Chapter 3 PROMISING SUBSECTORS IN METALWORKING INDUSTRY AND INVESTMENT OPPORTUNITY STUDY

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3.1 Promising Subsector of Metalworking Industry

As a basis for developing the linkage-type industry, the Study attempts to identify promising subsectors to be developed in the metalworking industry. There are two criteria used in identifying promising subsectors in the metalworking industries; one is marketability and the other is adoptability of the technical level required for the production which is judged in the light of the present technical level in Indonesia. The final selection of thus identified subsectors is made in due consideration of time span for materialization and also of possible investors. A view of these factors taken for identifying and selecting the promising subsectors is summarized below.

(1) Marketability

1) Market size

In Indonesia, since the metalworking industries can be developed for import substitution for some time to come, the size of the domestic market is a crucial element. The increase in the size of the domestic market is projected on the basis of a natural growth of the demands for final products and the prospect of localization of components and parts to be need in substituting for imports.

As the growth of demands for final products seems to be static because of the depression which is likely to persist, the progress of localization has more importance. In this context, the metalworking industries which directly supply parts and components to be used in the manufacturing of the products for which the government is pursuing to promote localization are considered as promissing subsectors. Those priority industries are automobile, machine tools and construction equipment.

2) Prospective client

The market can be broadly classified into the following four: subcontract for assembly-type industries, government purchase such as for public works, after-market for repair and maintenance, and sales to the general market. Government purchases for public works and supply for assembly-type industries are more stable market than others.

The government purchase will be electrical parts related to power development and electrification of rural villages and irrigation pumps for modernization of rural areas. The subcontract will be automotive parts, electric home appliance parts, and parts for heavy equipment and agricultural machinery.

3) Price competitiveness

Products being competitive with imported products in terms of price are deemed as promising subsectors. Products for which the raw materials are available at low price and the manufacturing process is labor intensive are generally considered as being competitive in price. Labor intensive products, however, are inferior in terms of quality and precision to the imported products which are mass-produced by using modern facilities.

Another possibility is the products for which manufacturing activities are anticipated to be shifted from advanced countries to developing countries due to manpower shortage on account of soaring wages and hard work. Casting products fall into this category.

(2) Technical level

1) Manufacturing technology

Products which involve many manufacturing steps or many control factors (such as temperature, time for processing, etc.) tend to be poor in quality because errors in each step or factor are accumulated in the final products.

Products which can be self designed by manufacturers or products specified with simple and clear standardization are considered particularly promising for medium and small firms. In this context, pressworking and casting products are promising types of industry. On the contrary, welding of special alloy steel or cutting, welding and heat treatment of products with large plate thickness and others requiring advanced manufacturing and inspection technologies might not be suitable for immediate production in Indonesia, because a fairly long period is required for the transfer of necessary technology.

2) Manufacturing facilities and product quality

As for the manufacturing of metal dies and molds for presswork, bearings, gears, etc. for high speed rotary machines and other products requiring high precision, Indonesia greatly lags behind in facilities, skilled manpower and technical level for plant management. It would be difficult to fill this technical gap in a short period.

Also, domestic raw materials are unsuitable for use in high precision products because of their uneven quality. Highly automated manufacturing facilities pose problems in terms of repair and maintenance because machine parts are not obtainable in Indonesia, and also because such facilities are expensive and the production capacity is so large that the production cost should be uneconomical unless there is a secured market for the product. Accordingly, parts manufacturing that requires highly automated manufaturing facilities in general is unlikely to become promising subsectors for the immediate future, although it may be possible to undertake the economic production of those items if technical and marketing tie-ups are made with foreign partners in the form of joing venture or other arrangements.

(3) The timing of the shift to domestic production and technology adoption

There may be some types of industry which cannot be considered promising now but which may prosper after 10 years, although even for such products, the immediate production should be possible if it is implemented by some state enterprise or joint venture including direct investment of foreign capital, by means of installing the most advanced highly sophisticated manufacturing facilities and also with intensive technical assistances provided by foreign engineers.

However, the purpose of this study is to search for measures to let the private medium and small firms grow on their own strength while receiving financial and/or technical assistance. Accordingly, products are selected from among those which can be manufactured by them within the next four or five years with their financial and technical capabilities.

Parts and components thus deemed as promising from the aforesaid viewpoint are listed by the subsector and by the process in Table 3.1.

3.2 Investment Opportunity Study for Some Subsectors

3.2.1 Project Selection and Problems

In order to promote the domestic production of promising components and parts as listed in Table 3.1, it is essential to develop a number of modern factories which are capable to produce some of those products having required quality. Since such projects should be implemented mainly by private entities, a detailed feasibility study of the projects shall be individually made by them for their investment decision.

Nevertheless, an investment opportunity study is made on possible projects to be developed for the foregoing goal. The objective of this study is to demonstrate typical examples of the possible projects and their investment sizes which can serve to examine the direction of investment promotion.

The investment opportunity study identified the 13 projects of the following three types, as the examples.

(1) Projects to produce a complete set of components and parts by building up	6 projects
(2) Projects of new plants with relatively small-scale investment	4 projects
(3) Expansion projects of existing factories	3 projects

According to the definition of the Ministry of Industry, small-scale industries are the firms which satisfy the following requirements:

Fixed assets (excluding land and building):	Rp.70 million or less
Capital investment per employee:	Rp.625,000 or less

It is difficult to identify linkage-type metalworking industries with growth potential as promising types of industry with the foregoing ceiling on production facilities. Eligible firms would inevitably be confined to those which supply only a single product to the after-market or general market, and their machine and equipment would have to be low accuracy conventional ones. The primary objective of this promotion program, as is discussed later, gives priority to expand growth oriented medium sized firms. In this context, the projects categorized as (1) above may represent the ideal types of the subcontracting matalworking factories.

An outline of those projects, including the indication of the amount of required investment and the rationale for selection is summarized below,

of which supporting technical data is given in Section 9. The scale distribution of Japanese metalworking industries is given in Table 3.2 for comparison.

3.2.2 Complete Type of Subcontracting Factories Equipped with Modern Facilities

There are six projects which have been studied to show models of the projects that should be required to be developed in order to establish really modern metalworking industries which are capable to produce high quality components and parts at economical costs as required by the assembly-type machine industries. These projects represent six processings respectively. The required investment size would have to be relatively large, but manufacturing facilities of such size are considered necessary to match the quality and cost demanded by the assembly-type machine industries.

(1) Casting factory (large-scale)

Casting products are the basic material of metalworking industry. The localization of the whole metalworking industries will not advance without local production of casting products. All kinds of casting products are promising products for improving the quality.

Unless high quality casting products are available as a fundamental components, machinery and equipment which are assembled by those components cannot cope with imported ones in quality. The quality of casted products mostly owe to the quality of raw materials. In such sense, a modern casting factory should have a melting section to control feeds of scrap, pig iron, etc.

a) Products

It is envisaged to produce automotive parts, construction equipment parts, agricultural machinery parts, machine tool parts, pumps and valves, etc.

660 T/M of cast iron (including DCI) shall be molded on a molding machine line, and 140 T/M of cast iron (including DCI) and 200 T/M of cast steel for small batch production shall be molded by hand molding, which add up to a total of 1,000 T/M castings. For melting, high frequency induction furnace shall be used, and in order to guarantee the quality, products shall be processed as far as rough machining.

b) Production capacity: 12,000 T/Y (two shits)

c) Employment size: 272 persons

d) Project cost: US$17.4 million (including US$5.5 million for f.o.b. cost of machinery and equipment)

(2) Forging factory (large-scale)

Forging is also a basic process of metalworking industry. The forging industry in Indonesia is still in the early stage of development, and there exist very few number of forging factories, except for blacksmiths which employ traditional techniques. There is a strong need to develop forging industry to produce parts and components for assembly products, such as automobile, which require toughness, abrasion hardness and strength for fatigue. There is substantial demand for forged flange, forged gear, shaft, automobile components (e.g., engine, clutch, transmission and propeller shaft) and high-tension bolt, which is at present almost all met by imports.

The production of shaft and gears as the important component for rotation machine is essential for the domestic manufacturing of rotation mahcine and transmission system. At present, in Indonesia, there is no factory manufacturing high quality forged products. Also, large diametral bolts, which require durability, strength and precisin, are not manufactured. Under these circumstances, a project to build a modern forging factory in identified as one of possible projects.

a) Products

Forged parts and components for automotive (crankshaft and connecting rod) and forged gear, forged flanges, and forged bolts are to be manufactured. The following table shows the shape and the dimensions of representative products to be manufactured.

	Product		Material and Product Mix		Product Condition
	Max. Dimension	Max. Wight	Mild Steel	Tempered Steel	
Forged flange	300ϕ	70kg	30%	0	Completed product
Forged gear	500ϕ	100kg	0	30%	Roughly finished product
Forged automobile parts and components	-	100kg	0	30%	Roughly finished product
Forged bolt	50ϕ	-	50%	50%	Complete product

Notes: 1/ The average weight of each product was assumed to be 15 kgs.

2/ The dimension of raw material: 50 - 200ϕ x 6 m

b) Production capacity: 4,600 T/Y (two shifts)

c) Employment size: 102 persons

d) Project cost: US$8.2 million (including US$3.1 million for f.o.b. cost of machinery and equipment)

(3) Precision machine component processing factory (large-scale)

A variety of components for machine tools and construction machinery which have been identified for local production include small-size items which require high quality of raw materials, and sophisticated processing techniques and equipment, such as shafts and gears for transmissions. Domestic production of high quality dies, precision processing and high quality pressworking are not only "promising" but are "must" for the advancement of industrialization in Indonesia.

The project studied here is to build a modern factory for precision machining of the driving parts and components such as axles and gears, which are preliminarily machined in foundry and forging factory.

For this purpose, the facilities include CNC turning rathe, precision measuring room, grinding room, gas atmosphere furnace for gera sur-

face hardening carburization process and nitriding process, annealing furnace, cleaning bath and shot blashing machine which are required for performing a complete finishing of parts and components.

a) Products:	Precision machining of shafts, gears and other driving parts
b) Production capacity:	639 T/Y (two shifts)
c) Employment size:	163 persons
d) Project cost:	US$8.1 million (including US$3.6 million for f.o.b. cost of machinery and equipment)

(4) Sheetworking and welding shop (medium-scale)

This project is to manufacture mainly transmission gear cases, various covers and other steel plate products for agricultural machines, machine tools and construction equipment etc., which are processed by bending, cutting, and welding.

a) Products:	Transmission gear cases, engine covers, various covers
b) Production capacity:	1,500 T/Y (two shifts)
c) Employment size:	90 persons
d) Project cost:	US$1.7 million (including US$0.42 million for f.o.b. cost of machinery and equipment)

(5) Pressworking shop (medium-scale)

Most of machinery assembly factories have large-scale and high pressure press machines for their in-house manufacturing of critical components and parts. Hence a project studied here is to build a medium-scale pressworking shop which is capable to produce a wide variety of small products with high quality.

In Indonesia, there exist very few pressworking factories which can produce it's own metal dies and can make high quality press products. The precision of pressed product is greatly dependent on the accuracy

of metal dies. At present, the demand for the high precise metal dies are almost met by imports.

The studied project is contemplated to install three units of different types of press machines which can meet the orders placed in a variety of product items, and also have the facilities for manufacturing molds.

a) Product:	KWH meter, and small parts for automotive such as boxes, covers etc.
b) Production capacity:	1,380 T/Y (two shifts)
c) Employment size:	25 persons
d) Project cost:	US$1.7 million (including US$0.48 million for f.o.b. cost of machinery and equipment)

(6) Steel fabricating shop (medium- to large-scale)

The Indonesian shipbuilding industry heavily based on components self-manufactured. The modern shipbuilding industry is rather featured as an assembly-type industry which is based on components and out-fittings procured from subcontractors.

At the same time, there are demands for repairing and replacement of some equipment and machinery which are involved in the existing plants for oil, natural gas, cement, sugar, fertilizer and pulp and paper industries, although it may take more time for the Indonesian machinery industries to be capable to manufacture all equipment and machinery for new plants.

In view of the Indonesian situation in regard to availability of raw material, technical level required and size of the existing markets, there are great possibilities for the country to develop the fields of sheetworking, welding and steel fabrication immediately.

The project studied here is to build a steel fabricating shop does not only which manufacture parts and out-fittings for shipbuilding but also steel structure, tanks, and other steel fabricated equipment.

a) Product:

- Ship outfittings such as mast, post, boom, ankering fitting, radder flue, air duct, air blow duct, chimney etc.

- Steel structure products such as steel structures, steel frame, containers and tanks

b) Production capacity: 1,500 T/Y

c) Employment size: 97 persons

d) Project cost: US$4.8 million (including US$0.68 million for f.o.b. cost of machinery and equipment)

3.2.3 New Factories Requiring Relatively Small Investment

New factories requiring relatively small amounts of investment amounts should be those for manufacturing a single product or undertaking as subcontractors to carry out a certain processing work for the relatively large factories as described in 3.2.2 above.

Hence the new factories built with small amounts of investment may mainly manufacture the metalworking products to be sold to general markets, rather than parts and components to be supplied directly to the assembly-type industry, although even such factories should be equipped with modernized facilities so that they can contribute to upgrade the technologies and products.

(1) Small-scale foundry

Since the cast products manufactured by medium- and small-scale foundries in Indonesia have a high rate of defect at present, most users are reluctant to use domestic cast products substituting for imports. Therefore, it is important to promote the expansion of small-scale modern foundries which can produce high quality cast iron with a simple control system. As a small foundry would have a limited production capacity compared to a large foundry described previously, it would mainly produce small items, while the machining and inspection processes are commissioned to others.

For those factories an induction furnace is recommended to be adopted since melting in the cupola requires a high degree of skill and also the temperature of molten iron cannot be high enough due to low quality of coke available now. Employment of the Furan Resin Process will give sufficient mould strength and easy control of the water content. While casting sand will be revived by the reclaimer for repeated use, the amount of added resin should be halved. Cleaning will be done by shot

blasting in order to facilitate easy inspection. This type of foundry can be regarded as the prestage to establishing a full-scale subcontracting foundry.

a) Products:

Automotive parts:	Flywheels
Industrial equipment:	Pump parts, valve parts
Machine tools:	Small parts
Electrical equipment:	Motor parts
Miscellaneous:	Gears, wheels, bearings

b) Production capacity: 420 T/Y (one shift)

c) Number of employees: 19

d) Project cost US$1.5 million (including f.o.b. equipment cost of US$0.42 million)

(2) Screw/rivet factory (forging)

Small screws and rivets of diameters ranging from 2.6 mm to 6.0 mm have a wide market (general market) covering household goods, automobile parts, furniture, agricultural machinery and small size structures, etc. Although they are basic metal processing parts, many users import foreign products due to the inferior quality of domestic products. At present, users are obliged to check each product and the rate of inferiority is found to be quite high. A new or additional factory could be founded with a small amount of investment if advanced facilities are introduced and the proper attention is paid to both plant management and quality control.

With regard to materials, although low-carbon steel bar is produced domestically, it must be reprocessed to make wire for cold forging. As high carbon steel, alloy steel, stainless steel and non-ferrous metals including aluminium and brass are not produced domestically, they must be imported.

The production of screws and rivets involves hardly any manual operation and can be easily subject to mass production using a fully automatic multi-function machine and, therefore, there are good prospects for its localization.

a) Products: Screws/rivets (small diameter: 2.6 -6.0 mm, maximum length: 45 mm)

b) Production capacity: 17 million pieces/year = 68 T/Y (one shift)

c) Number of employees: 7

d) Project cost: US$0.2 million (including f.o.b. equipment cost of US$0.06 million)

(3) Small-size press factory

There is a large demand in the general market for such sheet processing products as lighting equipment, box-shaped products, window frames, kitchen equipment and parts for truck beds, etc. Since a large number of items are produced in small quantities, automation has limited scope, rather it offers good employement opportunities. In addition, as the domestic purchase of the raw materials is relatively easy, this industry should be regarded as having good prospects.

In order to minimise the amount of investment, the manufacture and repair of dies should be subcontracted and the machine employed should have the minimum automatic control. In a factory of this kind, besides the maintenance and inspection skills for cutters and presses, the work process such as the drawing of parts, an efficient sheet cutting plan, pressing, drilling and welding to assembly will form an important technical factor.

a) Products: Sheet processing products (upto 6 mm thick), i.e. lighting equipment, box-shaped products (lockers, etc.), window frames, kitchen equipment and parts for truck beds, etc.

b) Production capacity: 240 T/Y (one shift)

c) Number of employees: 17

d) Project cost: US$0.35 million (including f.o.b. equipment cost of US$0.11 million)

(4) Electro-plating factory

An electro-plating factory is usually founded as part of a metal processing factory. When an electro-plating factory is planned as an independent establishment, it should be envisaged as a linkage-type industry carrying out subcontracting work from press, forging or machining factories.

The current plating facilities and technology in Indonesia need to be modernised. A specialised plating factory using advanced technology with an in-house waste treatment facility will attract a large demand.

A plating factory using zinc cyanide, with the view to carrying out the anti-corrosive plating of small steel products, is proposed as a business with good prospects. In addition, the factory should be able to carry out the three additional treatments, i.e. the chromate, unichromate and black chromate treatments, in order to improve the anti-corrosion performance of the zinc plating and to satisfy decorative requirements.

The subjects for plating include parts for electrical equipment, small automobile parts, steel furniture, metal fittings for wood furniture, kitchen equipment, metal fittings for buidings, screws, bolts, nuts and rivets, etc.

a) Products:	Plating of small iron/steel products such as bolts, nuts and screws, etc.
b) Production capacity:	144 T/Y (one shift) in the case of plating bolts, nuts and screws.
c) Number of employees:	7
d) Project cost:	US$0.31 million (including f.o.b. equipment cost of US$0.1 million)

3.2.4 Expansion Plans for Existing Factories

The expansion plans for existing factories are taken up for the investment opportunity study and are described below. For developing medium- and small-scale metalworking industries, the central focus is on the modernization of the factories currently in operation in view of their market accessibility and their experience in the manufacturing technology.

The questionnaire survey was initially conducted to get information on the expansion plans and several manufacturers were then selected based on their good prospects in the future. Investment opportunity studies were carried out in each case by visiting these companies, and the result is given below.

(1) Automobile filter factory (small-size company)

This factory produces air filters and oil filters, for automobiles for the after-market. It imports felt and paper filter materials and then sells completed products by installing filters to its own produced metal cylinders using a sheet metal press machine.

As the demand for general purpose diesel engine filters has recently been increasing, a plan to expand the present production capacity by three times is quite feasible.

The facility expansion will centre on the introduction of a deep drawing press machine for sheet metal. Although the present factory has adequate land for expansion, a new factory building with a floor area of some 500 m^2 is needed.

a) Products:	Air filters and oil filters for automobiles	
b) Production capacity:	Present;	400 - 500 pieces/day
	After expansion;	2,000 pieces/day
c) Number of employees:	Present;	15
	After expansion;	50
d) Expansion cost:	Total US$0.13 million (including f.o.b. equipment cost of US$23,500)	

(2) Pump factory (medium-size company)

The company concerned is currently manufacturing volute pumps, deep well pumps and hand pumps in Bandung. Its technology is above an average level and the manager has a high degree of entrepreneurship.

The expansion entails the building of a modern factory based on the accumulated technological strength and also a move from the present location to Jakarta which is near the market for these pumps.

Although there is not a large demand for these pumps to be used in ordinary household, the sales share of agricultural pumps for irrigation, marine pumps and valves and pumps for plant equipment can be increased by a supply of high quality, low cost pumps.

The company currently subcontracts cast iron products while manufacturing a small quantity of cast pumps made of non-ferrous metals. The

manufacturing plan to produce cast steel, included in the expansion plan, has great future prospects.

The modernization, as well as the sophistication, of the technology is crucial in this plan and, therefore, it is advisable that the coopertion of engineers from advanced countries be received in the initial planning stages onwards.

a) Products:	Present;	Hand pumps, volute pumps, deep well pumps, turbine pumps and land-use screw pumps
	After expansion;	Sea-water pumps and cast products, in addition to current products
b) Production capacity:	Present;	Pumps = 200 T/Y
	After expansion;	Pumps = 2,000 T/Y Cast products = 3,000 T/Y
c) Number of employees:	Present;	44
	After expansion;	110
d) Relocation cost:	Total US$6.9 million (including f.o.b. machine cost of US$1.9 million)	

(3) Switch gear assembly factory (large-size company)

The factory currently manufactures and sells various switch gears for the public electricity corporation (PLN) and its subsidiary construction company (BBI). Based on the national project aiming at the electrification of agricultural villages, the factory can expect a steady demand from public works.

As the factory has been receiving technical cooperation from a Japanese company for the past 10 years, its manufacturing technology, factory management and quality control are all of a high standard.

It manufactures switch gear boxes by bending, welding and painting imported steel sheets. Imported switch gears are installed to these gear boxes and the factory delivers the final products after they have been inspected.

The main purpose of the expansion plan is to newly build a fabrication shop and a painting shop in anticipation of the future increase in the demand. The improvement of the efficiency of the marking and bending of the sheet metal by the provision of additional facilities to the press brake and the rationalisation of the painting process are also planned.

Although the present factory site will be used, the construction of an additional factory building and a change in the layout will be required.

a) Products:	Low and medium voltage switch gears	
b) Production capacity:	Present;	1,200 sets/year
	After expansion;	6,000 sets/year
c) Number of employees:	Present;	202
	After expansion;	250
d) Expansion cost:	Total US$3.0 million (including f.o.b. machine cost of US$0.17 million)	

A summary of the investment opportunity study on the above 13 projects is shown in Table 3.3.

3.3 Overview of Investment Opportunity

The outcome of the investment opportunity study indicates that the projects to be implemented for the development of the linkage-type industry, which comprise the establishment of new facilities and the modernization and expansion of existing facilities, would require investments in a scale over that defined as a small-scale, and therefore it implies that the investment promotion program for the development of the linkage-type industry shall be focussed on the expansion of moderized medium-scale metalworking factories. In this connection the program should be designed to promote investments by "grower' type medium- and small-scale enterprises. For small-scale enterprises who are financially unable to undertake projects respectively, it may be effective to promote joint investments by a few enterprises as stated earlier.

Table 3.1 PARTS AND COMPONENTS AS PROMISING PRODUCTS FOR METALWORKING INDUSTRY

(1/2)

Industrial Field as Market	Parts and Components
Machine tool (Lathe, Miller, etc.)	Apron component, bed, casing, pulley, frame, column compoents, base, table, leg, cover, gear, shaft, bearing, bolt & nuts, spring, screwshaft, coolant tank, pan, panel box, cooling system, gear, spindle, handle, hinge
Agricultural machine (Mini tractor, etc.)	Transmission, rear drive axle, brake drum and cover, front weight, shaft, final drive axle, front axle, gear, support frame, bonnet, muffler, hydraulic tank, side cover blacket, seat, step, hitch attachment, fender, brake rod, rotary frame, wiring harness, hinge, bolt and nut
Construction Equipment (Crawler bulldozer, etc.)	Counter weight, cutting edge, end bit, teeth, front idler, pin and bushing, roller, transmission, gear, shaft, torque flow convertor, track shoe, bonnet & side cover, fender, yoke, muffler, support, hydraulic tank, radiator and guard, cable wiring, filter, fan and pulley, trunion, front idler, piston, handle, hinge, screw, bolt and nut, wiring harness
Automotive & motorcycle	Engine block, brocket, pump body, pulley, casing, cover, brake drum, bearing, connection rod, shaft, gear, yoke, valve, transmission, lever, arm, lifter, pedal, clutch, brake shoe, lever, stearing column, cylinder head, filter, pan support, frame, body, door lock, window sash, bumper, wheel cap, seat
Electrical machine (Diesel engine, etc.)	Base, piston, wheel, casing, valve, handle, pump, cover, bush, shaft, pin bolt, connection rod, washer, snapring, magnet, shaft key, fan, fuel tank, condensor, muffler, panel box, blacket, stator core, pan, wheel, valve, bolt and nuts, screw
Plant equipment (with Simple technology)	Tanks, heat exchanger, cooler, pump, valve, cyclon, belt conveyor, dust collector, pipe fittings, control panel, lighting fixture, overhead crane, hoist, pipe support, steel structure, filter, screen, blower, fans, boiler
Ship buildings (with Simple technology)	Propeller, motors, generator sets, transformer, pumps, switch board, heat exchanger, purifier, ladder, anchor and chain, tanks, mast, derrick post, rader post, antenna pole, boom, davit, mooring fittings, bollard, fair leader, mooring hole, deck roller, hatch cover, vent truck, dust, ventilator, deck stand, pipe support, strainer, steel furniture & fixture

Table 3.1 (Continued)

(2/2)

Industrial Field as Market	Parts and Components
Others (Pump, valve, hand tool, household appliences, etc.)	Casing, impeller, valve body, yoke, disk, cover, shaft, gear, spinde, ponch, driver, wrench, panel box, meter box, caster, tool box, window sash, steel furniture & fixtures, bolt and nut, screw, hinge

Table 3.2 FACTORY SIZE DISTRIBUTION IN JAPAN (1982)

Size of Employees	No. of Factory	Total Employee	Production (March 1982) (ton)
(1) Foundry 1/			
29 and below	447	8,246	40,639
30 - 49	183	6,880	38,965
50 - 99	98	6,890	52,624
100 - 299	35	5,330	41,105
300 - 499	3	1,047	8,915
500 - 999	1	2,830	21,718
1000 and above	1		
Total	768	31,226	203,966
(2) Press 2/			
9 and below	74		
10 - 20	132		
21 - 30	119		
31 - 50	111		
51 - 100	156		
101 - 200	69		
201 - 300	16		
301 - 500	15		
501 -1000	6		
1001 and above	-		
Total	698		
(3) Electric Plating 3/			
5 and below	693		
6 - 10	617		
11 - 20	533		
21 - 30	209		
31 - 50	136		
51 - 70	56		
71 - 100	42		
101 and above	26		
Total	2,312		
(4) Bolt, Nut, Rivet and Screw 4/			
3 and below	3,940		
10 - 19	2,141		
20 - 29	537		
30 - 49	141		
50 - 99	88		
100 - 199	41		
200 - 299	13		
300 - 499	4		
500 - 999	2		
Total	7,106		

Source: 1/ Japan Foundry Center
2/ Japan Metal Stamping Association
3/ Japan Electric Plating Association
4/ MITI Census of Manufactures

Table 3.3 SUMMARY OF INVESTMENT OPPOTUNITY STUDY

Products	Production Capacity	Employees	Total Project Cost (US$1,000)	Equipment and Machinery (f.o.b.) (US$1,000)
A. Modernized factories with small and medium size investment				
(1) Small size foundry products	420 t/y	19	1,500	420
(2) Forging of screw and rivets	68 t/y	7	200	60
(3) Presswork of locker, kitchen ware, etc.	240 t/y	17	350	110
(4) Electroplating of bolts, nuts, screw, etc.	144 t/y	7	310	100
B. Expansion or re-location of existing factory 1/				
(5) Oil and air filter for automotive	500/2,000 pcs/d	15/50	130	24
(6) Foundry and machining of pumps	Pump 200/2,000 t/y Foundry 0/3,000 t/y	44/110	6,900	1,900
(7) Sheetwork of switch gear	1,200/6,000 sets/y	202/250	3,000	170
C. Factories fully equiped as sub-contractors directly to assembly-type industry				
(8) Casted products for machine industry	12,000 t/y	272	17,440	5,450
(9) Forging of shafts, gears, rods, etc.	4,600 t/y	102	8,150	3,140
(10) Precise machining of driving components	639 t/y	163	8,100	3,590
(11) Sheetwork case and cover for transmission, etc.	1,500 t/y	90	1,710	420
(12) Presswork for kWH meter box, etc.	1,380 t/y	25	1,710	480
(13) Steel fabrication of out-fittings for ship, etc.	1,500 t/y	97	4,790	680

Note: 1/ (a)/(b): (a) is before-expansion while (b) represents after expansion, and investments cost are additional requirements for expansion.

Chapter 4 FINANCIAL SYSTEM AND INSTITUTIONAL FINANCE IN INDONESIA

Chapter 4 FINANCIAL SYSTEM AND INSTITUTIONAL FINANCE IN INDONESIA

4.1 Outline of Financial System

The financial system in Indonesia has been developed being based on the Principal Regulation on Banking enacted in 1967 (Act No. 14) and the Act concerning Central Bank of 1968 (Act No. 13). Figure 4.1 illustrates the present structure of official financial system in Indonesia.

The banking system in Indonesia is controlled by the Monetary Council and Bank Indonesia (BI), the Central Bank, and it comprises:

1) Deposit Money Banks mainly handling demand deposits,

2) Non Deposit Money Banks mainly handling activities other than the demand deposits, and

3) Non-Bank Financial Institutions (NBFIs).

The Deposit Money Banks consist of commercial banks mainly lending short-term loan and Development Banks lending medium- and long-term credits. The Non Deposit Money Banks consist of saving banks and rural banks (called as the secondary banks).

The NBFIs comprise State Pawn Services, development finance companies investment finance companies, housing finance company, several insurance companies, credit cooperatives[1/], which belong to the direct control of the Ministry of Finance. Among them, two development finance companies and P.T. Askrindo, the state-owned credit insurance company, are based on the BI's equity participation.

There are also "Tunkula", providing merchant finance, "Arisan", a kind of mutual loan, and private pawn shops, which are traditionally engaged in non-organized financing to inhabitants or small establishments in the regions.

Note: 1/ Beside the credit cooperatives, there are five cooperative banks, which are classified into the commerical banks.

In the banking system, five state-owned commerical banks and one state-owned development bank have a dominant share of lending. These banks have 739 branch offices and their outstanding credits amounted to Rp.13,345 billions as of the end of 1984, accounting for 74.1% of the outstanding credits of the Indonesia's banking system excluding the BI's direct credits (Table 4.1).

Beside the state banks, there are 69 private national banks, having 351 branch offices in total. The outstanding credits of these commercial banks amounted to Rp.3,042 billions as of the end of 1984, accounting for 16.9% of the country's banking system as defined above. In addition, there are 11 foreign banks (21 branch offices), 27 regional development banks (194 branch offices), and 5,823 rural banks. The amount of their outstanding credit and the respective share in the outstanding credit of the prescribed banking system was Rp.1,046 billions (5.8%) for the foreign banks, Rp.510 billions (2.8%) for the regional development banks, and Rp.16 billions (0.1%) for the rural banks.

There are two credit insurance companies, i.e., P.T. Askrindo and Perusahaan Umum Pengembangan Koperasi (PKK)1/. P.T. Askrindo was established by the Government and BI in 1971 for the purpose of providing banks with credit insurance and guarantee, as well as export insurance1/. It aims at promoting the credit facilities for small-scale enterprises which were enforced in the First Five-Year Development Plan. It was primarily engaged in the credit insurance added with credit guarantee, and currently handles re-insurance of nonlife insurance, as well as marine insurance. PKK is an institution providing insurance for banks' credits provided to cooperatives.

Note: 1/ Asuransi Expor Indonesia (ASEI) was newly established in November 30, 1985, who has succeeded export-insurance business operated by P.T. Asklindo until that time extending for banks and exporters. The report above was submitted before the establishment of ASEI.

4.2 Institutional Finance System for Small- and Medium-Scale Industry

(1) Definition of small- and medium-scale industry

Different definitions on scale of industry are being used by each organization concerned i.e. BPS, MOI and BI.

BPS

definition by number of employees

Household industry	:	less than 5 employees
Small scale industry	:	from 5 to 19 employees
Medium scale industry	:	from 20 to 99 employees
Large scale industry	:	100 employees and above

MOI

companies which satisfy the following three conditions at one time are defined as "small-scale".

1) Investment to machinery & equipment (excluding land and building) : not more than Rp.70 million

2) Investment per employee : not more than Rp.625,000

BI

Companies which satisfy the following two conditions at one time are defined as "small-scale".

1) Total assets excluding land & building : not more than Rp.100 million

2) 50% and above of the equity capital is held by Indonesian indigenous entrepreneur(s) and majority of directors consist of Indonesian indigenous people. Otherwise, 75% and above of the equity capital is held by Indonesian indigenous entrepreneur(s).

BI's definition is applied to the special credit programs for the small-scale enterprises. Hence, for those programs, eligible enterprises are subject to that definition, that is, those satisfying the indigenousness conditions and having the assets excluding land and building mscimum Rp.100 millions in the case of the manufacturing and construction sec-

tors and maximum Rp.40 millions in the case of other sectors. However, it seems to be practically difficult to define the scale of enterprises in terms of assets, since there may be difficulties in assessing the value of assets in a strict manner and, furthermore, the value reported by enterprises might not necessarily be correct. Likely, the number of persons engaged does not always represent the scale of enterprises, because it may vary depending upon variation of industries and mode of business even in an industry.

Referring to such argument, for the financial statistics, the scale of borrowers is often classified with each lending amount of loan, because the lending amount can be deemed to represent creditability of enterprises which is related to its scale.

(2) Special credit program for industrial development

In Indonesia, the institutional finance broadly consists of two components. One is the BI's direct credit and the other is indirect credit provided through the banking system by the Government and/or BI. The direct credit once increased to a substantial amount, but it currently becomes decreased according to the altered Government policy.

There are three types of the indirect credits which are (a) the credit based on the BI's liquidity credit, (b) the credit based on the Government fund which is provided directly to the handling banks, and (c) the credit based on the Government fund which is provided to the handling banks via BI. Among the special credit programs enumerated in Table 4.2, (1) KCK, (2) Mini Credit of KUPEDES and (14-a) Public Housing Program referred to in the table are based on the Government fund. These programs were executed for the purpose of social welfare or social aid rather than industrial development.

Besides these programs, there are a number of two-step loan programs for industrial development which have been set on the basis of soft-term loan provided under foreign aid. Table 4.3 shows the representative ones of those two-step loan programs. There are some other loan programs which are not listed in the table, such as fund financed by KFW in West Germany for BAPINDO.

For the foregoing two-step loans, there are two types of arrangements. One is to set up a two-step loan program at the top of the Government or BI. In this case, the Government or BI is the borrower of aid loan, and the lending to end borrowers is handled by the banks

designated by the Government or BI. For operation of the program, the Government or BI bears foreign exchange risk, coordinates any conflict with the existing credit programs or systems, and determines priority fields eligible for the program. Another arrangement is the direct borrowing of aid loan by a designated handling bank. In this case, the designated bank will make a loan agreement with the aid financier under the Government's guarantee and, based on the thus raised fund, it lends program loan to eligible borrowers.

It is the Government policy that whereas the private banks as well as the state banks may be designated as the handling banks for the former type of arrangement. for the latter type of arrangement the designated bank is selected from among the state banks. The characteristics of these loan programs are featured with a package assistance combining the provision of term loans and technical assistance.

Among a variety of existing credit programs, KIK/KMKP, New Kelayakan and Keppres are subject to small- and medium-scale enterprises, in which KIK/KMKP have been executed since long time before.

(3) KIK/KMKP

Outline of the program

In REPELITA I Plan, as an instrument for promoting private investment for industrial development, the Government set up a medium-and long-term investment credit system with the terms and conditions of (a) 5-years term, (b) interest rate at 12% p.a., (c) loan coverage not more than 75% of project cost, and (d) provision of adequate securities. However, most of small enterprises were unable to satisfy the prescribed requirements for borrowing. Hence, in December, 1973, the Government set up a special credit system designed for small-scale enterprises which consists of an investment credit component named "Kredit Investasi Kecil (KIK)" and a permanent working capital credit component named "Kredit Modal Kerja Permanen (KMKP)".

Present situation of the fund sources is as follows:

	Composition	Interest
BI liquidity credit	55%	3%
World Bank (SEDP)	25%	10.1%
Handling bank	20%	by bank
	100%	

Note: Handling banks are subsidised by BI at 1.5 % on insurance premium.

The World Bank loan is provided under its Small Enterprise Development Project (SEDP) which consists of the loan component and technical assistance component that is to provide trainings for loan officers of the handling banks and technical assistance to component projects.

Other conditions are summarized below:

Maximum loan size	:	Rp.15 million
Repayment period	:	8 years for KIK, 5 years for KMKP
Interest rate	:	12% per annum
Handling bank	:	6 State Banks, 27 Regional Development Banks, Several private national banks.
Eligible borrower	:	Small-scale enterprises on the definition of BI.

Present situation of operation

At the end of April, 1985, the outstanding number of the credit climbed to 165,521 for KIK, 444,319 for KMKP, and 609,840 in total, and the outstanding amount was Rp.381,269 millions for KIK, Rp.899,019 millions for KMKP, and Rp.1,270,288 millions in total. In comparison with the outstandings of credit at the end of December, 1979, KIK was 3.8 times, KMKP was 5.8 times, and total amount was 5.0 times.

For regional distribution of KIK and KMKP, Java holds 50% and the outer island holds the remaining 50%. For sectoral distribution of KIK/KMKP, the trade sector accounts for a high share; about 30-40% for KIK and about 70% for KMKP, while the utilization in the manufacturing sector is relatively low; 12-13% for KIK, and 11% for KMKP.

Regarding share of amount handled by each handling bank, the BRI, a state commercial bank holds a share of about 50%. The six state

banks' share dominated at 86.5% at the end of December, 1983, but their share declined annually, while the shares of regional development banks and private national banks gradually grew.

The above analysis indicates that these programs were substantially utilized in the local regions and for the regional life of consumption rather than for the industry. It implies that they are supporting small types of buiness for daily life.

Overdue loans and bad debts

The classification of loan collectibility with which BI requires periodic reports from the banks is of four grades: "Sound", "Not Smooth", "Doubtful", and "Bad Debt". In general, "Sound" represents a regular repayment, "Not Smooth" represents 1 to 6 months delay but having good prospect for collection, "Doubtful" 6 months to 1 year delay and having poor prospect for collection, and "Bad Debt" no possibility for collection.

The rate of overdue loans under "Sound" against total loan amount is very high at 28.6% for KIK and 23.2% for KMKP. That of "Bad Debt" stands at 6.4% for KIK and 3.9% for KMKP. The share of KIK/KMKP in outstandings of non-collected credits subrogated by P.T.Askrindo climbed to 92%, and it caused big deficit of Rp. 44.9 billions of the company for the fiscal year 1983. The number of overdue cases under "Sound" accounted for 24% of the outstandings of credits for KIK, and 25.4% for KMKP. Management work in connection with the delay settlement seems to cause substantial burden.

(4) Background of the financial sector reform in June, 1983

Liquidity credit system

The most important instruments of credit policy in Indonesia are the credits conducted by BI. They were introduces as a means of chanelling surplus government funds into the economy while providing additional credit to priority borrowers. The credits comprises two components, namely:

(a) BI's direct credits to public enterprises and government organizations, and

(b) BI's indirect credits through the banking system, so-called "liquidity credit".

The category (a), accounted for about 34% of the total outstanding of credit of the banking system including the BI's direct credit at the end of 1979, but it decreased to only 4.6% at the end of 1984. This was due to the Central Bank's sound monetary management policy for reducing direct credit and the collected fund was partially transferred to the "liquidity credit".

On the other hand, the category (b) grew at 44% p.a. in nominal terms, and its outstanding increased to Rp.6,938 billions at the end of 1984 which was 6.2 times compared with that at the end of 1979. It accounted for 38.5% of the total outstanding of credit from the banking system excluding the BI's direct credit. Thus, BI has become an important source of funds to the Deposit Money Banks.

Overview of deposits of the banking system

Total deposits of the banking system including deposits in BI increased by 2.8 times from Rp.5,880 billions at the end of 1979 to Rp.16,571 billions at the end of 1984. In real terms it grew at 12.5% p.a., far over the GDP growth (6.1% p.a.).

It was substantially contributed by the government deposits. The government deposit remarkably increased up to 1981, accounting for about 58% of the total deposits in the banking system at the end of 1981. Since then, the deposits from the private sector showed a substantial growth, and it reached 56% of the total deposits in the banking system at the end of 1983. The substantial increase in the government deposit raised from the revenue of oil sector (including LNG) which increased up to 1981, and it was the major source for the BI's liquidity credit provided to the banking system. Since 1982, however, the increase in the government depo sit with BI tended to level off reflecting stagnation in the oil revenue. Under this circumstance, it is likely that the source for liquidity credit would become stringent to meet increasing credit demands. Hence, in June, 1983, the Government enacted a financial sector reform to make substantial reform of the financial structure.

(5) Influences of the reform to institutional financing system for industrial sector

One of the major aims of the reform is to reduce money supply from the Government to the state banks in the form of liquidity credit with concessional interest rate since the income for the Government decreased by the depressed oil and LNG export since latter half of 1982.

The state banks were obliged to source funds from a commercial market as deposit with a commercial terms and conditions in order to compensate the liquidity credit. The time deposit in the state banks has substantially increased, and this implies that the funding cost of the state banks has rised accordingly.

Given priority in the reorganized programs was the financial assistance for (a) the protection of the economically fragile strata, (b) the fostering of small-scale industries, (c) the promotion of export industries, (d) groupnization of the small-scale manufacturers, (e) the fostering of small farm-holders and the development of farm land by farmers, (f) education and vocational trainings, and (g) housing.

The reorganization abolished the short-term general credit previously made and Category II to IV of KIB which were credit for medium-scale enterprises, while setting new programs such as (a) short-term working capital credit up to Rp.75 millions which is equivalent to the former KIB-Category I, (b) Keppres 29/1984 which is short-term credit of working capital required for procurement by government organizations, and (c) export credit. The reorganization also adopted a simplified on lend rate structure. An 12% point was applied to 17 programs; except for the short-term working capital credit up to Rp.75 millions and Keppres 29/1984 set at 15% point, export credit set at 9% point, and housing and education credit set at 5 to 9% point.

Table 4.4 shows the special credit programs after the reform as a comparison with those before the reform shown in Table 4.2.

In the long time view, it is likely that the financial sector reform enacted in June, 1983 will stimulate the effective operation of the banking system from viewpoint of national economy. However, the abolishment of BI's refinance for KIB-Category II to IV and short-term general credits provided by the state banks increased the funding cost of the state banks, and further, because of deregulation of the interest rates, the interest rates charged to non-priority borrowers rised swiftly.

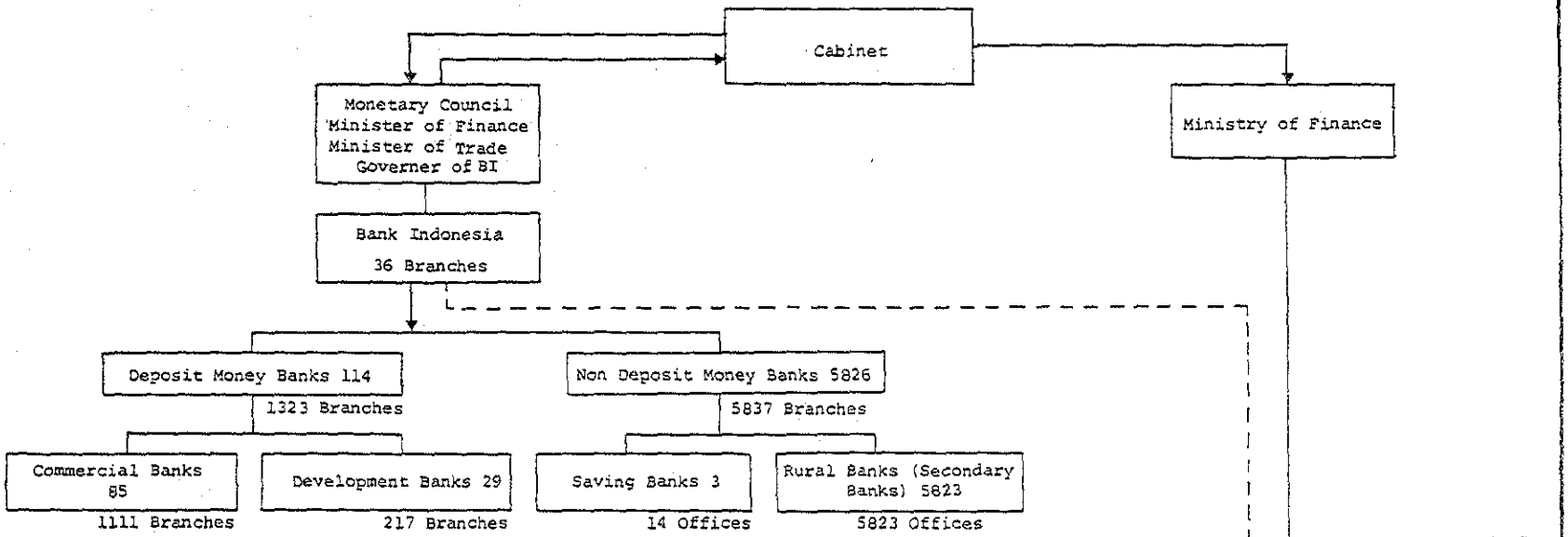
Creditable large-scale enterprises would be possible to borrow low cost loans from external sources, while small-scale enterprises can still borrow the low interest rate loans under the special credit program. The medium-scale enterprises, however, should be rather difficult to borrow low interest rate loans because of the deleted KIB-Category II to IV which provided low interest loan with loan size amounting to from Rp.7.5 million upto Rp.1,500 million.

KIB system was established in 1974 in order to facilitate the promotion of domestic investment by private sector. The system has been amended several times and eventually has been abolished at the time of the financial sector reform in June, 1983. Outline of KIB thus abolished is summarized below.

OUTLINE OF KIB SYSTEM (ABOLISHED IN JUNE, 1983)

Kinds	Category-I	Category-II	Category-III	Category-IV
Maximum loan amount (Rp. millions)	up to 75	75 - 200	200 - 500	500 - 1,500 (BAPINDO; 2,500)
Purpose	Equipment	Equipment	Equipment	Equipment
Handling banks	6 state banks			
Interest rate	10.5%	12.0%	13.5%	13.5%
BI refinance interest rate	3%	3%	4%	4%
Min. self finance by Borrower	20%	25%	30%	35%
Security requirement	Completed facilities with this loan plus collateral at 50% of loan amount			
P.T. Askrindo's insurance	Handling banks may request for insurance/ guarantee, but subject to Askrindo's acceptance			

Figure 4.1 STRUCTURE OF ORGANIZED FINANCIAL SYSTEM IN INDONESIA



1. State Banks
   5 Banks
   739 Branches
2. State Banks
   1 Bank
   22 Branches
3. Private National Banks
   69 Banks
   351 Branches
4. Regional Development Banks
   27 Banks
   194 Branches
5. Foreign Banks
   11 Banks
   21 Branches
6. Private Banks
   1 Bank
   1 Office
7. State Banks
   1 Bank
   12 Branches
8. Private Banks
   2 Banks
   2 Offices
9. Village Banks
   3574 Banks
   3574 Offices
10. Paddy Banks
    2079 Banks
    2079 Offices
11. Petty Traders Banks
    169 Banks
    169 Offices
12. Employee's Banks
    1 Bank
    1 Branch

1. State Pawn Services
   474 Shops
2. Development Finance Companies
   3
3. Investment Finance Companies
   9
4. Housing Finance Company
   1
5. ASEAN Investment Finance Company (P.T. SBPI)
6. Insurance Companies
   87
   (Including P.T. Askrindo & Perum PKK)
7. Credit Cooperatives
   about 1000

Note: Showing the number of banks and pown services as of March 31, 1984, and others as of December 31, 1983.

Source: Bank Indonesia

Table 4.1 OUTSTANDING CREDITS OF BANKS AT YEAR-END 1979 - 1984

(Rp. billions)

	Sector	1979 Amount	(%)	1980 Amount	(%)	1981 Amount	(%)	1982 Amount	(%)	1983 Amount	(%)	1984 Amount	(%)
I	Deposit Money Banks												
1	State Banks 1/	3,270	(79.1)	4,301	(78.7)	5,881	(77.8)	8,031	(77.9)	9,787	(75.2)	13,345	(74.1)
2	Private National Banks	406	(9.8)	566	(10.4)	834	(11.0)	1,197	(11.6)	1,883	(14.5)	3,042	(16.9)
3	Rural Development Banks 2/	87	(2.1)	145	(2.7)	247	(3.3)	357	(3.5)	411	(3.2)	510	(2.8)
4	Foreign Banks 3/	342	(8.3)	414	(7.6)	548	(7.2)	666	(6.5)	862	(6.6)	1,046	(5.8)
II	Villaged Paddy Banks	5	(0.1)	7	(0.1)	10	(0.1)	12	(0.1)	15	(0.1)	16	(0.1)
III	State Pawn Services	23	(0.6)	30	(0.5)	42	(0.6)	44	(0.4)	54	(0.4)	62	(0.3)
	Sub-total	4,134	(100.0)	5,463	(100.0)	7,562	(100.0)	10,307	(100.0)	13,012	(100.0)	18,021	(100.0)
	BI's liquidity credit provided to banks and percentage to outstanding	1,127	(27.3)	1,722	(31.5)	2,548	(33.7)	3,742	(36.3)	4,365	(33.5)	6,938 5/	(38.5)
IV	BI's direct credit	2,163	[34.4]	2,454	[31.0]	2,649	[29.5]	2,771	[21.2]	2,356	[15.3]	870 5/	[4.6]
	Total (I+II+III+IV)	6,297	[100.0]	7,917	[100.0]	10,211	[100.0]	13,078	[100.0]	15,368	[100.0]	18,891	[100.0]
	BI's credit provided and percentage of total 4/	3,292	[52.3]	4,176	[52.7]	5,197	[50.9]	6,513	[49.8]	6,721	[43.7]	7,808	[41.3]

Notes: 1/ Including State Development Bank (BAPINDO).
2/ Including 1 Private Development Bank.
3/ Including 1 Joint-Venture Bank (Bank Perdania).
4/ BI's Credit consisting of liquidity credit and direct credit.
5/ BI's direct credit provided to BULOG and PERTAMINA was transferred to liquidity credits respectively since April 2 and November 30, 1984.

Source: Bank Indonesia

Table 4.2 CHARACTERISTICS OF CREDIT SCHEMES IN INDONESIA

(1/3)

Name of Schemes (1)	Date of Commence-ment (2)	Category of Use (3)	BI's Credit for High Priority Sector (4)	Handling Bank (HB) (5)	Maximum Loan Amount(Rp.) (6)	Source of Funds (7)	Minimum Self Financing (8)	Maximum Lending Term (9)	Interest Rate p.a. (10)	BI's Fund Interest Rate p.a. (11)	Collateral Require-ment (12)	Insurance Coverage (13)
1. Kredit candak kulak (KCK)	Apr. '76	Working Capital(WC)	-	Village Co-operatives (KUD)	2,000 15,000	Government Budget	0%	5days-7months	12%	-	-	Government
2. General rural credit (KUPEDES)	Feb. '84	Investment(I)		BRI	1MM	BI 100%	-do.-	3years	-do.-	3%	Assets created	BI/BRI
		W.C.		-do.-	1MM	-do.-	-do.-	2years	18%	15%	-do.-	-do.-
Of which mini credit	(Apr. '74)	I	-	-do.-	200M	Government	-do.-	3years	12%	-	-do.-	Gov't/BRI
midi credit	(Jun. '80)	I		-do.-	500M	BI 100%	-do.-	5years	-do.-	3%	-do.-	BRI
3. BIMAS/INMAS credit	'64	W.C.		-do.-	Package	-do.-	-do.-	7months	-do.-	-do.-	Land certi-ficate/Other assets	Gov't 50% BI 25% BRI 25%
4. Small invest-ment credit (KIK)	Jan. '74	I		National banks	15MM	BI55% WB25% HB 20%	-do.-	8years	-do.-	BI 3% WB 10.1%	Assets created+max 50% of loan	Askrindo75% HB 25%
5. Permanent working capital credit (KMKP)	Jan. '74	W.C.		-do.-	15MM	-do.-	-do.-	5years	-do.-	BI 3% WB 10.1%	-do.-	-do.-
6. Investment credit up to Rp.75MM	Jun. '83	I		-do.-	75MM	BI 80% HB 10%	10%	10years	-do.-	3%	Assets created+ additional collateral	-
7. Working capital credit up to Rp.75MM	May '84	W.C.		-do.-	75MM	BI 70% HB 20%	-do.-	1year	15%	-do.-	Assets created	Askrindo70% HB 30%
8. Working capital credit for gov't project (Keppres 29/'84)	May '84	W.C.		-do.-	200MM	-do.-	-do.-	-do.-	-do.-	-do.-	Assets created/ project concerned	-do.-

Table 4.2 (Continued)

(2/3)

Name of Schemes (1)	Date of Commence-ment (2)	Category of Use (3)	BI's Credit for High Priority Sector (4)	Handling Bank (HB) (5)	Maximum Loan Amount(Rp.) (6)	Source of Funds (7)	Minimum Self Financing (8)	Maximum Lending Term (9)	Interest Rate p.a. (10)	BI's Fund Interest Rate p.a. (11)	Collateral Require-ment (12)	Insurance Coverage (13)
9. Credits for agricultural specific sector for binas program	Nov. '69	W.C.		State commercial banks	unlimitted	BI 75%	25%	--do.-	12%	-do.-	Commodities concerned	-
10. Export credit	Jan. '82	W.C.		National banks	-do.-	BI 60% HB 40%	0%	-do.-	9%	-do.-	-do.-	Askrindo85% BI 7.5% HB 7.5%
11. Cooperatives credits												
a.For the members & for supply of high priority goods	Sept.'81	I		-do.-	15MM	BI 90% HB 10%	-do.-	10years	12%	-do.-	Assets created	PerumPKK90% BI5% BRI5%
		W.C.		-do.-		-do.-	-do.-	3years	-do.-	-do.-	-do.-	-do.-
b.For the farmers under inten-sification program of paddy & crops	Apr. '85	W.C.		BRI/KUD	Package	BI 100%	-do.-	1year	-do.-	-do.-	Assets created/ other assets	PerumPKK95% BRI 5%
12. Paddy field formation	Sept. '79	I		Channelled thru. Dept. of agriculture	unlimited	-do.-	-do.-	1-2years	-do.-	-do.-	Gov't guarantee	Government
13. Plantation credits												
a.Estate smallholder		I		National banks	-do.-	BI 80%	un-identified	20years	-do.-	-do.-	un-identified	un-identified

Table 4.2 (Continued)

(3/3)

Name of Schemes (1)	Date of Commence-ment (2)	Category of Use (3)	BI's Credit for High Priority Sector (4)	Handling Bank (HB) (5)	Maximum Loan Amount(RP.) (6)	Source of Funds (7)	Minimum Self Financing (8)	Maximum Lending Term (9)	Interest Rate p.a. (10)	BI's Fund Interest Rate p.a. (11)	Collateral Require-ment (12)	Insurance Coverage (13)
b.Replanting rehabilita-tion & development of export commodity plants		I		-do.-	-do.-	-do.-	-do.-	-do.-	-do.-	-do.-	-do.-	-do.-
c.Private national plantation (PSN)		I		-do.-	-do.-	BI 85%	-do.-	10years	-do.-	-do.-	-do.-	-do.-
		W.C.		-do.-	-do.-	BI 75%	30%	un-identified	-do.-	-do.-	-do.-	-do.-
14. Credits for house owner-ship (KPR)												
a.Public housing	Nov. '78	I	-	BTN	3.5MM	Gov't budget	10-20%	20years	5-9%	-	House	Gov't/BTN
b.Non-public housing		I		-do.-	7.5MM	BI 90%	-do.-	-do.-	9%	3%	-do.-	BTN
15. Student loan												
a.For Indonesian students(KMI)	May '82	W.C.		BNI'46	750M	BI 100%	0%	10years	6%	-do.-	Diploma	Askrindo75% BI18.75% BNI6.25%
b.For student dormitories for 5 universities		I		un-identified	5.5billion	BI 80% HB 20%	-do.-	20years	5%	un-identified	un-identified	un-identified

Notes:
1/ Investment credits; 9 categories, of which 2 schemes for industrial sector: KIK and investment credit up to RP. 75MM.
2/ Working capital credits; 11 categories, of which 3 schemes for industrial sector; KMKP, working capital credit up to RP. 75MM, and working capital credit for government project (keppers 29/1984).
3/ Other credits; 4 categories
4/ No.12; excluding the credit channelled through the government.

(Source: Bank Indonesia

Table 4.3 TWO-STEP LOAN PROGRAMS BASED ON FOREIGN AIDS

(Under Implementation or Preparation)

Foreign Aid	Target Sectors to be developed	Loan Ceilings		Handling Institutions		Limit of Lending Term		Interest Rate p.a.	
		1st Step Loan	2nd Step Loan	1st Step Loan	2nd Step Loan	1st Step Loan	2nd Step Loan	1st Step Loan	2nd Step Loan
1. OECF	Manufacturing of basic consumers goods	¥360MM	¥10-300MM	GOI--BI (= 2nd step)	6 State banks	20 years including 5 year-grace period	12 years including 3 year-grace period	3.5%	12% 15%
2. World Bank (KIK/KMKP III)	Small enterprises	$776MM	RP15MM	GOI--BI (= 2nd step)	National banks	20 years including 5 year-grace period	Investment 8 years includ. 4 year-grace p. Working Cap. 5 years includ. 1 year-grace p.	10.1%	12%
3. World Bank (BAPINDO)	Medium/large scale industrial & maritime projects	$200MM	$6MM	GOI-- BAPINDO	BAPINDO	20 years including 5 year-grace period	15 years including 2 year-grace period	11%	10.5% 13.5%
4. World Bank (export)	Medium/large scale export oriented industries	not fixed	expected to $7MM	GOI-- 2nd step	5 State Comercial banks	not fixed	not fixed	11%	18%
5. ADB	Fishery industries including fishery processing, cold storage	$64MM	not fixed	GOI-- 2nd step	4 State Commercial banks (excluding BEII)	not fixed	not fixed	not fixed	not fixed

Source: Team's collection

Table 4.4 CLASSIFICATION OF LENDING PROGRAMS BEFORE FINANCIAL SECTOR REFORM IN 1983 (LENDING INTEREST RATES; BI REFINANCE INTEREST RATES; BI REFINANCE PROPORTION; JAN., 1982)

Classification	Category	Lending Interest Rates (% p.a.)	Refinance Interest Rates (% p.a.)	Refinance Proportion (%)
I. Investment credits by category				
1. Up to Rp. 75 million	I	10.5	3	80
2. Above Rp. 75 million - Rp.. 200 million	II	12	4	75
3. Above Rp. 200 million - Rp. 500 million	III	13.5	4	70
4. Above Rp. 500 million	IV	13.5	4	65
II. Small investment credits (KIK)	-	10.5	3	80
III. Permanent working capital credits (KMKP)	-	12	4	75
IV. Short term credits of state bank by category				
1. Supply and distribution of rice, paddy and corn by BUUDs/KUDs	I	9	3	100
2. Bimas and Inmas credits for rice and secondary crops	II	12	3	100
3. Collection and distribution of smallholder salt by BUUDs/KUDs and PN Garam and working capital credits for PN Garam	II	12	4	75
4. Operation of wheat flour mills	II	12	4	75
5. Export and production of of export goods				
a. Pre shipment				
-Strong export commodities	II	9	3	75
-Others commodities	II	6	3	75
b. Past shipment (all exports commodities)	II	6	3	75
6. Production, import and distribution fertilizer and insecticides for use by smallholder	II	12	4	75
7. Aid financed import and distribution of non food commodities	II	12	4	75
8. Collection and distribution of agricultural produce, animal husbandry and fishery by BUUDs/KUDs and cooperatives	II	12	4	75
9. Smallholders agriculture and handicraft	II	12	4	75
10. Smallholders animal husbandry poultry farming and fishery	II	12	4	75
11. Manufacturing and service rendering industries:				
a. Rice mills/hullers	III	13.5	6	70
b. Sugar mills	III	13.5	6	70
c. Coconut oil and palm oil	III	13.5	6	70
d. Textile	III	13.5	6	70
e. Agricultural equipment	III	13.5	6	70
f. Paper	III	13.5	6	70
g. Cement	III	13.5	6	70
h. Public transportation	III	13.5	6	70
i. Printing and publishing	III	13.5	6	70
j. Tourism	III	13.5	6	70
12. Other production activities	III	13.5	6	70
13. Import and distribution of supervised goods	III	13.5	6	70
14. Sugar stock	III	13.5	6	70
15. Domestic Trade	III	13.5	6	70
16. Contractors of DIP, INPRES and local government financial projects and contractors of low-cost housing project	III	13.5	6	70
17. Other contractors	IV	15	6	60
18. Imports and distribution of other import goods	V	18	6	40
19. Other	VI	21	6	25

Source: Bank Indonesia

Chapter 5 LOCALIZATION AND COST COMPETITIVENESS

Chapter 5 LOCALIZATION AND COST COMPETITIVENESS

5.1 Overview of Deletion Program

5.1.1 General

(1) Background of deletion program

As has been discussed earlier, the assembly-type machinery industries are heavily dependent on imported components and parts. Increasing local-made components contained in the assembled/manufactured final goods such as automobiles, agricultural machinery, electrical machinery and so on is one of the principal policies adopted by the Government of Indonesia for the development of industries particularly related to the machinery and basic metal industries in the country.

To meet this objective, the Government has been pursuing the implementation of a program called "Deletion Program" which is to guide the machinery manufacturers in Indonesia to increase the use of local-made components and parts under the achievement programs specifically set by the Government.

(2) Implementation of the program

The Ministry of Industry is responsible to pursue the implementation of the deletion program. The Ministry sets the programs for achievement of localization on the individual subsectors of machinery industries, which are announced as the Decree of the Minister of Industry for implementation. The Decree sets forth the names of components designated for the use of local-made ones and the time schedule for achievement of the localization for each designated component. These programs are prepared in due consideration of prevalent conditions and future outlook of the industries in Indonesia and also in consultations with the representatives of the industries so that the programs can be implemented efficiently by the relevant industries. In the course of the preparation and implementation of the programs, the Ministry closely coordinates with other ministries or government agencies concerned.

(3) CBU and CKD

The implemention of the deletion program was started with the import embargo of complete built-up components (CBU) replacing by the import of complete knock-down components (CKD) for domestic assembly. The next stage is to designate some of the CKD components to be manufactured locally. Incomplete knock-down, which excludes these localized components, is called minus-CKD.

When the imports of some components have decreased to a minor quantity because of the progress in the localization of components, such components are removed from the list of CKD components and are thereafter treated as "spare parts" subject to higher tariff rates.

(4) In-house and out-house productions

The local production of designated components is enforced with two distinctive ways of production, namely "in-house" and "out-house". As for the components designated for out-house production, assemblers are obligated to use those manufactured by outside manufacturers in Indonesia, while they are allowed to engage themselves in manufacturing the components designated for in-house production. The in-house production is allowed only for those requiring a large amount of investment, highly advanced technology, or product specifications specially developed by the individual assemblers.

The promotion of out-house production could stimulate the expansion of markets for local subcontracting manufacturers. For some items of the components designated for out-house production, the Ministry has a policy to limit the number of manufacturers to whom production license is granted, with a view to avoiding excessive competition among manufacturers and also maintaining economic production scale for each manufacturer.

(5) Import policy for components

In connection with the deletion program, the Government has a policy to take measures for protecting the domestic production of designated components, which are adjustment of tariff rates or import control. For example, the tariff rate on CKD or minus CKD components is 5% while the tariff rate of 30% is imposed on the same components if they are removed from the "CKD list" and treated as "spare parts". In addition, the import of the components which can be substituted by local-made components is closed, although an import is allowed with

quota for those closed items when the domestic production is insufficient to meet the demands.

5.1.2 Outline of the Deletion Program Applied for Each Subsector

(1) Machine tools

Manufacturing license was given to 11 designated companies stipulating the numbers of machines by type to be manufactured by each company. For 14 types of machine tools, such as lathe, milling machine, surface grinder, etc., the use of local-made components was enforced.

(2) Agricultural machinery

The use of local-made components was enforced for 6 types of machinery which were hand-operated tractor, mini-tractor, medium-size tractor, rice polishing machines, paddy grinding machines and rice hullers.

(3) Construction equipment

Deletion program for construction equipment recently started in April, 1984 having a stipulation on 4 types of equipment, i.e. crawler bulldozers, hydraulic excavators, motor graders and wheel loaders.

(4) Electrical machines

The Minister of Industry decreed a stipulation on electric generators in June, 1983 and a stipulation of KWH meter in April, 1984.

(5) Automotive

The first Decree of the deletion program concerning the automotive industry was issued in 1976, and thereafter several amendment and supplement were made to meet changes in the situation.

The deletion program for the automotive industry is confined to the components of commercial cars. The program consists of two stages, i.e. the first stage started in the late 1970s, applied mainly to the body and frame of cars, and the second stage started in September, 1983, applied mainly to engines, transmission axles, etc. For passenger cars, CKD import is still allowed for local assembly.

(6) Motorcycle and scooter

Deletion program for motorcycle and scooter is very similar to that for automotive in terms of historical progress except an application method that the indication of the use of local components is stipulated by percentage of local components costs shared in a complete products.

(7) Diesel engine

Since deletion program for engines which are equipped on automotive and motorcycle is stipulated by their own deletion program for each industry as mentioned above, the decree regulates diesel engines used for electricity generating, agricultural machinery, construction equipment and boats, etc.

Two decrees were placed; one is for the capacity of 2 kW to 25 kW and the other is for that of 26 kW to 37 kW.

(8) Shipbuilding and process plant equipment

There is no decree applied for shipbuilding and plant equipment as a whole industry because these industries use a large variety of components, however, promotion of localization in the industries is supported by import control of components instead of Minister of Industry Decree.

As for unit equipment, a decree exists on boilers upto the capacity of 100 tons/hr.

5.1.3 Some Difficulties Encountered in Implementation of Deletion Program

The deletion program has been playing an important role as the measures for pursuing the Government's policy to promote the development of machinery and metalworking industries in Indonesia. The large-scale assembly-type machinery manufacturers existing in Indonesia, in recognition of the importance of the program, have been devoting to adjust or reform their operations to meet the objectives of the program.

Nevertheless, despite the Government's efforts which have been taken for efficient implementation of the program, there seems to be some areas where the industries currently face the difficulties to cope with the achievement programs set by the Government, especially under the market conditions currently depressed in the country. Summarized below are observations on these problem areas found through the field surveys.

(1) Achievement schedule for the localization

Although most programs stipulate to be achieved within three years, in general it seems to be too tight. Particularly for the localization of components requiring advanced technology, it may require to have longer time for achievement, in view of time requirements for sub-contracting manufacturers to catch up such technology.

(2) Needs for adjusting the schedule

As the market conditions fluctuate, reflecting world trends as well as the economic conditions of the country, some manufacturers are causious to make additional investments which are required for adjusting or reforming their operations in line with the achievement schedule. There may be needs for considerations to adjust the programs to meet such conditions and also provide some incentives to them so that they may positively follow the achievement schedule set in the programs.

(3) Needs for guidance to the manufacturers

Some assembly-type machinery manufacturers face the following difficulties in interpretation of the guidelines:

1) If some of the in-house components which have so far been manufactured by a production line are designated as out-house components, the utilization ratio of the production line will drop and excessive personnel will be generated. In view of such problems, some manufacturers face difficulties to take immediate reaction.

2) There are some intermediate goods used for different final goods. Such intermediate goods are simultaneously subject to two or three achievement schedules for the localization of components which were individually set on each subsector of manufacturing and assembling into individual final goods. For example, 3 deletion programs exist for engines, which were set for automobile engines, two-wheel engines and unit diesel engines respectively with different schedules for the achievement of localization under these situations, the engine manufacturers who are engaged in manufacturing various types of engines have confusions to determine the direction of their operations.

In view of these facts, it is observed that, in order to promote the efficient implementation of the programs, it would be necessary for the

government authorities to provide more practical guidances with the manufacturers so that they can follow the program in the most efficient manner.

(4) Needs for expanding reliable subcontractors

It is obvious that the effective implementation of the deletion program is largely dependent on the existence of reliable subcontractors who can manufacture required quality of components and parts at economical costs. As has been discussed earlier, the Indonesian metalworking industries are situated in shortcoming of the reliable subcontracting manufacturers. Along with the progress of the deletion program, it is important to take immediate measures for fostering and expanding reliable subcontracting manufacturers of components and parts which is the objective of this present study.

5.2 Analysis of Cost Competitiveness

5.2.1 Introduction

This section assesses and discusses on the cost structure and competitiveness of local-made metalworking products which may substitute for imports, and also on possible improvement in the future.

Section 7 of the Section Report provides information on the prerequisites for the cost calculations and the details of the calculation results.

5.2.2 Comparison of Manufacturing Costs

(1) Casting

The manufacturing costs of the cast products of identical model factories in Indonesia and Japan are compared in Table 5.1. The manufacturing cost includes 20% gross profits on the amount of investment. The result indicates that the manufacturing cost is lower in the Indonesian factory, $967/ton, than the Japanese factory, $1,212/ton. The difference, $245/ton, is as low as 20%.

The less expensive items in Indonesia are the raw material cost ($75) and the personnel and overhead costs ($327). The main items which have higher costs in Indonesia are the depreciation cost ($17), the interest ($82) and the gross profit ($51).

The high depreciation cost and the high gross profits derive from the high project cost due to the necessity of importing equipment on which import tax is imposed. Similarly, the high interest derives from the high project cost which pushes up the size of the loan, and also from the high interest rate (26.4% annually compared to 9% in Japan).

The high personnel and overhead costs in Japan (31.6% of the total cost while it is 5.8% in Indonesia) and the high interest cost of 11.6% in Indonesia (2.5% in Japan) are especially noticeable in this comparison.

Note: "$" in these paragraphs are in U.S. Dollars.

The reason for the lower raw material cost in Indonesia lies with the facts that they use thin steel sheet scrap from the automotive industry and that the price of pig iron is set at a low figure, with the assumption of the domestic supply from Lampong. When thin steel sheet is used as scrap, however, the melting efficiency is reduced. The use of the pig iron, whose composition is not rigorously controlled, badly affects the product quality.

Although this analysis indicates that Indonesia may be possible to manufacture cast products at a cost by 20% lower than the Japanese products, it is common knowledge in industrial circles that the price of imported cast products is 20 - 30% lower than that of domestic products.

While the reason for this discrepancy is analysed in the following section (5.2.2), the above analysis result implies the possibility of competitiveness against imported products if a large, modern foundry is built in Indonesia with efficient control and operation.

(2) Forging

Table 5.2 compares the cost of forged products in Indonesia and Japan. According to this table, the manufacturing cost in Japan is lower by $72/ton (4% of the total cost), which can be regarded as alsmot the same in both countries. Concerning the cost for raw material in Indonesia, the price of domestic steel for forging is increased due to price controls, while that of import is also increased due to high transportation cost and import tax. In either case, the result is a higher raw material cost by $208/ton in Indonesia. In addition, the interest cost is $98/ton higher, the manufacturing losses caused by the lower technological level is $71/ton and the depreciation/gross profit is $76/ton higher in Indonesia.

These high costs are largely off-set by the lower personnel cost ($349/ton lower in Indonesia), and since the utilities cost (electricity and water) is also lower, the overall manufacturing costs are almost the same both countries. This means that if the manufacturing technology could be improved, the price difference between both countries would become negligible, under the assuumption of using the same designed factory.

(3) Presswork

A comparison of the manufacturing costs of press products is given in Table 5.3. The manufacturing cost of Japanese products is lower by $102/ton (8% lower than Indonesian products). This difference, however, should be considered minimal. When Japanese products are exported to Indonesia, they become more expensive than the Indonesian products due to the transportation cost ($50/ton) and the import tax, etc.

A comparison of the itemised costs shows a similar result to the previously described case of forged products. Japan has advantages in regard to the raw material cost ($206/ton lower), the cost of defect products ($65/ton lower), the interest cost ($70/ton lower) and the depreciation cost and gross profit ($65/ton lower). Converserly, Indonesia has an overwhelming advantage in reagrd to the personnel cost ($282/ton lower), followed by the overhead cost ($26/ton lower).

As decribed above, there is a strong possibility for Indonesian casted, forged or press products to be competitive against Japanese products in terms of their manufacturing costs. From the Japanese point of view, this means the erosion of the cost advantage of the basic metal processing products, except for those requiring high precision. As a result, Indonesia is expected to be able to compete with Taiwan and South Korea, where the personnel cost is not as high as in Japan.

5.2.3 Analysis of Cost Structure in Indonesia

(1) Discrepancy between current situation and assumptions for cost estimates

The estimation of the manufacturing costs has been done based on the assumptions given in Section 7 of the Section Report. These assumptions are used for the cost estimate of a large, modern model factory to be built in the future and do not necessarily reflect the production cost of the existing Indonesian factories.

The prevailing opinion in Indonesian industrial society is that the present manufacturing cost of existing metalworking factories is 20 - 30% higher than the price of imported products.

The differences in the conditions for the cost calculation of model factory and for an existing factory are as follows.

a) The production capacity of the existing factory is much lower than the model factory and the operation comprises of one shift.

b) The facilities of the existing factory are old, and the off-grade rate of products is higher than the assumption for the model plant.

c) The capacity utilization rate of the existing factory is about 60% due to the unstable market (production is mostly based on orders received due to the undeveloped subcontracting system) and obsolete facilities.

d) As the facilities of the existing factory has been depreciated to a certain extent, the depreciation cost accounts for a minor portion of the production cost.

e) As at the time when the existing facilities were built, the interest rate was lower than the current rate and as borrowed loan should have almost been repaid out, the interest cost of the existing factory should be rather low.

f) The gross profit of the existing factory should be low due to the high cost.

(2) Estimated manufacturing costs of existing factories

The manufacturing costs of existing foundries and press factories are estimated here based on the conditions specified in Table 5.4. The various factors described in the previous section have also been taken into consideration. As independent forging factories are virtually non-existent in Indonesia, they have been excluded from this analysis.

Tables 5.5 and 5.6 show the estimated manufacturing costs at existing foundries and press factories respectively. The production capacities and the project costs, etc. for existing factories are taken from the data on small industries with good future prospects examined in Section 9.

The resulting total manufacturing costs are as follows.

COMPARISON OF MANUFACTURING COSTS (US$/TON)

	Indonesia		Japan
	New, Large Factories	Existing, Small Factories	New, Large Factories
Foundries	967	1,664	1,212
Press factories	1,249	1,606	1,147

The total manufacturing cost at existing, small factories in Indonesia is 37 - 40% higher than the cost at new, large factories in Japan (the cost level at existing factories in Japan is similar to that of new factories). When Japanese products are imported to Indonesia, their import prices are considered to be $1,514/ton for cast products and $1,436/ton for press products due to the transportation cost of $50/ton and the import tax and VAT which are imposed on these products (the tax amounts to 20% of the product value). Even though these extra costs are added, Indonesian products are still more expensive by 10 - 12%. In addition, the quality of many of Indonesia's domestic products has not yet reached to the internationally required standard.

(3) Analysis of cost penalty factors

The following factors are considered to cause the relatively high prices of current Indonesian products.

a) Taxation, such as the import tax on raw materials, as well as on production equipment, etc.

b) High defect rate originating from inadequate factory management skills, inadequate production technology and obsolete facilities.

c) Low capacity utilizationdue to the reasons given in (b) above and unstable market.

d) High interest rate.

The influence of these factors on the total manufacturing cost is calculated below and tabulated on Table 5.6 taking an existing, small press factory as an example.

POSSIBLE REDUCTION OF MANUFACTURING COST BY IMPROVEMENT OF COST PENALTY FACTORS (US$/TON)

Standard manufacturing cost:		1,606
1)	Raw materials purchased at international prices without import tax:	(Assumption: 658) Less 156
2)	Improvement in defect rate:	(Assumption: 15%: 165) 10%: Less 55 5%: Less 110 1%: Less 154
3)	Tax exemption on construction cost:	Less 30
4)	Lower interest rate:	(Assemption: 18%: 139) 12%: Less 47 10%: Less 62 8%: Less 78

1) The raw material cost per 1 ton of product is $658 in Indonesia. Since the cost of imported materials from Japan is $502, including the transportation cost without import taxes, the difference is $156/ton.

2) The rate of defect products is set at 15% with the cost given as $165/ton. If this rate is improved to the Japanese level, i.e. 1%, the manufacturing cost will be reduced by $154/ton. The manufacturing loss is mainly caused by inefficiency in plate cutting.

3) The construction cost includes the import tax, the import sales tax and the value added tax. If all of these taxes are exempted, the entire project cost will be reduced, resulting in a reduction of the depreciation cost, the interest payment and the maintenance cost by a total of $30/ton.

4) As the existing factories were constructed in the early days, the interest rate of loans borrowed for acquisition of facilities was assumed to be 18% instead of the current interest rate of 26.4%. If the interest rate for existing factories is 10%, the manufacturing cost will be reduced by $62/ton.

If all the conditions described above are met, the reductions in the manufacturing cost will be as follows.

	Amount of Reduction
Purchase of raw materials at international price	$156/ton
Defect rate reduced from 15% to 1%	$154/ton
Tax exemption for construction cost	$30/ton
Loan interest: 10%	$62/ton
Total	$402/ton

The calculated total manufacturing cost of U.S. $1,606/ton is, therefore, reduced to approximately $1,200/ton because of the reduction of $402/ton. At this cost, existing, small factories can manufacture competitive products for the international market as far as the cost is concerned (product quality, however, is an entirely different matter).

In conclusion, the cost penalty in Indonesia are caused by institutional reasons such as the import tax and the interest rate and also by the inadequate technological level. Hence, if these factors can be improved, the Indonesian production costs may be reduced to a level comparable to the Japanese costs, implying that Indonesia has potential to produce the products at competitive costs when appropriate measures are taken as mentioned above.

Table 5.1 PRODUCTION COST COMPARISON (CASTING)

	Indonesia		Japan	
	(US$/ton)	(%)	(US$/ton)	(%)
A. Variable cost				
Raw materials	142	(14.7)	161	(13.3)
Utilities	125	(12.9)	186	(15.3)
Auxiliary materials	106	(11.0)	101	(8.3)
Sub-total	373	(38.6)	448	(37.0)
B. Fixed cost				
Labor cost & overhead	56	(5.8)	383	(31.6)
Maintenance cost & tax	17	(1.8)	13	(1.1)
Depreciation	93	(9.6)	76	(6.2)
Sub-total	166	(17.1)	472	(38.9)
C. Loss from off-grade	56	(5.8)	42	(3.5)
D. Operating expenses				
Interest	112	(11.6)	30	(2.5)
Admin. & sales exp.	18	(1.8)	29	(2.4)
Sub-total	130	(13.4)	59	(4.9)
E. Return on investment (20%)	242	(25.1)	191	(15.8)
F. Total cost and return	967	(100.0)	1,212	(100.0)

Source: Section Report, Section 7; Tables A-7.6 and A-7.7

Table 5.2 PRODUCTION COST COMPARISON (FORGING)

	Indonesia		Japan	
	(US$/ton)	(%)	(US$/ton)	(%)
A. Variable cost				
Raw materials	897	(49.9)	689	(39.9)
Utilities	111	(6.2)	140	(8.1)
Auxiliary materials	5	(0.3)	12	(0.7)
Sub-total	1,012	(56.4)	842	(48.8)
B. Fixed cost				
Labor cost & overhead	60	(3.4)	409	(23.7)
Maintenance cost & tax	24	(1.3)	19	(1.1)
Depreciation	128	(7.1)	103	(6.0)
Sub-total	213	(11.8)	530	(30.8)
C. Loss from off-grade	99	(5.5)	28	(1.6)
D. Operating expenses				
Interest	136	(7.6)	38	(2.2)
Admin. & sales exp.	40	(2.2)	42	(2.4)
Sub-total	176	(9.8)	80	(4.7)
E. Return on investment (20%)	295	(16.4)	244	(14.1)
F. Total cost and return	1,796	(100.0)	1,724	(100.0)

Source: Section Report, Section 7; Tables A-7.8 and A-7.9

Table 5.3 PRODUCTION COST COMPARISON (PRESSWORK)

	Indonesia		Japan	
	(US$/ton)	(%)	(US$/ton)	(%)
A. Variable cost				
Raw materials	658	(52.7)	452	(39.4)
Utilities	50	(4.0)	67	(5.9)
Auxiliary materials	7	(0.5)	16	(1.4)
Sub-total	715	(57.3)	535	(46.6)
B. Fixed cost				
Labor cost & overhead	53	(4.2)	335	(29.2)
Maintenance cost & tax	13	(1.0)	10	(0.9)
Depreciation	69	(5.5)	56	(4.9)
Sub-total	135	(10.8)	401	(35.0)
C. Loss from off-grade	74	(5.9)	9	(0.8)
D. Operating expenses				
Interest	94	(7.5)	24	(2.1)
Admin. & sales exp.	28	(2.2)	28	(2.5)
Sub-total	122	(9.7)	52	(4.5)
E. Return on investment (20%)	204	(16.3)	150	(13.0)
F. Total cost and return	1,249	(100.0)	1,147	(100.0)

Source: Section Report, Section 7; Tables A-7.10 and A-7.11

Table 5.4 REVISION OF ASSUMPTIONS FOR EXISTING PLANT

	Basic Assumption for New Investment (Table 5.1, 5.3)	Revised Assumption for Existing Plant (Table 5.5, 5.6)
A. Capacity		
Casting	12,000 t/y (2 Shifts)	420 t/y (One Shift)
Presswork	1,380 t/y (2 Shifts)	240 t/y (One Shift)
B. Capacity utilization		
Casting	100%	60%
Presswork	100%	60%
C. Off-grade products and/or loss		
Casting	8.25%	20%
Presswork	7.5%	15%
D. Project cost (1,000 US$)		
Casting	14,532	1,455
Presswork	1,405	352
E. Employees		
Casting	272	19
Presswork	25	17
F. Depreciation	as defined in Section 7	Half of new investment
G. Interest rate	26.4% per annum for all	18% for fixed assets, 26.4% for working capital
H. Return on investment	20% of the project cost per year	10% of sales amount

Table 5.5 ESTIMATED PRODUCTION COST FOR EXISTING CASTING PLANT IN INDONESIA

	Annual Cost (US$ 1,000)	Unit Cost (US$/ton)	Composition (%)
A. Variable cost 1/	94.0	373	22.4
B. Fixed cost			
Labor cost & overhead 2/	46.8	186	11.2
Maintenance cost & tax	18.1	72	4.3
Depreciation	60.7	241	14.5
Sub-total	139.5	499	30.0
C. Loss from off-grade 3/	43.9	174	10.5
D. Operating expenses			
Interest	106.1	421	25.3
Admin. & sales exp.	7.9	31	1.9
Sub-total	114.0	452	27.2
E. Return on investment	41.8	166	10.0
F. Total cost & return	433.2	1,664	100.0

Assumptions
Capacity = 420 t/y
Capacity Utilization = 60%
Annual production = 420 t/y x 60% = 252 t/y
Project cost (US$ 1,000) Ref. Section 9; Table A-9.15

Erected plant cost	772
Civil & building	516
Indirect cost	161
Working capital	56
Total	1,455

Notes: 1/ Assum as same as the large scale plant (Table 5.1).
2/ 19 employees
3/ 20% of (A + B)

Table 5.6 ESTIMATED PRODUCTION COST FOR EXISTING PRESSWORK PLANT IN INDONESIA

	Annual Cost (US$ 1,000)	Unit Cost (US$/ton)	Composition (%)
A. Variable cost 1/	89.9	624	38.8
B. Fixed cost			
Labor cost & overhead 2/	49.5	344	21.4
Maintenance cost & tax	4.7	33	2.1
Depreciation	14.7	102	6.4
Sub-total	68.9	479	29.9
C. Loss from off-grade 3/	23.8	165	10.3
D. Operating expenses			
Interest	20.0	139	8.6
Admin. & sales exp.	5.5	38	2.4
Sub-total	25.5	177	11.0
E. Return on investment	23.2	161	10.0
F. Total cost & return	231.3	1,606	100.0

Assumptions
Capacity = 420 t/y
Capacity Utilization = 60%
Annual production = 420 t/y x 60% = 252 t/y
Project cost (US$ 1,000) Ref. Section 9; Table A-9.19

Erected plant cost	187
Civil & building	93
Indirect cost	38
Working capital	34
Total	352

Notes: 1/ Assum as same as the large scale plant (Table 5.3).
2/ 17 employees
3/ 15% of (A + B)

Chapter 6 MEASUREMENT OF FUND REQUIREMENT

Chapter 6 MEASUREMENT OF FUND REQUIREMENT

This section reviews the capital investment necessary for the linkage-type metalworking industries in the near future. The fund requirement is measured from the following two viewpoints.

a) The amount of fund actually needed by the private firms.

b) The potential fund requirement for the metalworking industries in Indonesia as a whole.

a) is the realistic amount of fund requirement obtained by the questionnaire survey of 219 firms, and it represents the total requirement of existing firms who replied that they needed the fund for expansion and/or modernization of their facilities. Although it is hard to determine what proportion of this fund requirement will actually be realized as real demand for two-step loans, it means that at least this much fund requirement does actually exist. (Reviewed in Paragraph 6.1)

Meanwhile, b) represents the potential total demand for fund obtained from the viewpoint of capital investment required for the metalworking industries if it is to achieve industrial development as targeted in REPELITA IV and other programs. (Reviewed in Paragraph 6.2) Accordingly, a) may be regarded as being a part of b).

6.1 Tabulation of Fund Requirement Obtained by Means of Questionnaire Survey

6.1.1 Premises for Tabulating the Questionnaires

(1) Classification of the scale of firms and distribution of replies

According to the Ministry of Industry's classification, "the small-scale enterprises" are defined as those which satisfy the two conditions of (1) having the mechanical production facilities worth 70 million Rupiahs or less, and (2) capital equipment ratio per employee of 650 thousand Rupiahs. MOI does not have any precise definition with respect to "medium-scale" and "large-scale" firms so that it is not possible to classify the statistical data into small, medium and large industries. BI's definition is also only for the small-scale industry. For expedience, the questionnaires were tabulated here according to the classification by number of employees. The distribution of the number of replies to the questionnaire by the scale of firm is as follows.

DISTRIBUTION OF REPLIES TO QUESTIONNAIRES
BY FIRMS OF THE METALWORKING INDUSTRIES BY SIZE

Group of Company	No. of Answers	(%)	Average employees Re-company
I (19 employee or less)	75	(34.2)	10
II (20 to 99)	99	(45.2)	46
III (100 to 199)	24	(11.0)	137
IV (200 empoyees or more)	19	(8.7)	354
Employment size unkown	2	(0.9)	-
Total	219	100.0	71

Note: A questionnaire survey of the assembly-type industries was also conducted, but the responses were not included in the foregoing figures. The foregoing figures come strictly from the linkage-type metalworking industries only.

(2) Method of tabulation and special notations

Table 6.1 shows the tabulated results of the questionnaire survey, but it must be noted that in the questionnaire, the respondents were first asked whether they had any expansion plan for the near future, and those who answered "yes" were asked to give the approximate amount of total investment. Then they were further asked about their financing plan, broken down into the amount of self finance and the amount of loan required. Their answers, however, were given in various forms, and they lack consistency due to the following reasons.

a) Although the firms have plans for facility expansion, some are not yet certain about the amount of total investment that it will require.

b) The some firms have approximate ideas of the required investment but has no fund raising plan on self finance or loan.

c) Because of errors in the answers, the total of self finance and loan amount do not add up to total investment.

Here, none of the figures was adopted or rejected for the sake of consistency; all figures were tabulated as they are to reflect the answers. For instance, if we look at the total in Table 6.1, the number of firms with expansion plan is 159 but only 121 of them entered the total investment amount. The number of firms which answered that they were ready to self finance for their expansion plan was 108 and the number of firms which required loans was 111.

Accordingly, the financing plan does not amount to:

Total investment = self finance + loan required.

6.1.2 Total Investment and Financing Plan

(1) Total investment

As can be seen from Table 6.1 and summarized below, investment required for 121 companies in a total amounts to Rp.84 billion, or Rp.695 million per company.

The size of investment per company increases accordingly to the size of company.

For reference, taking Group II and III as a category of medium-scale and grower-type industry, investment required for 59 companies amounts to Rp.44.2 billion in a total, or Rp.750 million per company.

The total capital investment above is deemed as sum of fixed capital and working capital because the question was not made separately on the two capitals.

Almost all firms scheduled to complete their investment by 1990, which on average, centers on May 1987.

INVESTMENT REQUIRED BY GROUP OF COMPANY SIZE

Group		I	II	III	IV	Total
No. of answer		55	53	6	7	121
Total investment	(Rp. billion)	2.4	22.2	22.0	37.5	84.0
	(US$ million)	2.1	20.0	19.8	33.8	75.7
Per comapny	(Rp. million)	43	403	3,667	5,357	695
	(US$ thousand)	39	363	3,303	4,826	626

(2) Financing plan and debt/equity ratio

Validity answers to anticipated amount of paid-up equity involved in the total investment were from 108 companies and those to debt or loan were from 111 Companies.

The discrepancy between the numbers of validity answers is caused by the fact that some companies reported only anticipated loan amount without any data for equity as well as total investment, and so on. The information and answer to the questionnaire has been simply added up by each item in avoidance of artificial adjustment, since the descrepancy can be deemed as tolerable error.

DEBT, EQUITY AND DEBT/EQUITY RATIO BY GROUP OF COMPANY SIZE

Group	I	II	III	IV	Total
Total debt (Rp. million)	1,111	14,675	1,600	3,200	20,586
Total equity (Rp. million)	615	5,313	400	2,300	8,628
Debt/equity	64/36	73/27	80/20	58/42	70/30

The above Debt/Equity Ratio indicates average figure including companies which intend to borrow all requirements or to provide equity as much as 70% of the requirements. Debt/Equity ratio for the sum of Group II and III is computed as 74/26.

(3) Estimate of loan amount required

As discussed in (1) above, 159 companies or 73% of 219 companies which are the total number of companies interviewed in the questionnaire survey have expansion plans, and 121 companies require capital investment amounting to Rp.84 billion. On the other hand, a debt/equity ratio analyzed in (2) above indicates 70/30 in average as a total. The debt/equity ratio of 70/30 can be deemed reasonable as discused in the following (3).

Using these two figures, loan requrements for coming 5 years is estimated as Rp.58.8 billion, in which the requirements for Group II and III amounts to Rp.30.9 billion.

LOAN REQUIREMENTS BY GROUP FO COMPANY SIZE

Group	I	II	III	IV	Total
Total investment (Rp. million)	2,376	22,163	22,000	37,500	84,039
Loan requirement (Rp. million)1/	1,663	15,514	15,400	26,250	58,827
No. of company	55	53	6	7	121
Loan per company (Rp. million)	30	293	2,560	3,750	486

Note: 1/ Debt/Equity is assumed as 70/30 for all groups.

(4) Appropriate debt/equity ratio

The reason why the Debt/Equity Ratio of the Group I firms is relatively high at 64/36 is because the amount of fund required is relatively small. It is also their borrowings are limited to a relatively small amount due to low ranking in banks' credit rating and their limited collateral availability for borrowing. When these small firms grow into medium-scale firms, borrowings from banks may become easier, because their creditability and their collateral position would be improved by accumulated earnings and assets. At the same time, as the investment requires a larger amount of capital, the requirements might not be met by their equity capital. The loan requirement for growth thus increases, and it is reflected in the debt/equity ratio of 73/27 for Group II and 80/20 for Group III. When the firms grow into large-scale firms, profitability improves by virtue of the economy of scale and increases in their retained earnings, so that the debt/equity ratio again returns to the lower level of 58%.

These tendencies are not peculiar to Indonesia alone. Similar tendencies can be seen in other countries. In case of Thailand, the debt/equity ratio is 56/44 for small firms, 72/28 for medium firms and 55/45 for large firms (findings made by JICA experts in 1982).

According to the provisions stipulated for KIB which was abolished by the 1983 financial reform, the minimum equity ratio was as follows.

	Credit Limit	Equity (%)
KIB I	75 million Rp.	20
KIB II	75- 200 "	25
KIB III	200-500 "	30
KIB IV	Above 500 "	35

At present, KIB II to IV have been abolished, but the category of KIB I virtually remains under a different name, which provides for the minimum equity ratio of 10%.

Judging from all of the foregoings, it is considered reasonable to set the minimum equity ratio for two-step loans in the range from 20% to 30%.

6.2 Potential Capital Demand Estimate

The potential capital demand for the linkage-type industry in whole Indonesia has been estimated in three different methods.

a) Estimate by work volume increase

Work volume for the linkage-type metalworking industry in Indonesia is firstly estimated on the assumption that the requirements for domestic production stemmed from localization and natural economic growth in the assembly-type industry sector will create an additional market for the linkage-type industry sector.

Secondly, the capital investment required for the linkage-type industry is computed on the assumption that such additional market shall be fulfilled by investment for installation of new or additional capacity.

b) Estimate by the questionnaire survey data

The questionnaire survey shows a capital requirement as much as Rp.84 billion for 219 companies including ones which do not have expansion plan in the near future. An average capital requirement per company has been computed as Rp.380 million, by which an estimated total number of companies in Indonesia is multiplied to obtain a total capital requirements for the whole country.

c) Estimate by the national macro-economic data

It is known that there is a correlation between the value-added and the fixed assets formation (investment) in the industry. Using the correlation, an estimation of the capital requirements for the metalworking industry sector is made.

6.2.1 Estimate of Capital Demand by Work Volume Increase (Refer to Section 4 in Section Report)

(1) Methodology of the production volume estimate for the assembly-type industry

The markets for the linkage-type metalworking industry will be the assembly-type machine industry. The production of the linkage-type industry will increase in accordance with the domestic production volume of the assembly-type industry.

Therefore, in order to estimate the demand volume for the linkage-type industry, the production volume of the assembly-type industry should first be estimated.

The following two factors affect the demand increases.

1) Increase in local content or localization ratio (progress of localization).

2) Increase as a result of growth of national economy (growth of economy)

The increased demand for domestically manufactured products can be given as the total of 1) and 2). Here, the increased demand for domestically manufactured products is automatically regarded as the actual local production volume because export of machinery and equipment from Indonesia could be assumed as negligibly small in the near future. Estimates have been made for 1985, 1990 and 1995.

Forecast of progress of localization

Firstly, the major types of machines are selected for each of the following industrial fields.

Machine tools	7	Types of machines
Agricultural machinery	8	"
Construction machinery	4	"
Electrical machinery & appliances	10	"
Automotive	1	"
Motorcycle	1	"
General-use diesel engines	1	"
Total	32	Types of machines

A representative model is selected for each of these 32 types of machines and the major components for each machine are then listed. After the weight for each of these components has been calculated, the metalworking volume to be given to each component has been computed in weight under the following five different metalworking processes.

1) Casting
2) Forging/heat treatment
3) Machining

4) Sheet work/welding
5) Press work

Different rate of difficulty is involved in each component in view of the processing technology and the precision, and the utilization of domestically manufactured products is enforced for some components under the Deletion Programs. Taking these two factors into account and also based on findings and information obtained by the field survey, while assuming that the local production may be started on the product items easier for the production, realization of local production has been estimated. There, localization ratio was assumed basically on the basis of achievement schedule set in the Deletion Program, except for some items on which the stipulated schedule has been adjusted if it is seemed unlikely. Thus, based on the work volume in weight (kg/unit) estimated for each selected machine, and also on the estimated localization ratio, the work volume by each process was projected on each of the 32 machines and for the years of 1985, 1990 and 1995.

As for the shipbuilding industry, the projection was made in the following manner, since the above method was difficult for use due to a numerous number of components used for shipbuilding.

1) In 1985, outside orders from shipbuilding industry to linkage-type metalworking industry may equal nearly zero.

2) In 1990, outside orders of out-fittings made of steel structures and steel fabricated products will start in certain amount, which will be demand to linkage-type metalworking industry.

3) In 1995, the volume of order of the out-fittings to the linkage-type industry will be doubled since 1990.

As for plant equipments, the data provided in "The Feasibility Study Report on the Development of Plant Processing Equipment Industry in the Republic of Indoneisa", submitted to the Government of Indonesia by JICA, 1985 were referred to for estimating the demand and the localization ratio of the plant equipment manufacturing industry. The figures in the Report are reviewed and revised by data and information which the Survey Team has obtained.

Estimate of natural growth from the growth of national economy

The defail method and estimated growth rate by sub-sector are referred to in the Section 4, Section Report. As known in the Section Report, growth rates for the representative 32 types of machines for 8 subsectors are estimated by each sub-sector such as machine tool, agricultural machinery, etc., mainly on the basis of the growth rate projected in REPELITA IV.

Numbers of vessels and process plants to be constructed are estimated for the shipbuilding and plant equipment industries respectively. Thus, production volume of the assembly-type industry is first obtained in terms of unit of machine, and then it is converted to the volume for the five categories of metalwork process in terms of tonnage. The volume for the metalworking is deemed as a market to be fulfilled by the supply of the metalworking industry.

Basides, the estimated production volume for the assembly-type industry has been cross-checked by data for imports and national demand in order to avoid any inconsistency in overall economy in the country.

Estimate of coverage ratio

The selected 32 types of machine cannot always cover all items categorized in the industrial field. A ratio of the selected ones to the all is called as the coverage ratio in this Study. Total demand volume in that particular industrial field can be calculated dividing the figure for the selected machine by the coverage ratio. As for the automotive, motorcycle and shipbuilding industries, the coverage ratio is assumed as 100%, since the total number of production has been captured in the production volume forecast.

Summary of estimation method

The estimation method described above can be expressed by the following formula.

Base Volume of Domestic Production for Assembly-Type Industry (BF)
= Present Production Volume x Natural Growth Rate x Localization Ratio

Total Domestic Production Volume for Assembly-Type Industry (TF)
= (BF)/Coverage ratio

(2) Conversion to the demand for the linkage-type industry

Since the estimated volume of domestic production so far is the demand for the assembly-type machine industry, it does not necessaily mean that the same volume is subcontracted to the linakge-type metalworking industry. In the case of some products, a part of or most parts of their components are manufactured by the assembly-type industries themselves as in-house manufacturing.

The criteria for determination of externally ordered components ratio are as follows.

1) Components designated as out-house products under the Deletion program.

2) Components unsuitable for in-house production by the assembly-type industries because of the smallness in production volume.

3) Components which do not require extremely high technologies or know-how, and those where no technological secrets are involved on the side of the assembly companies in terms of technical design.

4) Components whose subcontracting is considered to be more efficient for both the assembly- and linkage-type industries when the experience and history of advanced countries is referred to.

Shipbuilding companies in Indonesia, at present, manufacture most of components by themselves, resulting in inefficient operation.

Here in this Study, however, it is assumed that the shipbuilding industry will be rationalized so as to concentrate in mainly building hull steel and assembling purchased components into a complete ship.

Thus, a new factory(-ies) subcontracted to the shipyards is assumed to be constructed in Indonesia around 1985 to 1990.

(3) Estimated capital investment required for the linakge-type metalworking industry

1) Methodolody

8 subsectors represented by 32 types of machine

The subcontracting production volume of metalworking products in 1985, 1990 and 1995 is estimated on the previously selected 32 types of machine, based on the production demands estimated in terms of tonnage for the 5 processing methods [i.e. 1) casting, 2) forging and heat treatment, 3) machining, 4) sheetwork and welding and 5) press work] as stated in (2) above and by totaling the thus estimated demands. On the other hand, investment cost for 5 processing methods as shown in Table 6.2, has been estimated in terms of US$/ton of products. Thus, the capital investment requirements are estimated by using the above two factors and in the following manners:

a) Estimate the investment cost for one ton of metalworking products to be producted by each process in subcontracting, by means of dividing the estimated plant cost for each of the five model plants by the production capacity set for each.

b) Deduct the volumes of the production demands for each process in 1985 from the figures for 1990 to obtain the demand increase during these 5 years. Use the same calculation method for estimating the demand increase in 1995 against 1990.

c) Multiply the results of a) i.e. increase in the volume of the production demand for every 5 years by the unit investment cost per ton (US$/ton) to get the amount of incremental capital demand for expansion of required production capacity.

d) Sum up the amounts of capital demands for 5 types of processing work to get the total capital demand until 1990 and 1995.

Shipbuilding and plant equipment industry

A subcontracting manufacturer of out-fittings for shipbuilding is used to engage also in fabrication of plant equipment, because these apparatus can be made by using similar facilities. Assuming a model factory which undertakes the fabrication of out-fittings for shipbuilding and plant equipment, an investment cost is estimated for such a factory, and an investment cost required for one ton of

those apparatus is estimated by means of dividing the investment cost of the factory by the contemplated production capacity.

On the other hand, the increase in the volume of these works for each 5 years of 1985 - 1990 and also of 1990 - 1995 are estimated in terms of tonnage, by using the same method as applied to that for the metalworking related to the 32 types of machine. Then, the capital requirements for the metalworking industry connected with the shipbuilding and plant equipment industries are estimated by multiplying the work volume increase by the unit investment cost per ton of the work demand.

2) Estimated work volume demand for the linkage-type industry

From 8 subsectors

Subcontracting work volume for the selected 32 types of machine in 8 subsectors which has been estimated for each of the 5 processes by using the foregoing method is shown in Table 6.3.

From shipbuilding industry

Under existing conditions of 1985, out-fittings are wholly manufactured within shipyards or imported, therefore, sub contract order is zero. Subcontract of the out-fittings for shipbuilding is assumed to be promoted in 1990 and 1995 as follows:

1985:	0	-
1990:	3,000 tons	(40% of total demand)
1995:	6,000 tons	(54% of total demand)

From plant equipment manufacturing industry

The data provided in "The Feasibility Study Report on the Development of Plant Processing Equipment Industry in the Republic of Indoneisa", submitted to the Government of Indonesia by JICA, 1985 were referred to for estimating the demand and the localization ratio of the plant equipment manufacturing industry.

The aforesaid Feasibility Study was made on the following 9 types of plants in 5 business categories.

a) Cement
b) Sugar
c) Fertilizer

c-1) Ammonia
c-2) Urea
c-3) Ammonium sulfate
c-4) Phosphoric acid
c-5) Triple superphosphate

d) Pulp and paper
e) Palm oil

In addition, the demands were preliminarily estimated for petroleum refineries and petrochemical plants, power generating and transmission facilities, boilers, watergates and bridges and plant repairing.

Data given in the aforesaid Study Report are reviewed and adjusted by the localization ratio as well as the coverage ratio. The thus estimated demands are given below:

1985: 42,700 tons
1990: 78,000 tons
1995: 120,100 tons

3) Potential capital demand for investment

The estimated subcontracting work volume was shown in the precedent paragraph. This increased demand should be locally fulfilled by increase in production capacity which may lead to new investment. On this assumption, the investment capital demands were estimated in the following manner:

Required investment amount = Increase in work volume (tons) x Unit investment cost ($/ton)

To use the unit investment amount, it has been considered that the purchase of several unit machines, partial expansion of the existing factory as well as construction of a new set of plant will come for increase of production so that it is more practical to apply the unit investment to be made for increasing unit production.

The linkage-type metalworking industry was classified into 7 pro-

cesses were conceptualized respectively and the construction cost was estimated on each plant to estimate the unit investment cost per ton of each product. (Details of the estimates are stated in Section 9 of the Section Report.) The thus estimated unit investment cost is summarized below (refer to Table 6.2):

a) Casting	:	US$ 1,500/ton
b) Forging/heat treatment	:	US$ 1,800/ton
c) Machining	:	US$12,700/ton
d) Sheetwork/welding	:	US$ 1,140/ton
e) Presswork for small items	:	US$ 1,220/ton
f) Presswork for large and medium items	:	US$ 6,680/ton
g) Steel fabrication	:	US$ 3,210/ton

The presswork for small items in e) is for electrical products, automotives and motorcycles, and the presswork for large and medium items are for engine covers, bonnets, etc. of machine tools, agricultural machinery and construction machinery. A steel fabrication plant in g) is applied to the linkage-type industry to shipbuilding and plant equipment industry which fabricates steel structures, boilers, tanks and the similar components.

A potential capital demand for investment is estimated by multiplying the unit investment cost by the increase in the work volume. The thus estimated capital demand is shown in Table 6.4, and is summarized below:

	1986	1987	1988	1989	1990	Total
1985 constant price	103.7	103.7	103.7	103.7	103.7	518.6
With 8% inflation	112.0	121.0	130.6	141.1	152.3	657.0

6.2.2 Measurement Based on Questionnaire Survey

(1) Methodology for estimate

In the questionnaire survey, 159 companies out of 219 companies answered that they have plans to expand their capacity in the near future, 121 companies of which have indicated an amount of investment required for such expansion. On the basis of the answer, capital investment required for the linkage-type industry was measured. For this end a total number of the establishments engaged in the said

this end a total number of the establishments engaged in the said industry in Indonesia was first estimated, and the answered capital demand per company was multiplied by the total number of the establishments.

(2) Estimate of total number of the establishments

The estimate of total number of the establishments in the subsector was made by using data given in The Study Report of The Medium- and Small-Scale Metalwork Industry issued by the Technonet Asia-JICA and also using the Industrial Census (1979) made by the Central Bureau of Statistics (BPS). As shown in Figure 6.1, in the industrial census (1979) the total number of large-, medium-and small-scale industries of the metal and machine manufacture (5 subsectors: metal products, general machine, electrical machine, transportation machine and precision machine) is 7,583 establishments, and among them the establishments corresponding to 3 subsectors (general machinery, electrical machinery and transportaion machinery), which are subject to the present Study, is 1,786 establishments.

In the Technonet Asia-JICA survey performed in 1980, the total number of companies (5 ot 200 employees) in the metal and machine industry (5 subsectors) was estimated as 4,000 companies, furthermore, the share of companies in 3 subsectors was 43% or 1,720 companies. It is considered that there is no large difference between both figures, 1,786 from the census and 1,720 from Technonet. However, since the Technonet's survey it has passed 5 years up to the date of the present study.

Since there is no statistical data showing the present number of establishments of medium- and small-scale industry in the machinery and metal industry, it is assumed that the number of establishments should have increased at the same growth rate of the manufacturing industry sector or 8.8% per annum during 1980 -1985. Taking 1,720 companies in 1980 and 8.8% of annual growth rate as basic figures, the number of establishments is estimated as 2,600 companies having 5 to 200 employees in the 3 subsectors.

(3) Estimate of a potential capital demand for investment

In the questionnaire survey the questionnaire was made to 219 medium- and small-scale enterprises, and as the result, 159 companies answered that they have an intention to expand their production capacity in the near future. Furthermore, among them 121 companies have indicated investment requirements as much as 84.0 billion Rupiahs in total around

the middle of 1987. Dividing the total capital demand of 84.0 billion Rupiahs by 219 (the number of answered companies) to get average capital demand per company, and multiplying that by 2,600 (the total number of estimated establishments), the total potential capital demand for the subsectors which are subject to this Study was estimated as follows:

(Rp.84 bill./219) x 2,600 = Rp.997.3 bill.
= US$898 mill.
(US$1 = Rp.1,110)

The average year for investment by the answer is in the middle of 1987 including answers before and behind it, and even if it is scheduled to be made within 3 years, it is usually late in implementation. Thus, this figure might be considered as required amount for 5 years. The thus estimated amount is shown below:

(US$ 1,000)

	1986	1987	1988	1989	1990	Total
1985 constant price	179.6	179.6	179.6	179.6	179.6	898.0
With 8% inflation	194.0	209.5	226.3	244.4	264.0	1,138.2

6.2.3 Measurement Based on National Economic Factors

(1) Methodology for measurement

It is known that there is a correlation between the value-added and the fixed assets formation (investment) in the industry. The amount in a certain ratio of the value-added generated by a certain industrial sector is turned to the re-investment. In this context, estimates are made first on the value-added of the linkage-type metalworking industry sector, secondly on ratio of fixed assets formation (investment) to the added-value in the subsector, and finally on the capital demand by multiplying the projected value-added with the ratio of fixed assets formation to the value added.

(2) Value-added in the metalworking and machinery industry sectors

After 1985 the value-added amount in the manufacturing industry is not indicated in REPELITA IV but only the ratio of value-added in the manufacturing industry against the GDP. It is 19.4% in 1988/89, while actual value was recorded as 15.7% in 1983/84. According to the

REPELITA IV, the GDP will grow at 5% per annum, comprising 9.5% for the manufacturing industry sector.

On the other hand, seeing the value-added ratio between the manufacturing industry sector and the sector of the metalworking, machinery and equipment industries, 9.2% in 1983/84 is known. In addition the former growth rate of the latter sector is projected as 17% in REPELITA IV. The following table has been obtained using the above limited economic indicators.

VALUE-ADDED FOR FABRICATED METAL PRODUCTS AND MACHINERY AND EQUIPMENT

	(1)GDP	(2)Manfuacturing	(3)Metal Products & M/E	(2)/(1)	(3)/(2)	Indicator for 3
	(Rp. bill.)	(Rp. bill.)	(Rp. bill.)	(%)	(%)	(1985=1.0)
1983/84 1/	79,815	12,531	1,153	15.7	9.2	-
1985 1/	96,578	16,515	1,842	17.1	11.2	1.00
1990 2/	123,261	26,008	4,057	21.1	15.6	2.20
1995 2/	157,315	40,902	8,875	26.0	21.7	4.82

Notes: 1/ Current price
2/ 1985 constant price

(3) Value-added in the metalworking industry sector

The number of companies of metalworking industry is estimated as 2,600 companies in the preceding paragraph, and among them it is stated that large- and medium-scale companies is 22.5% and small-scale companies is 77.5% in the Technonet Asia/JICA Study. Applying the same percentages to 2,600 companies, number of large-and medium-scale company is calculated as 585 and small-scale companies as 2,015. On the other hand, the value-added per establishment of large- and medium-scale companies is of 992 million Rupiahs in 1983. The stalistics for small companies are available only for 1974/75 and 1979, which are given below:

	1974/75	1979
Number of establishments	2,957	6,814
Total value-added (Rp. mill.)	3,900	14,200
Value added per establishment (Rp. mill.)	1.3	2.08

It has become 1.56 times during approximately 5 years. If it grows till 1983 at the same rate, the value-added per establishment of the small-scale industry is estimated as approximately 3 million Rupiahs at the current price in 1983.

Therefore, the total value-added amount against 2,600 companies in 1983 price is obtained as follows:

	(in 1983 price)
585 companies (large and medium) x Rp.992 mill.	= Rp.580.3 bill.
2,015 companies (small) x Rp.3 mill.	= Rp.6.0 bill.
2,600 companies	Rp.586.3 bill.

Note According to the questionnaire survey, the value-added per establishment of the linkage-type metalworking industry (most of them is medium-scale) is Rp.414.8 mill.

The total value-added results as below.

	Rp. bill.	US$ mill.
1985	684	616
1990	1,505	1,356
1995	3,297	2,970

(US$1 = 1,110 RP.)

(4) Fixed assets formation and capital demand

The past ratio of fixed assets formation/value-added in the metal products, machinery and equipment industries is shown as follows:

1980	15.2%
1981	13.5%
1982	28.1%
1983	15.8%

Here it is presumed as 15% of constant ratio for simplificaion. The investment amount is obtained by multiplying this ratio to the value-added amount.

Thus, the capital investment required for the metalworking industry is estimated as follows:

(US$ mill.)

	Investment Amount	Annually Increase
1985	616 x 0.15 = 92.4	
1990	1,356 x 0.15 = 203.4	22.2
1995	2,970 x 0.15 = 445.5	48.4

The required total investment amount for 5 years from 1986 till 1990 can be roughly calculated as follows:

1986 - 90: ((92.4 + 22.2) + 203.4)/2 x 5 years = US$795.0 mill.

From 1991 till 1995:

1991 - 95: ((203.4 + 48.4) + 445.5)/2 x 5 years = US$1,743.3 mill.

When distributing the capital demand required for the metalworking industry from 1986 till 1990 to the corresponding values, the followings are obtained.

(US$ mill.)

	1986	1987	1988	1989	1990	Total
1985 constant price	159.0	159.0	159.0	159.0	159.0	795.0
With 8% inflation	171.7	185.5	200.3	216.3	233.6	1,007.4

6.2.4 Comparison of Results Measured by Three Different Methods

The potential capital demand for the metalworking industry estimated by 3 different methods over 1986 to 1990 are summarized as below.

POTENTIAL CAPITAL DEMAND (1986-1990)

(US$ mill.)

Method of Estimate	Per year (in 1985 price)	5 years (in 1985 price)	5 years 1/ (in current price)
1) Work volume	103.7	518.6	657.0
2) Questionnaire	179.6	898.0	1,138.2
3) Economic indicator	159.0	795.0	1,007.4

Note: 1/ With 8% inflation.

It should be noted that the total number of 2,600 metalworking establishments which was used as a key factor for the methods of 2) and 3) in the above table covers somewhat wider area than that for 3) because the 2,600 companies are neither confined to so-called linkage-type industry nor to medium- and small-scale industry due to the number of employees from 5 to 200.

Ratio to total investment of the private sector projected in REPELITA IV are computed as follows on the basis of the current price and the exchange rate of Rp.1,110/US$.

(%)

	1986	1987	1988
1) Work volume	1.0	0.9	0.8
2) Questionnaire	1.7	1.5	1.3
3) Economic indicator	1.5	1.3	1.2

As a conclusion, the potential capital demand for the linkage-type metalworking industry is estimated with a range from US$520 million to US$900 million in 1985 constant price term, which will be equivalent to around 1% to 2% of the total investment for the private manufacturing sector in whole Indonesia.

Figure 6.1 NUMBER OF MACHINE AND METAL WORKING ESTABLISHMENTS[1] BY SIZE OF EMPLOYMENT, ACCORDING TO INDUSTRIAL SURVEYS

Size of Employment	Category (BPS)	Industrial Census (BPS) 1974	Industrial Census (BPS) 1979	Industrial Census (BPS) 1982	TECHNONET[4] -JICA 1980	This Survey (1985)[6] MSI	This Survey (1985)[6] Sub-con of LSI
	Cottage Industry	15,432[1] (1,832)[2]				3%	1%
5							
10	Small Industry	2,956 (651)	6,814 (1,385)		30%	32%	26%
20					40%		
30	Medium Industry	362 (169)				27%	24%
50					11%		
100			769 (401)	839 (453)	11%	18%	13%
200	Large Industry	136 (77)			8%	11%	9%
						9%	26%
Total number[1] (Excluding cottage I.)		3,454	7,583	(839)[3]	4,000	-	-
Total number of the three sub-sectors[2]		897	1,786	(453)	1,720[5]	2,600[5]	
Sample size		-	-	-	384	219	91

Note: 1) Metal products (ISIC code 381), General machinery (382), Electrical machinery (383), Transportation machinery (384), Scientific, measuring & optical equipment (385).
2) General machinery (382), Electrical machinery (383), Transportation machinery (384).
3) Large and medium industry
4) Small & Medium Metal Working Industries - Technonet Asia & JICA, 1981.
5) Estimated figure.
6) ANNEX IV-3 SMES-30100, LMES-60300.

Table 6.1 CAPITAL INVESTMENT REQUIRED BY 219 COMPANIES IN QUESTIONNAIRE SURVEY

Category Employees	I 19 and blow	II 20-99	III 100-199	IV 200-299	Total
Expansion plan					
(1) Nos. of answers	75	99	24	19	217 1/
(2) Expansion plan (yes)	66	70	13	10	159
(3) (2)/(1) (%)	(88.0)	(70.7)	(54.2)	(52.6)	(73.3)
Total investment					
(4) Total capital required (MMRp.)	2,376	22,163	22,000	37,500	84,039
(5) Validity of answers (Companies)	55	53	6	7	121
(6) (4)/(5) (MMRp./Company)	(43)	(403)	(3,667)	(5,357)	(695)
Self finance					
(7) Self finance (MMRp.)	615	5,313	400	2,300	8,628
(8) Validity of answers	50	49	4	5	108
(9) (7)/(8) (MMRp./Company)	(12)	(108)	(100)	(460)	(80)
Loan required					
(10) Loan required (MMRp.)	1,111	14,675	1,600	3,200	20,586
(11) Validity of answers	51	50	5	5	111
(12) (10)/(11) (MMRp./Company)	(22)	(294)	(320)	(640)	(186)
Equity/Debt Ratio					
(13) (7)/(10)	36/64	27/73	20/80	42/58	30/70

Note: 1/ Of 219 answers (companies), two answers don't show number of employees.

Source: Questionnaire Survey Carried Out by JICA Team

Table 6.2 ESTIMATED PROJECT COST OF MODEL PLANT

(Unit: US$ 1,000)

Item	Casting	Forging/ Heat Treatment	Machining	Sheet work Welding	Press (Small Item)	Press (Heavy Item)	Steel Fabrication
1. Plant Direct Cost	5,619.4	3,208	3,658.6	428.5	485.2	520.0	704.6
2. Ocean Freight Insurance, Inland Transportation	276.8	139.5	148.6	23.7	24.7	33.9	79.3
3. Civil & Erection	3,643.5	1,010.4	882.7	407.0	287.9	276.0	2,129.6
4. Office Accommodation	98.4	62.7	71.7	8.4	9.5	11.2	13.6
5. Engineering & Supervising	167.1	153.0	225.5	40.4	17.8	32.7	74.5
6. Overhead Expenses	980.5	457.4	498.7	90.8	82.5	87.4	300.2
Sub Total	10,785.7	5,031.0	5,485.8	998.8	907.6	961.2	3,301.8
7. Tax & Duty	1,571.2	782.5	861.5	134.2	129.6	140.4	383.3
8. Working Capital	2,174.2	979.6	406.9	290.9	366.0	69.5	325.8
9. Contingency	2,906.2	1,358.7	1,350.1	284.8	280.6	234.2	798.2
Total	17,437.3	8,151.8	8,104.3	1,708.7	1,683.8	1,405.3	4,809.1
Investment Cost per ton of product ($/T)	1,500	1,800	12,700	1,140	1,220	6,680	3,210
Productin Capacity (T/Y)	12,000	4,600	639	1,500	1,380	212	1,500

Table 6.3 DEMAND FOR SUB-CONTRACTORS WITH PROJECTED PRODUCTION VOLUME AND ADJUSTMENT BY COVERAGE RATIO

(ton)

	Casting			Forging/ Heat treatment			Machining			Sheet work/ Welding			Press work		
	(1985)	(1990)	(1995)	(1985)	(1990)	(1995)	(1985)	(1990)	(1995)	(1985)	(1990)	(1995)	(1985)	(1990)	(1995)
1. Machine tool	85	3,381	15,270	0	207	1,016	73	2,001	10,848	33	593	2,062	8	110	388
2. Agriculture machine	903	3,561	9,929	45	397	1,706	642	3,785	14,272	662	3,505	12,578	352	1,717	5,633
3. Construction equipment	104	2,982	8,010	58	1,695	4,557	306	2,939	11,064	856	14,602	32,538	94	1,452	3,077
4. Electrical machine	1,008	1,583	2,500	0	0	0	0	0	0	1,078	1,919	3,031	1,014	3,916	10,307
5. Electrical appliances	112	143	183	0	325	414	-	-	-	4,352	5,571	7,094	2,204	7,160	13,434
6. Automotive	0	7,091	17,858	0	15,837	30,277	0	12,142	21,992	-	-	-	20,442	28,823	46,403
7. Motorcycle	0	2,651	4,516	0	7,249	14,597	283	4,592	8,322	-	-	-	5,278	11,277	18,165
8. Diesel engine	0	1,477	6,666	0	226	1,428	259	3,663	14,463	384	716	1,131	768	1,507	2,381
Total	2,212	22,869	64,932	103	25,936	53,995	1,563	29,122	80,961	7,365	26,906	58,434	30,160	55,962	99,788

Source: JICA Team Estimate

Table 6.4 CAPITAL INVESTMENT REQUIRED FOR LINKAGE-TYPE METALWORKING INDUSTRY

(in 1985 constant price)

	Production (ton)			Increase (ton)		Unit Investment	Total Investment ($'000)	
	(1985)	(1990)	(1995)	(1985-90)	(1990-95)	($/ton)	(1985-90)	(1990-95)
a) Casting	2,212	22,869	64,932	20,657	42,063	1,500	30,986	63,095
b) Forging/heat treatment	103	25,936	53,995	25,833	28,059	1,800	46,499	50,506
c) Machining 1/	1,094	20,385	56,673	19,291	36,288	12,700	244,996	460,858
d) Sheet work/welding	7,365	26,906	58,434	19,541	31,528	1,140	22,277	35,942
e) Press work (Small item) 2/	28,938	51,176	88,309	22,238	37,133	1,220	27,130	45,302
f) Press work (Heavy item) 3/	1,222	4,786	11,479	3,564	6,693	6,680	23,808	44,709
g) Steel fabrication (Ship building)	0	3,000	6,000	3,000	3,000	3,210	9,630	9,630
h) Steel fabrication (Plant equipment)	42,700	78,000	120,100	35,300	42,100	3,210	113,313	135,141
Total							518,639	845,183

Annual average: 1985-1990 = US$110.4 million/year
1990-1995 = US$177.6 million/year

Notes: 1/ 70% of total machining volume in Table A-4.14
2/ Electric machine, Electric appliances, Automotive and Motorcycle in Table A-4.14
3/ Machine tool, Agriculture machine, Construction Equipment and Diesel Engine in Table A-4.14

Source: JICA Team Estimate

Chapter 7 PROPOSAL OF A DEVELOPMENT PROGRAM FOR THE LINKAGE-TYPE METALWORKING INDUSTRY

Chapter 7 PROPOSAL OF A DEVELOPMENT PROGRAM FOR THE LINKAGE-TYPE METALWORKING INDUSTRY

7.1 Basic Concept of the Program

Technical and financial facilities exist to a certain extent in Indonesia in regard to the fostering of small-scale industries. It can be said that the Government's continuous efforts are now showing positive results.

As has been discussed earlier, however, there is a critical lack of modernized factories which are capable to undertake a constant supply of components and parts with high and uniform quality to the assembly-type machine industry. The overwhelming majority of existing factories have obsolete facilities, using traditional technologies, and they are classified into cottage industry in virtue. The existing machinery and metalworking industries are characterized with a stracture which is bipolarised into a group of large-scale maheine assembly industry with many of them being joint ventures or state owned companies and a group of small-scale industry which is dependent on the traditional technologies. Medium standing companies to fill up the gap between these two groups have not been sufficiently fostered up until now. This is the biggest reason why the expansion of the domestic supply of machine parts replacing imports has been hampered in Indonesia.

It is imperative that metalworking manufacturers capable of producing the products internationally competitive in quality and prices should be fostered in order to modernize the metalworking industry having linkage to the assembly-type industry. The linkage-type industry should firstly have the ability to compete with imported products as import substitution.

Based on this understanding of the current state of the Indonesian metalworking industry, it is proposed here that efforts should be focussed on expanding the growing type of modernized metalworking industries consisting of those companies with a sizable operation which is called as the "Grower", rather than those companies which are dependent on the traditional technologies and which are collectively called as the "Stayer", although continuous efforts should also be made for the Stayer to upgrade their technical skills and management capability.

To a group of small-scale industry, KIK/KMKP upto 15 million Rupiahs and the investment credit up to 75 million Rupiahs are provided as special credit facilities and vocational training centres, common service facilities, mini-industrial estates and extension services through local offices of the

Ministry of Industry (KANWIL), are available in the aspect of technical assistance.

It is extremely important that these current provisions be continuously reinforced and put into practice in the future. The development program being proposed here for medium standing companies, with particular stress on the "Grower", therefore, intends as a supplement to the above provisions while avoiding overlapping with them. As a result of the 1983 reform of the financing sector, there is no institutional finance available for the companies which were eligible for the previous KIB Category II or above. Hence, medium-scale and growing small-scale companies which have a most vigorous demand for financing are obliged to borrow high interest loans, resulting in discouraging their investment. It would be necessary to establish an investment credit system for providing low-interest, long-term finance for the medium- and small-scale metalworking companies in order to develop the modern metalworking industry.

Under the existing credit facilities based on foreign funds provided by the World Bank and other financing institutes, a large amount of funding is available for a wide scope of subsectors. Although this type of program loan is one possible and useful method of financing, its credit facilities tend to be indiscriminate.

In this context, it is proposed to implement the first phase program with a certain amount of funds prepared for financing to limited number of projects, focussing on stemming effective impacts on the target subsectors to be expanded through subsequent phases of the program.

The proposed program is expected to give an impact to the target subsector, stimulating the desire for modernization of their technology and production facilities by fostering a certain number of model factories, so that success of the implementation will create a demand for continuation of the program.

It is well known that technical support is a must for modernization of industry in addition to the provision of credit facilities. The proposed program shall include such services as Technical Assistance Services (TA) and the establishment of Common Service Facilities (CSF). It is recommened that these services and facilities will directly relate to those companies subject to the fostering efforts.

Thus, the proposed development program is a package type of loan, TA and CSF. Such package services enable to provide thorough assistances for individual projects in all phases of development cycle, including project findings, project evaluation, implementation and monitoring of the projects.

The basic concept of the comprehensive development program being proposed in this Report is summarised as follows.

1) The objective of the program shall be to expand modernized medium- and small-scale metalworking industry particularly the linkage-type industry.

2) To meet the above objective, a program loan is to be newly enacted to provide soft-term investment credit for those projects.

3) As a first step, the program shall provide a limited number of projects, as model cases, with comprehensive services so as to ensure their success. With their success, the size of the credit facility, the number of companies and target subsectors shall be expanded on step-by-step.

4) The development program is to be a package type combining the provision of a special program loan, and the provision of TA and CSF.

7.2 Eligiblity of Borrowers

One of the most important requisite for success of the program to identify pipeline projects which are financially viable and, eligible to the proposed program loan. The followings are suggestion of the Study Team for reference, although the criteria of the eligibility to the loan shall be mutually discussed between Indonesian Government and a prospected financier(s).

7.2.1 Eligible Sub-Sector

Eligible subsector is to be the linkage-type metalworking industry. Those companies, however, which have potentiality to become or grow up to one of the linkage-type industries even though no link is presently made to the assembly-type industries shall also be considered as being eligible, since the objective of the program is not only to "foster" the linkage-type industry for the immediate needs but also "foster" the candidates to be grown for the future expansion.

7.2.2 Ownership of Company and Usage of the Loan

Companies owned by Indonesian citizen shall be the main target of the program loan. It is recommended to consider joint ventures with foreign companies also as eligible companies as long as they satisfy the conditions set in terms of company scale and other requirements, because the introduction of technology, technical assistance and the transfer of technology given through the joint ventures will all play important roles in the modernization of the subsector concerned. As for Common Service Facilities (CSF), public sector companies or organizations should be regarded as eligible due to its public nature.

The investment for the establishment of new facilities but also for the expansion of existing facilities should be considered as eligible projects, provided that those projects be based on modern technology and facilities. Application of modernizaed technology and facilities for the subject projects would be assessed and guided in the process of loan appraisal.

The main subject of financing should be investment to production facilities in view of the basic concept of the program. Loan applications for working capital which do not involve investment to production facilities should not be eligible.

7.2.3 Company Size and Credit Ceiling

As there is no clear classification for small-, medium- and large-size of company in Indonesia, it is hard to define the size of companies eligible for the loans.

This matter shall be examined in the future by taking the following items into consideration.

(1) It is undesirable for the eligible size of companies to be determined only in terms of the number of employees. In general, the size of the asset and the number of employees should be simultaneously used to determine the company size eligible for the loan.

(2) The criteria for small-scale industry are as follows.

Ministry of Industry:

a) The investment amount for machinery and equipment, excluding land or buildings, is to be less than Rp.70 million.

b) The investment amount per employee is to be less than Rp.625,000.

Central Bank (BI):

The total assets, excluding land and buildings, are to be less than Rp.100 million.

No definition is given for medium- or large-size industries. If the subject of the present program loan is restricted to small-scale industries, most of the growing type industries would be excluded, contradicting the program's basic objective.

(3) Although KIK/KMKP is available as institutional financing for small-scale industries, it is undesirable for small-scale industries to be excluded from the program loan as they would not be able to enjoy such benefits as technical assistance, etc. which are an integral part of the package program.

(4) Another way to determine the size of companies which are eligible for the loan is to control simply by means of a maximum ceiling of the credit. In general, however, both the size of assets of the company before investment and the credit ceiling are used to difine the size of companies eligible for loans.

Modernization usually requires a fairly large investment amount and, therefore, a minimum lending limit may be introduced with a view to leaving those requirements needing a small amount of credit to the other existing credit facilities.

The table below shows the credit ceilings and the interest rates for each of the four KIB Categories which were abolished in 1983.

Category	Credit Ceiling	Interest Rate
KIB I	Upto Rp.75 million	10.5%
II	Rp. 75 - Rp.200 million	12.0%
III	Rp.200 - Rp.500 million	13.5%
IV	Rp.500 million & above	13.5%

Note: KIB I Category finance is still available under a new name with a new interest rate of 12%. The credit ceiling for KIK/KMKP is Rp.15 million.

(5) The Indonesian Government is requested to cautiously set up an eligible company size and a credit ceiling in view of the above-described guidelines.

The following is one of the possible criteria, which have been examined in due consideration of the eligibility conditions applied to similar program loans and also of the requirements in Indonesia.

Existing Asset Size	(Maximum):	Rp.1,000 to 2,000 million
Credit Limit	(Maximum):	Rp. 500 to 1,000 million
	(Minimum):	Rp. 15 million

7.2.4 Profitability of Firm Level Project

In the process of loan appraisal, it is necessary to assess the project's profitability in addition to security and creditability for the loan. The Internal Rate of Return (IRR) is generally used as a tool for assessing profitability. The minimum IRR value (the cut-off rate) will, therefore, be set up so that finance is only available to those companies which are anticipated to generate the returns over cut-off rate.

The IRR cut-off rate is determined by reference to the lending rate of interest, the inflation and the average rate of return for the manufacturing industry in Indonesia. The cut-off rate is commonly given at 10 to 15% in a constant price term.

7.3 Source of Funds, and Terms and Conditions of the Loan

7.3.1 Source of Funds and Two-Step Loan

In general, a so-called two-step loan arrangement is based on aid finance provided by bilateral aid financing institutes or international financing institutes combining local currency funds prepared by the central bank, as well as the handling banks (commercial banks and development banks, etc.) in the recipient country. These funds are blended and managed in a special account. These original funds may be provided on concessional terms and conditions or commercial ones. The overseas funds found in hard currancy(-ies) are mainly used for the import of machinery and equipment while the local funds are basically used for local procurements and the construction of buildings, etc. In the case of two-step loan for medium- and small-scale industries, however, the demarcation between the foreign and local currency portion is not rigorously applied for the smooth and flexible fund management.

As the stage where the overseas funds are lent to the recipient country is considered to be the first-step, and as the stage where the overseas funds blended with the local counter funds are lent to firm-level projects is considered to be the second-step, the total flow of the funds consists of two-steps. Loans in the second-step are often called as sub-loans. An entrepreneur who receives a sub-loan, also provides his own funds as an equity and invests the total amount of the loan and equity to his project.

7.3.2 Interest Rates of Sub-Loans

The following three factors determine the interst rates of sub-loans.

1) The cost of the original funds and the spread, that is the cost and charges for the management of the program loan.

2) The interest rate appropriate for the effective fostering of the target industries.

3) The interest rates of existing finance systems or similar program loans in the country.

In this Report, as item (1) above is not yet known, the discussion below is based on (2) and (3).

In accordance with the questionnaire survey described in Section 3 of the Section Report, the answer from the metalworking industry indicates the following interest rates as preferrable conditions:

Investment to fixed assets:	9.2%
Working capital:	11.3%

KIK/KMKP available for credit upto Rp.15 million and also the Investment Credit System available for credit upto Rp.75 million provide an interest rate of 12%. When borrowing exceeds Rp.75 million, the only credit available is on a commercial basis at interest rates of more or less 26.4% (based on 2.2% per month). Long-term investment in machinery and equipment is rather hard with such a high rate of interest.

The analysis of the cost structure derived from local manufacturing, as stated in Chapter 5, shows that effective cost-down can be achieved by reducing the interest rate. The interest rate, however, is not solely responsible for the high manufacturing cost in Indonesia. The high price of raw material, the low operation rate and the high loss rate in processing all contribute to form such high cost production. Therefore, even if the interest rate is reduced to zero, the problem of the high manufacturing cost will not be solved. In this sense, it is impossible to conclude a reasonable rate of interest based on a cost analysis. One can only say that the lower the interest rate is the better.

When the interest rates of the sub-loans under the existing program loans are examined (refer to the Table 4.2 in Chapter 4), most of the loans available for manufacturing industries for investment to machinery and equipment are at a 12% interest rate. One credit facility is available at 9%, but is only for use as working capital for export business.

In view of the above discussion, it would appear preferable that the interest rate for sub-loans be between 9% upto a maximum rate of 12%. The final interest rate, however, should be decided when the cost of the original funds is defined. It may be unnecessary to set up different interest rates for investment to fixed assets and for working capital.

7.3.3 Terms of Repayment

As the loan will be made for the long-term investment for production facilities, the provision of preferential repayment conditions should be offered to end-users, namely the borrowers of the sub-loan.

One possibility is a maximum repayment period of 15 years with a maximum grace period of 5 years. Even if it becomes necessary to shorten these periods, the term of repayment should not be shorter than a maximum period of 8 years with a maximum grace period of 2 years in order to prevent a cash shortage in the cash flow of the financed projects.

With regard to the repayment conditions, it is suggested that a maximum period for repayment and grace be set up as a program-level guideline. In the course of loan approval for individual projects, an appropriate repayment condition for each project will be decided on the basis of the financial evaluation of the project. It will be unnecessary for the repayment period to set up different terms on working capital and on investment for fixed assets.

7.3.4 Debt/Equity Ratio

As described in Chapter 6, the results of the questionnaire survey show that the average composition of financing plan consists of 70% debt and 30% equity. This ratio would appear to be adequate in view of similar program loans for small- and medium-scale industry in other countries and also in view of the KIB stated previously. It should, therefore, be reasonable to set up a debt/equity ratio in a range between 80/20 and 70/30.

7.4 Establishment of Testing Laboratory for Metalworking Industry as Common Service Facility (CSF)

Production of parts and components which meet the requirements of buyers in terms of quality should be essential for the modernization of metalworking industry in Indonesia. A large gap between the requirements on quality demanded by the assembly-type industry and production capability of subcontractors is often observed at present. From such point of view, establishment of authorized and well-equipped testing laboratories which are eagerly desired by private companies is indispensable. It is also advisable that the laboratory shall play a role of technical consultancy center.

This kind of facilities can not be owned by each private company because of large investment requirements.

Review was made on existing facilities and function attached to testing, research or development institutions being operated in jurisdiction of the Ministry of Industry, Agency of Application and Assessment of Technology and Universities, the result of which was stated in Section 8 of the Section Report (Part III). These institutions, however, can not timely response to requirements for private companies in view of facilities equipped and functions given. Indonesia has no institution which acts for promotion of "linkage" between enterprises as its main objective.

With regard to the above understanding and observation, establishment of a new-type testing laboratory/technical service center is proposed in this section. The objectives of the proposed center are to fill up the technology gap and to promote closer linkage between the assembly-type industry (user) and the linkage-type industry (subcontractor).

Outline of the proposed center is discussed below:

7.4.1 Activities of Metalworking Products Testing Laboratory

(1) Testing and inspection

Upon requests by enterprises, the laboratory tests, inspects, calibrates and analyzes the metal materials, components and products.

1) Physical test: Strength, yield strength, hardness and strain tests, and composition analyses

2) Chemical test of materials: Static and quantitative analysis and etching test

3) Precision measuring: Length, angle, calibration, roundness, surface roughness and three-dimensional measuring

4) Defect test: Defect test by magnetic, ultra-sonic and X-ray devices

(2) Technical consultancy and guidance

To provide advice in material and production techniques for technological improvement of linkage-type industries. In order to clarify the qualitative requirement by clients, a close coordination with assembly-type industries is to be maintained.

1) Technical consultancy services

Based on testing results at the laboratory, necessary measures to achieve better quality products are advised.

2) Extension services

By visiting the factory, consulting and guidance are to be given to linkage-type industries.

(3) Technical and marketing information service

1) Technical information service

Development, translation, distribution and publishment of production technology written in Indonesian language, dessimination of technical information provided by MIDC, etc.

2) Marketing information service

Through registration of machine and metalworking industries in the region, information of candidate subcontractors is to be provided to assembly-type industries. On the other hand, particular production capabilities owned by certain enterprises, including foreign companies, are to be provided for linkage-type industries upon the requests.

7.4.2 Institutional Set Up of Metalworking Product Testing Laboratory

In Japan there are a number of the testing laboratories/technical service centres having the similar function which were established in each prefecture, owned by each prefectural government. "Kanagawa Prefecture Industrial Testing Laboratory", for example, was established in 1949 and now has activities in testing, research and development in the fields of metalworking, electronics, plastics, robotics, pollution control and textile industries, which also attached with "technical information center". Kanagawa prefecture is a neighboring prefecture to Tokyo, supporting the medium- and small-industries located within the prefecture. This laboratory is established on 3 ha area with 200 staffs and employees under operation of Kanagawa prefecture's budget.

In case of Indonesia, it is urgently needed to have the laboratories in Jakarta and Surabaya, and will be needed in Semarang and Medan in the near future. It must be carefully studied on what the suitable institutional set up is for these laboratories in order to have them effectively function. The followings are some possibilities to be considered.

(1) To establish as branches of MIDC

There are some good reasons to establish such laboratory under the Ministry of Industry which has an authority as a central government and also in charge of establishing the industrial standards (SII). At present, testing for SII certificate is being done by B4T under the Agency for Industrial Research and Development (BPPI), while technological development and guidance for small and medium industries are conducted by MIDC, also under BPPI. Since the objective of the laboratory is to develop the linkage-type industries, it is more suitable to establish the laboratory under MIDC while keeping close contacts with B4T.

However, it must be always noted that if it is fully owned by the government, there is a tendency of bureaucratic and lack of flexibility which seems to make it difficult to response to the requirements for private industries, both assembly-type and linkage-type. For example, in case of testing, the result should be given within 7 to 10 days. For the working hours, if the laboratory is to be closed at 2 or 3 P.M. everyday when the factories are still operating, it might bring difficulties for users.

The development budget for the Ministry of Industry in fiscal year 1986/87 has been decreased by 35% from the previous year. Under these circumstances, a way to obtain an external fund sources is worth considering.

(2) To strengthen and supplement the Regional Industrial Institute (BPI)

BPI is also under BPPI of the Ministry of Industry. Since BPI was established to cover research and testing attached to the regions, the main fields are food and chemical products except for BPI Surabaya which has metal product division under cooperation of MIDC, however, its function as a testing laboratory is very limited at present. In case of Surabaya area, BPI is already like a "branch" of MIDC by institutional set up. If the proposed laboratory is attached to BPI, it still has to overcome the problems inherent as a governmental organization and, furthermore, the activity to develop linkage-type industries has to be more aggressive one than the conventional activities of BPI which is more or less passive.

The merit of using BPI is that the organization is already attached to and familiar with the region, with its own building and area.

(3) To establish as an organization under semi-governmental operation

Through this study, necessity to establish the testing laboratory has been strongly expressed by private industry associations like Federation of Indonesian Metalworks and Machinery Industry (GAMMA). Since GAMMA consists of 9 associations of machine and metalworking industries encompassing 224 member companies, its interest is of both sides of the assembly-type and the linkage-type industry.

The remarkable point of involvement of such private sector is that the assembly-type industry (users) may make it contingent for their subcontractors to bring and test their sample components at the laboratory before making subcontracting arrangements and also may support the linkage-type industry under coordination of the association. The management of the laboratory might be less rigid and efficient if it is seriously operated like private organization. Users may charge some fee for testing and guidance while the laboratory is run as non-profit making organization.

The difficulty, however, may arise in sense of "authority" to the certificate issued by the laboratory and of budgeting especially for construction of the facilities. To solve this difficulty, a semi-governmental establishment in cooperation with the Ministry of Industry, for an example, is deemed as one of the possible formulation.

7.4.3 Toword Realization of Establishment of the Metalworking Products Testing Laboratory

After reviewing the merits and demerits of alternatives in institutional set up of the laboratory, there are several issues, particularly financial and institutional ones, to be examined and determined between government, industries and other relevent parties in Indonesia.

It is recommended to make a detailed feasibility studies concerning the required testing equipment line-up, personnel requirement, institutional and financial arrangement including utilization of foreign aid fund.

Though a detailed study is to be followed, technical data are shown as follows for reference.

Table 7.1 Equipment list for CSF
Table 7.2 Estimated capital requirements for CSF (Case 1)
Table 7.3 Estimated capital requirements for CSF (Case 2)

Figure 7.1 Layout for CSF
Figure 7.2 Organization for CSF

7.5 Technical Assistance (TA) Related to the Implementation of the Program

7.5.1 Necessity and Role of TA

The objective of the proposed program is to lead all enterprises which will be financed by the program loan to successful operation by means of modernization of their technology and facility, providing them with institutional finance, TA and CSF.

The TA is, therefore, one of the most important services to be rendered by the Implementing Agency (the Agency).

The activities of the Agency in executing the program will involve the following major aspects:

1) Program promotion
2) Project identification and development
3) Project evaluation
4) Project implementation and supervision

The Agency has to render appropriate assistance and advice to proponents in due course from planning stage until operational stage of their projects.

Thus, TA services separated from the institutional finance in terms of activities cannot easily reach to the goal of the program.

7.5.2 Program Promotion

In order to stimulate interest in the program facilities and seek out potential projects that may qualify for assistance under the program, the thrust of the promotion activities will be directed towards industries that have been selected as priority targets for the modernization program.

The Agency shall organize links with various government agencies and private sector organizations as a means to promote the propram and to help provide support services that may be required in carrying out the program.

7.5.3 Project Identification and Development

These activities will serve to provide proponent firms in the target industries with necessary information and assistance required for the formulation of projects that can lead to financing. The major activities in project identification and development will include:

1) Market inforamtion and information for raw materials purchase.

2) Consulting, advising and information services in appropriate technology adoped to the firm-level projects.

3) Consultation services to proponent firms in formulation of project.

7.5.4 Project Evaluation

Upon the submission of a loan application, the Agency will appraise the project to determine whether it is viable and feasible according to a predetermined appraisal procedure and criteria. The following aspects of the project will be investigated:

- Marketing
- Technical
- Financial
- Management
- Collateral coverage

If necessary, assistance will be provided to improve the feasibility of the proposed project. Projects will be approved when they satisfy the criteria on the five aspects enumerated above.

7.5.5 Project Implementation and Supervision

During this stage, the Agency will monitor proper usage of the loan and schedule of plant construction giving necessary advice, and also perform the provision of appropriate assistance in technical, management, financial and marketing areas required for financed projects which are under operation.

7.5.6 Employment of Outside Consultants

The wide range of technical assistance envisaged for the implementation of the program will require technical expertise in various fields, which may not be within the Agency's capability to provide. This will have to be sourced from both local and foreign experts outside the Agency.

It will be effective in performance of the consultancy services that the outside consultants will be organized as a group and attached to the Agency as a part of total framework of the execution system in the Agency.

The terms of reference for outside consulting services that will be required are outlined below:

The general role of the outside consultants will be to assist the Agency, as its extended staff, in the provision of technical assistance during the various phases of program implementation. This will include assistance in the collection and analysis of market information, organization of project promotion seminars, analysis of production technology needs and sources of technology, and extension services to proponent firms.

The scope of specific services to be performed by outside consultants in relation to the above activities are described in the following sections:

(1) Project identification and development

1) Market analyses and raw material distribution system investigation to support firm-level projects in formulation as well as the project evaluation.

2) Assistance in selection of an appropriate technology for firm-level projects.

3) Assistance in establishing necessary linkages with various governmental and private technology agencies.

4) Assistance in organizing project promotion seminars and other relevant seminars to be held by the Agency for the program.

5) Assistance in development and reinforcement of linkage between the assembly-type and the linkage-type industries in aspects of market and technology.

6) Assistance for the Agency in preparation of various manuals for project evaluation and program operation.

(2) Project implementation

1) Project management during construction phase.

2) Assistance in developing management and administrative system.

3) Extension service to the financed projects in technical, management and marketing.

4) Assistance in developing project, monitoring and operation audit systems, and assistance in conducting project monitoring and operation audits.

The outside consultants will be able to contribute for transfer of technology in the area of consulting business to staff of of the Agency as well as to local consultants involved.

7.6 Implementing Agency

7.6.1 Criteria for Selection of Implementing Agency (Executing Body)

In order to achieve the aims of the proposed development program, it has been discussed that it is imperative to implement the program by packaging both institutional finance component and technical assistant component. In implementing this comprehensive program, the direct and indirect cooperation of relevant government autorities, industrial organizations and financial institutions are necessary, but among others, what is essentialy needed is an implementing agency to assume initiative and responsibility in executing this program. From technical and financial assistance viewpoints, either a technical ministry such as the Ministry of Industry or some other governmental agencies concerned mostly with technical assistance or a financial institution such as state banks can be the candidates for the implementing agency.

The study team has carefully conducted the field survey from these two viewpoints, and upon conferring time after time with the various parties concerned, has reached the conclusion that it is reasonable to select one or more of state-owned banks as the implementing agency. The reasons for it are as follows.

1) The major pillar upon which this development program rests is the institutional finance called "two-step loan" or "program loan" provided for the medium and small industries.

2) According to the laws of Indonesia, general financing operation shall be made by financing institutions.

3) Considering that the main source of the fund for institutional finance will be met from a foreign fund(s), the necessary procedures and steps would be more smoothly carried out if a state-owned bank(s) is assigned as the implementing agency.

The proposed promotion program is proposing a new development system for Indonesia in which financial and technical assistances are provided for a certain number of firms. The successful implementation of the program will lead to an expansion of the number of firms or the subsectors of industries in step by step. The number of implementing agency should not be too many since the initial implementation of this program brings a "model" or "pilot" case. If possible, assignment of only one implementing agency is desirable in view of close relation of two activities, financial and technical assistance to proponent firms.

7.6.2 Comparative Study on Implementing Agency

(1) Requirements for implementing agency (handling bank)

In view of the general characteristics of medium and small firm financing, the handling financial institutions must have the following functions.

1) It must have experience in industrial (manufacturing) finance and be familiar with conditions of industrial society.

2) It must be accustomed to handle long term development financing and be capable of directly or indirectly (by mutually cooperating with other financial institutions) implementing short term commercial lending (follow-up financing after lending development funds).

3) It must be located close to the clients (the target medium and small-firms) so as to be able to maintain contact with their day to day operating activities and to offer face-to-face guidance and information. In other words, it must have an extensive branch network.

4) It must be able of allocating manpower to conduct firm's credibility investigation and project analysis for the proposed new program within the institution.

5) It must be able to provide technical assistance, particularly in project identification, implementation and monitoring after lending with proponent firms.

(2) Administration system necessary for implementing the proposed program

In Chapter 4, Indonesia's financing systems for the medium and small firms and their operating status were reviewed. Based on the information from various existing systems and the ten banks visited by the Study Team (6 state banks, 2 private banks and 2 local development banks), the establishment and improvement of the following activities is considered vital in management of the program funds.

1) Establishment of a special account to control inflow and outflow of the funds for the program.

2) Controlling of lending procedure (from application to repayment) separately from other lendings. Formats, reports and documentation should be clearly distinguished from other documents.

3) Provision of a special lending and consulting desk within the bank and/or within its branches to render services in project findings, implementation and monitoring for the program loan and for proponent firms.

4) Compilation and maintenance of lending statistics similar to the reporting systems of KIK/KMKP. For example, types of industries financed shall be classified into the manufacturing subsector.

5) Establishment of a system for management of outstandings, particularly with respect to overdue loans. The World Bank has already made some recommendations for KIK/KMKP system, which should be referred to in investigation of the existing system to study the counter-measures.

6) Availability of manpower for appraisal and monitoring of projects is deemed necessary since the shortage of manpower for client services loses job opportunity of the proponent because of delay in loan processing.

7) Among the many problems faced by the medium and small firms, the shortage of collateral against loans is common in any country throughout the world. Guarantee system or the credit insurance system for small- and medium-scale industry is usually provided by the national agency1/. Indonesia likewise has established a credit insurance/guarantee system, P.T. Askrindo, which is facing difficulties in providing guarantee for KIK/KMKP. The counter-measures against shortage of the collateral should be carefully studied, for example, reexamination of P.T. Askrindo and establishing separate credit loss guaranty system by the government.

(Note) 1/ According to the report on the loan guarantee system submitted at the international meeting on medium and small firms (held in Osaka) in January 1982, 15 countries have own promotion program, of which 12 countries have the governmental credit insurance/guarantee system (2 with national funds, 5 directly by government, 5 by state-owned corporation).

(3) Comparative study on implementation agency

In this section, the strong and weak points, the advantages and disadvantages of each of existing financial institutions are examined in order to select the implementing financial institution for this program.

As this program is to be initiated for a certain number of eligible firms to be developed and to be gradually expanded in the number of firms and the subsector of industry subject to the success of the initial implementation, the number of handling financial institutions has to be limited to for efficient operation of the program. Such an institution(s) should be carefully selected from those which well-organized lending activities are.

The state banks, which are six in Indonesia, have been previously recommended as the candidate institutions, and their strong and weak points as an implementing agency for this program is reviewed hereunder.

State banks to be examined:

a) Bank Negara Indonesia 1946 (BNI'46)
b) Bank Rakyat Indonesia (BRI)
c) Bank Expor Impor Indonesia (BEII)
d) Bank Bumi Daya (BBD)
e) Bank Dagang Negara (BDN)
f) Bank Pembangunan Indonesia (BAPINDO)

1) Experience in dealing with the industrial sector

Although this program is now focussing on the metalworking industries, it is expected that it will extend to other industrial sub-sectors in the future. The experience in transactions with the manufacturing industry shall be reviewed for each bank. The share of outstanding balance of loans to industries and the share of outstanding balance of medium and long term loans in the total outstanding balance of loans of each bank as of the end of December 1983 are as follows.

SHARES OF INDUSTRIAL SECTOR AND LONG TERM LOAN

(%)

	BNI'46	BRI	BEII	BBD	BDN	BAPINDO
Share of outstanding loan balance to industrial sector	40.3	7.1	n.a.	15.6	76.1	79.2
Share of outstanding balance of loans for capital investment	48.2	n.a.	n.a.	n.a.	29.9	79.3

Source: Data submitted by each bank

The banks with "n.a." do not maintain such statistics. Their ranking in this item would be; (1) BAPINDO, (2) BNI'46, (3) BDN, (4) BBD, (5) BEII and BRI.

2) *Experience in medium and long term lendings*

The share of outstanding balance of loans for capital investment of three banks, namely, BNI'46, BDN and BAPINDO, are available from the foregoing table. Credit in this country is mostly short term lending with the exception of loans provided by the liquidity credit of BI. Almost all of the borrowings shown in Table 7.4 are by the liquidity credit, usage of which is at minimum for BEII.

3) Target group of clients for each bank

Lending to medium and small scale firms in Indonesia has been conducted mainly through five state banks under the guidance of BI. Consequently, each of the state commercial banks seem to have adequate experience in transaction with the medium and small firms. However, with respect to BRI, its major field of transactions is with the small-scale cottage industries in the rural areas so that its organizational set up is also developed to match such clients. According to the report of the World Bank, BRI is now putting more effort for KIK/KMKP and BIMAS financing programs. Therefore, since BRI have different client group from linkage-type metalworking industries, these are not quite suitable implementing institution from this respect.

BAPINDO, also according to World Bank Report, handled only 4% of the loans to medium- and small-scale firms under the KIB financing

system, and its targets for lending are mainly large scale investment projects.

4) Distribution branch offices

Location of branch offices (excluding sub-branches and cash offices) of each bank as of the end of December, 1983 is as tabulated below.

LOCATION OF BRANCH OFFICES OF STATE BANKS
(AS OF THE END OF DECEMBER 1983)

	BNI'46	BRI	BEII	BBD	BDN	BAPINDO
Jakarta	37	15	9	15	17	1
Suburbs of Jakarta						
Bogor	1	1	-	1	-	-
Tangelan	1	1	-	1	-	-
Bekasi	1	1	-	-	-	-
Major cities in Java						
Bandung	6	1	1	1	1	1
Surabaya	8	3	1	3	1	1
Semarang	2	1	1	1	1	1
Tegal	1	1	1	1	1	-
Surakarta	1	1	-	1	-	-
Other areas in Java	77	98	6	17	10	1
Outside Java	106	171	30	36	47	16
Total number of branches	241	294	49	77	78	21

Source: Annual reports of each bank

The names of cities specified in the above table are the areas in which relatively many medium and small firms are located. BNI'46 has the largest number of branches in these areas, followed by BRI, then the three banks, BEII, BBD and BDN, are ranked as the third group. The location of branches is a quite important factor for medium and small firm financing, and in this context, BAPINDO is the lowest in the number of branches.

5) Operating performance of the six state banks

Table 7.4 shows lendings in rupiah, collection of deposits, and borrowings (mainly from B.I. liquidity credits); Table 7.5 shows total operating assets, operating revenues, financial expenses and administrative expenses; Table 7.6 shows comparison of the operating efficiency based on Table 7.4 and Table 7.5. The performance of six banks indicated in these three tables is summarized as follows.

a) Comparison of lendings in Rupiah

Breaking down total amount of lendings into Rupiah and foreign exchange assets, the ranking of the Rupiah lending is in the order of BRI, BBD, BNI'46 and BDN, then BEII and BAPINDO.

b) Ratio of net worth to total assets

The figures are 10.6% for BAPINDO, 5.7% for BBD, 5.6% for BEII, 5.4% for BDN, 4.1% for BRI and 3.9% for BNI'46, by averaging the year-end figure of '83 and '84.

c) Efficiency of operating assets (gross income/total operating assets and pretax profit/total operating assets)

BEII ranks as the top in terms of gross revenue and pretax profit to total assets. It owes to its major customers in trade and commerce which keeps the high rate of deposit and its high weight of demand deposits. The financial reform of June 1983 seemed to have had a favorable effect for the BEII.

The ranked second is BNI'46, being followed by BDN and BBD. Despite of the fact that BNI'46 has the lowest ratio of "net worth/total operating assets" among the six state banks, it keeps fairly high efficiency of operating assets. This is probably due to its higher operation in foreign exchange assets than Rupiah lending. (In fact, BNI'46 has higher amount in foreign exchange assets, Rp.2,698 billion (1983) and Rp.3,616 billion (1984), then the Rupiah lending, Rp.1,973 billion (1983) and Rp.2,931 billion (1984), while other five banks has higher amount in Rupiah lending than the foreign exchange assets. (Table 7.4)

d) Administrative cost ratio (administrative cost/total assets employed)

Due to the financial reform in June 1983, the banks' cost of funds has been rising. (Refer to Table 7.5, trends in the ratio of financial expenses to total assets.) All state banks except for BAPINDO are coping with this by reducing administrative expenses. (Only BAPINDO increased its administrative cost by 8% from 1983 to 1984.) The bank ranking in terms of the ratio of administrative expenses to total assets in 1984 is, BDN (1.9%), BBD (2.7%) and BNI'46 (3.2%).

The ratio of administrative cost to total assets per employee in FY 1983 was 5% for BRI, 13% for BDN and 17.5% for BNI'46.

e) Overall index of operating performance

The scores in Table 7.6, "Comparative Study of Managerial Performance Among Six State Banks" was obtained simply by adding the scores of the top-three of ten indices. The figures in parentheses are the sum of the scores of only the first rank. According to this table, ranking in FY 1983 was led by BDN, followed by BEII in second place, BBD in third, BAPINDO in fourth, BNI'46 in fifth and BRI in sixth place; in FY 1984, BEII in first place, BAPINDO in second, BBD and BDN in third, BNI'46 in fifth and BRI in sixth place.

Since BAPINDO has only a small number of branches and its loans are predominantly large, the outstanding balance of loans per branch (and per employee) is high (first rank) and the efficiency of its operating assets (gross revenue/total assets used) is high. These, however, cannot be claimed to be a suitable setting for medium and small firm financing. BAPINDO is also characterized by its high equity ratio (the bank has a regulation on equity ratio). BRI may be regarded as the opposite case of BAPINDO. BEII's performance is mainly attributable to the fact that its rate of deposit collection and profitability, gross revenues and profit before tax to total assets, are the best, as stated already. BBD and BDN exhibit generally stable performance with balanced scores.

f) Quality of outstandings

The quality of outstandings of loan credit, which is one of the crucial factors in the operating assets of a bank, could not be examined closely due to unavailability of information. "Overdue loan" is briefly discussed in Section 7, "Conditions of Arrearages Generated", of the Section Report, but data of each bank are only partially available. Even though the bank's operating performance indices are good, if the bad debts are large in its lending, the bank cannot be regarded as reliable. In implementing this program, therefore, particular attention must be given in loan portfolio management and monitoring.

(4) Overall evaluation

The above various indicies for evaluation are summarized as the following results. Prior to this evaluation, BRI was excluded from the list of candidates for this program, in view of its major clients currently being delt with.

1) Experience in transaction with relevant types of industries and long term loans:

1st rank: BAPINDO, 2nd: BNI'46, 3rd: BDN

2) From the viewpoint of established business connections with the leading medium and small industries:

1st rank: BNI'46, 2nd: BRI, 3rd: BBD, BDN (same ranking)

3) Distribution of branch offices

1st rank: BNI'46, 2nd: BRI, 3rd: BBD, BDN (same ranking)

4) Bank's operating performance

1st rank: BEII, 2nd: BDN, BBD (same ranking)

5) Availability of after-care finance

1st rank: BNI'46, 2nd: BEII, BBD, BDN (same ranking)

According to the Banking Law, BAPINDO's major function is to provide long and intermediate term credit, but short term credit also accounts for about 20% of its total loans. The problem is in the location and distribution of its branch offices.

6) Manpower and administration of loan (excepting the quality of credit)

1st rank: BAPINDO, 2nd: BNI'46, 3rd: BBD, BDN (same ranking)

The table below lists these results.

OVERALL EVALUATION OF STATE BANKS AS AN IMPLEMENTING AGENCY OF THIS PROGRAM

	BAPINDO	BNI'46	BDN	BBD	BEII
Long term loans to industry	1	2	3		
Experience with medium and small indutries		1	2	2	
Branch network in major areas		1	2	2	
Bank managerial performance indices			2	2	1
After care finance		1	1	1	1
Manpower and administration of loan	1	2	3	3	

Note: The number indicates ranking in each item.

(5) Consideration to be taken in selection of implementing agency

There are advantages and disadvantages in appointing only one institution or a plurality of financial institutions as implementing agency. The advantage in having plural implementing agencies is that the principle of competition will work to the credit of the program by accelerating the promotion of lending to promising industries and thus speed up development. The advantage in having only one bank is that technical assistance which ought to be integrated with finance can be integrally implemented under centralized control under one bank. In case of plural agencies are assigned, it tends to hinder smooth promotion of this program because their assistance given under institutional finance would be separated from technical assistance.

This matter requires further review, but since the proposed promotion program, if materialized, would become Indonesia's new system, it is

considered that the program would be more smoothly operated if only one bank were to be appointed as implementing agency to adopt a centralized control and assistance system at least during the initial program loan.

Involvement of a technical agency(-ies), however, in the part of the technical assistance is still worth for examination in the case that an assigned bank(s) could not provide sufficient technical services to proponents inside of his organization. The Institute for Industrial Entrepreneurship newly established by MOI in participation of other agencies could function technical and managerial assistance services to be extended to individual projects under the program, as well as the promotion and monitoring of the program, provided that close coordinations are maintained with the appointed bank(s).

7.6.3 Overall Institutional Framework and Role of the Ministry of Industry for the Proposed Program

Figure 7.3 illustrates an overall framework including relevant organizations and institutions for implementation of the proposed program. As shown in the figure, collaboration of relevant agencies such as MOI, MOF, BAPENAS, BKPM, industry associations, technical agencies and banks is indispensable. In such sense, although it is suggested in the preceeding paragraph that a state bank(s) which has TA division inside of the bank will be most workable as the implementation agency for the program, the role to be played by the Ministry of Industry as the governmental ministry responsible to development of industry in the country is important for the success of the program specifically by participation in the area of TA. In such case that MOI will be directly or indirectly involved in the program, the function, organization and workflow of the overall execution system shall be carefully examined in coming stage. Some of major functions of MOI in the program can be described as below:

(1) Project identification and feasibility study

MOI has been in close contact with medium- and small-scale industries through its regional offices (KANWIL) and implementing various assisting programs. Identification of projects and conduct of feasibility studies (F/S) of sub-projects (expansion or new construction of factories) are important supporting functions of this program, which is a possible area to be covered by functions of MOI or its agency.

In addition, project identifications and F/S have been conducted in UNIDO project (INS/78/002) which started in 1980. The UNIDO project

has identified about 300 sub-project mainly in the areas of North Sumatera, East Kalimantan and South Sulawesi, and about 20 projects have been confirmed as "feasible". The UNIDO project formulated a team in each region and is carring out project identification and F/S, it channel the feasible projects to banks. The UNIDO project will be expanded to cover five regions along with its start of phase-II from January, 1986.

MOI has established a new organization, Institute for Industrial Entrepreneurship (IIE) for the purpose of providing extensive technical assistances to private industrial investors necessary to materialize their projects in effect and thereby supporting the UNIDO phase-II. IIE will be governed by the advisory council which will be chaired by Minister of Industry, and the representatives from Bank Indonesia, BAPINDO, KADIN, P.T. Bahara and four director generals of MOI will be the member of the council. The major function of IIE are as follows.

1) Identification of projects of private industrial entrepreneurs

2) Preparation of feasibility studies in the framework of industrial entrepreneurship

3) Assistance in training program for management, marketing and technology transfer

4) Promotional activities of industrial entrepreneurship for domestic industries

5) Promotion of investment introducing feasible projects to financial institutions

These functions which are covered by IIE have also of common importance to developing linkage-type machinery and metalworking industries. The provision of these facilities will greatly contribute to execution of the program proposed in this Report.

(2) Testing laboratory for metalworking industry

As it was discussed in 7.4, establishment of Metalworking Product Testing Laboratory is necessary as a common service facilities (CSF) for development of the subsector. An institutional set up for this CSF, there will be possibilities in establishing directly under MOI, under private industrial association or in collaboration between government (MOI) and private (so called "third sector" approach). At any

rate, there has to be a participation by MOI directly or indirectly. There are still various factors to be carefully studied, including the study of facilities, manpower, budgeting of operational expenses, technology, and sourcing of fund either from government, budget private sector and/or foreign aid, which are to be clarified in the further study.

7.7 Estimated Budget of the Program Loan

(1) The total amount of sub-loans to firm level projects and number of borrowing companies

As described in 6.2 of Chapter 6, the metalworking industry in Indonesia is expected to require investment of between 500 and 900 million U.S. dollars in the coming five years. This investment requirement will be met by government investment, private investment, investment from overseas in the form of joint-ventures, borrowing from various institutional loans, borrowing from state and private banks and the acceptance of foreign loans and aids.

Therefore, the portion to be shared by the program loan proposed in this Report cannot be exactly stated at this moment that no financing source is defined. In the light of the basic concept given in 7.1, the program loan aims at stimulating the Indonesian metalworking industry in the direction of modernization by means of selectively fostering grower-type companies as development models. The initial total amount of sub-loans should, therefore, be assumed based on the actual capital demand in a pipeline.

Loan requirement answered by 219 companies in the questionnaire survey is summarized as follows (Refer to 6.1.2 (3) in Chapter 6).

Group (No. of Employees)		Required Borrowing Amounts (Rp. Million)	(US$1,000)	(Yen100 Million)
I	(upto 19)	1,663	1,498	3.5
II	(20 - 99)	15,514	13,977	32.8
III	(100 or 199)	15,400	13,874	32.6
IV	(200 or more)	26,250	23,649	55.6
	Total	58,827	52,997	124.5

Suppose Group IV is removed from the target group because of its large size, and also suppose that Rp.350 million (70% of the investment amount of Rp.500 million per sub-project) is required for each sub-project as an average owing to the need for fair large investment for modernization, the lending schedule for the coming five years can be calculated as shown in the table below. These finance requirements would be met by foreign funds, as well as domestic counterfunds.

LENDING SCHEDULE (SUBJECTS: CATEGORIES I, II AND III ONLY)

	No. of Borrowing Companies	Rp. Million	US$1,000	Yen100 Million
1st Year	18	6,300	5,681	13.3
2nd Year	20	7,000	6,312	15.0
3rd Year	20	7,000	6,312	15.0
4th Year	19	6,650	5,996	14.1
5th Year	16	5,627	5,047	11.5
Total	93	32,577	29,348	68.6

Note: Assumed as sub-loans for Group I, II and III with an average lending amount per company of Rp.350 million, US$315.6 thousand.

(2) CSF and TA

In Section 7.4, the cost of Common Service Facilities is preliminarily estimated to be between US$5.3 million and US$7.6 million. Whether this cost will be financed from the frame of the program loan or met by other sources shall be determined only after the program's implementation has been decided.

Supporing that TA would be provided in accordance with the scope of work described in 7.5 of this Chapter, the cost for outside consultants except costs for the implementing agency is estimated as below. The duration of the services rendered by the outside consultant is assumed as 3 years (36 months) which cover a period from the initiation of the program until the stable operation of a certain number of financed firms.

(Mon-months required for the consultants)

a) Foreign consultant

- Resident consultants stationed in Indonesia: (2 men x 36 mos.)	72 m/m
- Consultants occasionally visiting Indonesia: (12 men x 4 mos.)	48 m/m
- Back-stop experts: (1.5 men x 36 mos.)	54 m/m
Total	174 m/m

b) Local consultant

- Permanent staff of consultant: (3 men x 36 mos.)	108 m/m
- Temporary and back-stop expert: (2.5 men x 36 mos.)	90 m/m
Total	198 m/m

Since the date of the commencement of the program is not decided, a price increase due to an expected inflation is not taken into account.

(Cost of the outside consultants in 1986 price)

a) Remuneration

- Foreign consultant: (174 m/m x $10,000/m)	US$1,740,000
- Local consultant: (198 m/m x $4,000/m)	US$ 792,000

b) Out-of-pocket expenses

- Accomodation and per-diem: (112 m/m x $2,000/m)	US$ 224,000
- Overseas air fare: (30 trips x $1,800/trip)	US$ 48,000
- Local travel, administration etc.: (36 mos. x $5,000/m)	US$ 180,000
Total	US$2,984,000 (Say: US$3.0 million)

3) Total budget for the development program

While many items of the total program budget are subject to future examination a preliminary estimation is shown as below based on the above-described assumptions.

	US$ Million
Sub-loans	29.4
Outside consultants	3.0
Common service facilities	7.6
Sub-total	40.0
Contingency (10%)	4.0
Total	44.0

7.8 Economic Benefits Expected by the Implementation of the Program

The possible benefits of the development program for the linkage-type metalworking industry for Indonesia as a whole are evaluated in this Section in terms of employment opportunities, the saving of foreign currency and the indirect benefits.

7.8.1 Increment of Employment Opportunities

The employment structure in Indonesia is: 58% in the agricultural sector, 12% in the industrial sector and 30% in the service sector (World Bank, 1981). As the Fourth Five-Year Development Plan (REPELITA IV) requires new employment of 1,864,000 people each year, it is anticipated that the industrial sector, with the highest growth rate of 9.5%, will provide most of these new employment opportunities. As REPELITA IV clearly states "the metalworking industry and the machine industry are the important industries for the expansion of productive employment in the industrial sector", the linkage-type metalworking industry should play an important role as its employment opportunities creation in accordance with the modernization, as well as the expansion, of its production facilities.

The results of the questionnaire survey carried out this time clearly show that a large number of medium and small size machine/metalworking companies intend to expand their business sizes. The introduction of new equipment achieved through the new investment drive will mainly be aimed at the development of the machining process which cannot be done manually, high accuracy and the expansion of the production size rather than at replacing human labour with machinery. As a result of this, new employment will be necessitated. In addition, the introduction of new factories will obviously require a new workforce. Consequently, it must be said that the implementation of the proposed program will effectively generate a large amount of new employment.

7.8.2 Saving of Foreign Currency

Under the severe situation concerning the foreign money reserve, caused by stagnant oil exports in the world economic depression, the Indonesian Government expects an increase of the export share of non-oil/gas from 26.8% at the end of REPELITA III to 34.6% at the end of REPELITA IV. With regard to imports, it is intended to increase the share of capital goods from 42.4% to 49.4% in the same period, while reducing the share of raw materials and intermediate with low value-added from 43.3% to 40.7%. REPELITA IV intends to increase the foreign exchange reserve