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REPORT ON THE CONDITION OF THE METAL WORKING INDUSTRY IN SRI LANKA AND THE PROSPECTS FOR FOREIGN COLLABORATION IN THIS SECTOR

by

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LIST OF ABBREVIATIONS

BTT	Business Turn-Over Tax
CAD	Computer-Aided Design
CISIR	Ceylon Institute of Scientific and Industrial Research
CNC	Computer Numerically Controlled
DC	Developing Countries
EDB	Export Development Board
EFTA	European Free Trade Association
FIAC	Foreign Investment Advisory Commission
FDI	Foreign Direct Investment
FM	Flexible Manufacturing Systems
GCEC	Greater Colombo Economic Commission
GPMT	General Purpose Machine Tool
IDB	Industrial Development Board
IECD	International Economic Cooperation Division
IPC	Investment Promotion Zone
ISIC	International Standard Industrial Classification
JV	Joint Venture
LC	Local Content
NC	Numerically Controlled
MFP	Ministry of Finance and Planning
MIRID	Ministry of Rural Industrial Development
MISA	Ministry of Industries and Scientific Affairs
MT	Machine Tool
MTS	Ministry of Trade and Shipping
MVA	Manufacturing Value Added
MW	Metal-Working
PMT	Production Machine Tool
RM	Raw Materials
Rs	Rupees
SC	Subcontracting
SLBDC	Sri Lankan Business Development Corporation
TNC	Transnational Corporations
TT	Technology Transfer

Report on the Condition of the Metal-working Industry in Sri Lanka and the Prospects for Foreign Collaboration in this Sector

I. Context

Since the late 1970s Sri Lanka has pursued a liberal policy towards the promotion of manufacturing industry. The accent has been on labour-intensive branches, much of it through sub-contracting arrangements with transnational enterprises (TNC), and has been strongly export-oriented. Within the past year or so, however, the government has become increasingly concerned about the strong concentration of this type of manufacturing on two or three branches only viz. textiles, clothing, and some parts of food processing. There have been, therefore, various attempts to diversify both the branches on which exports depend as well as the sources from which foreign direct investment (FDI) is obtained. The genesis of the present report is a partial response to these concerns. The International Economic Co-operation Division (IECD) of the Ministry of Finance and Planning (MFP) has requested UNIDO to examine the possibilities for establishment of Joint Ventures (JV) in the machine tool (MT) and metal-working (MW) branches.

The approach to this work has relied essentially on four inter-related activities. First, a detailed examination of international developments in the MT branch. Second, an in-depth survey of MT and MW activities carried out within Sri Lanka itself by the Sri Lanka Business Development Corporation (SLBDC). Third, a detailed series of interviews with enterprises involved in the MT industry that were participating in the Seventh European Machine Tool Exhibition organized in Milan, Italy in October 1987. Fourth, extensive utilization of earlier studies prepared by UNIDO and other Organizations on related subjects both in Sri Lanka itself and other developing countries (DC). The purpose of this report is to weave together these various strands of information into a coherent presentation of the current situation and the realistic prospects for Sri Lanka to carry through its aim of reducing dependence on a few industrial branches and cheap labour exports. Before entering into the details of the MT and MW issues, however, it is essential to try and summarize both the internal preoccupations and external constraints within which and subject to which policy actions will have to be taken.

To begin with the foreign exchange side of matters some simple yet nonetheless fundamental observations can be made. Sri Lanka has obtained foreign exchange almost entirely through four sources viz., primary commodity exports, tourism, remittances by migrant labour, and labour intensive manufactures. Given the rapid deterioration in external economic conditions from the early to middle 1980s onwards, these sources have appeared to be increasingly vulnerable. The sharp falls in primary commodity prices, the severe reduction in the market for Sri Lankan labour due to the collapse in oil prices and its effects on the labour demand from the Middle East, and the relatively stagnant incomes and thus more limited growth in foreign tourism have all contributed towards constraining the prospects for foreign exchange growth in the country. The fourth component, i.e., labour-intensive manufactures is also vulnerable partly for the same reasons and partly for others. It would appear that FDI based on sub-contracting (SC) for Sri Lanka has rather limited horizons. In the traditional branches, of which textiles and clothing is the principal example, those firms which wished to do so have already had ample opportunity to establish operations in the country. Those operations are unlikely to expand very much and may well be under pressure for some reduction. The reasons are not to do with rising costs in Sri Lanka itself; on the contrary wage rates for various kinds of labour have remained very low in relative terms and the government has been more than generous in the fiscal and other concessions it has offered. Rather, these branches are susceptible to a certain degree of relocation back towards their OECD base due to technological advances; moreover, the growing sophistication at the demand and of the market makes it still more interesting for producers to locate most of the production activities in their home bases. Faced with these conditions, the government has begun to look for other branches which could provide a useful source of foreign exchange through export-oriented manufacturing - it is for this reason that MT and MW have come to the fore.

These branches, which at the moment depend heavily on imports for local supply, would of course act both as import-substitution and export-oriented areas. In this respect any emphasis on them, poses some problems for a government policy so heavily oriented towards exports. To encourage MW and eventually MT production within the country runs up against basic problems both in attracting foreign collaboration and in designing appropriate incentives for production oriented to the national market. Yet there does seem to be some belief in Sri Lanka itself that government and private sector

entities, operating in collaboration with foreign public and private organizations, together can do something to improve the status of these branches within Sri Lanka. The principal areas in which joint efforts could be made include the following:

- Collection and analysis of information on MW and MT branches in Sri Lanka with a focus on the likely extent and composition of demand.

- Similar information gathering and analysis on external trends especially in relation to markets, technology and sources of finance.

- Joint agreement on and provision of ways of reorganizing the existing structure of these branches in Sri Lanka through measures to assist individual enterprises, investment in joint facilities, services and activities (the "competition within co-operation" approach), the modification of the present industrial structure in these branches, and the effort to obtain JV and other forms of foreign collaboration.

The recognition that some steps are necessary, and the slow maturing of a collective willingness to undertake those steps (with all the risks and costs as well as possible benefits which they may involve) is of course by no means a guarantee that everything can be achieved. In Sri Lanka's case this statement is more than the platitude it may seem since the country's geographical position, current income level and the developments in the international economic system all militate against easy change. Sri Lanka's situation as an island country which is relatively small, particularly as compared with most other Asian countries, does not make it anywhere near the first choice for potential foreign investors interested in developing operations in the complex and rapidly advancing branches such as MT and MW. Sri Lanka's still limited domestic market size and the low degree of internal integration in its industrial sector are both factors which compel it to rely heavily on exports yet to import a substantial proportion of the raw materials and intermediate inputs on which output in these branches depends. The fact of a certain distance from major supply lines along with the fairly limited extent of domestic demand contribute towards raising the costs of such imports and thereby imposing greater pressures on productive efficiency within Sri Lanka itself.

During the present decade the focus of dynamism in the international economic system has switched very strongly to Asia and in particular to four parts of the continent. Japan has now become the primary international creditor and is extremely well placed in advanced industrial branches of which MT and MW are outstanding examples. The Asian NICs have already begun to break into OECD markets, especially North America and Australasia, in reasonably advanced types of MT product and are areas of major interest to potential foreign investors. The ASEAN countries are well placed to become the third wave of Asian manufactures exporters and surveys of foreign investors show that these countries, both individually and as a group, figure highly on the list of preferred locations. Finally, India, although it seems to attract less attention in the financial and business press, nevertheless remains an extremely important industrial market and one in which the size and sophistication of domestic production has to remain a source of interest to foreign suppliers.

Against these major locations Sri Lanka appears very isolated. It is, as things now stand, conducting a lone struggle to put itself on the map and obtain the sorts of collaboration which would yield returns to the country as opposed simply to external investors. The fact is that, in its concentration on cheap labour activities, Sri Lanka has only been competing to a partial extent with other Asian countries. Certainly the Philippines and Indonesia are normally analyzed in the same breath as Sri Lanka when it comes to comparisons of wage rates, government incentive packages and so on, yet some of Sri Lanka's competition really comes from other continents, e.g., Malta and Cyprus as Mediteranean Island suppliers to Transnational Corporations (TNC) located in European common market countries, North African States supplying to Europe, and to a lesser extent Central American countries insofar as sales to North America may be involved. In short, Sri Lanka is somehow on the margin in the dynamic region of the world economy to which it geographically belongs and is thus faced with the difficult policy predicament of deciding whether it should try to go it alone, and if so along which route, or whether it should try first to establish some formal links with other Asian countries and then try to attract FDI in the producer good branches which are the concern of this report.

The purpose of the preceeding remarks is to highlight a point which is all too easy to lose sight of in present circumstances where international

discussion focuses so much on export-promotion. It is that only a limited part of export-promotion is really within the control area of the Sri Lankan Government and domestic entrepreneurs. The present period is one in which numerous DC are offering extremely attractive incentive packages to external enterprises and yet, with the exception of Japan, OECD countries are not expanding their FDI in manufacturing to any appreciable extent. This is partly because so much investment has occured over the past quarter century, and therefore most companies are already established in those manufacturing locations which interest them, and partly because the fierce technologically-driven competition within the OECD is itself obsorbing almost all the investment capital which is available. Furthermore, the enormous investments taking place in tele-communications and informatics are in essence a logical supplement in terms of international infrastructure to developments which took place a couple of decades ago in terms of international transport. The container revolution in shipping along with the rapid introduction of larger and faster cargo-aircraft both contributed to reductions in unit cost of international movement of goods and the current developments are providing their complement in relation to services. It follows that whereas a few years ago it was important for DC to have adequate port facilities with which to correspond with the physical transport developments, at the end of the 1980s it is equally essential for DC participating in more sophisticated manufacturing operations to develop adequate service infrastructure facilities.

It follows from the above that Sri Lanka is faced with expensive requirements and fierce competition if it wishes to expand its involvement in advanced areas such as MT and MW. For government and private firms to pursue this path is not merely a question of developing substantial incentive packages (much of which has in any case already been done in Sri Lanka) but also means a tough analysis of the real benefits stemming from such investments. Such benefits are most unlikely to arrive quickly or with much guarantee; instead a risky, medium- to long-term committment will be the requirement and it is in principle almost impossible to say in advance whether or not such a committment will pay off. This point is stated crudely simply to ensure that there are no illusions when making decisions of this type. Sri Lanka does not have the basic domestic market size which large DC such as India, some of the Latin American countries and a few ASEAN countries can always rely on if the export dimension of operations turns sour. If things work out then the long-term returns are potentially high - but if they do not then the costs are severe.

II. The Domestic Situation in MT and MW

In any meaningful sense of the term the MT branch is non-existent in Sri Lanka. Instead such production as does take place is entirely in the area of MW, defined as fabricated metal products in ISIC categories 3811-3814 and non-electrical machinery in ISIC categories 3822-3824 and 3839. These categories amounted to approximately two per cent of industrial production in Sri Lanka in 1986 and that percentage had varied hardly at all during the preceding quinquennium. Approximately 7/8 of that production was in the form of fabricated metal products with the rest being basic metal products. Roughly 30 per cent of the items produced were relevant to the food processing branch and another 30 per cent to textiles. The mere statement of such facts emphasizes an obvious yet nevertheless significant point viz., demand for MW products is a derived demand and is therefore dependent on the state of economic activity in the economy as a whole and in particular on the evolution of investment in fixed capital. The primary areas of demand for MW items in Sri Lanka are as follows: agricultural machines and implements, especially equipment for processing tea and rubber, and water pumps for use in irrigation; building materials; transport equipment needs including spares; and, on the consumer goods side, domestic appliances. Almost all production in Sri Lanka goes to the domestic market and total sales, amounting to roughly Rs two billion per year, account for about 22 per cent of domestic needs with the remainder being imported.

To provide more detailed information on the MW branch a survey of some 52 firms was undertaken during the first half of 1987. According to data provided by the Industrial Development Board (IDB) there were approximately 870 enterprises registered as MW producers in Sri Lanka in 1986 with many smaller firms left unregistered (the informal part of the branch). The 52 firms included in the survey, where the data relate to the position as of 31 December 1986, tended to be the larger enterprises where fixed capital investment exceeded Rs 1 million, where 9.6 per cent of the firm's question had total investment (i.e., land, buildings, working capital and plant and machinery) in excess of Rs 100 million, and where average investment in plant and machinery per employee came to approximately Rs 69,000. It follows that the conclusions that can be drawn from the survey are important in at least three major respects. First, these larger enterprises are almost certainly the ones with which both government department and potential foreign investors will have the most contact; to the extent that JV possibilities and other forms of collaboration can be worked out with existing enterprises, the ones

surveyed are the most probable candidates. If they see the prospects for domestic reorganization and foreign co-operation as slim, then this must be taken as a powerful indicator of the overall situation. Second, the degree of sophistication in both products and processes is almost certainly highest in the enterprises examined - what can be done with their assistance and involvement effectively represents the frontier of possibilities in Sri Lanka in the short- to medium-term. Third, it may be that the problems of tiny enterprises are appreciably different from those described in the survey. To the extent this is the case, support for development of the sector might have to include measures hardly discussed by the enterprises surveyed.

Before analyzing in detail the findings of the survey and their policy implications, a few caveats have to be put on record. First, the sample itself, like all samples, had its limitations. Only one JV was included and thus there was virtually no possibility to obtain practically-based assessments of JV operations in the country. Second, the questionnaire employed was pre-structured and distributed without any pilot use. This means that certain matters which could have been of importance to firms were not specifically dealt with and that undue emphasis may have been given to subjects which enterprises themselves are little concerned with. Third, there was poor acceptance of interviews subsequent to distribution of the questionnaire. It seems that companies felt that several reports on the MW branch had been initiated in recent years but that the producers themselves had not benefitted from such surveys. As a consequence they were reticent to provide data for yet another assessment. This of course means that the chances of effectively cross-checking answers and of going deeper into the reasons for some of the assessments and evaluations were limited. Fourth, the actual questionnaire itself did not devote enough attention to certain matters which, in the light of other information, appeared to be of considerable significance, e.g., the financial structure of enterprises and the interrelationships between certain of the variables (ownership, company size and technologies employed). The net result of these caveats is simply that the survey, while providing useful indicators for policy on several matters, does not provide a sufficiently strong basis for tackling all of the main areas which both government departments and foreign investors are likely to be interested in. Subsequent and highly specific enquiries would therefore have to be undertaken before any final policy designs were made.

The survey data offers information on a variety of subjects and the most convenient way to summarize these results is to use a series of standard headings; this is done in the following paragraphs.

(1) Product mix

Pulling together the responses from all 52 enterprises surveyed, a variety of 39 items (24 of them corresponding to ISIC 382) were identified as being part of the regular product mix of the firms. Listing these 39 products and putting against them the firms actually producing yields 118 entries, i.e., on the average each firm produces about 3 products (the largest number produced by any single enterprise was 6). The comparison of products and firms shows a fair degree of grouping. Thus agricultural machinery and spares for agricultural machinery were items each of which was made 10 enterprises of which 8 make both sorts of product; in the same vein the listing show that the three firms which manufacture barbed wire were also the three which manufacture wire nails, nuts and bolts. It appears that the degree of specialization is not too high and that, as will be seen later, much of this production on a one-off basis which is hardly conducive to obtaining low cost of production. Indeed the firms indicated that organize production lines are hardly ever used and that output consists essentially of descreet responses to demands from diverse sources. In the same connection there was little evidence to indicate that any of the companies producing MW items form part of larger trading or manufacturing groups in Sri Lanka; were they to do so, the resultant vertical integration could well assist the stability in the flow of orders. A categorization of the 39 items shows that 24 of them relate to ISIC 382 and that more than 80 per cent of the company entries for production pertain to the same category. Hence the MW branch in Sri Lanka is oriented towards non-electrical machinery rather than fabricted metal products and produces a range of items on the basis of relatively little specialization and either one of or very small batch production. These findings suggest both a considerable scope for production improvement and yet the serious obstacles to that. It is certainly the case that companies are not in this position by accident, by choice, or by protection through government commercial policy. The reason for the current structure is the nature of the domestic market and the emphasis it puts on what we might call relatively non-automated flexibility in output where the resultant high costs are borne by local consumers.

(2) Machines and manufacturing processes

The survey sought to ascertain the kinds and number of machines installed in the companies and the processes which were carried out using this equipment. The main features to emerge were the following:

- Lathes were by far the most common pieces of machinery installed with a total of 367 and only 5 firms possessing no lathes whatsoever.

- Although their total number was much smaller, drilling machines were also available in all but seven of the companies.

- Close to 40 per cent of the sample had no welding facilities and very few companies had machinery for boring or bending of metals.

- Though not all companies provided information on the average age of equipment, of those which did 18 firms claimed their machine stock was at least 20 years old (the largest company in Sri Lanka said the average age of its machinery was about 40 years) and only 10 companies had machinery whose average age was no more than 5 years. Though no specific information was given, it seems highly probable that even when a firm buys machinery it is purchasing reconditioned second-hand equipment and it seems most doubtful that more than a hand full of machines in MW in Sri Lanka are ever purchased brand new. Obviously no firm can be operating with machines which are at all close to the technological vintages now commonly found not only in OECD countries but in several of the more industrialized DC.

- No company in Sri Lanka is utilizing machinery of the numerically controlled (NC) or computer numerically controlled (CNC) type.

- Data on capacity utilization was only discerned in rough-and-ready fashion through questions to entrepreneurs regarding what they considered the level of machine use to be. On this basis seven companies claimed operations at full capacity while 20 firms said they operated at 50 per cent or less. It was not possible, on the basis of information obtained in the survey, to obtain any correlations between capacity utilization and matters such as company size and age of equipment.

This sketch of the machine stock and its use gives an inroad into the question of manufacturing processes and their frequency. The survey examined a variety of ten different processes ranging from standard activities such as metal casting and milling through to more sophisticated operations involving heat treatment. A matrix relating the 52 firms to these 10 activities yielded 194 entries, i.e., an average close to four activities per firm, with the widest spread of activities for any one enterprise being seven. Machining and sheet metal working were the most frequent operations whereas, at the other end of the scale, heat treatment was only carried out by two companies and recourse to supplementary data to the survey shows that steel casting can only be carried out in two companies in the whole country (both of them in the public sector). Casting as an activity is in fact still quite traditional in that few synthetic binders are employed, few chemical additives are made to slagging materials, and wooden patterns are used for individual job orders. This data emphasizes the limitations of the MW branch as it now exists and the desirability of substantial upgrading if higher quality products of a type suitable for export are to be manufactured. Yet the upgrading would itself imply appreciable changes in the machinery stock and is thus a matter not only of improved technical training and quality control but also of additional investment in fixed capital.

(3) Manpower issues

Total employment in the firms surveyed as of end-1986 reached 6965 persons with approximately 15 per cent of them in managerial functions. The distribution of employment by firms revealed 48 per cent of all companies to have less than 15 employees and 73 per cent of firms with less than 100 employees; only 15 per cent of the companies had above 200 staff. A more detailed examination of the figures on an individual firm basis, however, shows that just one firm (Walker and Sons) had 1,800 employees and that it and the Steel Corporation of Sri Lanka together accounted for 43 per cent of all employment. If these two entities were removed, then average employment for the branch (as measured by the sample) would be around 75. Within the individual categories skilled fitters and skilled machinists are the two groups most regularly employed while, on the managerial side, various companies revealed a pattern in which just a few individuals were required to perform a wide range of functions. The firms in that situation are those which do not participate in organized training programmes. Certainly these findings are fully consistent with the typical situation of a developing

country where company size in a given branch is not too large, where specialization in production is not marked, and where financial structure of the enterprises is still fairly biased towards family concerns, sole proprietorships and partnerships (i.e., where reliance on external sources of risk capital is nil).

The turn-over of labour appears to be reasonably high with fairly skilled staff changing jobs at anywhere from two to five years, i.e., a turn-over rate averaging around 30 per cent. More recently the difficulties facing the companies have tended to accelerate the rate of turn-over and, more disturbingly, the changes seemed to have focused more on the more skilled staff. The impression is that the overall composition of the current work force is rather less skilled than before. This point is considerable importance because the survey also shows a heavy reliance on practical experience in the labour force. Many skilled technicians are unable to read technical drawings and instead rely on their undoubted abilities to copy existing samples and to utilize their own know-how to improve the quality of production. While this kind of experience is a key asset, it nevertheless would be an improvement if some formal training could also be given, particularly when possible collaboration with foreign producers is involved. Moreover, the combination of a slow drain of highly experienced technicians along with the threat to Sri Lankan production which would come if more sophisticated products were to be imported, mean that the formal training component has to be given more attention. Since this kind of technical improvement cannot be carried out efficiently within individual firms, there is a clear case for either joint facilities to be provided by the companies themselves and or for government support in providing technical training.

The questionnaire did obtain data on wage rates in MW. Highly skilled workers are, at present exchange rates, receiving some US$50-100 per month with rates for Senior Managers going from US$330 - 500 per month and pay to unskilled workers being in the range of US$27-40 per month. Earlier estimates relating to 1983 showed that wage rates in these categories in Sri Lanka were, on the average, only about half of those prevailing in say Malaysia and a mere 2 per cent of comparable rates in USA: since then the relative rates of inflation along with exchange rates changes have certainly not improved the position of Sri Lanka. In other words in terms of shere cash payments it is comprehensively a much cheaper location than any other to which it might legitimately be compared. Moreover, there are no grounds for believing that

the labour productivity in Sri Lanka is sufficiently below that in other countries so as to outweigh the labour cost differential. In short, Sri Lanka has no reason whatsoever to be worried that FDI fails to occur because of any rising tendencies in real labour costs. Rather, as further material in this report will demonstrate, the problems are elsewhere, i.e., foreign investors are, within a certain range, no longer influenced by the wage rate differentials and are much more concerned with the infrastructure situation in alternative locations.

(4) Raw material supply

The survey shows that not only is close 4/5 of MW consumption in Sri Lanka derived from imported items but that local content (LC) is very low. Although foundries make significant use of scrap (mainly steel) obtained from prior local production, most other raw materials (RM) and intermediate inputs are imported. The problem of imports is not only one of availability but also of cost since the structure of the branch along with its size in the country and certain policies pursued by the government combine to increase charges, particularly for smaller companies. The problem comes from the relatively small quantities needed by most companies which leads them to purchase their supplies from bulk importers rather than directly. This implies the payment of significant mark-ups which add to the cost which is any case payable due to Sri Lanka's relative distance from RM sources. Moreover, the infrequency of purchase means that companies may well be subject to significant lags in delivery which of course adds to their costs and contributes competitive difficulties. The fact of purchasing through intermediaries is a negative cost factor in Sri Lanka due to the existence of a busines turn-over tax (BTT) which is imposed in cascading fashion on the various stages at which a product is transacted. In short, a company is not only paying higher charges for RM due to Sri Lanka's own situation and the business mark-ups charged by intermediaries, but it is also losing through additional tax payments. A simple example of this was found by the survey in relation to foundry coke, which is 50 per cent more expensive when obtained through this indirect route. The larger companies can to some extent minimize the excess costs because of their possibilities for buying more frequently and on a larger scale whereas the smaller firms are at a disadvantage in all respects.

(5) Company structure

More than 55 per cent of the firms surveyed were more than 21 years old whereas only 9.6 per cent had been established in the five years previous to the questionnaire. The MW branch in Sri Lanka is therefore primarily a product of the 1960s with a relatively small proportion of its members (about one quarter) having been formed in the decade from the mid-1970s to the mid-1980s and only a few firms established in the post-liberalization period. By its nature the sample survey was not in a position to provide information on companies which may have been forced to close down in recent years but indirect information suggests that such firms may have existed. Certainly some of the more important companies are relatively long established, are in the public sector and appear to sell considerable proportions of their output to government departments with which they are associated. The longevity of firms suggests that their sales contacts should be well established with, by now, a quite pronounced degree of linkage between specific supply firms and specific purchasers. Although neither the survey nor other materials were able to yield clear information on company profit rates or the real state of competition within the branch, the persistence of firms suggests that they are still able to obtain sufficient returns through selling to traditional customers. Nevertheless, the branch is definitely fragmented and there seems to be but limited scope for individual firms to reduce their excess capacity through capturing the markets normally handled by other suppliers.

A critical issue, on which unfortunately the survey yielded little information, refers to the financial structure of companies. Leaving aside the public sector firms, there is clearly a heavy reliance on a mixture of own capital plus bank loans. The majority of firms have to rely on bank loans for their working capital requirements and although World Bank funding to the financial sector allows a small subsidy component in interest rates, it appears that many if not most companies are now at the point where these charges along with their other costs have put them in a most vulnerable financial situation. There is a strong suspicion that several companies are now fully geared (i.e., the debt to original invested capital ratios are at ceiling levels or even beyond) and that the utilization of assets as measured by, for example the ratio of annual sales to fixed assets is far to low. Hence companies are faced with heavy overhead charges and insufficiently active use of capital with which to meet those costs. It is imperative that the government and the sector together undertake serious work on these issues before matters become still worse. The existence of such a situation in

countries where capital markets are active and the financial and business structure is relatively densly populated would undoubtedly lead to a wave of company mergers and/or take-overs. In Sri Lanka, however, a much more likely consequence of what seems to be the present state of affairs is the collapse of several companies. Whether or not this is a desirable outcome of course depends on how the branches view it; on the assumption, however, that the government is seriously interested in improving the state of MW, then this increase in concentration is something which should be examined immediately.

(6) External contacts of MW firms

The survey did not examine this issue in great detail but did nevertheless provide some relevant information. To begin with it is clear that companies make relatively little use of outside institutions as sources of general information or specific consultancy. Purchases of equipment are heavily dependent on information provided by machinery suppliers or, still more frequently, by agents in Sri Lanka whose technical and commercial knowledge is not necessarily a good guide for purchasing decisions at the company level. Very few firms have undertaken external visits in recent years, whether those visits be concerned with equipment purchase or investigation of markets. Consequently companies are inward-looking in more than the traditional sense of that term, i.e., their horizons are pretty fully taken up with what is going on inside the country rather than with external changes which could either improve their situation or be a threat to it. The limited external perspective goes further than the foreign information question: the survey did discover that very limited use is made of government facilities whether they refer to formal training of technicians or to product development. The companies may perceive a need for upgrading of management, of employees and of products yet they are not willing to make the contacts outside which would allow this upgrading to take place. It is tempting to conclude that the firms themselves must change their horizons and that this alone will solve the present situation. This deduction, however, might not be a full description of the situation since, as will be seen later, there are real problems of business confidence in MW connected with the suspicions that entrepreneurs have about the willingness of the government to assist the branch.

This suspicion is forcibly demonstrated by the macro-economic approach towards imports and FDI. It was noted earlier that not only are all MT

imported but that close to 80 per cent of MW products are also purchased from abroad with the main sources being Republic of Korea, India, China and Taiwan Province of China. In other words, the import penetration is not primarily due to OECD countries but comes from Sri Lanka's own Asian competitors. These countries have a production range which is far superior to Sri Lanka's in MW goods, have quality levels which are apparently superior and are obviously price competitive. For MW producer goods, 1986 data show substantial imports of agricultural equipment such as seeders, planters and transplenters which are all machines produced to some extent within the country itself. Although it could be (sufficient details to permit a strong statement are not available) that the kinds of equipment mentioned here are beyond Sri Lanka's current capabilities, the fact that significant imports of centrifugal pumps also take place does raise questions about the competitive capabilities of local firms. Traditionally pump production is a key branch of MW output even when that output is on a relatively small scale. Further examination of the import list shows that, in 1986, more than $2 million were spent on sewing machines. If these items were primarily intended for industrial use and that use was linked to export oriented clothing production, then again it could be that quality levels in Sri Lanka are as yet insufficient to meet local demand. To the extent, however, that such machines relate to less sophisticated uses, then once more questions as to the inadequacy of local supply have to be raised.

(7) Institutional matters

There seems to be four different Ministries with responsibilities related to MW issues. These are Ministry of Industries and Scientific Affairs (MISA), Ministry of Rural Industrial Development (MRID), MFP and Ministry of Trade and Shipping (MTS). Each one of these Ministries in its turn has institutions which are relevant to the branch. Thus with MISA is connected the Ceylon Institute of Scientific and Industrial Research (CISIR); with MIRID comes the IDB; with MFP come SLBDC and the Foreign Investment Advisory Committee (FIAC); and with MTS comes the Export Development Board (EDB). However, these institutions seem to be partially competing among themselves yet at the same time not covering several of the areas relevant to MW. In practice the current operation is focused on export questions, on small scale enterprise and on limited aspects of research. Yet even the comments given in earlier sections of this chapter are enough to show that MW is faced with acute problems of reorganization and industrial management. The present

government institutions are not well placed to provide this type of support and the problem is accentuated by the strong feeling within the companies that the government is not really committed to supporting MW activities in Sri Lanka. Consequently, the institutional limitations cannot be overcome unless there is some improved dialogue between the firms and the government and both are ready to take risks and make committments to improve the branch.

(8) Government policies

The thrust of the manufacturing efforts in Sri Lanka over the past few years has been strongly towards export-oriented operations in which the government has endeavoured to provide a range of incentives. Those incentives had been primarily in terms of facilitating inflow and outflow of foreign exchange for investing firms from abroad, in improving the grant of permits and licenses where necessary to cover both investment and trade operations, and to provide adequate physical infrastructure for companies to carry out their operations. This has been done within a context where companies have been able to import their requirements quite liberally and in which the import of final products has also been permitted under fairly easy conditions. For a producer good activity such as MW these conditions certainly do not facilitate domestic production and are not compensated by adequate FDI. Indeed, the present position is one in which investment in the branch as a whole appears to be very low. Local companies have little incentive to invest because to do so would mean purchase of MT in conditions where imports of MW are freely allowed and would represent severe competition. Moreover, the relatively high costs of loan capital along with the absence of any specific direction and support from the government act as further disincentives to local producers. When the Government also offers easy conditions for FDI, but that FDI is not forthcoming the aggregate result is one in which there are net losses for everyone. For such investment as does occur the incentives offered are almost certainly unnecessarily high, meaning that the government foregoes revenue which it could otherwise have received. Domestic investment is constrained by the threat of competition - even if that competition is not forthcoming. Thus local output declines in relative terms (i.e., compared with expenditure on imports) and may even decline in absolute terms if companies are sufficiently concerned about the combination of imports and FDI threats.

It is this setting which has led to the lack of business confidence in the country and which is a basic reason for the absence of confidence between

the government and the industry. Unless very clear initiatives are taken to alter this there will almost certainly be a further deterioration in the situation. This implies that the current attempt to improve MW production through a focus on JV activities is a double-edged one. It could easily happen that firms become disillusioned with the possibility of still greater foreign penetration and reach the conclusion that there is little point in collaborating under those circumstances. If this were to be the case the outcome would have two unfavourable features. First, investment by local firms would fail to increase and second such JV as were started up would probably be with new companies which lacked any experience in MW. Under these conditions the country would be failing to make good use of those assets which it currently posses and might well be moving into types of production in which the local partners in the end provided little more than distribution and general management inputs but without any solid build-up of the branch. The mere statement of this possibility is enough to reinforce the concerns expressed earlier about trying to build up a producer good activity in conditions where the local market is relatively small, the degree of sophistication of the current industrial structure is still limited, and foreign firms do not see the country as a key part of prospective operations.

In order to put these findings at the level of enterprises within Sri Lanka into a more adequate context it is necessary to look at the real situation in international markets; that is the purpose of the next chapter.

III. International Perspectives in MT and MW

MT and MW activities have been subject to major changes since the mid-1970s; those changes can be characterized in the following way:

- In the early 1970s in the OECD countries, 80 per cent of engineering output was batch production with little opportunity to realize economies of scale, with each part subject to anywhere from 5 to 30 operations with lenghty gaps between them, an average component manufacturing cycle time of around 100 days, and a ratio of processing time to total cycle time which was rarely above 1 per cent.

- The mass production of consumer goods in OECD countries was complemented by batch production in engineering and this production put a premium on skilled craft work.

- Advances in computing, along with the introduction of NCMT and CNCMT, have permitted major changes in this structure through minimizing down time and queing between operations, through arranging components into families which CNC machines could process as if they were uniform items, through the optimization of parts routing, and through computer-aided design (CAD) which not only greatly improve the design process itself but allowed design to govern the sequencing of manufacturing operations.

- These new orientations have led to a growing market segmentation between production MT (PMT) and general purpose MT (GPMT); this segmentation has permitted the rapid growth of exports from Asian NICs which have concentrated on GPMT since the latter do not require a constant feed-back from clients.

- In the OECD the late 1980s orientation is strongly towards PMT where the idea is to provide personalized flexible techical solutions to client problems, solutions which in the most advanced cases cover whole systems of the flexible manufacturing type (FMS). This orientation has now pushed total labour costs to around 60 per cent of total costs where a significant proportion is made up of these software component. Indeed the labour share in costs of advanced MT systems has more than doubled in relative terms within the past decade.

These changes have obviously greatly increased the technological gap between the majority of DC and the OECD countries and indeed made that gap so significant that genuine questions about the relevance of technology transfer (TT) now have to asked. Effective TT can only take place when there is sufficient communication between the partners as to put them on the same waivelength but yet where the gap between them is sufficiently great as to make the transactions worthwhile; under present circumstances there is a serious danger that the first of these conditions is ceasing to be met. The immediate implication is that the FDI question cannot be looked at through the same perspectives as has traditionally been done. DC still appear to believe that there is a strong interest on the part of OECD producers to relocate their activities elsewhere in order to reduce labour costs. That presumption is true only to a limited extent, in a fairly small number of branches, and to countries which meet the conditions these investors envisage. The work conducted at the 7th European Machine Tool Exhibition revealed some of the difficulties in relation to MT developments and it is convenient to summarize the findings of those interviews:

- 1,650 firms participated in the Exhibition and of these 50 were from DC with 21 alone from Taiwan Province of China, 14 from Republic of China, and 10 from Republic of Korea. In other words, DC participation was almost entirely dominated by a handful of Asian countries.

- Detailed interviews were conducted with 68 companies of which 10 each came from Japan, FRG and Italy and 6 each came from Switzerlands, UK and France; these companies produce between them a range of 124 MT, with 23 firms being lathe producers, 21 manufacturing machining centers, and 14 making milling machines. The companies vary greatly in size with 13 of them having more than 1,000 employees each and 10 of them having less than 50 employees each.

- The foreign interests of these firms were already fairly extensive. Thus 18 of them had wholly owned or JV production facilities - of the 31 such plants, only 6 of them were in DC. Mostly these firms had been obtained through purchase of existing enterprises and this was mainly because of the increasing share of intangibles, such as brand names and special customer relations, in the sales costs of products. The firms argued that the factors which most encourage FDI are the size of the local market, SC possibilities and the availability of a communications and

services infrastructure, and availability of qualified technical personnel, with labour costs being of but marginal significance in relation to PMT and only of somewhat greater significance in relation to GPMT.

- One-third of the companies has sales subsidiaries in key-export markets yet all but one of these were located in OECD countries.

- 16 of the companies had granted a total of 27 licenses for MT production of which half had gone to India and China; in general, however, there was a cautious approach towards licensing.

- Regarding export markets the companies considered that, while the core OECD countries would continue to absorb most of foreign sales, Republic of Korea, Taiwan, and to a lesser extent India and the ASEAN countries represented potentially promising markets. Approximately one-half of the firms interviewed had exported to Sri Lanka but only three of them had done so on a continuous basis. The firms characterized Sri Lanka as a location where GPMT where the only kinds of product which could be sold but where enterprises from the OECD had already lost out to competition from Republic of Korea and Taiwan.

- The companies emphasized very strongly the role of SC in MT production. They noted that SC could easily account for around 50 per cent of total production costs and that there were important international differences in styles of SC; within Europe SC takes the form of precision components supplied from abraod, while Japanese and US foreign SC concentrates more on standardized items where labour cost advantages do play some role. Some cases were cited of European firms which had tried SC in Brazil and India but had given up because of difficulties over delivery dates, foreign exchange procedures, and quality control.

- Examination of FDI issues has to distinguish between large and medium-sized enterprises as well as between the two types of MT referred to above. Essentially the investment policy of large firms is dominated by their dealings in PMT and only a handful of DC enter into this circuit; this is mainly through MT producers who decide to follow key customers abroad when those firms establish in DC. For medium- and small-enterprises GPMT output is more significant and there is some

interest in FDI with a preference for BC where the domestic market is large or where there are prospects for access to neighbouring countries (ASEAN would be a case in point). The problem for smaller firms is the limited financial and human resources available to the company with which to handle investments.

- Several firms explicity raised doubts about the possibility for Sri Lanka to enter into any significant foreign connection of this type. Their reasons referred to the limited size of the local market, the limited access to other markets of the region, the lack of an appropriate industrial supply network with which to meet needs for intermediate products, and doubts about the local business environment.

- It followed from these observations that the companies considered Sri Lanka would have to provide a series of base pre-conditions if it were to have any prospects at all of appearing on the likely map of FDI locations. Those pre-conditions would have to include mutual trade arrangements whereby production in Sri Lanka could serve as a platform for exports to other countries in the area; major investments in establishment of an SC network within the country where tight quality control conditions could be set up; a special incentive package which would support the efforts of pilot investors in the MT field; and a provision of technical training facilities paid for to a large extent from local resources.

The interviews focused on MT activities and as such reinforce the earlier observations regarding the very limited prospects, and not only the non-existant current position, of MT activities in Sri Lanka. There is little doubt that in the frame of rapid technological advance, close relations between producers and clients, fierce competition among major producers, and the relatively limited market size of Sri Lanka itself, it would be extremely difficult to attract any FDI of much consequence in the MT area. Moreover, the above comments have made it clear that investments in MW activities must also be looked at rather carefully. A comparable study to the present one was recently conducted by UNIDO in relation to Cyprus, which is also an island country with a limited domestic market. That study showed that MW activity was again the dominant one yet 80 per cent of metal and engineering products were imported, only three firms used CNC machines, there waeredeclining skill levels in the context of little specialization and automation, financial

structure problems were severe, export markets were declining, and there was an inadequate domestic market to cover fixed costs. That report suggested that Cyprus should concentrate on flexible automated specialization and should try to achieve this through a focus on niche markets where firms in the sector cooperated with each other to provide common facilities, e.g., a CAD center, overseas marketing and strategic planning, and where the government should provide support to the private sectors own initiatives. That study further pointed out that SC was still very limited in the country and that the handling of inventories was a severe problem for companies which should be tackled through a review of the production approach, i.e., instead of making a product using current stock and then sending it direct to the customer, there should be an attempt to obtain materials only as and when specific orders came in i.e., stockholding should be reduced to a minimum.

It follows that, if Sri Lanka is to be able to achieve anything in this key area of producer good production, it must try to operate through the MW branch. How does the country fare in relation to its Asian competitors in this area?

To provide a general frame of reference, Table 1 summarises some macroeconomic indicators for the 3 largest Asean members, China, India and Sri Lanka. On a per capita income basis Sri Lanka is at about half the level of Thailand and some 25% below Indonesia; although reliable comparisons are not easy to establish, the distribution of income is probably much more equal in Sri Lanka than in the Asean states. The column for industry's share throws into sharp relief Sri Lanka's limits as a market; on a par with India in relative terms but a few percentage points below the rest means that the absolute size of industry is well below that in any of the other Asian states listed. Unlike say Hong Kong and Singapore, tiny countries but with heavy concentration on industry and intricate networks of financial and communications services as backup, or Malaysia, a country of comparable size of population yet (notwithstanding the depressed prices of its main commodity exports of petroleum, rubber and tin) with the potential to develop considerable industry based on natural resource and agricultural commodity processing, Sri Lanka's industry has few systemic or natural advantages to build on. There is, in short, a fundamental problem of integrating industrial activities with the rest of the economy. During the past decade the thrust of policy has not been towards building linkages among branches or across sectors but rather to encouraging a type of industry which could at least bolster

employment and the foreign exchange position. The final column of Table 1 expresses the percentage variation in gross export receipts over the quinquennium to end 1985 and shows the increase for Sri Lanka to have been second only to China. Given the relative stagnation of earnings from traditional commodity exports, much of the rise is due to manufacturing trade and the government continues to look for ways to augment and diversify that commerce - hence the interest in MT (among other branches).

While Table 1 illustrates how Sri Lanka compares to some other Asian nations macroeconomically, to locate it in the Asian context requires some further exploration of the investment situation. It is simplest to begin with Japanese investment since this is the country located in the region, the world MT leader and now showing the highest marginal propensity for FDI. Table 2 describes the country composition of its investments in Asia during fiscal year 1985 (i.e. to 31 March 1986). Ten countries are listed explicitly and to them more than 98% of all FDI to the region is committed; Sri Lanka is not mentioned and its part of the category 'other' could only have been minute since the whole of the Indian subcontinent plus various other countries also figure in that group. Moreover, the general figures here do not tell the whole story. Some of the stronger commentaries argue that Asia has been left aside by the boom in FDI from Japan. Thus one recent assessment commented that "except for significant increases in investment in Singapore, South Korea, Taiwan and to a lesser extent India, the Japanese are leaving Asia high and dry"[1/] and "As Japan moves into the information revolution, it has also lessened the need for South East Asia's raw materials its survival once depended upon."[2/] The figures for the past couple of years vary sharply from the pattern of the late 1970s and early 1980s, especially for the Asean countries which are probably Sri Lanka's most serious competitors. From 1977-1983 the annual average growth rate of Japanese FDI in manufacturing was 18.7% globally but a superior 20.6% in Asean (corresponding world and Asean statistics for 1976-1983 were for USA 6.6% and 13.3%, for FRG 12.2% and 12.8%). So Sri Lanka is barely on the map even where its neighbours (economically speaking) are somewhat losing their place.

A more detailed picture in relation to FDI can be gleaned from some other recent research. Looking once more at the Asean countries (less Singapore and Brusei) Japanese FDI is far more concentrated on manufacturing than is investment from USA: 1983 data show the share of manufacturing in the US

total to range from around 4.5% for Indonesia and Thailand to some 35% for Philippines, whereas the corresponding span for Japan runs from 27.5% in Indonesia to 75% for Thailand. Within manufacturing Japan put close to one-third of the total into metals and metal products against just one-seventh for USA. On areas of interest to Sri Lanka, therefore, Japanese behaviour is of considerable significance. A failure to make an impression on Japan would thus mean that investment in the MT and metalworking areas would have to be sought in bits and pieces from firms located in countries that are either not at the core of the branch or are losing their position in the core group. Since, moreover, the labour intensity of Japanese investments in machinery industries is high relative to those made by other countries (1983 figures put employment per US$1 mn. of Japanese assets in the machinery sector in Asia at 59 people while the corresponding figure for USA is about 15% lower), the employment effect as well as the foreign exchange effect is significant. Finally, the absence of FDI by US companies in Sri Lanka implies that nothing can be expected from capital spending by subsidiaries.

The report has suggested that the Asean countries may be Sri Lanka's closest competitors in the region, in the sense that they too are actively seeking foreign collaboration and do not (with the exception of Singapore) yet have sufficiently strong domestic industries of their own. As a prelude to exploring possibilities in Sri Lanka, Table 3 brings together some characteristics of the MT industry in 5 Asean countries (excluding Brunei). No satisfactory estimates of the overall value of output could be obtained but other aspects of branch structure and the approach of governments to MT could be ascertained; the main findings can be summarised as follows. First, the number of producing firms is small, around 10 to 15 - the higher number for Malaysia includes quite a few metalworking and woodworking enterprises whose elimination would certainly reduce that country's total to the same range as elsewhere. If this number, unweighted for size of employment or value of output, is compared with numbers in other countries, then the Asean average is not much more than 10% of the industry size in, say, Japan or Republic of Korea. Second, there is an absence of leading firms i.e. enterprises which have a powerful investment and production base. Thus in Indonesia commentary in 1986 on the plans to enhance the branch stated "The government has authorised 11 companies to expand and develop their machine tool activities. Until now firms have only been small and have not been able to compete with imports."[3/] There does not, furthermore, appear to be evidence of a State

sector firm of significant size operating in any of the countries. Third, and closely related to the preceding point, all Asean countries recognise a dearth of investment in MT notwithstanding the importance assigned to it in national planning. As described in the last section of Table 3, the inherent risks of MT production tend to be accentuated in the developing country context: whereas events of the present decade have been as an earthquake in several OECD countries, bringing down many firms and forcing others to be rebuilt on totally different structural bases, in Asean they have acted as a brake on getting the industry off the ground.

Reports from specialised industry sources emphasise both the continued wish of countries to enhance production and their recognition that FDI offers the most promising route for achieving the aim. Thus a 1985 analysis stated "Although a country that can now produce 1550 machine tools a year, Indonesia's newest 5 year plan calls for production of 21,000+ metalworking machines per year by 1989...Present facilities could manage 3,600 units per year by then, and the rest will have to come from new facilities from joint ventures and foreign investment. Indonesian technology officials have announced they would prefer to get the capital and knowhow from the US machine tool industry."[4/] Moreover, in early 1986 the importy duty on MT was raised by some 15% with the purpose of encouraging greater domestic output; thus far, however, there is scant evidence that FDI has actually occurred. In the case of Thailand there was an undisguised 1986 initiative by the Board of Investment to encourage US metalworking and machinery firms to locate plants in the country. Thus: "Thailand has moved into a better position to compete for US manufacturing operations in the wake of rising labour costs elsewhere in Asia, including Hong Kong, Malaysia, Taiwan and South Korea. It has a sizeable pool of engineers and technicians and its assembly line workers make less than US$4 per day. Going wage rates for skilled workers range up to US$6 per day, while typical salaries for technicians and engineers are US$150-250 per month and US$300-500 per month respectively. Benefit packages usually come to about 50% of wages and salaries. Standard government incentive packages include investment guarantees, up to 8 years of corporate income tax and business tax exemption, duty free import of machinery, equipment and basic raw materials and components."[5/] In the Thai case also the impacts of this drive to encourage FDI have yet to be realised. Obviously there are 3 kinds of time lag in this process viz. the information lag from Government to potential investor, the approval lag for acceptance by the Board of Investment

of any proposed FDI, and the gestation lag for turning an accepted proposal into an actual production operation. Together these lags are quite sufficient to account for the absence of actual start-ups till now. The passage of time could well lead to a marked reduction of the information lag and possibly some cutback of the approval lag. Yet the gestation lag is always likely to be present, especially in an industry as volatile as MT: market conditions can alter between the date a proposal is put together and the time the investment is ready to begin.

Returning to Table 3 the fourth point to underline, and one of considerable importance, concerns the type of product and production technology prevailing in Asean. Singapore stands apart from the other 4 nations with a profile resembling the advanced OECD countries i.e. emphasis on metal cutting using equipment of recent vintage and certainly with some export orientation. But the 4 largest Asean countries are in a quite different context. Although they have roughly the same number of firms as Singapore, what these firms actually do is by no means comparable. To begin with their concentration of activity is towards metal forming, using machinery of no more than an intermediate kind and often obtained second-hand. The average age of machinery is therefore high relative to the stock found in more advanced production locations (this statement can be made with some confidence due to the introduction of new technologies) and the equipment is being used to produce for specific orders rather than large batches. Now it is true that MT demand anywhere has a substantial job order component but a stronger sector where firms have more flexible production equipment can usually manage (except in phases of very limited demand) to keep low rates of machine downtime and reasonably high and stable levels of capacity utilisation. These indices are definitely unfavourable for the Asean countries and must lead eventually to higher product prices and/or lower company profits than would prevail in a situation where the sector was stronger. The reliance on imported raw materials accentuates the problems not so much in the familiar sense of the risk that foreign exchange will be unavailable (though this might be a difficulty on occasion, especially in Philippines and Indonesia) but because of the disjuncture between material quality and equipment vintage. There is currently a contradiction between the declared aims of augmenting MT quality and the tools at the disposal of the industry to achieve that objective. In Asean the sector is thus awaiting its own definition - how to combine the simpler, lower grade requirements for many branches of local output with the undoubtedly essential introduction of progressively more advanced technologies

to support the modern industries. Each of the 4 countries (leaving aside Singapore) will have a different response due to the varied industry mixes they possess and as of now there is no sign of any elements of a common approach.

The Asean example is highlighted to show how difficult the task is for Sri Lanka, which is in a weaker position than any of the 5 countries. The next sub-section moves to the Sri Lanka situation on its own.

IV. Manufacturing and Foreign Direct Investment in Sri Lanka

In the past decade manufacturing activity in Sri Lanka has been aimed to a considerable extent at obtaining foreign exchange. The route chosen to achieve this has been the encouragement of FDI and that, in turn, has been channelled through 2 organisations, the Greater Colombo Economic Commission (GCEC) and FIAC. The former deals with export oriented FDI as such in the Sri Lankan Investment Promotion Zone (IPZ) while FIAC handles all other external investments. In ownership terms the formal difference is that while FIAC transactions are of a JV nature where at least half the equity capital is registered in the name of a Sri Lankan physical or legal person, the GCEC operations can be wholly foreign owned. In practice a certain number of exceptions have been made for FIAC arrangements, principally for some construction development, large capital intensive operations and projects providing substantial export potential. The importance attached to the export thrust can be judged by the fact that the GCEC, administratively headed by a Director General, is immediately responsible to the President of Sri Lanka. FIAC, as the title says, is an advisory institution with the Committee itself chaired by the Deputy Secretary to the Treasury and including secretaries to other ministries as well as others, not least the head of GCEC. Back-up support to FIAC comes through the IECD of the MFP and it is responsible for what amount to information brokerage activities in relation to collaborations in JV agreements. The institutional location of both FDI bodies mirrors most sharply their preoccupation with financial matters, whether in foreign exchange or otherwise. This point is of some consequence when dealing with MI.

To put the foreign linked projects in the whole industrial context, Tables 4 and 5 describe the role of GCEC and FIAC firms as industrial employers and industrial exporters respectively. Their combined employment share as of end 1985 was about 28% with close to three-fifths of that in GCEC, and their combined export share much higher, approaching 45% at end 1985 of which over one-third came from FIAC approved activities. Industrial exports as a whole rose by greater than three and one-half times from the end 1970s to the mid 1980s - the increase in the GCEC/FIAC combined share was almost sixfold and in absolute terms the GCEC/FIAC rise accounted for 60% of the whole increase in industrial exports. Domestically tied industry thus continues to occupy the predominant place in the overall context: in output

terms the locally oriented factories contribute about two-thirds to NVA while public sector plants, which have little in the way of foreign JV, contribute a little over one-half (if the State Petroleum Corporation is taken away then the contribution is roughly one-quarter). These comments are for industry as a whole, of which manufacturing is just over one-half. Hence the shares of GCEC and FIAC would rise substantially were they computed on a manufacturing basis: the issue in the metalworking and MT activities will be to see what part of them are and could be handled by FDI ventures.

To go further into the existing pattern of FDI means examining the nature of projects actually in operation under the jurisdiction of the 2 authorities; Table 6 gives the GCEC data and Table 7 that for FIAC. Under both authorities the number of operation projects is substantially less than those approved; the tables leave aside the information on approvals and deal strictly with projects actually working. GCEC statistics do not give a cash value of investment to compare with the Rs.3.7 bn. for FIAC projects but one source gives the cumulative figure for 1979-1984 as roughly Rs.2.7 bn. If the annual average contained in that figure had been maintained through 1985 and 1986 then the cumulative value of investments in GCEC as of beginning 1987 would have been approximately Rs.3.8 bn. This implies a larger average size (measured by capital invested) of project for GCEC and in general a substantially larger foreign investment in absolute figures for the average project in GCEC as opposed to FIAC. In the latter average project size is just under Rs.30 mn. and the foreign share just over 30%, meaning that FDI per project was probably around Rs.10 mn. For GCEC a figure of at least Rs.20 mn. of FDI per project seems a fair reckoning. The GCEC numbers show JVs with local partners account for just over half the cases and that each of the half a dozen leading investor countries, that together signify half the cases, also have around one half of their projects as JV. Although explicit export figures for GCEC are not given it is known that a very high proportion of output is in fact sent abroad - but Table 31 reveals that the export ratios for FIAC projects are also extremely high.

Of major interest for this report is the degree to which projects even loosely related to MT have been implemented under the approval of GCEC or FIAC. Table 7 gives figures for the broad category of basic metals and engineering (of which, it will be recalled, MT is but a small part) and shows that all FIAC authorised investments there came to around 4% of the FIAC

total, that just over 3% of the direct employment generated was in this broad category, and that none of the output was exported. CCEC investments, as Table 6 indicates, were mainly in textiles and garments: information obtained in an earlier study by UNIDO covering the 1979-1984 period shows zero FDI in basic metals and only Rs.90 mn. in fabricated metal products, machinery and transport equipement which once more means around 3% of the total. Overall, therefore, in projects coming under the aegis of the FDI authorities the '3% rule' seems to prevail as far as basic and fabricated metal products are concerned i.e. the sector accounts for that proportion of manufacturing investment and employment whatever type of FDI regime is followed. Moreover, data on value added for fabricated metal products and non-electrical machinery covering the whole of manufacturing i.e. whether or not foreign investment is part of the capital base, suggest that their joint contribution is no more than 3%. It bears repetition that MT proper is only a small part of this. Within a manufacturing economy where capital goods are a relatively minor share of total output and in any case are on the decline, MT certainly do not figure other than on the periphery.

The preceding comments are put into sharp perspective by Table 8 which provides a few performance indicators for the years 1977 and 1984 in the branch of fabricated metals. MVA and employment shares fell from around 5.5% to the 3% level and there were no exports to speak of throughout the period. Though dependence on foreign raw materials fell somewhat it remained high (as for the Asean countries discussed in the preceding sub-section). The only clear improvement was in regard to capacity utilisation though even there the change may be partly attributable to the elimination of a few firms. Aggregate output of MT, though impossible to determine accurately, can only be tiny. For, to use 1982 figures where full comparability can be obtained, the situation was as follows. MVA was around US$750 mn. of which fabricated metal products did not account for above US$30 mn. If the ratio of value added to gross output was even as low as one-fifth, then the latter aggregate would have been around US$150 mn. of which MT was only a tiny part.

Table 9 gives the data for imports of metalcutting MT and shows that in 1982, a quite low year for trade, gross imports were close to US$2.8 mn. Combining this with the gross output approximation just described shows that the contribution of local MT production to apparent consumption might have been as much as three-quarters (if MT accounted for the high proportion of 5%

of gross output of fabricated metal products) or as low as zero, if in fact MT production strictly defined is non-existent. Survey data by ESCAP suggest the latter is closer to the truth i.e. that what actually takes place is metal working of a fairly traditional type. On this basis the current situation is one where domestic production, heavily reliant on imported raw materials, meets part of the demand for what is probably a mixed bundle of fabricated metal products and there is an annual import of MT anywhere from $2-6 mn. Given foreign exchange shortages the import figure is probably a low estimate of real demand in the economy but even so it would seem that local MT requirements are currently quite small. This is explained both by the limited total size of the industrial sector and its composition which is towards branches relatively light in the use of MT. Sri Lanka not only lacks the production base for MT, it also lacks the demand. In a more developed industrial economy there is a synergy between MT production and the structure of industrial output but in Sri Lanka that situation does not exist nor is it likely to in any time-horizon relevant for present purposes.

So it is that the government is considering MT essentially as one possible vehicle towards expanding and diversifying its foreign exchange earnings from cheap labour based manufacturing. Production is not seen in the perspective of domestic requirements (though there could be minor spinoffs) nor does there seem to be any intention of a progressive absorption of technology with a view to establishing independent locally controlled operations. Instead the hope is to derive net foreign exchange receipts in return for supplying cheap labour. What does this mean in practice?

As an approximate guide to what is happening in the broad area of metal fabrication with FDI involved, the listings of firms operating under GCEC and FIAC authority have been examined to single out those having some involvement in this area. From the GCEC list, valid as of end January 1987, only 3 companies with even a loose connection to the area of interest to this report could be identified. They were: Mono Pumps, a wholly owned UK firm producing industrial and irrigation pumps (this enterprise had ceased operation by end April 1987); Alloy Fabricators, a tripartite JV of UK, Norwegian and Sri Lankan interests, making piping systems; and Precision Moulds and Tools Ltd., a JV of FRG and Sri Lankan interests manufacturing moulds and tools. From the

FIAC list, valid as of end June 1986, there were again only 9 companies with some relation to the subject matter of this report. They were: Eastern Auto Parts (Pte) Ltd., a JV with Denmark aimed at renovation of automotive components; Lanka Askok Leyland Ltd., a JV with India in the area of assembly and progressive manufacture of motor vehicles; and Swedlanka Engineering (Pvt) Ltd., a JV with Sweden for the manufacture and designing of moulds, dies and special machines. To obtain a feel for the situation contact was made by correspondence and 'telephone interviews' with some of these firms; the following paragraphs give a rough sketch of the situation in 2 of them, Mono Pumps and Swedlanka Engineering.

Mono Pumps functioned for 6 years under GCEC authority manufacturing industrial and irrigation pumps for export, primarily though not exclusively to other Asian countries. The UK based company, which also has operations in Australia and some other countries outside of Asia and the Pacific, was originally seeking a cheap labour base mostly for assembly operations though with some simpler engineering operations as well. Initially the company's preferred location had been the Philippines but that was rejected for reasons of suspected political instability (this was in 1980); Singapore and Hong Kong were also considered with their plus points being their engineering capacities but the firm felt that geographical location was not quite adequate and that Sri Lanka could provide adequate quality at higher profit to the company. Mono Pumps emphasises that labour costs were not a particularly big item in total output charges (they were much smaller than materials costs) but they were the only cost component that could be pared down through relocation. Production was set up with already used equipment relatively demanding of less skilled labour. It was pointed out that the absence of local infrastructure for maintenance precluded the installation of best practice machinery and that, though the 6 years activity did demonstrate that Sri Lankan engineers could handle the equipment installed very well, the country would not come into the realm of possibilities if sophisticated equipment was to be utilised. In such a case the preferred locations in Asia would be Singapore and Hong Kong. Moreover, the company pointed out that absence of a sufficiently elaborate local engineering network rendered local subcontracting extremely difficult. During the 6 years life of the investment in Sri Lanka local sourcing of castings was eventually achieved (originally they were imported from Taiwan, Province of China) but, had the factory been set up in Singapore, Republic of Korea or Taiwan, Province of China, it seems

that a high degree of local subcontracting would have occurred from the start. In its operations the firm employed some 40 to 50 people and stressed that their on the job learning and real productivity were fully satisfactory.

Why has Mono Pumps closed down? The crucial reason has been the introduction of a high degree of automation into the production process which has made it economically beneficial to relocate output to UK. New machines, functioning around the clock 6 days a week and which necessitate only 8 semi-skilled operators, make it more economical to produce in Manchester and export from there. The fact that Manchester is at the centre of a region with a rich engineering tradition that continues to be closely involved with machine building is also a factor of significance - the company stresses that if any problems arise with the equipment then "someone down the road" will be able to help solve them. Were it not for the fresh technology of production Mono Pumps would still be in Sri Lanka and the company emphasises that if some intermediate level activities with export of production were to present themselves it would be very willing to return since its experiences were good. Production has ceased simply because cheap labour is no longer a strong enough asset in the business.

Swedlanka is a case of great significance, indeed unique since it is the only firm explicitly engaged in part of the metal working field. The agreement to establish the company was finalised in April 1985 and production started in July 1985 to make tools and dies for plastic rubber and metal manufacturing industry. The capital composition of the company is unusual and of considerable interest as a pointer to possible accords in the future. Participation of Swedish groups involves both Swedfund itself, with 24% of the stock and Conrit AB, with 25%. Initially the Sri Lankan involvement came from 2 Tamil entrepreneurs but they withdrew towards the end of 1986 and now the domestic shareholding is 41% for Phoenix Ltd., a private company, and 10% for the National Development Bank. Thus there are 2 public sector financing agencies, together holding just over one-third of the investment capital, and 2 private firms. Total share capital is Rs.4 mn. out of a total investment of Rs.9 mn., part of the funding coming through loans raised in Sri Lanka. The genesis of the project reflects both the public/private combination in Sweden and the difficulties experienced in the European MT industry. For Conrit, a relatively small firm, was experiencing increasing problems in competing from its Swedish base and was faced not only with the need to reduce unit costs but

also the necessity to expand its market. Swedfund was instrumental in seeking out the Sri Lanka possibility and has financed the critical training component for Sri Lankan toolmakers in Sweden. This has permitted the current combination of low labour costs and qualified staff (employment is now in the 25-30 range) without which the operation would not be viable.

As of 31 March 1987 the company completed its first full year of operation with a turnover of Rs.5.2 mn. which, after allowance for all charges, was not much below the break-even point. The company assesses that its output is high quality and is exporting a considerable proportion to Western European markets including Sweden itself, FRG and Switzerland - the initial export requirement was one-quarter of output but this may well be exceeded. It appears that freight costs are not significant and thus do not present any obstacle as far as exporting is concerned. Marketing is clearly a vital activity since Conrit is not a sufficiently big company in Sweden to hold any captive market of its own. But Swedlanka has 2 advantages: first, though Conrit may not be large at home it does possess all the local knowledge to ensure that a quality low cost item can break into the Swedish market; and second, the Managing Director of Swedlanka is a person who already had detailed information on and many contacts in the other European countries and was therefore able to move the product much more quickly than would normally be the case. Thus far, it will be noticed, Swedlanka is not selling elsewhere in Asia nor is it by any means a standard subcontracting activity - it is beginning to take a life of its own.

How does Swedlanka fare in a somewhat broader perspective? The company thus far is well pleased with operations in Sri Lanka but has emphasised various issues of a system nature which are germane to investment decisions that other firms could consider. To begin with, the absence of infrastructure complicates the management problems. There is serious underdevelopment of the small industry network which renders subcontracting a difficult job. Now the company argues that these matters are ones of a long term nature and that to carry out a transformation of the industrial economy in this way requires a basic stability of approach which cannot be achieved even in the space of a decade. In contrast to Singapore, Republic of Korea and Taiwan, Province of China where the same focus has been maintained now for at least 25 years, and where the linkages of public and private sector, large businesses and small, are so intense as to allow virtually immediate use of local subcontracting

(save for very sophisticated items), Sri Lanka has, over the longer time horizon, had some major shifts of perspective. The message appears to be that what is lacking is the integration of a series of emphases which, in themselves, are fully acceptable and indeed represent the pivots of an economy and society able to progress under existing conditions of the international system. Put briefly the cornerstones so far laid are the establishment of basic education and health schemes which provide the essentials for human resources to develop, the use of public investment to set up the physical infrastructure and some agricultural and industrial activities which offer a context for business, and an orientation towards export in manufacturing without which the country cannot easily tackle its twin obstacles of foreign exchange scarcity (Sri Lanka has no power over the international markets for its major commodity exports) and limited domestic market. These elements need to be blended together instead of being treated as antithetical e.g. the supposition that somehow an export orientation in manufacturing is incompatible with an important presence of public sector firms in those industries where private capital is not readily forthcoming. In effect the view from the foreign investor side is saying that the more the public/private, large/small industrial sectors in Sri Lanka work together, the more not only domestic investment will be stimulated but the more encouragement foreign investors will also have. Even now there is a view of the groups as antagonistic, adversorial which prevents any coherent strategy from fully unfolding.

Swedlanka, as other companies, notes the major shifts in production cost structures and levels now sweeping through the industrial sectors of the OECD countries and particularly pronounced in the MT and engineering branches where the combination of the electronic with the mechanical has totally altered the nature of processes (allowing a felicitous mix of batch and custom-made production) and drastically changed the skill requirements for staff. Production in Sri Lanka is highly vulnerable to these developments and that creates real tensions around investment decisions. Swedlanka lays strong emphasis on the time required to build marketing channels and establish long term customers: even if original investment costs can be recouped relatively quickly, medium to long term profitability is a function both of continuing cost efficiency and quality maintenance (variables which depend, among other things, on whether significant technological changes are occurring) and the ability to retain a marketing grip. The problem is that Sri Lanka has a cheap

labour edge but that is constantly liable to erosion (or even a sudden landslide) due to technological changes. Consequently the single edge of labour cost is not enough: what is required is at least a second asset, preferably of a system kind, which can provide some cushion against technolcgical improvements (at least within a range). It is the long term building of that asset which has to be the focus not only of policy, seen as a succession of manouevres, but of strategy. This is not the same as economic planning as it has been conventionally understood and widely castigated. It is a social cum economic process of integration which recognises that domestic entrepreneurship devoted to long term profit making through industrial production (as opposed to financial speculation and trading) is essential to improving not only the wealth of the economy but also its resilience in the face of external shifts. That entrepreneurship will only flourish if public sector support is available and if the public sector is committed to creating a well defined type of economic structure. The common feature of the economically successful Asian countries has been precisely the sharpness and insistence of that definition.

The case sketches express perhaps more graphically than any figures the high risk option which Sri Lanka is pursuing (and which in the short term it may have little alternative but to follow). Yet to put Sri Lanka's investment costs in perspective a quick glance at the numbers is useful. Table 10 brings together, for the latest year for which a sizeable sample of countries on a comparable basis could be obtained, data on hourly wages and labour costs in the export zones. The numbers tell their own story: Sri Lanka is by far the cheapest location with costs of half to one-third those prevailing in Philippines, Thailand and India. The table shows vividly how (and recall these are 1983 data) Hong Kong, Singapore and Republic of Korea have become, in the Asian context, high labour cost locations and have therefore been driven to seeking other advantages to sustain their export thrust. On any assessment, and especially when the discipline, skill and literacy levels of the Sri Lankan labour force are kept in mind, the country is unquestionably the cheap cost site.

Since the latter half of 1985 there has been a major realignment of exchange rates, especially in the $/Yen parity. This has altered investment costs in different countries according to the behaviour of their currencies. The only countries, as compared with Sri Lanka, which are becoming cheaper for

investors both in $ and Yen are Indonesia and Philippines with the numbers for Malaysia not much different. At one level this confirms the view expressed earlier in this report that it is the Asean countries which are Sri Lanka's competitors: they have the lowest labour costs (fragmentary information for Indonesia suggests that could it have been included in Table 10, its rates would have been closest to those for Sri Lanka) and their exchange rates are just as likely to devalue as Sri Lanka's with their export earnings reliance on a few commodities and political unrest contributing to a lack of confidence in the economy.[6/] But taken from a different angle, the exchange rate information suggests some other conclusions as well. First, nothing much is to be gained by any further attempts at competitive devaluations, cuts in wage rates or efforts to improve incentives for foreign investors. Not only are they likely to backfire, in that neighbouring countries will probably modify policies to neutralise the shifts, but they would seriously call into question the net benefits to Sri Lanka of the export oriented manufacturing thrust. Due to the absence of data this report has been unable to present net export earnings estimates but they are certainly not that substantial due to the import content of export directed manufacturing production. Any further policies allowing part of the benefits to be taken aw.. would leave the country with little to show for its efforts. Second, the obvious course for Sri Lanka is to try and combine some of the low cost advantages with those of a sophisticated supporting service sector, as indeed exists in Hong Kong, Singapore and elsewhere in Pacific Asia. That means encouraging investment of a different kind such that, for example, efforts in MT could obtain local assistance from computer software specialists. Third, Sri Lanka will, if it wants to remain on the export path, have to go beyond the cheap labour issue to try and capitalise other assets e.g. location. Certainly efforts of that kind are not helped by the present political unrest in the country.

Currently Sri Lanka is looking at half a dozen areas where FDI might be encouraged. A couple of them are ones where a certain amount of investment has taken place viz. gems and jewellery, and consumer electronics, while the MT area with special emphasis on dies and mould making is another. Now independently of the manifold difficulties already identified with encouraging MT investment because of the state of the industry, there are some weaknesses in Sri Lanka's own administrative structure. None of the agencies connected with FDI is in a position to evaluate market potentials or indeed to assess carefully the real profitability of investments. Up till now the accent has

been on quick approval of projects, especially by GCEC, and this approach may not have generated either an adequate return on the infrastructure expenses laid out by the government when establishing the IPZ or necessarily picked the most suitable projects from foreign exchange considerations. Despite its endeavours through distributing information and so on the administration has not taken a sufficiently active stance with regard to attracting the kinds of FDI Sri Lanka is looking for. The material provided in this report demonstrates the complexity of the MT industry and the need to pinpoint particular niches where some opportunities might exist. That can hardly be done without sending experienced staff overseas to check for themselves what the possibilities really are: if the phrase 'priority sector' is to have an active rather than passive connotation then operational steps to do something in that sector must be taken. So far these steps have not been forthcoming. Moreover the relative success of the Swedlanka venture hints at the possibility of generating projects of a triangular kind, where foreign capital comes not only from industry but also financing institutions, whether public or private sector. That kind of possibility too is best stimulated through active field search by Sri Lankan staff, which could easily include public and private sector people.

This chapter has underlined still more the message of the earlier ones viz. that the MT industry is nowadays almost totally taken up with an internecine struggle among the leading OECD countries in which even the Asian NICs are largely on the periphery. Although to date there is little evidence of substantial FDI as a response to the competitive tensions it is very possible that FDI and other forms of collaboration will become prominent in the near future (meaning the next year or so). But the signs point strongly to an OECD focussed investment with involvement of developing countries quite marginal. The information on Asia in this chapter shows that Japan has, relatively speaking, paid much less attention during the past 2 or 3 years to the continent and that Sri Lanka in particular is more or less off the investment map. Other OECD nations are also less interested in pursuing cheap labour locations and hardly at all in MT activities.

Within the Sri Lankan economy the role of capital goods in industry has been declining and the FDI in manufacturing that has expanded so much in the past few years shows a mere handful of firms loosely related to engineering and metalworking. Examination of what are probably the 2 most instructive cases reveals a close concordance of opinion about the advantages and

disadvantages the country possesses. The labour force is excellent, learns quickly and is unquestionably cheap in relation to its productivity: if production depended on that alone then Sri Lanka would be top of the list. But today engineering/metalworking firms are looking for other perhaps more important things. Sri Lanka badly lacks infrastructure and a network of small industries suitable for subcontracting - only intermediate technology activities, at most, could be located there. If Sri Lanka hopes to be a possible location for this type of investment in the future then a qualitative leap must be made through system investments. Assets other than cheap labour and cheap currency have to be created. The country takes too lax a view of the marketing issue: much time and money goes into market building and neither Sri Lankan partners nor the authorities handling FDI seem to have given enough attention to the point. When local manufacturing does not have a high proportion of intra-firm trade and export markets, particularly in more specialist items such as MT, have to be created, this weakness is significant. These structures are brought into strong relief by the evidently high risk of technological changes which cut the ground from under the feet of cheap labour and prompt companies which have invested to relocate as well as deterring other would-be investors.

Attempts to obtain FDI in MT and similar activities will thus require a more active and imaginative series of actions in the short run, aimed at individual investors, plus a conscious move towards system building in the medium to long run. Export oriented manufacturing predicated on cheap labour cannot be a development path to be followed for always but only a step towards upgrading human and material resources so that domestically initiated and operated activities can keep pace with changes externally. The absence of this perspective in Sri Lanka severely complicates the short-run task of finding projects yet even so more should be done. Field staff are required with substantial sectoral expertise. The contacts they make should reach beyond individual firms to public financing agencies in the OECD countries and the commercial banks. Given the very slim chances of obtaining FDI by large MT companies the efforts may have to be devoted to smaller producing countries and/or smaller firms (which could of course generate enterprises big in the Sri Lankan context). Investment authorities in Sri Lanka will have to scrutinise carefully the bases on which any possible MT investments might be made. All known attempts to develop MT production have been just that i.e. part of a comprehensive attempt to develop local industry. Sri Lanka does not

want MT output for that purpose, however, although certainly some FDI based production would serve the local firms. Instead MT is wanted as a foreign exchange earner. Yet the message that seems to come from foreign firms is that their effectiveness as foreign exchange earners may well be enhanced if they can make better use of local support facilities. In trying to promote FDI in this sector Sri Lanka might therefore be compelled to widen its scope of assessment.

The report has shown that, from several points of view, the Asean countries are the ones closest to Sri Lanka in this area. In the past there were times when a closer association with these countries was proposed: but even were that to occur in the future, Asean does not have any sectoral policy which could stimulate production in this area. So from a regional perspective there does not appear to be much advantage to Sri Lanka seeking any association. Elsewhere internationally, as the report has stressed, Sri Lanka is not closely linked to any arrangements which could encourage production in MT. Probably the best that can be done is to strengthen ties with some of the smaller OECD producers and try to work up from there. All in all the prospects are slim indeed - whatever can be acquired in the way of FDI in MT will be through Sri Lanka's own efforts and very much against the current.

V. Some Policy Proposals and Technical Assistance Possibilities

In the view of this report the development of policy proposals by the Sri Lankan government and technical assistance work through UNIDO, other international organizations and bilateral organizations should be conducted in close collaboration. This represents to some extent a departure from normal procedures but in the circumstances of MT/MW in Sri Lanka, there are advantages to joining the two areas rather than conducting them separately. The reason is that much of the work has to do with organization of the firms, market research and examination of investment possibilities. A certain amount of additional information is necessary regarding the operation of firms but that is only to some extent on technical matters.

The basic decision that must be taken by the government is the extent to which it is prepared to support expansion of MT/MW activities in the country. If the answer is in the affirmative, then substantial infrastructural conditions must be established. The two crucial areas concern SC and communication services. To tackle the former in a practical fashion will require the government to search for JV based primarily on establishing completely new enterprises whose primary function will be to act as suppliers to firms whose technology is mainly if not entirely foreign. Since a country of Sri Lanka's size and income level cannot sensibly try to launch major production of heavy industry (which is the core demand element for MT and also for much MW), the only way effective SC can be developed is in relation to foreign technologies and indeed foreign demand. Hence the search for JV partners should be on a significant scale in order that there be sufficient impulse and incentive to encourage SC production. In other words, a critical mass has to be built up before companies will find it worthwhile to engage in supply of parts and components to enterprises located in the country.

One route for trying to achieve this critical mass could be for Sri Lanka to seek favoured arrangements with one or perhaps two OECD countries. In the view of this report the best chance might well be with one of the European Free Trade Association (EFTA) countries, particularly Sweden or Switzerland. Both of them are high grade MT and MW production locations with a powerful export bias and considerable experience in foreign collaboration. The former country, as was seen in the discussion of Swedlanka, has already shown interest in ventures of this type and the Sri Lankan government might well try

to pursue bilateral arrangements on a larger scale. Moreover, it should be remembered that Sweden is a country where certain branches of heavy engineering-related production are undertaken by internationally famous companies and it could be that Sri Lanka could develop a favourable linkage with them over the next few years.

The development of communication services would, by a fortuitous coincidence, also be served by an arrangement with Sweden. The reason is that this country is also far advanced in the fields of telecommunications and informatics and thus would be in a position to assist Sri Lanka in developing its capabilities in this area. There are two aspects to the services expansion. One is the need for much better tracking of markets both as a means to help local companies and as a way of offering better facilities to prospective newcomers (Singapure is an example in this respect). The other aspect is the relationship of the technologies used in developing infrastructure with those now employed in more advanced forms of MT and MW. On both counts a favourable bilateral linkage could be the most conveninent route for Sri Lanka's expansion.

Continuation of the bilateral approach has the further advantage of easing problems connected with financing and marketing, not to mention the training aspects. On all counts Sri Lanka is in need of reliable foreign support and these are areas where Sweden has shown itself to be an accelent partner; moreover, it has established national institutions and schemes (Swedfund and the Sister Industries Programme are clear examples) where bilateral collaboration with specific DC is favoured. To date the vast majority of these operations have concentrated on Africa but there is an excellent opportunity for Sri Lanka to become involved utilizing the advantages which it has and offering Swedish entrepreneurs and the government a base in operations in Asia which they would scarcely be able to obtain otherwise. The relevance of the bilateral contact is underlined by the fact that the incentives programme alone will not be able to provide sufficient support to attract large scale FDI. Throughout this report the need for system conditions has been stressed and the real value of bilateral collaboration is in developing them. In short, the bilateral route may well be the best way of obtaining multilateral collaboration in the longer run.

In specific terms, of course, the proposals mentioned in earlier sections of the report should be implemented. These include the following main elements:

- A RM purchasing institution funded by private and public resources.

- Establishment of overseas investment promotion facilities to encourage FDI and marketing.

- Setting up adequate quality control facilities including the use of industrial standards which emphasize how to achieve them as well as the levels themselves.

- Training institutions to upgrade technical staff.

- Support for improvements in financial management and plant organization.

- Joint establishment by the government, private sector and collaborating foreign institutions (bilateral and multilateral) of medium- and long-term strategic goals for the MT and MW branches.

Technical assistance by UNIDO in particular could focus on the two issues of investment promotion and plant and branch level restructuring. In the former area the recent experiences of UNIDO suggest it is in a position to assist considerably in bilateral dealings with e.g., Sweden to establish appropriate linkages and seek out co-operating enterprises for upgrading. At the same time UNIDO's long experience in investment promotion activities, along with the more recent creation of a regional advisory service through the joint offices in Bangkok of ESCAP and UNIDO, would allow technical help in exploring other investment options besides those linked with a single partner country alone. Restructuring assistance can draw on UNIDO's extensive experience in branch level work, focusing on survey assistance to help co-ordination and financial management, along with specific help directed at technical problems in individual enterprises. It is to be hoped that further discussions with the Sri Lankan government and private producers will lead to the elaboration of these proposals.

Table 1: Macroeconomic Indicators for Selected Asian Countries, 1985

Country	Per Capita GDP 1985 (US$)	Industry Share GDP 1985 (%)	Export Change 5 years to 1985 (%)
Thailand	752	29.1	+10.3
Philippines	648	31.4	-20.3
Indonesia	498	29.4	-16.3
Sri Lanka	372	26.3	+21.7
China	255	49.5	+50.7
India	243	26.3	+16.4

Source: Business Asia, 9 February 1987

Table 2: Japan: Foreign Direct Investment in Developing Asia, 1985[a/]

Country	Amount ($ mn.)[b/]	Change on Previous Year (%)
Indonesia	408	+9
Singapore	339	+51
Rep. of Korea	134	+25
Hong Kong	131	-68
Taiwain, Province of China	114	+75
China	100	-12
Malaysia	79	-44
Philippines	61	+33
Thailand	48	-60
Brunei	1	-80
Others	20	-5
Total	1435	-12

Source: The Economist, 25 October 1986, drawing on MITI data.

Notes:

a/ Fiscal year, i.e. 1 April 1985 to 31 March 1986. Figures refer to all sectors.

b/ Converted at current exchange rates: the aggregate fall from 1984 to 1985 measured in dollar terms would therefore be greater measured in yen due to the rising value of the yen against the dollar in the latter half of fiscal 1985 (i.e. subsequent to the G5 accord of September 1985).

Table 3: Some characteristics of the Machine Tool Industry in Asean Countries, 1985

Number of Producers:

Indonesia:	13
Thailand:	13
Singapore:	10-15
Philippines:	5-10
Malaysia	47 (metalworking and wood working)

Nature of Product:

Metal Forming rather than Metal Cutting (except for Singapore)
Intermediate level (except for Singapore), including reconditioning and rebuilding of imported machines (particularly in Philippines)

Nature of Production Method:

Old machines (except for Singapore), frequently more than 10 years
Job order rather than continuous production
Heavy reliance on imported raw materials, particularly special steel alloys

Investment and Ownership:

Lack of investors (domestic and foreign) despite high priority given to Machine Tools in all countries investment plans. Risks seen as volatile demand, advanced and changing technology, and weak support industries.

Current ownership is mainly national

Source: Derived from material collected by Technonet, Singapore, published in UNIDO, The Machine Tool Industry in the Asean Region: Options and Strategies, Main Issues at Regional Level, May 1986.

Table 4: Sri Lanka: GCEC and FIAC Firms as Industrial Employers, 1985

Total Industrial Employment	206,172
GCEC Employment	31,835
FIAC Employment	25,874
GCEC + FIAC as % of total	28.0

Source: Upananda Vidanapathirana, "Internationalisation of Production and Third World Industrialisation: Relevant Policy Issues for Sri Lanka", mimeo, December 1986.

Table 5: Sri Lanka: Performance of GCEC and FIAC Firms as Industrial Exporters, 1979-1985

Item	1979	1985
Total Industrial Exports (Rs. Mn.)	3,700	13,584
GCEC Exports (Rs. Mn.)	152	3,802
FIAC Exports (Rs. Mn.)	126	2,225
GCEC + FIAC as % of Total Industrial Exports	7.5	44.4

Source: Upananda Vidanapathirana, "Internationalisation of Production and Third World Industrialisation: Relevant Policy Issues for Sri Lanka", mimeo, December 1986.

Table 6: Sri Lanka: Features of Investment Projects Implemented under GCEC as of 31 January 1987

Registered cases of investment:	101
Number of joint ventures with Sri Lankan participation:	54
Number of wholly Sri Lankan projects:	10

Leading foreign investors measured by number of projects:

Hong Kong	15 (including 10 JVs with Sri Lankan participation)
UK	9 (7)
Japan	7 (3)
USA	7 (3)
FRG	7 (2)
Singapore	6 (3)

Leading branches:

Garments	26
Jewellery and lapidary	10

Source: From data supplied by GCEC

Notes: The total excludes Mono Pumps (UK) which closed down operations in early 1987. Some joint ventures with Sri Lankan participation involve more than one foreign partner; there are some joint ventures just among foreign firms.

Table 7: Sri Lanka: FIAC Approved Projects in Manufacturing, 1977-1986, Actually in operation[a/] end June 1986

Sector	Number of Projects	Actual Investment (Rs. mn.)	Foreign Share (%)	Average Export[b/] Requirement (%)	Actual Employment
Manufacturing of which:[c/]	130	3,712	31.1	87.6	25,444
Textiles and Garments	42	1,225	27.9	90.0	16,177
Food and Beverages	10	383	90.0	79.0	1,068
Wood and Paper	5	40	20.0	66.7	196
Chemicals, Plastics and Rubber	28	692	21.2	83.0	3,142
Basic Metal and Engineering	12	145	33.1	n.a.	790
Oth...	33				

Sources: Calculated from data supplied by FIAC.

Notes:

a/ Projects actually operating are substantially less than those approved; for manufacturing as a whole the approved figure is 229.

b/ The figures in this column are unweighted averages (in the absence of firm level production and export data) and are calculated assuming that where FIAC provides no information on export requirements the proportion is unknown (as opposed to zero). If in fact those figures are zero, then figures in this column should be reduced. In that case the numbers would read: manufacturing, 62.0; textiles and garments, 85.7; food and beverages, 31.6; wood and paper, 40.0; chemicals, plastics and rubber, 50.4; basic metal and engineering, zero.

c/ The branch classification is necessarily somewhat imprecise.

Table 8: Sri Lanka: Performance Indicators for Fabricated Metal Products, 1977-1984

Item	1977	1984
Share of manufacturing value added (%)	5.3[a/]	3.2[b/]
Share of manufacturing employment (%)	5.6[a/]	3.0[b/]
Capacity utilisation (%)[c/]	54	84
Foreign to total raw material supply (%)	78.9	70.0
Share of manufacturing exports	negligible	negligible

Sources: UNIDO, Handbook of Industrial Statistics, 1986, and UNIDO' Sri Lanka Industrial Review, February 1986.

Notes:

a/ 1973-1975 average

b/ 1982-1984 average

c/ Includes machinery and transport equipment

d/ Includes machinery and transport equipment; estimate based on public sector firms

Table 9: Sri Lanka: Foreign Trade in Metal Cutting Machine Tools, 1979-1983 (US$ '000)

	1979	1980	1981	1982	1983
Imports	3325	6729	2775	2779	3111
Exports	112	56	281	48	198

Source: International Trade Statistics Yearbook, United Nations, New York 1985.

Table 10: Average hourly wages and average hourly labour costs in Export Processing Zones and World Market factories in Selected Developing Countries, 1983 ($US)

Country	Average Hourly Wages	Average Hourly Labour Costs
Sri Lanka	0.11 - 0.15	0.15 - 0.25
Philippines	0.25 - 0.70	0.30 - 0.90
Thailand	0.35 - 0.50	0.40 - 0.60
India	0.40 - 0.75	0.50 - 0.80
Taiwan, Province of China	0.40 - 1.25	0.50 - 1.50
Malaysia	0.50 - 0.70	0.65 - 0.90
Singapore	0.60 - 1.25	0.90 - 1.80
Rep. of Korea	0.60 - 1.20	0.75 - 1.50
Hong Kong	0.90 - 1.65	1.12 - 2.10
Brazil	0.40 - 0.90	0.50 - 1.20
Mexico	0.65 - 0.90	
Colombia	0.75 - 1.00	0.90 - 1.25

Source: Folker Frobel, Jurgen Heinrichs and Otto Kreye, Umbruch in der Weltwirtschaft, Rororo 1986, p.470.

Notes: Labour costs differ from wages through including social payments.

FOOTNOTES

1/ South, "The Rising Sun: Cutting Out Asia", February 1987, p.58.

2/ idem.

3/ Nachrichten fuer Aussenhandel, "Branchenbild: Die Werkzeugmaschinenindustrie in Indonesien", 3 February 1986, p.ac2.

4/ American Metal Market, "Indonesia: Toolmakers Wanted", 14 January 1985, p.16.

5/ Iron Age - Metal Producing Management, "Thailand asks US Firms to Locate There", 17 January 1986, p.16.

6/ It is claimed that so far the internal strife has not affected foreign investment behaviour. However international air communications have been reduced (at least for passenger traffic) and the persistence of problems will certainly reduce investment incentives in Sri Lanka as compared with other countries.

Bibliography

Author	Title
O'Brien, Peter	"Recent international trends in engineering industries and issues for consideration in Thailand", in UNIDO, Engineering Industries in Thailand, Report IS/R.14, March 1985.
_____,	Recent Developments in the Machine Tool Industry: The Prospects for Foreign Direct Investment with Particular Reference to Asian Developing Countries, Report PP.53, UNIDO, Vienna, September 1987.
_____,	ASEAN in the Age of the Pacific, Special Report, Economist Intelligence Unit, forthcoming April 1988.
_____, and Plätzer, Karl-Heinz,	"Report on interviews carried out at 7th European Machine Tool Exhibition held in Milan, October 1987", mimeo, Vienna, November 1987.
Rafferty, Jim,	The Metal Working Sector in Cyprus, Report contained in UNDP/UNIDO Mission, June 1987.
SLBDC,	"Study of the potential for redeployment of machine-tool industries to Sri Lanka", mimeo, Colombo, September 1987.
Technonet Asia,	Small and Medium-Scale Metal Working Industries in Bangladesh and Sri Lanka, summary Report, March 1980.
UNIDO,	Engineering Industries in Thailand, Report IS/R.14, March 1985.
UNIDO,	Sri Lanka, Industry Development Review, Report IS.613, February 1986.