agent that took the initiative to transform innovative ideas into definite actions. That process always involved: (a) putting together the ingredients needed for successful exporting, such as suitable technology, marketing skills and networks, and managerial know-how, in addition to financing or capital and local resources, and (b) applying that package of assets effectively, often overcoming obstacles in the developing country and international environment.

5.07 The specific role played by catalysts, foreign and domestic, in the ten success stories differed according to whether local catalysts had the capacity to package the critical factors. In the cases of countries at the lower end of industrial development with respect to a given export product, where local capacity to package the critical assets needed to initiate development was inadequate--Jamaica, Zambia, Cote d'Ivoire, Bangladesh, Colombia and Indonesia--foreign catalysts from either NICs or OECD countries provided the package of technical, marketing and managerial know-how in addition to capital resources. In these cases, the role of local catalysts was to attract the right foreign catalysts. These foreign catalysts succeeded in speeding up the timetable for outward-oriented development. In the cases of Hungary and Brazil, competent local catalysts were able themselves to package the elements for export success. As a result, the role of foreign collaborators was smaller. However, foreign agents still were integrally involved in the export process in those countries with relatively sophisticated technological bases; their role was more that of supplier of specific missing ingredients. Examples are the Honduran food processing, Guatemalan shoe manufacturing and Indian diamond manufacturing for export, where foreign catalysts simply supplied specific elements missing from the accumulated know-how of local catalysts. In these cases, it is useful to trace how those local catalysts were able to build their capacity to package the critical factors for export-based development.

5.08 Packaging the critical factors (such as technical, marketing, and managerial know-how) that are needed for entering the world market is particularly critical for countries in the early stages of export development. The only way to acquire this capacity is through long association with foreign catalysts who embody such capacity. Since Korea had acquired the capacity from Japan before starting its outward-oriented development strategy in the early 1960s, it did not have to rely much on direct foreign investment (DFI) and transnational corporations (TNCs) for its light manufactured goods exports.[15]/ However, there are some who misinterpret the Korean experience, as if the role of DFI and TNCs is not necessary for manufactured exports even in developing countries that do not have the capacity to package the critical factors.[16]/

15/ Westphal, Rhee, Pursell, 1981.

16/ UN Center on TNC, 1983, pp. 18-23.

5.09 The vital part played by foreign catalysts in the eleven stories is quite consistent with the emerging view on the critical role of TNCs in the transfer of technical, marketing and managerial know-how to developing countries--a role more important than the transfer of financial resources associated with DFI by TNCs.[17]/

5.10 However, the eleven stories described here reveal that there are many other modes for achieving collaboration between foreign and domestic catalysts than the conventional DFI from TNCs. First, individuals unassociated with TNCs can act as catalysts. Second, technical and marketing agreements, subcontracting arrangements, and many other modes are being used even though knowledge on their comparative merits is still sketchy.[18]/ The UN report on TNCs acknowledges the growth of smaller TNCs as part of the process of transnationalization whereby firms with specific competitive advantage are successful in exploiting those advantages in a transnational setting.[19]/

5.11 In the stories reviewed here, the success of the catalysts depended on their achieving an appropriate mix or collaborative effort of domestic and foreign catalysts. It is helpful to examine who initiated the collaborative efforts and when. In the case of Zambian garment, Colombian flower, Bangladesh garment, and Indonesian plywood exports, the initiative for collaboration came from private, foreign catalysts. In the case of Jamaica's garment, Cote d'Ivoire's semi-processed cocoa, Hungarian software and Brazil's aircraft exports, the initiative came from local, public catalysts, whereas in Honduras, a local, private catalyst provided the initiative for food processing exports. In all three groupings, however, success involved some close ties between domestic and foreign agents.

5.12 The eleven success stories reveal several instances in which public agencies in developing countries played a vital, catalytic role themselves, as well as promoting other catalysts. That role extended beyond the assurance of appropriate export incentives and involved effective handling of the problem of imperfect information and facilitating the entry of catalysts into the export business. Jamaica's JNIP was active in disseminating information to potential foreign catalysts and in promoting their entry into Jamaica's business community. In the case of Cote d'Ivoire's cocoa processing, the Government attracted the foreign catalyst through an active search for a joint venture partner with certain characteristics and then through equity investments in the joint venture. In Hungary and Brazil, a public agency served as the catalyst--alone in the former and jointly with the private sector in the latter. In India, training by a public agency as well as by local private catalysts was an important factor in developing diamond exports.

17/ UN Center on TNC, 1988, p. 6.

18/ Helleiner, 1987, pp. 70-71.

19/ UN Center on TNC, 1988, p. 3.

5.13 Looked at from the opposite perspective, start-up of the shoe export business of a domestically successful manufacturer in Guatemala could have occurred much earlier if effective public assistance in locating foreign collaborators or buyers had been available. Similarly, it is questionable whether the companies in Zambia and Colombia could have exported their military uniforms and flowers as early and as extensively as they did had it not been for the initiatives of foreign catalysts.

C. Diffusion of Foreign Know-How

5.14 It is noteworthy that most foreign catalysts in the eleven success stories had an important impact beyond the success of an individual company. They also had a powerful diffusion and learning effect on many other companies and entrepreneurs in a given industry and in other industries. This effect may have been more important to the developing country than the initial exports themselves, in that they were often the genesis of a rapid and reinforcing expansion of an export industry. Often efficient diffusion of know-how was not a deliberate objective of a catalyst. Success bred success through demonstration and movement of managerial and technical staff who gained experience in the pioneering venture, and took their embodied know-how with them.

5.15 Examples of the importance of this diffusion of the accumulated know-how of the initial foreign catalysts can be seen in Bangladesh's garment industry, Indonesia's plywood industry, and Colombia's flower exports. The success of a single export venture in both countries led to extensive and rapid expansion of the industries to which those ventures belonged. While criticism has been leveled at assembly-type, off-shore, direct foreign investments because of concern over the depth of the technical transfer to developing countries, the anecdotal evidence provided here suggests that the learning and diffusion of technological, marketing and managerial know-how, together with the capacity to package the critical factors introduced by foreign catalysts and matured through export experience, are one of the most important gains stemming from an outward-looking strategy.

5.16 It is desirable to identify the various elements responsible for success or failure in know-how transfer from foreign catalysts or firms, including transfer of the capacity to package the critical elements for development. Such a study should identify the most effective specific modes of diffusion, such as labor mobility or training in the developed or developing country. Further, to evaluate the impact of catalysts on the diffusion of know-how, it may be desirable to study how the foreign catalyst acquired and mastered the know-how initially. For example, the role of foreign catalysts in the Indonesian plywood industry cannot be evaluated without studying the process of know-how acquisition and mastery in the Korean and Taiwanese plywood industry from the 1930s to 1960s. In turn, how Japan became the best of all nations in "technological borrowing"[20]/ would be relevant in understanding Japan's influence on Korea and Taiwan Province's technology mastery.

20/ Peck, 1976.

5.17 The critical importance of on-the-job training (OJT) in skill formation, as found in our case stories, confirms the important findings of a comparative microstudy of factory work skill formation in several manufacturing sectors in Japan, Thailand and Malaysia.[21]/ The depth of skill formation in developing countries can be achieved only through OJT under the guidance of highly skilled personnel. Since OJT is informal and inseparable from working hours and place, technology can be transferred most effectively when both "transferors" and "transferees" work jointly on the shop floor rather than through training centers.

5.18 The findings that the transfer of skills occurred most effectively through mobility of foreign technical personnel and domestic skilled workers who had worked in other factories confirm the Korean exporter survey results.[22]/ Similarly, the role of foreign buyers and foreign suppliers of machinery in technical transfer could not be overlooked, just as in the case of Korean export industries.

D. Inducement to Foreign Catalysts

5.19 What induced the foreign catalysts to enter business in another country? Whatever motive the foreign catalysts had for wanting to become involved in developing country exports, they would not have done so unless there had been a good prospective match with a domestic collaborator or the possibility of setting up and operating a subsidiary effectively. In the case of Indonesia's plywood exports and Jamaica's garment exports, the foreign catalysts were interested in expanding and taking advantage of production possibilities not feasible at home. They had the technology, know-how, management, market base and experience to produce certain types of exports but diminishing domestic opportunities to exploit those assets competitively. At the same time, Jamaica and Indonesia had a comparative advantage in those export areas but no domestic companies able to exploit the opportunities for want of experience, know-how, and financing, the same assets the foreign catalysts possessed. Good matches were made. In the cases of Zambia and Cote d'Ivoire, their demand for inputs was matched by the supplies of OECD firms. In sum, foreign and domestic catalysts were agents able to take the initiative to capitalize on potential new inter-dependencies stemming from changing comparative advantages. Given the critical role of local catalysts, cultivating them should be an important part of an outward-oriented development strategy.

5.20 Realizing that a lack of information on opportunities for collaboration between small and medium size TNCs and local businessmen in developing countries could be a major constraint on effective collaboration, the UN report on TNCs suggests that one role [23]/ of multilateral development institutions is to develop the necessary information systems.

21/ Koike (1987) and Koike and Inoki (1987).

22/ Rhee, Ross-Larson, Pursell, 1984.

23/ UN Center on TNC, 1988, p. 7 and p. 204.

E. Policy Environment

5.21 Factors other than the catalysts were important but did not appear to be as determinant as the catalysts. Given initial conditions of large policy distortions and underdeveloped institutions, the developing countries studied here could rarely afford to wait until perfectly rational policy environments were achieved to promote development in an outward-oriented direction. Rational domestic policies might have made the start-up of exports easier and faster but would have been no guarantee of success without the catalysts, while irrational policies made business harder but clearly did not rule out success as long as the catalysts persisted. In fact, one of the foremost characteristics of catalysts was a willingness to proceed in times of adversity and a capacity to find ways to work around obstacles. It took someone or some institution to spark the whole development process in an outward-looking direction by putting endowments to use, adding the missing elements and overcoming problems including irrational policies, starting from with one product, firm and project.

5.22 Regardless of the ability of catalysts to succeed under poor policy regimes, a rational policy environment helps their emergence, be they local and foreign, and the diffusion of their success. What, in the context of the growth of exports, constitutes a rational policy environment? The majority of the anecdotal cases indicates that as far as export incentives are concerned, unrestricted access to imported inputs at world market prices, to financing at appropriate costs, to investment licensing, and realistic exchange rates are the most important factors in putting exporters on an equal footing with foreign competitors. In a few cases, however, catalysts succeeded in initiating exports even in the absence of those minimum conditions. In other cases, catalysts were instrumental in getting the government to implement rational policies. In turn, efficient administrative arrangements were critical in implementing rational export policies.

5.23 It is encouraging that there has been marked improvement in developing country policies towards DFI from TNCs. The conventional attitude of confrontation is being replaced by a pragmatic approach, and the assumption of conflict has largely given way to acceptance of mutually beneficial cooperation between host developing countries and TNCs.[24]/

F. Implications for Development Strategy

5.24 Further in-depth research into the issues raised by this anecdotal review of export success stories in eleven developing countries is planned by PPR's Industry Development Division. Such research is expected to contribute significantly to the design of a workable and realistic industrial development strategy for countries in the very early stages of manufactured exporting. Pursuit of an outward-looking development strategy will not occur automatically or simultaneously at all firms in an economy that lacks not only techni-

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24/ UN Center on TNC, 1988, p. 9.

cal, marketing and managerial know-how, but also the capacity to package the various elements needed for initiating exports.

5.25 The experience of the last two to three decades has established the wisdom of pursuing an outward-looking development strategy as a basis for efficient industrial development. That principle holds despite pessimism over the protectionist threat and market limitations in both developed and developing countries. However, the most crucial questions for a country that lacks experience in international markets--that lacks the technical, marketing and managerial know-how to produce and sell manufactured export goods, that lacks the capacity to package this know-how and combine it with local resources, and that has a highly distorted policy environment--are how to start the process of development in an outward-looking direction in the first place and then how to transmit the process effectively to other firms in a given sector and to other industries. An equally important question has to do with the appropriate, specific sequence of policy and administrative instruments and institutional arrangements at the micro level of individual public and private sectors.

5.26 The Catalyst Model of Development. Based on the eleven success stories reviewed here, a catalyst model of development emerges that can serve as a hypothesis for future research. The catalyst model of development aims at providing feasible and practical answers to the above questions, particularly for a developing country facing the three most unfavorable initial conditions: (i) the absence of the critical factors needed to enter the international markets; (ii) the non-availability of a local capacity to package those factors; and (iii) extremely distortionary policies and underdeveloped local institutions, including market and administrative mechanisms.[25/]

5.27 Model for Initiating Development. Development is a dynamic process in which self-generating mechanisms may emerge once action is initiated. However, when initial conditions are unfavorable, movement toward development can hardly be activated by all firms in an industry and all sectors in a country spontaneously, as the conventional view presumes, no matter how successful the country is in correcting the policy distortions. To ignite development in an outward-oriented direction, a first spark must be occur. In several of the case studies reviewed here, that spark was the collaborative effort of local catalyst, who mobilized necessary local resources, and foreign catalysts who brought the technical, marketing and managerial

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25/ It may be argued that the catalyst model of development presented here does not capture the development process of the East Asian economies, which succeeded in development on the basis of an outward-oriented development strategy, inasmuch as their initial conditions in the 1950s were much more favorable than those indicated here. That perception may be one reason the success of East Asia has yet to be explored accurately. A proper study must begin in the Japanese and British colonial periods as indicated in the case of Korea's skill formation for later success in plywood exports, during which some of the foundations for later development were laid. At that time, initial conditions were similarly unfavorable.

know-how to produce and sell manufactured export goods. The foreign catalytic agents packaged those factors with the local resources and initiated entry into the international markets using their established marketing networks and company names. After the initial success, the catalysts transferred the success ingredients to other companies in the sector. Foreign and local catalysts can even influence the policy environment required for exporters to compete in international markets. In short, the catalyst model of development is a model for initiating development in an outward-oriented direction in a developing country with very unfavorable initial conditions, based on the pioneering efforts of foreign and local catalysts.

5.28 Model for Transmitting Development. The process of development initiated by foreign and local catalysts for one firm needs to be transmitted to other firms in the same sector and even to other sectors. This allows the tremendous externalities stemming from international contacts and competition to be diffused throughout the economy. Equally important as the catalysts are the transmitters of the development process, through the learning and the demonstration effects. Key questions are: what is the method to transfer the know-how of foreign catalysts to local catalysts? What is the most desirable way to transfer the capacity to package the various ingredients needed to enter the international markets? What is the best way to transfer the needed technical, marketing and managerial know-how? The capacity to package the various elements a foreign catalyst has acquired over a long period cannot be translated into blueprints or manuals, even in such a simple industry as garments. The best way to instill that capacity in developing country entrepreneurs appears to be through on-the-job training at a company operated by a foreign catalyst, and in the whole system of operations related to exporting. Furthermore, because of the indivisibility of the technical, marketing and managerial know-how, the ingredients for success are best diffused through the movement of skilled manpower to other companies and sectors. In short, the catalyst model of development is a model for transmitting throughout the entire economy the development initiated by catalysts.

5.29 Model for Sequencing Policy Reforms. Given extremely high policy distortions and underdeveloped institutions, a developing country can rarely afford to wait until perfect, rational policy environments are achieved to promote development in an outward-oriented direction. However, a country can and should provide foreign and local catalysts and other exporters with the minimum policy environment: that which provides equal footing with foreign competitors. In the cases reviewed, the equal footing policy environment provided for exporters involved: (i) a realistic exchange rate; (ii) speedy and unrestricted access to intermediate inputs/capital goods at world market

prices;[26] (iii) access to trade financing; and (iv) unrestricted investment licensing. The increasing industrial competence that evolves from competing in international markets and is transmitted throughout the economy by catalysts, promotes widespread confidence in governments and the business community to undertake appropriately sequenced policy reforms designed to extend equal footing policy environments gradually to import-substitution industries. In short, the catalyst model of development is a model for sequencing realistic policy reforms, starting from equal footing export incentives. This last must take place in parallel with the increasing industrial competence gained through world market competition initiated and transmitted throughout the economy by the catalysts.

5.30 State of the Art Review. The state of the art on the development issues raised in this paper has been surveyed recently by development economists. We sketch briefly how the catalyst model of development might fit into future research, while focusing on elements overlooked by past research. Reviewing key elements overlooked in the neoclassical framework for industrial strategies, Pack and Westphal (1986) stress a need to investigate the central empirical underpinning of industrial strategies i.e., factors determining dynamic efficiency. The catalyst model of development provides a framework for a serious empirical study on dynamic industrial efficiency, focusing on long overlooked real agents of development--catalytic agents that package elements needed to achieve such efficiency. In a recent survey of literature on the microeconomics of technical progress, Dorsi (1988) concludes that there is a significant gap between the "empirical stories" and the "analytic stories" of the theoreticians on economic dynamics and evolutionary process, which are still largely unexplored frontiers. The catalyst model of development provides a framework to explore these frontiers, with the objective of bridging the gap between facts and analytics.

5.31 Helleiner (1987), in his survey of literature about the role of DFI in the export development of developing countries, admits that despite the critical importance of the TNCs and DFI in initiating outward-oriented industrial development for particularly low-income developing countries, the state of the art in this vital area is still distressingly weak. The objective of the catalyst model of development is, precisely, to shed light on this most pressing development issue, focusing on the collaborative efforts of foreign and local catalysts. Reflecting on some neglected aspects in past development studies, Streeten (1984) stresses, among other things, three dimensions in the methodology of development economics: (a) historical, (b) global, and (c) micro-micro-economic (Harvey Leibenstein sense). The catalyst

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26/ For example, even though the effective rates of protection for Bangladesh's import substitution garment industries have ranged from 200-300%, while those for exports have been just above 0%, exporters' profits have far exceeded those of import substitution firms. One reason is saturation of the domestic market, versus the extensive opportunities of the international markets. The mushrooming of 100% export-oriented garment firms over the last four to five years shows that many entrepreneurs are aware of this situation. For the estimates of the effective rates of protection, see Management Unit (1985).

model of development attempts to incorporate these dimensions by studying ways to resolve the pressing development issues based on past experience and the process of change inside firms, on factory floors, and in export sales offices. Changes that occurred as a result of close collaboration between foreign catalysts from OECD countries or NICs and domestic catalysts in LDCs reflect the mutual benefits to be derived from the interdependence between developed and developing economies.

KEY INDICATORS OF SAMPLE COUNTRIES AND EXPORT SUCCESS IN SELECTED PRODUCTS

Country	GNP per Capita (US$)	Merchandise Exports (mil. US$)	Major Export Products	Success Story Export Product	Sample Item Export Success Indicators
Bangladesh	160	1,231	Garments, Jute goods	Garments	130 Desh workers' training in Daewoo factory for 7 months in 1979 was critical in increasing garment exports from negligible before 1980 to $430 million in 1989/88.
Jamaica	960	538	Alumina bauxite, sugar	Garments	Jamaican garment exports increased from US$11 million in 1983 to US$98 million in 1986. United Fashions Ltd., exports started with $1 million in 1986; exports expected to grow to $4 million by 1987.
Zambia	240	829	Copper	Garments	Exports by Serioes Ltd. started in 1984 and reached US$7 million by 1987.
Guatemala	940	1,060	Coffee, cotton, sugar	Shoes	COBAN started exporting in 1975; exports reached US$1.2 million in 1987.
Honduras	780	406	Bananas, sugar	Processed food	FIAH $200,000 in 1986 (ck), and rapid growth and diversification of products and exports.
Cote d'Ivoire	750	2,972	Coffee, cocoa	Processed food	Exports increased from US$124 million in 1980 to $217 million in 1986.
India	300	8,942	Tea, burlap	Processed small diamonds	Gross exports of cut and polished small diamonds increased from approximately US$14 million in 1966/67 to $1.5 billion in 1986/87.
Indonesia	450	18,744	Crude petro. products, rubber	Plywood	Indonesia imported plywood in the early 1970s. Exports grew from US$56 million in 1980 to $2 billion in 1987.
Colombia	1,220	3,696	Coffee, fuel oil	Cut flowers	Cut flower exports from Colombia started in 1970 and reached US$155 million in 1986. FLORAMERICA exports grew to $60 million in 1986.
Hungary	2,240	29,863	Processed food, chemicals, engineering equipment	Software	Hungarian software exports increased from approximately US$4 million in 1980 to $14 million in 1986.
Brazil	2,020	25,637	Coffee, soybean & iron ore	Aircraft	EMBRAER started exports in 1975 significant exports of medium size aircraft and export potential for military aircraft.

ANNEX II

AN OVERVIEW OF CATALYTIC AGENTS FOR SAMPLE PRODUCT EXPORT SUCCESS, COUNTRIES ENDOWMENTS, AND POLICY ENVIRONMENT

Country	Product	Catalytic Agent: Origin	Endowment	Policy Environment
Bangladesh	Garment	Daewoo-Desh: Foreign and local private	Low wage	E.F.
India	Diamond Processing	Diamond Trading Company of India: (private/public)	Low wage	Moving toward E.F.
Zambia	Garment	PEINE EmbH: Foreign (private)	Low wage	E.F.
Indonesia	Plywood	KORINDO, KODECO: Foreign (private)	Raw material; low wage	E.F.
Cote d'Ivoire	Cocoa Processing	BARRY, S.A.: Foreign (private)	Raw material	E.F.
Honduras	Food Processing	FIAH: Local (private)	Low wage	E.F.
Jamaica	Garment	UNITED FASHIONS LTD. and others: Foreign (private)	Low wage Access to U.S. market	E.F.
Guatemala	Shoe	COBAN, S.A.: Local (private)	Low wage	Neither E.F. nor E.I.
Colombia	Flower	FLORAMERICA, S.A.: Foreign (private)	Climatic soil	E.F.
Brazil	Aircraft	EMBRAER: Local (public and private)	Technical base	E.F.
Hungary	Software	SZKI: Local (public and private)	Technical base	Neither E.F. nor E.I

Note: E.F. = Equal Footing = Equal Footing with foreign competitors regarding access to inputs and financing.

E.I. = Equal Incentive = Equal Effective Incentive between export and import substitution activities.

APPENDIX

LIST OF CONTACTS AND REFERENCES

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