



**TOGETHER**  
*for a sustainable future*

## OCCASION

This publication has been made available to the public on the occasion of the 50<sup>th</sup> anniversary of the United Nations Industrial Development Organisation.



**TOGETHER**  
*for a sustainable future*

## DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

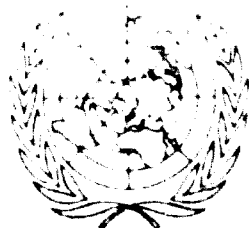
## FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

## CONTACT

Please contact [publications@unido.org](mailto:publications@unido.org) for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at [www.unido.org](http://www.unido.org)



# D00718



United Nations Industrial Development Organization  
Organisation for Economic Co-operation and Development -  
Development Centre

---

Distr.  
LIMITED

ID/WG.41/P  
CD/PME(69)7

10 June 1969

ORIGINAL ENGLISH

---

Expert Group Meeting on the Role and Promotion  
of Subcontracting in Industrial Development

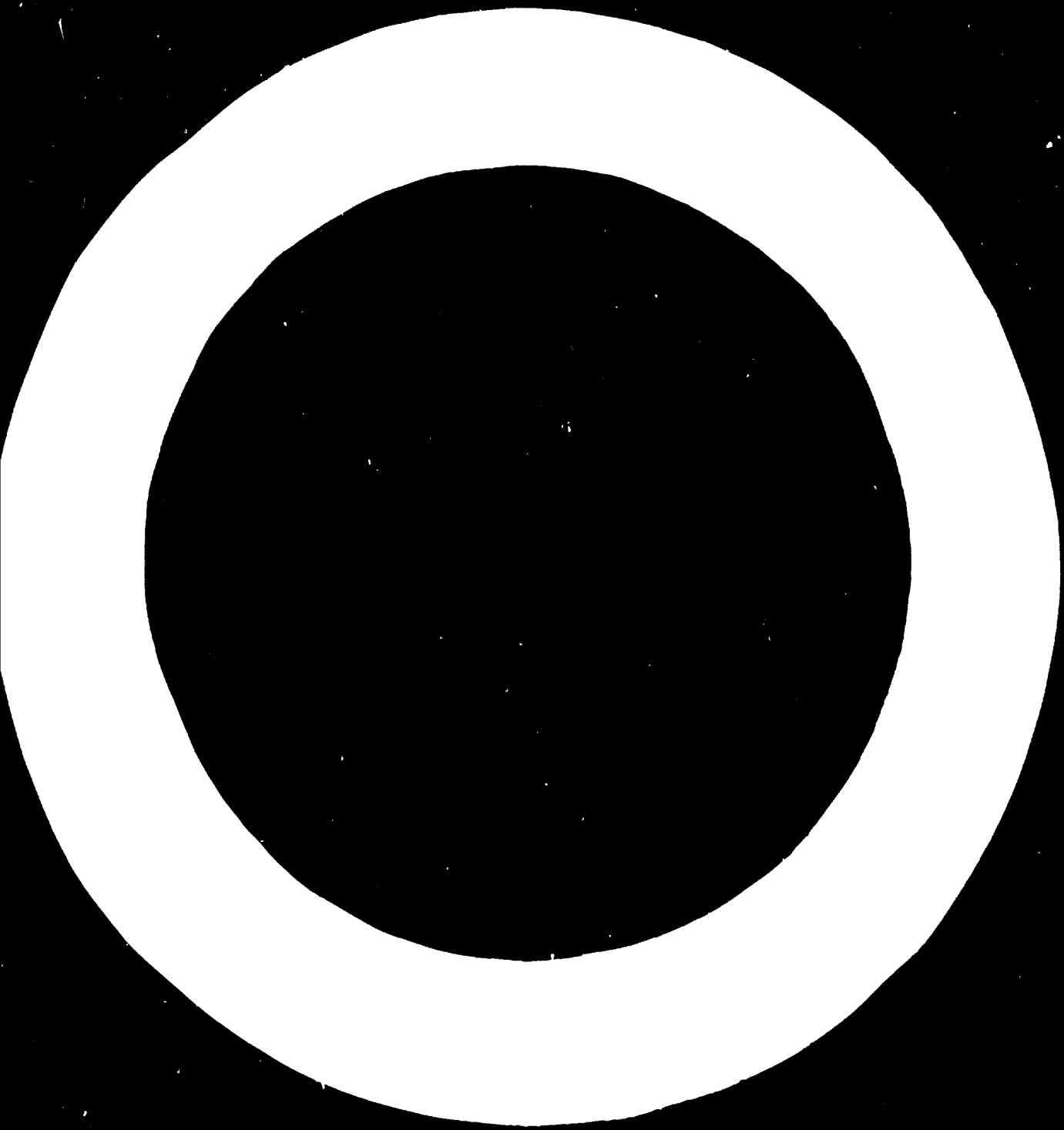
Paris, France, 6-11 October 1969

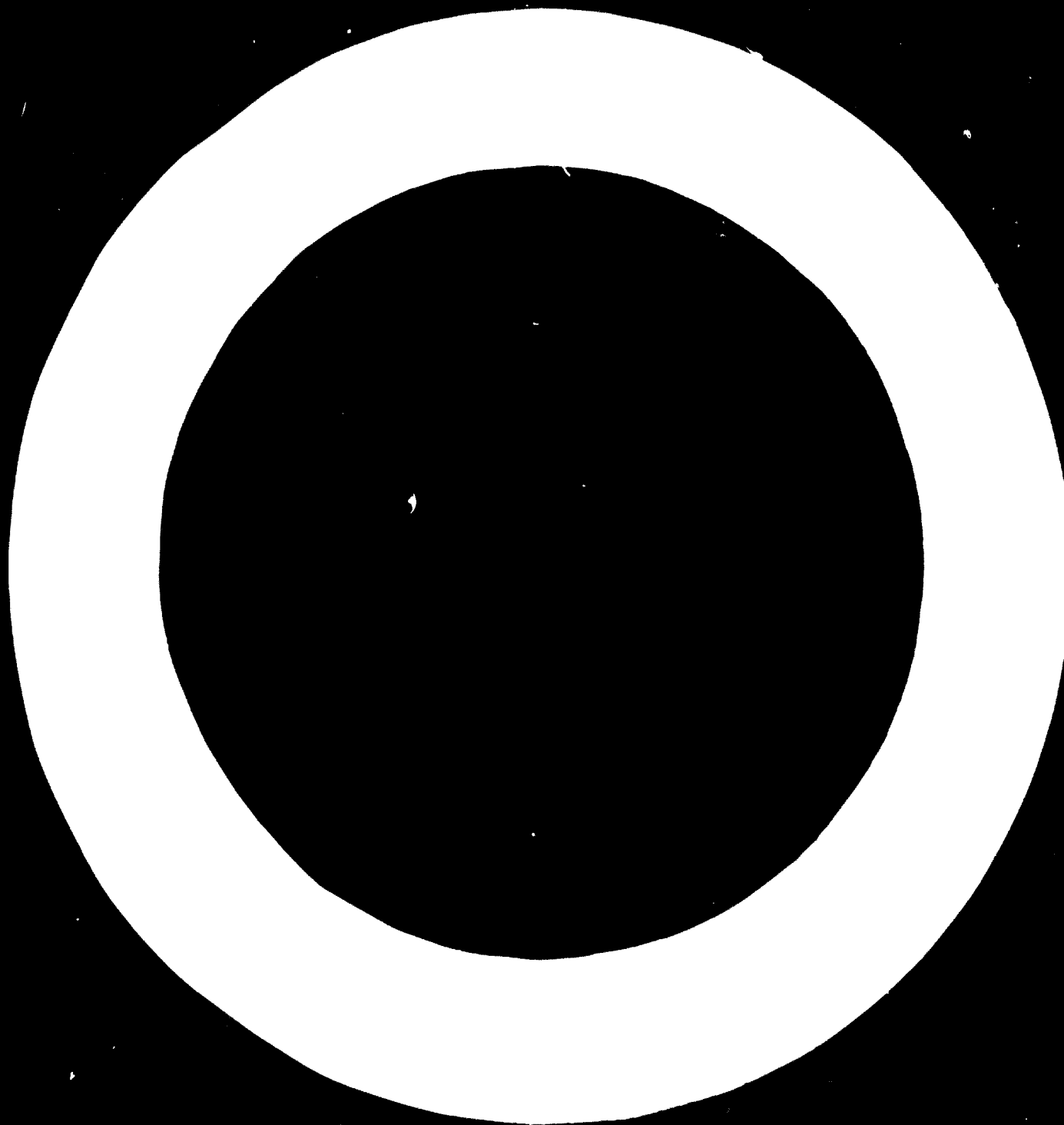
SUBCONTRACTING - ITS ROLE IN INDUSTRIAL DEVELOPMENT 1/

---

1/ This document has been reproduced without formal editing.

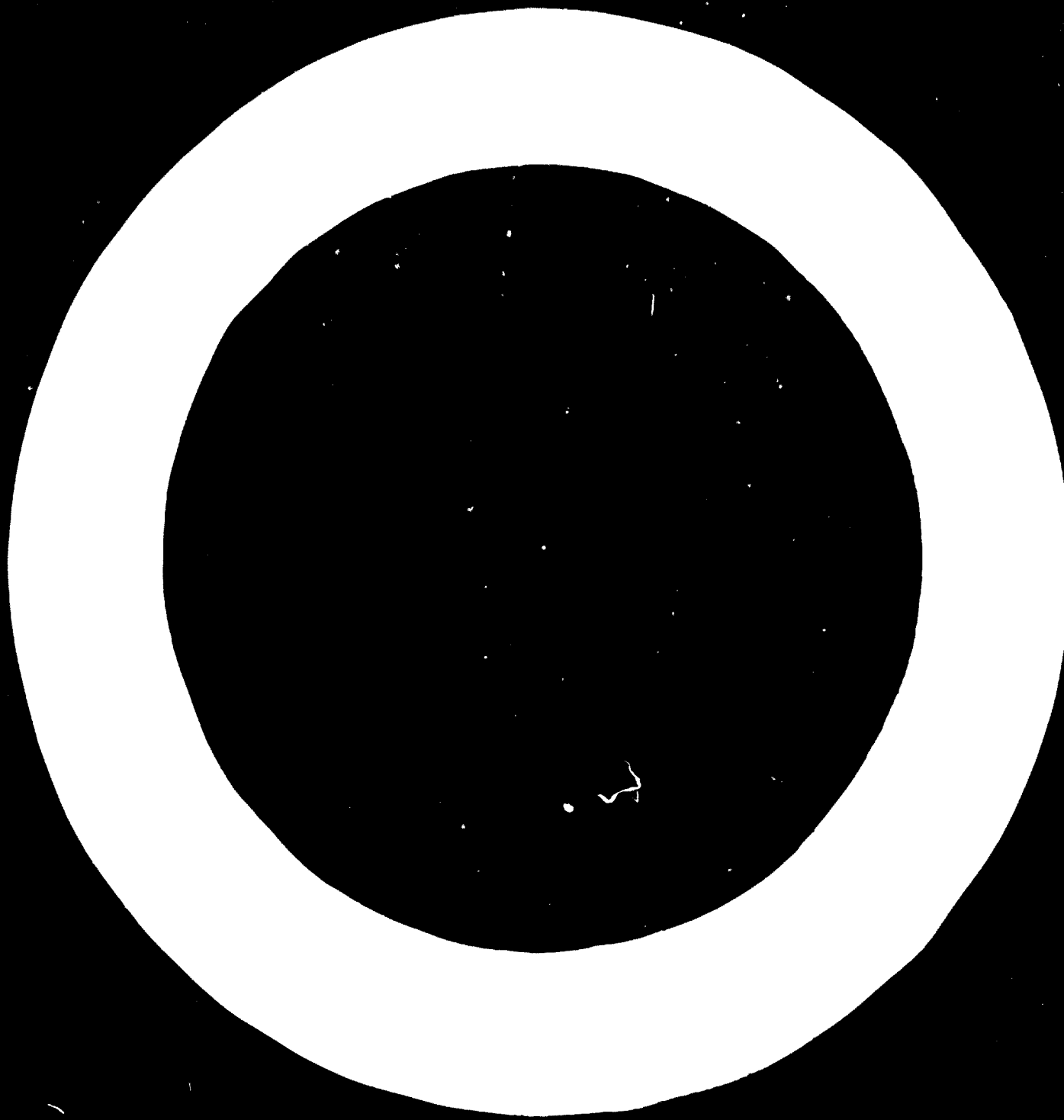
id. 69-3286





Contents

	<u>Page</u>
<b>FOREWORD</b>	1
<b>I SUBCONTRACTING AS A FORM OF INDUSTRIAL ORGANIZATION</b>	4
The nature of subcontracting	4
Conceptual framework	5
Definition of subcontracting	6
Types of subcontracting	6
<b>II ADVANTAGES AND DISADVANTAGES OF SUBCONTRACTING</b>	8
Advantages to the contractor	8
Disadvantages to the contractor	12
Advantages to the subcontractor	12
Disadvantages to the subcontractor	14
Advantages to the economy as a whole	17
Limitations and possible dangers of subcontracting	18
<b>III CONDITIONS FOR SUBCONTRACTING</b>	22
Size, market, level of technology	22
Compulsory subcontracting	24
Productions suited to subcontracting	26
<b>IV MEASURES TO PROMOTE SUBCONTRACTING IN THE DEVELOPING COUNTRIES</b>	29
The role of the Government	29
The role of industrial extension centres	32
The role of large-scale industry	34
Subcontracting exchanges	36
Ancillary industrial estates	37
The role of private groups	41
<b>ANNEX</b>	
Summary list of parts and components	1
(1) Industrial machinery	1
(2) Agricultural and earth-moving machinery	1
(3) Machine-tools	2
(4) Industrial, scientific and mechanical instruments	2
(5) Locomotives, rolling stock, ships and aircrafts	3
(6) Bicycles	3
(7) Boilers and steam-generating plants	3
(8) Steam engines, turbines and internal combustion engines	4
(9) Automobiles	4
(10) Commercial office and household equipment	7
(11) Electrical machinery, equipment and appliances	8
(12) Telecommunications equipment	8
(13) Industrial instruments (electrical)	8
(14) Radios and electronic equipment	8
(15) Air-conditioners and cold storage equipment including refrigerators	8
(16) Mineral oil and petroleum industries	9



## FOREWORD

Subcontracting between industries of various types and sizes, especially between large and small establishments, is a feature of a modern industrial economy. In the highly industrialized countries, an intricate network of complementary inter-industrial relationships exists, in which even giant industrial corporations rely on smaller undertakings for the manufacture of parts, components and sub-assemblies, or for certain processing and finishing operations, which they incorporate to their own products. It is a paradox that while the extent of inter-industry relationships is clearly revealed in input-output statistics and analysis, only a minimal number of studies are to be found in the economic literature on one of the most important aspects of such relationships - subcontracting between large-scale and small-scale industrial enterprises.

In the developing countries, even in those where large enterprises are established in industries lending themselves to subcontracting, such industrial relationships appear to be in their infancy. As a rule, large industries in these countries are set up as self-contained units, manufacturing under their own roof a variety of items which, in industrial economies, would be produced by outside firms. The literature on the subject, whether descriptive or analytical, is even scarcer than in the case of the more advanced countries.

While subcontracting is mostly practised in the industrial countries, the question arises whether, and to what extent, it should be promoted in the developing nations as part of their plans and programmes to set up, expand, diversify and modernize their industries. This question, in turn, raises many issues: Is subcontracting practicable only in economies having reached a certain level of industrial development, or can it be introduced even in countries at early stages of industrialization? Should these countries meet certain pre-conditions in regard to size, market, level of

technology, product quality, skill of management, specialization of production, and so on? Should it be mainly the responsibility of government agencies or of private organizations to promote subcontracting, or of both? What methods should be used to that end? Is it enough to assist subcontractors in getting orders from prime contractors and in meeting their obligations towards the latter, or should special measures of protection also be adopted to safeguard the interests of the smaller firms? Can an obligation to subcontract part of their production be imposed by the Government on large industries as a condition for their establishment, expansion or diversification, and should such compulsory subcontracting impose certain obligations on all parties concerned, namely the Government, contractors and subcontractors?

To answer these, and many other related questions, much more information and analysis than is currently available is needed.

In an effort to collect data on the experience of certain countries, the Secretariat of the Centre for Industrial Development of the United Nations (now the United Nations Industrial Development Organization (UNIDO)) commissioned, in the past few years, a number of country monographs. A study of subcontracting in France and some Western European countries was prepared by Mr. R. Holtz, Secretary General, International Association of Crafts and Small and Medium-sized Enterprises; a study of subcontracting in India, by Mr. G. R. Shrivastava, Director (Auxiliary), and Mr. S.V.S. Sharma, Director (Planning), Office of the Development Commissioner for Small Scale Industries, Ministry of Industrial Development, Government of India, New Delhi; a study of subcontracting in Japan, by Mr. S. Okita, Executive Director, Japanese Economic Research Center, Tokyo; and a study of subcontracting in the United States, by Mr. H. Stewart Holden, Consultant, formerly Ford Foundation consultant and Faculty Member of the Small Industry Extension Training Institute, Hyderabad.

At the end of 1965, the Secretariat of UNIDO sent a questionnaire on subcontracting to selected developing countries. The replies to the questionnaire are analysed in a separate report.<sup>1/</sup>

---

<sup>1/</sup> "Subcontracting - An Analysis of International Experience",  
ID/WI.41/3 - CD/PNE(69)5.



The present paper is based both on the country monographs and on the general knowledge and experience of problems of industrial development, especially in the field of small-scale industry, gained by the Secretariat of UNIDO. While it refers to the above-mentioned issues, it does not attempt to provide fully-substantiated solutions to all questions - much more research, reflexion and pooling of the information and experience of many countries are needed to that end.

The paper endeavours to set out and clarify some basic problems - the definition of subcontracting, its advantages and disadvantages, the conditions and methods for promoting it, the role of the government and of private groups in organizing and regulating it. Some conclusions on the role of subcontracting in the industrialization of the developing countries are tentatively put forward in the various parts of the report.

## I SUBCONTRACTING AS A FORM OF INDUSTRIAL ORGANIZATION

### The nature of subcontracting

One of the characteristics of a modern industrial economy is the interdependence of many firms, both large and small. In the industrial countries, even giant corporations rely on large numbers of other firms for the supply of many items necessary for the production of their goods. For example, General Motors, one of the world's largest corporations, depends directly on 33,000 other companies which, in 1954 alone, received over \$7,700 million in orders, representing about 45 per cent of General Motors' gross sales for the year. While the companies serving General Motors were of all sizes, more than 75 per cent of them had fewer than 100 employees.<sup>2/</sup>

The degree of dependence on smaller firms varies from one large undertaking to the other, but reliance on outside producers is the rule rather than the exception, even in companies which, in the past, endeavoured to be self-sufficient. For example, Ford Motor Company was intended by its founder to be as self-contained as possible and to rely on vertically integrated departments, rather than on outside industries. Iron ore was mined in company mines, then carried by company ships to the company steelmills which produced the materials for the many metal parts manufactured and assembled in the Dearborn plants. Since 1940 there has been a definite trend away from this policy. In the process of decentralization, the tire plant was sold and all tires are now purchased from tire manufacturers. While steel continues to be produced, the company buys more steel than it makes. About 24,000 companies supply the Ford Motor Company annually with \$4 billion worth of materials and parts that go into its vehicle production.<sup>3/</sup>

The above examples can be multiplied by the thousands all over the world. This does not mean that, on the whole, there is today less vertical integration in the economies of the industrial countries than in the past. In actual fact, some industrial fields are today more integrated than ever, as

---

<sup>2/</sup> Source: Report by H. Stuart Holden.

<sup>3/</sup> Ibid.

exemplified by petroleum companies conducting exploration, production, refining and marketing of oils and derivatives. Many chemical firms are also mainly self-sufficient as evidenced by their integration from raw material sources to the market place. Yet, in certain sectors, especially in the engineering industries, large concerns are greatly dependent on their producers, many of which are small firms.

The automobile and electrical household appliance industries are so characteristic of subcontracting that, in France, for example, from 50 to 60 per cent of the value of final shipments is accounted for by subcontractors and suppliers.

### Conceptual framework

The most important factor in the establishment of subcontracting relationships between firms of different sizes, in the industrial countries, has been the recognition of the role of scale in industrial efficiency.

The tenet that productivity increases with scale of operation is true only within certain limits. A larger firm can perform a number of activities that give it definite advantages over smaller producers. It can operate a more efficient production run, afford to utilize larger and more modern equipment, buy in larger quantities at more favourable prices, obtain highly skilled management, marshal greater resources for investment or expansion purposes - in other words, it can obtain greater "economies of scale". This consideration and the desire to achieve greater economic power were the guiding forces in efforts to expand vertical and horizontal integration. Yet, there comes a point beyond which it is not advisable to expand. There is an optimum size to any activity and to exceed it reduces efficiency on a per unit basis. Beyond a certain size there is waste in many forms, excess capacity, an overburdened cost structure, and mismanagement. The over-expanding firm may be confronted with "decreasing returns to scale". Output at this stage may become less economical, on a per unit basis, than when the size of the firm was smaller. Many large firms recognize that, for certain productive activities, separate units can operate more efficiently than integrated plants.

A secondary factor has been the corrective action taken by industrial firms in response to pressure from government anti-monopoly action, such as the comprehensive anti-trust legislation adopted in the United States and the anti-cartel regulations of European countries.

While some of the units participating in the production of the large one may be controlled or even owned by it, subcontracting between independent units appears to be the prevailing form of organization. It is this type of relationship, especially between large and small units, that is the subject of the present study.

#### Definition of subcontracting

Subcontracting is a contractual arrangement between a primary company (contractor) and a secondary company (subcontractor) for:

- (a) the supply, by the subcontractor, on order from the primary company, of parts, components, sub-assemblies and assemblies that are then incorporated in a product sold by the primary company, both companies being involved in manufacturing;
- (b) the processing of materials for the primary company - whether the materials are provided by it or not - and the processing or finishing of parts provided by, and returned to, the primary company;

A corollary to this definition is that there is no subcontracting in the case of purchasing by the large company of shelf items or of commonly available services, such as transportation, electricity, telephone, auditing, research, design, maintenance etc. Government purchasing from industry, where no further processing, assembly or other manufacturing operations are involved, will not be considered as subcontracting, even though the term subcontracting is often used in that sense.

#### Types of subcontracting

Subcontracting can take place between companies of different size - large and large, large and small, small and small. In developed nations the term subcontracting does not necessarily define the subcontractor as a small one.

Both companies can be approximately equal in size although in that case the subcontractor usually performs for more than one contractor or has a complementary product line for sale to other clients.

In a few lines of activity (such as processing of raw materials in saw mills, planing mills, leather tanning plants, stone cutting etc. where the material is provided by and returned to the contractor) the subcontractor may even be larger than any one of his contractors. In that case, there are usually more contractors than subcontractors and the latter enjoy an unusually strong competitive position, and do not need assistance from other sources. This, however, is not a typical case.

Subcontracting is frequently practised among small firms. Such relationships may sometimes be lasting and steady; in many cases, however, they are occasional jobbing arrangements of limited economic impact.

The main form of subcontracting, and the most important for industrial development, is the one that takes place between a large-scale or medium-sized firm and several smaller ones, even very small ones, whatever the measurement criteria - number of employees, fixed assets, net worth, value added, value of shipment etc.

Often, firms working as subcontractors for large enterprises also function as suppliers to the open market. It is sometimes difficult to differentiate the two concepts, subcontracting and supplying. Thus, when an automobile manufacturer starts producing a model requiring batteries of a type so far non-existent on the market, he will ask one or several makers to supply him with the new batteries, in a subcontracting capacity. The battery manufacturer will enter this new model in his catalogue, to meet not only the original contractor's continuing requirements but also those of the replacement market. In this case the battery producer is both a subcontractor to the auto manufacturer, and a supplier to the replacement market.

Subcontracting relations are established for numerous reasons and take several distinct forms.

(a) Full-capacity subcontracting - contractor firms whose existing production capacity is insufficient to meet the normal flow of orders offer

subcontracting orders, usually up to a fairly fixed percentage of their total output; a variant is peak-load subcontracting: when the contractor's product faces fluctuating levels of demand, subcontracting orders are given during temporary "peak-load" periods.

(b) Specialized subcontracting - contractor firms give, usually on a regular basis, orders to subcontractors who have specialized machinery and equipment and have developed special techniques and skills in processing or in making certain parts or components.

(c) Marginal subcontracting - contractor firms faced with orders which are either too small in size or too infrequent to justify internal production pass on these orders to subcontractors.

(d) Cost-saving subcontracting - contractor firms subcontract processing or manufacturing components mainly because of the subcontractor's considerably cheaper factor prices (labour, machinery, overhead, taxes, power etc.).

## II ADVANTAGES AND DISADVANTAGES OF SUBCONTRACTING

### Advantages to the contractor

One of the most important advantages to the contractor of a subcontract-agreement is the opportunity it affords him for reducing costs. The reasons for which costs may be reduced by placing orders with small firms are:

(a) Labour costs are often lower in small enterprises than in large firms.

(b) Most subcontractors have less equipment and machinery and simpler workshops than large firms, and their depreciation costs are smaller.

(c) Subcontractors spend little on research and marketing, which also reduces their costs.

(d) Subcontractors have more flexibility; management decisions can be taken more quickly and production programmes may be changed or adjusted more easily.

(e) Subcontractors - especially when highly specialized - can often produce certain items more efficiently and cheaper than contractors.

Some contractors obtain important advantages by using subcontractors to supplement their production capacity, equipment or technique. A contractor having a capacity geared to a given level must decide, when faced with an increase in orders, either to expand his capacity (by additional investment in plant and equipment) or to subcontract. If the increase in orders represents a temporary or seasonal trend in demand, the contractor is more inclined to subcontract than to expand his capacity and thereby risk underutilization of his investment during periods of the year.

When faced with a decline in orders, a fully self-sufficient large manufacturer may be inclined to reduce personnel, in which case he may have difficulties with labour unions. Subcontracting enables him to cut down his production and his costs and to minimize the effects of a recession on his own facilities. When he gives out short-term subcontracting orders, the contractor enjoys a hedge against a decline in manufacturing activity. It is reported that some European enterprises maintain, as an average, about 15 per cent of their orders with subcontractors to protect themselves in the event of a recession. If a reduction in orders of a given magnitude takes place, the contractor stops placing his own orders with subcontractors.

Thus, the ability to adjust production to fluctuations of demand is an important advantage of subcontracting.

Some changes in demand involve sizable re-equipment and re-tooling. Some large manufacturers with heavy investment tend to use plant and equipment well beyond the depreciation stage. They hesitate to acquire new machinery and turn out new goods. Subcontracting may facilitate change-overs due to technological innovation, by relying, to a greater or smaller extent, on small but modern enterprises having the necessary equipment and the required skills.

In general, an important advantage to the contractor is that he may improve his capital efficiency, in particular by avoiding excess capacity through the use of the capital investment of his subcontractors.

Also, a contractor may improve his capital efficiency by subcontracting certain work in which the subcontractor has specialized knowledge or uses a patent process. It is then more economic to subcontract than to acquire the necessary knowledge or license the patented process. Small companies acting as subcontractors often have opportunities for developing innovations by concentrating on narrow fields of specialization.

Manufacturers with major assembly operations prefer to secure alternative sources of supply. Even though good inventory planning protects them against short interruptions in the supply of components, they need to guard against total interruptions in the event of major machinery breakdown, work stoppage or failure in the transportation system. Large contractors will often apportion the supply of the same components among several subcontractors. Some large manufacturers with assembly operations will subcontract even though they make the part themselves in order to have alternative sources of supply to allow for demand fluctuations, to balance their inventories and sometimes to alleviate the strain of full capacity production.

Subcontracting can also help to solve certain problems faced by contractors due to limitation of facilities and resources. These include:

- (a) Lack of space whether for additional plant or for storage of materials, work in process or finished goods.
- (b) High transport or freight costs arising out of a particular geographical location.
- (c) Objectionable conditions, such as excessive noise, vibrations, noxious smells, dangerous gases, waste disposal problems etc.
- (d) Difficulties of complying with regulations prohibiting certain industrial activities conflicting with sanitary, zoning or town planning requirements.

In all the above cases, the contractor may be able to solve the problem by selecting a subcontractor with the necessary resources or appropriate location.

../.



In addition, subcontracting may solve manufacturers' problems arising out of shortage of skilled labour and materials. When skilled labour is unavailable, rather than invest time and expense in training the manpower needed, a large manufacturer can utilize skilled labour available with a subcontractor. In the case of materials in short supply, either through insufficient imports or through the long lead time needed to procure the materials concerned, a contractor may be able to overcome the difficulty through recourse to a subcontractor who has the material in stock.

Finally, when faced with conditions where machinery is unavailable either through overloading during periods of high demand, through breakdowns, or because of the lack of suitable operators, subcontracting may extricate the contractor from a critical situation that would otherwise lead to defaulting on orders. Even where machine and operator are available, but can be utilized only with considerable overtime charges, subcontracting may provide a cheaper solution.

A financial advantage accrues to contractors in the ability to pass off to the subcontractor some working capital costs (labour and other variable costs) spread over the production period. The contractor pays for the component, part or process only upon delivery, if he produced these himself he would bear all the cash payments when due.

Another advantage occurs to the contractor in saving storage costs. If he were to produce the item himself he would have to store materials, parts and supplies during weeks in order to achieve profitable load planning for his machines.

It is difficult to assess the relative importance of the above reasons in inducing large firms to subcontract. The more general reasons would appear to be cost reduction, savings in and better utilization of investment, and better adjustment to fluctuations in demand. Their relative importance would vary according to the type of subcontracting, especially in the case of capacity or peak-load subcontracting on the one hand, and specialized subcontracting on the other.

### Disadvantages to the contractor

The problems of which contractors complain most are those which have their origin in the technical and managerial weaknesses of the small firms.

One of the most frequent complaints by contractors is that the subcontractor's output does not conform to specifications. Tolerances may not be respected, raw materials may be inferior, quality and finishing may be inadequate, and the rate of reject may be high. To prevent such a situation, the contractor may have to provide his subcontractor with some training and assistance and with materials of the required quality.

The inability of the subcontractor to meet production delivery targets presents another problem for the contractor. This difficulty is related to any of a number of management weaknesses of the subcontractor. It can be caused by poor production planning, but inadequate inventories of parts and raw materials may also contribute to it. Poor maintenance of equipment, resulting in machinery breakdown, is a frequent cause of delays in production and in shipment.

Other management and technical weaknesses of the subcontractor are bound to result, if not corrected, in an inadequate implementation of the contractual agreement. Lack or inadequacy of quality control, shortcomings in production planning, in training of personnel, poor book-keeping and cost accounting, are among the leading causes of unsatisfactory subcontracting relationships.

### Advantages to the subcontractor

One of the major advantages obtained by small companies from a subcontracting arrangement is the stability of orders it may offer. Small producers hope to obtain - and sometimes do obtain - sizable orders assuring them of a given market over a period of time. This, however, is not always the case. Yet even occasional subcontracting boosts production and turnover and is eagerly sought after.

An efficient small enterprise entering a subcontracting relationship can normally expect to increase its quantity of orders. The subcontracting agreement may stipulate the quantity as a certain fixed level of orders to

be placed over a given period, or it may take the form of a percentage of the contractor's backlog of orders. Whatever the arrangement, the amount of subcontracting will be directly related to the contractor's production activity. In periods of boom, the subcontractor can reasonably expect an increase in orders; he will "dial in his contractor's coat-tails". In periods of depression, he will evidently be the first victim.

When he has an assured market, the subcontractor may afford to introduce, sometimes with the contractor's assistance, the necessary machinery and equipment to enable him to produce faster and better or to specialize. Through greater specialization he can become a more efficient producer and can expand his market, in particular by subcontracting with additional contractors. Specialization gives him the many benefits of higher productivity and greater independence. By concentrating on a narrow field, a small enterprise may acquire a level of expertise which enables it to develop innovations in the technology or process involved. This may place it in a position of obtaining patents and of becoming prominent in its field, and sometimes of growing to medium or large size.

Other advantages to subcontractors may accrue when they receive from the contractor raw materials and technical and managerial assistance.

Scarcity of raw materials is a common occurrence in some developing countries. Prices may even rise to the point where it becomes more advantageous to sell raw materials allocated by the Government than to process them. When small producers, as is often the case, cannot even obtain from legitimate sources the materials they need, subcontracting with supply of materials by the contractor may be a distinctive advantage to the subcontractor.

To provide subcontractors with some technical assistance is, sometimes even in industrial countries, a necessity for the contractor. As a rule, large industries are not inclined to bear costs of technical assistance or training, but they may be compelled to do so, especially when subcontractors produce complex parts requiring involved technologies or high quality and precision. In the advanced countries, the needs for such assistance may be minimal: assistance may be required, for instance, at the planning and beginning of production, and for setting up some forms of quality control. In

the developing countries, it may be more substantial. If large industries resort to subcontracting, it is in their own interest to minimize rejects and to ensure agreed upon delivery schedules. They may consider the provision of technical and managerial assistance (in addition to that provided by industrial extension centres, where these exist, or in lieu of, as the case may be) as a lesser burden, and a lesser cost than suffering delays in their own production and assembly lines.

Provision of financing by the contractor does not appear to be common, though occurrences are reported in Japan, especially for "affiliated" subcontractors. It is conceivable that in some cases, efficient subcontractors with a long history of satisfactory co-operation with a large firm may receive some help when faced with financial difficulties.

In developing countries, such assistance is at times provided, especially in the form of advance payments, by private large-scale enterprises, but this is not common. The financial assistance given to subcontractors by Government-owned large factories in India and private large concerns in Japan in the form of low-cost rental of standard factories in ancillary industrial estates may not necessarily be duplicated in other countries. This question is discussed below in connexion with the ancillary industrial estate.

#### Disadvantages to the Subcontractor

Conditions in which prices for subcontracting work are determined may be highly detrimental to subcontractors. Because of the disparate bargaining strength between large contractor and small subcontractor, prices are frequently imposed by the former on the latter. At times, the small enterprise so welcomes the opportunity to enter a subcontracting agreement that it will give insufficient attention to the pricing arrangements presented by the contractor. Sometimes, small enterprises may be engaged in "cut-throat" competition with each other, for instance for obtaining subcontracting orders, and may themselves reduce their prices to uneconomic levels. In other instances, small enterprises may be the victims of their own inability to calculate costs correctly, and whether through over-pricing or under-pricing, find themselves bypassed by contractors or confronted by acute difficulties.

Delayed payment by the contractor is one of the main complaints voiced by small subcontractors in all countries with a history of subcontracting. In India and Japan, for example, instances of payments being delayed up to six months have been reported. Through this practice, the contractor saves on the amount of working capital needed to finance any particular line of manufacturing activity. It is especially profitable to the large company whose subcontracting amounts to a relatively high percentage of the value of production. Terms of payment is an item that requires careful negotiations and has become a focal point of concern particularly in activities involving governmental expenditures (government procurement). In Japan, a law was enacted in 1963, "the Basic Law of Small Business", in which certain provisions (article 18) are aimed at preventing arrears in payment by parent enterprises to subcontractors, and at enabling subcontractors to conduct their business independently.

A problem quite often encountered by small subcontractors is that of unreasonable delivery demands on the part of contractors. This difficulty arises especially on the part of a large contractor having a widely distributed sales network. The sales "bureaucracy" within such an organization may give assurances to purchasers of the final product without considering the lead time required for delivery from the subcontractor, and considerable pressures may be exerted on the latter to accelerate delivery.

Technical difficulties faced by subcontractors include excessively tight tolerance requirements with consequent high rate of rejection and changes made in specifications without adequate warning. These problems reflect exacting technical demands the execution of which should be determined in a legal sense by the contractual agreement made. Yet, such business transactions require good faith on the part of both partners along with a certain amount of flexibility required for day-to-day transactions. There is much evidence that subcontractors are often to blame for technical shortcomings. Assistance and training by the contractor and by government-supported industrial extension centres can go a long way towards eliminating them.

Another difficulty may arise when, in order to ensure timely deliveries, subcontractors are required to maintain a certain level of finished parts

inventory at all times. This stock could act as a cushion in case of any interruption in manufacturing for such reasons as shortage of raw material, equipment failure, labour problems etc. If the cost of maintaining such inventories is not included in the quoted price, the subcontractor may find himself in a tight financial situation. Some contracts specify that this inventory should be paid by the contractor even though it is stored at the subcontractor's.

One of the complaints of subcontractors is that large firms do not always adhere to the conditions of long-term orders. For example, there are instances where orders are cancelled while they are being executed.

Of all problems confronting subcontractors the most lamentable is that of "captive" firms producing under economically oppressive conditions. A small firm may be "captive" in the sense of being entirely dependent on only one contractor who takes all or most of its output but who may give its subcontractor an equitable and fair treatment. The case discussed here is that of the "captive" firm economically exploited by its contractor. The latter may bring the former to a state of complete subordination through unfair pricing, delayed payments, failure to provide raw materials, etc. and may even reduce it to a state of "peonage" through permanent indebtedness. Such cases, however, are becoming rare.

Both in India and Japan, small-scale industries have been - and still are, though to a diminishing extent - engaged in production for large firms through middlemen. These middlemen - jobbers in India and wholesalers in Japan - make bids or tenders on orders extended by large companies and have the work done by small enterprises. In both countries middlemen have played a positive role at early stages of industrialization by providing financing, in particular advance payments, by procuring raw materials and machinery and by finding markets for small firms. At the same time, they retained high profit margins for themselves, held the small firms in subordination and gave them no incentive for specialization, technological improvement and innovation.

In both countries, subcontracting began largely through the intervention of middlemen. The "tender" system, however, resulted, among other things, in

the fact that both the middlemen and the small industries carrying out subcontracting orders changed from one contract to another. Contractor - subcontractor relationships were thus unsteady and haphazard. Direct contracts between large and small industries, fostering durable relations, would be of mutual advantage.

#### Advantages to the economy as a whole

Apart from the benefits that it offers to both contractor and subcontractor, subcontracting may play the role of an accelerator of industrial development, but to do so, subcontracting programmes should be rationally designed.

One of the most obvious benefits provided by subcontracting is that it may expand industrial activity within the framework of production complementarity. It may broaden the industrial base in a manner whereby resources - whether scarce or not - are efficiently utilized. It minimizes waste by reducing unused capacity, which is particularly valuable for developing countries as long as their markets remain limited. Mistakes can easily be made in overestimating the market, the result being an unprofitable plant investment with excess capacity which may require years to be fully, and therefore gainfully utilized.

Subcontracting may help in import substitution when indigenous manufacturers take on the production of various parts, components, sub-assemblies, etc. which were previously imported and locally assembled, it may thus contribute to alleviating the scarcity of foreign exchange.

Not only does subcontracting expand the industrial base, it also improves the technical competence of the subcontractors. Due to the specialization which it induces and to the various assistance measures provided by the Government and/or by the contractor, the productivity of the small manufacturing companies increases. Subcontractors gain a degree of security which enables them to concentrate on the efficient production of a narrow range of products or processes.

Subcontracting may, under certain conditions, contribute to industrial decentralization. As a rule, most of the subcontracting work is placed with small companies located close to the primary company. The main reason is

economy in transport cost; another reason is easier contact with the subcontractor. However, where a good transportation network exists, with adequate handling facilities and moderate freight costs, subcontracting may be practised in spite of distance between primary and secondary companies. The decentralization of many large enterprises may also bring about the emergence of subcontracting small-scale industries in the surrounding area.

Subcontracting helps to mobilize a highly skilled entrepreneur, a scarce and highly desirable factor in most developing countries, especially in those in which the indigenous sector of the population hardly participates in industrial development. Through the technical upgrading of the subcontractor and the training provided by the industrial extension services or by the large contractors, the development of higher skilled labour can be anticipated.

Too often, there is a marked tendency among both large and small producers in developing countries to ignore each other during the whole process of manufacturing. As a result, there is little integration or co-operation, and even lack of trust, between the two groups of producers, and the division of labour among different lines of production is left undeveloped. Subcontracting helps to correct this.

#### Limitations and possible dangers of subcontracting

Subcontracting is difficult when the level of production technique on the part of small firms is too low to be specialized for use in any section of industry. Only a limited number of small firms have the capacity and other requisites to meet orders from other enterprises and fulfil their requirements with a reasonable amount of assistance. Obviously, if the transition of small firms into viable subcontractors is too costly for the contractor, then it will not take place. Unfortunately, this situation leads to a standstill in the division of labour, which is so important for developing countries.

In some developing countries the growth of subcontracting may be hindered when several large firms manufacture a product, having a relatively limited market, with different standard specifications for parts and components of different design. For instance, in the automobile industry in India, three large manufacturers using different design and specifications manufacture



several makes of cars, under collaboration agreements with foreign manufacturers. The adoption of different standards by the manufacturers prevents interchangeability of parts and components used. Since the quantity of parts and components required by each manufacturer is relatively small, some of them could be manufactured by small-scale subcontracting firms, but, because of the small size of production, the costs of manufacture of these small firms are higher than the costs of importing such parts and components. The adoption of uniform standards for parts and components by the different large manufacturers of automobiles would facilitate the establishment of viable small-scale subcontracting units. There is, however, a considerable amount of subcontracting in the Indian automobile industry. The scope for subcontracting would expand with a sizable expansion of the internal market for automobiles; it would further expand if uniform standards for certain parts and components were adopted by the different large manufacturers. In the case of certain other industries in India like bicycles, sewing machines and radios, there is already considerable interchangeability of parts and components and subcontracting has begun to take place and is growing.

In Latin America, the limitations due to the narrowness of the national markets are partly overcome through arrangements whereby manufacturers of automobiles license small-scale industries to produce parts and components to assembly plants in several countries of the region.

In countries where there is excessive competition among small producers, and a large gap in industrial skills and bargaining power between large firms and small ones, subcontracting may have both positive and negative effects. The case of Japan is of special relevance.

On the positive side, industrial subcontracting has contributed enormously to Japan's ability to produce economically for home consumption and for export. Some negative aspects involve social abuses and misuse of economic power which have led to some remedial measures on the part of the Japanese Government. These measures include legislation and support of small industry associations, along with programmes designed to improve the over-all competence of small-scale industry.

Without proper regulation and assistance on the part of Governments and large contractors, social abuses can develop. Some subcontractors may take advantage of their local monopoly position to pay abnormally low wages to their workers. This is particularly so in locations where the firm is the only source of employment. This practice has been evident in developed as well as developing countries.

There are examples of small firms being given subcontracting agreements because of their lower cost structure primarily attributed to non-payment of social welfare dues - retirement, unemployment, health, insurance and other payments. In some cases, legislation regarding wage rates and social welfare costs does not apply to small establishments.

There are cases of the so-called "slave-trader" subcontractor who is sought out by contractors not interested in a high quality product or not abiding by acceptable business practices. Such subcontractors usually enjoy a local monopoly and can take unfair advantage of their labour by offering low prices. They do not respect either high standards of production or safety conditions. Much of their work is undeclared in an attempt to evade payment of taxes.

Subcontracting has been accused (in France and the United States, for instance) of generating an anti-union policy and trade unions have adopted an adverse attitude to it. Trade unions hold to the view that large contractors utilize subcontracting as a "buffer" to minimize the effects of a business recession. They feel that during a period of production cutbacks, the large contractors first reduce their orders to the small subcontractors whose employees are the first to feel the effects of unemployment. The automotive, electrical appliances and steel industries are often cited as industrial fields where such practices occur. In the United States, the attitude on the part of labour unions seems to be less emotionally charged than it

is in France, where subcontracting is often openly used by industrial enterprises as a weapon against unions. In some industries in the United States, unions exercise considerable control and this position seems to fluctuate with general economic conditions. In some cases, unions actually favour subcontracting when it is possible to gain job opportunities for their members in the subcontracting enterprises.

Neither do workers employed by the contractors favour subcontracting. In the United States, large contractors, in particular in the heavily industrialized areas of the country, have tended to resist the introduction of the subject of subcontracting in labour negotiations. Yet a number of labour contracts do include clauses governing subcontracting especially in the automotive and steel industries which are highly unionized. In the southern areas of the United States, where unions represent a smaller proportion of workers, trade union representatives fear that subcontracting will reduce the amount of work available to union members in large factories in favour of non-union (lower paid) workers employed by subcontractors. A recent study of all major labour contracts (other than railroad and airline industries) revealed that nearly one-fourth of the agreements in effect made some reference to subcontracting.

Subcontracting, like all industrial relationships, can take place under oppressive conditions that are incompatible with an advanced industrial structure. Yet some of the problems created by subcontracting, in particular the undesirable social effects, may be nothing more than the normal problems created by industrialization in any society. They represent potential undesirable side effects of a larger, more important element - growth in industrialization. Such problems can be corrected, and often prevented, through governmental and other institutions as well as private groups.

### III. CONDITIONS FOR SUBCONTRACTING

#### Size, market, level of technology

Historically, subcontracting has developed in the industrial countries and, though to a much smaller extent, in those developing countries which have reached a relatively advanced stage of industrialization or where large industries of suitable types exist.

The reasons for this are quite evident in the case of developing countries having no large industries or in the case of countries, such as, for instance, most of the newly-independent nations of Africa, where no modern small-scale industry exists. In some countries where population and market, present and prospective, are small, and where resources are limited, few large industries will be set up and subcontracting will be limited. Size of the market, however, is a more important consideration than size of population. Some small countries may, either because they belong to a common market, or because of very favourable geographical location, have access to foreign markets and may develop large industrial establishments - sometimes with satellite subcontracting small firms - even if they do not have their own raw materials and have to process imported ones.<sup>4/</sup>

It is probable that, in developing countries where the industrial structure includes both large and small establishments of suitable types, the former do not subcontract with the latter mainly because of the inadequate quality, lack of specialization, lack of appropriate equipment and defective management of the small firms.

Under subcontracting, any of these shortcomings could jeopardize the production and assembly operations of the large industries. While subcontracting with efficient small-scale industries would involve economies for the large one, subcontracting with inefficient small firms would involve appreciable losses and difficulties.

A basic condition for subcontracting, therefore, is the existence of an efficient modern small industry sector in lines of production corresponding

---

<sup>4/</sup> For example, Hong Kong and Singapore.

to the requirements of the large firms. In the absence of small industry promotion organizations and of industrial extension centres providing assistance in technique and management, small industrial establishments are not always able to meet the rather stringent conditions in respect of quality, tolerance and time of delivery, required by the contractor. The existence of competent industrial extension centres is therefore an important factor for the development of subcontracting in the developing countries.

Even where such centres exist, a relatively long time is needed to bring existing small-scale industries to the level of efficiency required for the development of subcontracting. In many cases, it is also necessary for the industrial extension centre to stimulate the establishment of new specialized small subcontracting firms. For this reason, it is very unlikely that, in many developing countries, a large industry could be planned, from the outset, to operate to any sizable extent under a subcontracting set-up. In most cases it would have to be largely self-sufficient.

However, not all subcontracting work requires exceptionally high skill or specialization, precision and quality. Many simple items incorporated in a large industry's product may be manufactured to relatively low acceptance standards by very ordinary small firms having conventional equipment and average skills. Firms capable of manufacturing such items are found in advanced and developing countries alike, throughout the world. There is no reason why simple parts and components should not be produced for large industries by subcontractors, even in countries at relatively early stages of industrial development. The number of such parts will usually be rather small, and the impact of such subcontracting will be limited. However, it may be a beginning, and the volume and type of the subcontracting operations may be expanded in the future.

It may be noted in this connexion that, in many developing countries, small-scale industries produce a variety of parts of automobiles, tractors, and other machinery, for the replacement market. Such parts are manufactured for both imported and domestic products. While many of the enterprises would not qualify for subcontracting with domestic large producers because of insufficient quality of product, they offer much scope for becoming subcontractors, if assistance and support are made available to them.

### Compulsory subcontracting

It has been proposed sometimes that in order to stimulate subcontracting the government of a developing country should use legal powers to ensure that large industry makes greater use of facilities available in small factories. Whether a government will find it desirable or not to use a form of compulsion on large industry to increase subcontracting will depend on its general economic policy. In economies where private enterprise is well developed, governments generally feel that it is preferable to allow such relationships between large and small firms to develop of their own accord and to restrict the role of the government to providing a favourable economic climate and conditions ensuring the growth of subcontracting.

However, where a government is committed to an economic policy whereby it uses its authority and administrative machinery to direct economic development along lines which it considers desirable, there are a number of ways in which it can exert a form of compulsion to expand the volume of subcontracting. The governments of several developing countries have entered into binding agreements with large foreign industrial groupings, under which they allow them to set up manufacturing operations in their countries only on the condition that they will undertake within a specified period of time to subcontract a fixed percentage, usually substantial, of the total manufacture of the product to local firms. This has been the case of, for example, the large automobile manufacturing enterprises in certain Latin American countries and in Israel.

Another form of compulsion - used for example in the United States - is to operate the powerful instrument of government purchases in such a way as to ensure that a given percentage of the value of the items ordered by governments or government-controlled organizations is subcontracted to

small firms. Some use of the weapon of withholding government purchases from firms that do not make sufficient efforts to subcontract has been made in India. Since in various developing countries the role of the government within the economy is usually very significant and covers not only direct government activities but also defense spending, the operation of public utilities, and often of public corporations engaged in mining and manufacturing, the use of government purchasing could in some situations be a powerful instrument to promote subcontracting.

Another method whereby government powers may be used to expand subcontracting by large industry is provided in situations where the government directly approves or rejects proposals for expansion and the establishment of new facilities. Most governments in developing countries have this power in one way or another, whether through the granting or withholding of concessions or privileges or through issuing licenses to import the required machinery. In all these situations where the government is the final arbiter, whether to give or withhold its approval of a large corporation's expansion plans, it is in a position to ensure that all available facilities existing in the country are utilized. It can therefore insist that all opportunities of subcontracting are resorted to before new facilities, which in most cases involve the expenditure of scarce foreign exchange, are created.

All these methods of using compulsion to increase the amount of subcontracting have their limitations. They generally do not produce the desired results unless small-scale industries in the country are sufficiently developed and are given the necessary support to serve as efficient subcontractors. No government can succeed in forcing larger enterprises to subcontract work to inefficient subcontractors unable to maintain adequate standards of quality and defaulting continuously in delivery schedules. However, where small industries of the required standards do exist, a certain amount of government compulsion on large contractors who would otherwise be reluctant to subcontract can be considered.

### Productions suited to subcontracting

A most important condition of subcontracting - other conditions being equal - is the existence of large-scale firms in certain types of industry.

Although subcontracting is prevalent in certain industrial activities, it may be practised to varying extents in a variety of sectors. With some exceptions, such as certain chemical industries where integration is a technological requirement, a degree of subcontracting may be found in different types of industries which are exposed to competitive pressures and have optimum sizes dictated by technological and economic considerations. Historically, however, some industries have been more involved in subcontracting than others. This is the case of the automobile, ship-building, aeronautical construction industries, electrical household appliances, computers etc., all of which usually consist of very large concerns manufacturing and assembling multi-component products of high complexity and requiring many different production equipment and techniques. A lighter industry in which subcontracting has a very ancient tradition is watchmaking.

In India, a number of industries and product lines are considered by the Government to be particularly suitable for subcontracting between large and small industries. In order to encourage small establishments to carry out orders for large industries in these sectors, a special definition of "ancillary small-scale industries" has been adopted. This definition (investments in fixed capital up to Rs.1 million (\$133,330) is more liberal than that of small-scale industry in general (investment in fixed capital up to Rs. 750,000 (\$100,000)). Thus, ancillary industries remain entitled to the various measures of promotion and assistance provided by the Government (admission to industrial estates, technical and managerial assistance from small industry service institutes, procurement of machinery under hire-purchase, preferential purchase of products under the Government stores purchase programme, etc.), even though their size may be larger than that of non-ancillary small enterprises.<sup>5/</sup>

---

<sup>5/</sup> While there is no compulsory licensing of small-scale (and medium-sized) industries in India, voluntary registration is possible - with the Director of Industries for non-ancillary units and with CSIO for the ancillary ones.



The industries listed by the Indian Government as suitable for subcontracting are as follows:

- (1) Industrial machinery, including among others:
  - (a) textile machinery
  - (b) sugar mill machinery
  - (c) chemical plants
  - (d) building and road construction machinery
  - (e) flour mill machinery
  - (f) oil mill machinery
  - (g) paper-making plants and machinery
- (2) Agricultural and earth-moving machinery
- (3) Machine tools
- (4) Industrial, scientific and mechanical instruments
- (5) Locomotives, rolling stock, ships and aircraft
- (6) Bicycles
- (7) Boilers and steam-generating plants
- (8) Steam engines turbines and internal combustion engines
- (9) Automobiles
- (10) Commercial office and household equipment
- (11) Electrical machinery, equipment and appliances
- (12) Telecommunication equipment
- (13) Industrial instruments (electrical)
- (14) Radios and electronic equipment
- (15) Air-conditioners and cold-storage equipment, including refrigerators
- (16) Mineral oil and petroleum industries

A summary list of parts and components which can be subcontracted under several of these categories will be found in an annex.

#### IV. MEASURES TO PROMOTE SUBCONTRACTING IN THE DEVELOPING COUNTRIES

The decision to subcontract or not to subcontract is always taken by large companies. Small enterprises may offer their services, but the final decision is taken by the contractor. The decisive consideration is therefore whether, in the view of the large company, it and it alone, will benefit from subcontracting or not.

In making this decision, the contractor may be hampered by lack of information or by prejudice. Even in the industrial countries, the lack of information on those smaller firms which are able to carry out subcontract orders is considerable, and the means usually relied upon to find such firms do not always yield prompt or satisfactory results. Managers of large firms resort to consulting directories and trade publications, place advertisements in trade papers and reviews, inquire with professional associations, chambers of commerce and even with competitors. It is mainly because of the inadequacy of information in industrial countries that subcontracting exchanges have come into existence there. Some more enlightened firms arrange exhibitions of parts and components for subcontract and even subcontractor's fairs, with demonstrators and specialized personnel able to provide technical and economic guidance. In general, however, the subcontracting market, even where subcontracting is widespread, is poorly organized and there are reasons for thinking that, in many industrial countries, it could be considerably broadened and improved. Subcontracting exchanges have been tried, with a varying measure of success, in a few countries only, and the possibility of organizing international or regional subcontracting, in particular in countries members of a common market, has been envisaged only very recently and in a preliminary way.

In the developing countries, lack of knowledge of potential subcontractors may be aggravated by prejudice against small industries. This may often be based on unsatisfactory actual experience, and the adoption of a generally adverse attitude towards giving orders to small-scale industries is, understandably, the result. Solicitations by small establishments may be hampered by their own lack of knowledge of the requirements of large industries, and

rebuffs by the latter can only discourage any further attempts by the former.

In the developing countries where subcontracting is possible, the power of decision will evidently, as everywhere else, be vested in the large firms. However, the Government will have a most important role to play in creating conditions inducing large firms to place more orders. The action by the Government - especially of the industrial extension agencies - will need to be supplemented by the large industries themselves. Some instruments of promotion such as the subcontracting exchanges which, in most industrial countries, are operated by private groups (employer's federations), will probably need, in the developing countries, to be sponsored by government agencies. As industrialization proceeds, the scope for action by private groups will undoubtedly increase in the developing countries.

#### The role of the Government

The role of the Government in promoting subcontracting will vary according to the degree of planning or of laissez-faire characterizing its development policies. In planned economies in which private investment in large industrial projects is subject to government control, the establishment of small subcontracting enterprises can be dovetailed with the establishment of large plants from the planning stage.

Compulsory subcontracting, to which reference has been made earlier, may be more easily set up in such economies, provided of course that government agencies are able to give subcontractors the necessary support.

In a number of developing countries, heavy industry and large mechanical and electrical engineering belong to the public sector or to mixed companies with government participation. Subcontracting can then be planned by the Government as an integral part of the large industrial project.

Even when certain industrial sectors are not reserved to the Government, large industries, in some developing countries, are usually set up either with government participation or under government control. There is thus scope - other conditions being equal - for direct promotion of subcontracting by the public authorities in many countries. In developing countries where private enterprise predominates, subcontracting will sooner or later be

practised - provided conditions for its development are met - because of its efficiency and because large firms have interest in resorting to it. But it should always be up to the Government to create those conditions for which it is responsible.

Perhaps the most important action incumbent on the Government is the provision of industrial extension services to small-scale industries. This is considered in more details in the next section.

Other measures may include:

- (a) Adoption of a policy and programme facilitating the development of ancillary units, by providing incentives to large enterprises licensed by the Government and to large contractors tendering for government purchases to subcontract part of their production to small units, and by providing assistance to the latter.
- (b) The adoption of a special definition of ancillary industries with ceilings on employment and/or investment higher than those applying to other small-scale industries. The purpose of such a definition is to allow subcontractors to avail themselves of the benefits provided by the Government, even though their size may be larger than that of non-ancillary small-scale industries.
- (c) The introduction of an appropriate tax system, the tax on value added being the most favourable to subcontracting. Under this system, which is practised in France and some other Common Market countries, the contractor can deduct from his own taxes the value of the purchase tax invoiced to him by his subcontractors. Each producer pays tax only on the basis of the value of his own production. Other systems of commodity taxation, such as sales tax, excise duty, turnover tax, etc. result in cumulative imposition regardless of the number of manufacturing processes, and are not favourable to subcontracting. Such systems have a heavy impact on the final payer and penalize firms which have to pay tax on tax (taxation en cascade) for transactions with each other. The existence of taxation on value added is not a basic condition of subcontracting, though it removes barriers to its development. Subcontracting is practised in countries having a cumulative tax

- system, but the disadvantage of higher taxation is offset by the economies of lower costs and better utilization of equipment.
- (d) Accelerated depreciation allowances on new equipment and machinery.<sup>6/</sup>
  - (e) Exemption or reduction from import duties on machinery needed by small subcontracting enterprises (especially if the activities of subcontractors promote import substitution).
  - (f) Special financing facilities and/or subsidies for procurement of machinery and for working capital.
  - (g) Allocation of scarce raw materials to subcontractors with the same priority as for the contractors.

It will also be the responsibility of the Government to adopt measures to protect small-scale industries from abusive practices on the part of the contractors. In Japan, for instance, the Government incorporated in the Basic Law of Small Business, 1963, a number of regulations to prohibit inequitable or unfair practices by contractors, such as: unfair discount; compulsory purchase; retaliatory acts; demanding payment for raw materials or other goods at an unduly early date. The law provides that a contractor must pay interest on arrears at a stipulated rate to a subcontractor if 60 days have elapsed since the date of delivery of the goods. To clarify subcontractor dealings, the contractor is obliged to deliver a letter to the subcontractor stating clearly the nature of the order, its value, date and method of payment.

---

<sup>6/</sup> In cases in which the prices of some major items like automobiles and tractors are fixed by the Government, interest and depreciation on capital investment in plant and machinery are sometimes considered as elements of overhead. This encourages large entrepreneurs to set up plant in their own factory to produce themselves as many components as possible, instead of subcontracting with outside firms. Price fixation of such items on the basis of, e.g., similar imported items, irrespective of local cost of plant and machinery, might be preferable. Such a system would not only encourage subcontracting but would also contribute to a more effective use of capacity of many factories - small, medium and large.

The contractor is also required to prepare and maintain a document recording the whole process from the delivery of goods to their payment. Some of these measures have also been adopted in other countries.

To enforce the law, the Japanese Fair Trade Commission requests reports from contractors, and if any abuses are suspected it conducts spot inspection of enterprises. In less than a year's time after the introduction of the legislation, approximately 12,000 establishments of large contractors were required to submit documents on their subcontracting activities and about 1,500 establishments received spot investigations. About 1,000 establishments were found committing some fault and were given corrective advice.

#### The role of industrial extension centres

The main function of industrial extension centres (also called small industry service institutes, small industry advisory centres, etc.) is to stimulate the establishment of new small industrial enterprises and to modernize existing ones through a variety of measures of promotion and assistance. These include the preparation of feasibility and pre-investment studies, of "model schemes" or "industry fact sheets", assistance and training in technique, management and marketing, facilitation of financing, and so on.

In most developing countries, the industrial extension centre would be the natural agency for promoting subcontracting between large and small industries. Its very functions, which put it in daily contact with small establishments, place it in a unique position to gather information not only on the machinery and equipment available in small units, but also on their skills, specializations and quality of production. Most centres would be able to establish a register containing this type of information and to function to some extent as a subcontracting exchange. As will be seen below, the establishment of an exchange would be justified mainly in towns or regions with large concentrations of small-scale industries. Where the number of small establishments - especially those able to serve as subcontractors - is not excessive, the industrial extension centre should be able to collect and keep up to date the information on a systematic basis and to serve as a clearing house to bring together demand and supply for subcontracting operations. The centre would establish contact with large undertakings to find out require-

ments for parts and components, would circulate lists of parts to small firms and would submit to large industries lists of small firms able to carry out the orders. It might also assist in organizing exhibitions - permanent and mobile - of items required by large industries.

The advisory services and assistance in technique and management provided to small units by the industrial extension centre are the necessary counterpart of its clearing house activity. Subcontracting cannot be developed to any appreciable extent unless small industries are able to undertake specialized productions - which often call for specialized machinery - and achieve good quality in production and efficiency and reliability in management. Extension services may be considered as a kind of guarantee that subcontracting work will be properly carried out and their availability may be an inducement to large industries to place subcontracting orders.

Both objectives - getting orders and carrying them out well - can be achieved only if the industrial extension centre is of recognized ability. The centre should have qualified specialists on its staff - or should be able, when necessary, to call upon consultants.

Thus, it would appear to be desirable, in the developing countries, to give ancillary industries a special definition and status entitling them to measures of assistance, even though their size may be larger than that of other small-scale industries, as is being done in India. In many cases, the provision of more intensive or more specialized servicing will be required. Among the services especially needed by subcontractors in assistance in design and production of dies, jigs, tools and fixtures, advice on selection of specialized machinery, procurement of high grade raw materials, quality control, and improvement of cost accounting and inventory control. Specialized high-cost machinery which no single small enterprise could operate at full capacity, but which might be used by several units, could be provided by the extension centre as a common service facility.

The Small Business Administration (SBA) of the United States carries out activities of far broader scope than those undertaken by industrial extension centres. Since 1953, the SBA has been promoting small-scale industry through various measures including financial assistance, management and technical assistance, procurement assistance designed to give small industry a fair share of Government purchases, <sup>7/</sup> research studies and so on. These measures are available to small enterprises in general, including subcontractors. Special measures for subcontractors include facilitation of contracts between large and small companies. The Small Business Administration has convinced several of the largest purchasing offices to include in many of the basic contracts specific provisions that subcontracting will be undertaken with small firms by large prime contractors. <sup>8/</sup> The agency has devised a "certificate of competency" programme whereby an officer of the Administration will inspect the premises of small firms and certify their technical and financial capability to carry out a contract. Subcontracting is further encouraged by government-sponsored "contract opportunity meetings" which are held throughout the country in order to bring together government contracting officers and representatives of both large and small firms to learn about the Government's needs, buying methods and bidding procedures.

#### The role of large-scale industry

Despite its cost and inconvenience, technical assistance is sometimes given to subcontractors by large-scale industry in the industrial countries. Contractors usually supply drawings and blue-prints; occasionally, they also make available the services of engineers to give initial guidance, and of inspectors to check quality, expedite production and maintain schedules. Arrangements to enable subcontractors to produce under patents or licences need often to be made. The effort and expense involved by such practices are evidently largely compensated by the over-all savings resulting from subcontracting.

---

<sup>7/</sup> On the policies and practices of India and the United States in the field of Government-procurement see "Promotion of Small-scale Industries through Government Purchasing", by Kennard Weddell, in Industrialization and Productivity, Bulletin No.12 (Sales No.: E.68.II.B.3).

<sup>8/</sup> A similar system is practised in India by the Directorate General of Supplies and Disposals.



In the developing countries, the large industries would probably have to do even more. Although, as mentioned in the preceding paragraphs, the industrial extension centre - where it exists - should play a major role in the provision of technical and managerial assistance and of common service facilities, the contractor would still need to give help unobtainable from any other source. Where raw materials are in short supply, provision by the contractor may be necessary. Specialized technical know-how may be available only in the large company and technical assistance may need to go beyond initial guidance; training courses in specialized techniques and in quality control may have to be provided by the contractor. Special tooling facilities and other equipment may have to be leased to subcontractors by the giver of orders. It is conceivable that, in some cases, some forms of financial assistance, help in obtaining machinery, leasing of premises or other help in securing physical facilities to a growing small firm need to be provided by the contractor.

Assistance may - and does - go even beyond that. Paternalism is still, in many countries, a strong motivation of the managerial policies of some big companies. The mutual advantages of paternalistic policies - as seen by the management of the large company - are not necessarily limited to the relationship between the large firm and its employees, but may well be extended to those between the firm and its subcontractors. It is conceivable that, from the standpoint of the large company, provision of finance, machinery, premises and even of factories in "ancillary" industrial estates may be a cost ensuring security through subservience.

The question whether the strengthening of small-scale industries through paternalistic policies on the part of big companies is, especially in the developing countries, a desirable or an undesirable feature is beyond the scope of the present report. The only conclusions which may be drawn here are that large companies will have to do more for their subcontractors in the developing countries than in the more advanced ones; and that, as a rule, they will provide those services which industrial extension centres are unable to supply.

### Subcontracting exchanges

In recent years, a new type of facility to promote subcontracting - the subcontracting exchange, also called engineering capacity exchange - has been established in a few West European industrial countries - France, the Netherlands, the United Kingdom, Spain and Sweden, and projects are being considered in some other countries - Argentina, Chile, Greece, India and Turkey. All these countries have an important small industry sector and it is the lack of information on the capacity which it could make available for subcontracting work that leads to the creation of exchanges, which are clearing houses for bringing together demand and supply for such transactions.

A subcontracting exchange is, basically, a simple facility consisting of a card-index system, a telephone and a small staff. Simple as the facility may be, the card-index system containing information on the capacity and specialization of small firms must be quite elaborate and must be continuously kept up to date. The staff should consist of an experienced engineer heading the exchange, an assistant and some clerical personnel. The head of the exchange should present an unusual combination of abilities: advanced knowledge of technologies, thorough administrative skill, and talent in public relations, even in diplomacy. He should have first-hand knowledge of the enterprises which he should bring together, and of their requirements and resources. Thus, the system is simple, but it is not simple to set it up and operate it. 2/

Subcontracting exchanges were first established in France about 15 years ago, under Government sponsorship. Because of insufficient use of their facilities, many of them were closed, and the remaining ones were taken over by employers' federations. The exchanges currently in operation function on a broad regional basis. Some provide management consultancy in addition to their main task.

In Sweden, a central subcontracting office set up in Stockholm provides services on a nation-wide basis. Very recently, its services were extended to cover the other three Scandinavian countries - Denmark, Finland and Norway - with which Sweden co-operates in the Nordic Union. As in France, the office is operated by the employers' federation.

---

2/ See "The Subcontracting Exchange" by E. Edwards, Document ID/WG.41/8 - CD/PNE (69)10.

In the United Kingdom, two exchanges - one in London and one in the Midlands - are operated as commercial, profit-motivated ventures.

In the Netherlands, a subcontracting exchange under the name of BOTU (Bevordering Onderlinge Toelevering en (uitbesteding)) is operated by the Metal Industries Federation centered in Bilthoven near Utrecht.

There is undoubtedly scope for subcontracting exchanges in those developing countries where ancillary relationships can be promoted on a large scale. Most probably, the exchanges would need to be set up under Government sponsorship and would maintain the closest possible relationship with industrial extension centres. In view of the decisive role of technical and managerial assistance in the development of subcontracting, there would often be advantages if the exchanges were operated by the centres.

It has been suggested, in connexion with the closing down of several exchanges in France, and with the undertaking by the surviving ones of management and technical counselling in addition to their basic clearing house activities, that the exchange was a self-destroying instrument. Once firms have been brought together, they tend to continue to work together without further calls on the exchange and, after a few years, the usefulness of the exchange comes to an end - its task has been fulfilled. This view, however, is likely to be incorrect in a perspective of long-term growth of industry, both large and small, in which the needs for inter-industry servicing will themselves grow and become increasingly diversified; the need for information on capacity available for subcontracting will not decline in such a case. What probably happened in France was that too many exchanges, each of which covered too small a territory, were originally set up, and that the disappearance of a number of them was due more to this reason than to the lack or slackening of over-all demand.

In other developing countries, their functions could be assumed by the industrial extension centres as one among their various activities, without setting up a special institution and evolving elaborate methods and procedures.

#### Ancillary industrial estates

Specialized industrial estates for subcontractors have been set up in India and Japan. In India, the Hindustan Machine Tools factory (H.M.T.) in

Bangalore, a public-sector undertaking, built in 1960 an industrial estate for small enterprises manufacturing parts, components, castings, forgings, accessories and packing cases for machine tools. About 50 small units selected by H.M.T. occupy factories of three different sizes - 1,500, 3,000 and 4,500 square feet (133, 271 and 418 square metres), rented on reasonable terms. H.M.T. provides raw materials and stores at cost plus overhead; free technical advice for setting up the unit and for manufacturing the parts and components ordered by it; training of workers at a nominal charge; and technical inspection, tooling and testing at moderate cost. All the machinery of the subcontractors is owned by them; much of it was obtained on hire-purchase from the National Small Industries Corporation, H.M.T. standing surety for regular payment on behalf of the ancillary units, thereby reducing the amount of normal earnest money from 20 to 5 per cent.

The occupants are under the obligation to execute all the orders given by H.M.T. at rates fixed by the company for proprietary items and articles in substitution of imports. For indigenously procurable items, H.M.T. invites open tenders from firms in and outside of the estate and the rates are fixed on the lowest offer. Preference, however, is given to ancillary units in the estate in regard to rate as well as orders' placement. For instance, if the lowest tender is from an outside firm which happens to be large-scale, a price preference up to a maximum of 10 per cent is given to the unit in the estate. In some cases, H.M.T. negotiates the order with the ancillary units in the estate so that the order can be distributed at the lowest rate between the estate unit and the outside firm. This is found to be advantageous by H.M.T. since it can depend on more than one source for supply in case the outside units are unable to meet delivery schedules. Also, inspection is facilitated if the orders are executed by units in the estate. The units in the estate may use their surplus capacity to manufacture for the open market.

The units on the Bangalore ancillary estate are evidently "captive" from a business and management standpoint, but they are well-equipped, use advanced technologies and produce items of very high quality. It is difficult to say whether H.M.T. set up the estate because of government directives so as to provide a demonstration of what could be done to promote the development

of ancillary relationships; or whether the large factory considered itself that it could not obtain the parts it needed, in the required volume, quality and time, from existing units in Mysore State or other nearby states, and had therefore to resort to the industrial estate as the only means of achieving this result. Perhaps both reasons explain the project.

In 1967-1968, the occupants of the estate produced at the extremely low rate of about 15 per cent of capacity. The main reason was evidently the recession which cut short new investment and demand for producers goods in the country. It is quite probable that the ancillary units of H.M.T. suffered more than the average small-scale industry in India, since H.M.T. was itself seriously affected by the recession and passed it on to its subcontractors. The situation might however have been different in an industry manufacturing durables of other types, less affected by the slow-down, but the fact remains that captive subcontractors share more directly both the fortunes and the vicissitudes of their "parent" companies.

Another ancillary industrial estate has been set up in Madras with the help of a private manufacturer - Enfield - India, a major producer of motor cycles and scooters and of engines for industrial and agricultural use. In 1961, Enfield assisted in setting up a co-operative industrial estate for its subcontractors. The co-operative built 20 factories on the estate, of a total covered area of 60,000 square feet (5,574 square metres), with financial assistance from the Government and from the large firm. Enfield built a tool room with the necessary machinery, which supplies the occupants with dies, jigs, fixtures and other toolings. The company provides process sheets, drawings and specifications; technical assistance in selection, installation and maintenance of machinery, in production and in quality control as well as in production planning and scheduling; and raw materials when the units are unable to obtain them from other sources. Financial assistance is given by the company in the form of advance payment towards unexpected capital expenditure such as an increase in the cost of machinery, the advance payment is recovered from the units in instalments. The purchase prices of the parts and components are fixed according to mutually agreed formulae; payments are made against delivery.

Enfield is reported to purchase from the small-scale sector 1650 parts and components valued at Rs.20 million out of 2000 parts and components valued at Rs. 25 million the remainder is purchased from the large-scale sector. Enfield subcontracts with 540 enterprises, of which 450 are small-scale and 90 are large-scale industries.

The case of Enfield is probably more significant for the promotion of subcontracting in the developing countries than that of H.M.T. As a rule, large industrial enterprises, whether publicly- or privately-owned, would not consider bearing themselves all or the largest part of the sizable investment costs of developing land and building the standard factories of an industrial estate. On the other hand, giving assistance to private groups, especially co-operatives, in developing their own industrial estates in the vicinity of the large plant, may be an enlightened form of self-interest on the part of the contractor. It is likely, however, that in developing countries where no or very few government-sponsored industrial estates exist, it would be hardly possible to encourage the development of co-operative estates at such an early stage. The experience of India indicates that co-operative industrial estates could develop only after the government-sponsored industrial estate programme demonstrated its worth. There are reasons for believing that, with proper support from the Government of India, more private large companies could be induced to help in setting up co-operative ancillary estates, and that such developments could also be expected, some time in the future, in other countries having important government programmes for the establishment of industrial estates.

In Japan, where co-operative associations in general, and subcontractors' co-operatives in particular have become very important, the Government has given special encouragement to the establishment of co-operative ancillary industrial estates.

As part of a general programme to encourage small industries to move to special areas of the country<sup>10/</sup>, loans are extended to subcontractors' co-operatives for acquiring and developing land and building factories in

---

<sup>10/</sup> In 1965, 94 "factory areas" were designated as eligible for special government assistance to small-scale industries moving there; of these, 10 were allocated to groups of subcontractors belonging to the same parent company; 12 to groups of small enterprises in need of modernization at traditional producing centres; 13 to groups evacuated from overcrowded districts, and 59 to groups evacuated because of "public damage".

designated areas. To be eligible, the co-operatives must consist of at least 20 enterprises engaged in the same kind of manufacturing or having correlated activities. Two thirds or more of the members of the co-operative should be companies with a capital of less than one million yen (US\$ 2,800) or employing less than 300 workers. The groups settling in the "factory areas" should belong to the same parent company. It is quite probable that assistance for the establishment of the ancillary estate is also provided by the parent company.

#### The role of private groups

As stressed earlier, government-sponsored agencies such as the industrial extension centres will play a major role in the promotion of subcontracting in the developing countries. Much support, however, can be expected from private groups, such as trade associations, chambers of commerce and industry and co-operatives of subcontractors.

As a rule, trade associations, including federations and confederations of small-scale industries, are more concerned, in most countries, with the protection of the interests of their members than with their promotion. Most of these organizations engage primarily in union activities and "lobbying" with governments. These activities are undoubtedly necessary and useful, but much would be gained if the trade organizations also endeavoured to complement the promotional efforts of the government agencies.

It is quite probable that, as the small-scale industry sector grows in the developing countries, the resources of the industrial extension centres will not expand in the same proportion. It will be desirable for the Government to encourage measures of self-help by the small producers. Trade associations and chambers of commerce could undoubtedly provide some counselling in technique, management and marketing, organize training courses, undertake market and other surveys, facilitate financing, and so on<sup>11/</sup>. So far, however, in most developing countries, such organizations have either never considered engaging in such activities or have been reluctant to do so - for both organizational and financial reasons. The absence of measures of encouragement on the part of the Government has probably also been a factor.

---

<sup>11/</sup> In Denmark, industrial associations provide services to small firms through their own consultants. Government subsidies cover about 50 per cent of salaries and direct expenses for such services, the remaining 50 per cent is covered by fees charged to client firms.

There are, however, reasons to believe that trade associations and chambers of industry could be induced to provide some assistance in the field of subcontracting. Such organizations, especially when they include industries of all sizes, are extremely well placed to provide information on needs and resources in their respective geographical areas, and the facilitation of transactions among their members would probably be considered by them as a legitimate activity. The fact that, in some countries, members of such organizations have greater trust in them than in government agencies would be a contributing factor. It is no accident that, in France, the Netherlands and in Sweden, subcontracting exchanges have been set up by employers' federations. In the United Kingdom, the Engineering Industries Association, a trade association of small engineering firms, regularly publishes bulletins giving information on equipment capacity available and being offered by members for subcontracting as well as details of work for which subcontractors are being sought.

In many developing countries, however, exchanges or clearing house functions would probably, as suggested earlier, need to be set up or carried out by extension centres, but close co-operation with chambers and associations could and should be achieved.

Subcontractors' co-operatives are highly developed in Japan, particularly in the automotive, ship-building and electrical appliance industries, where thousands of subcontractor firms are so organized. These co-operatives conduct a wide range of services for their members including assistance in finance, education, information, joint labour control, joint purchasing, joint manufacturing and the like. Financial assistance to subcontractors is estimated to be provided by nearly 90 per cent of these co-operatives. This is particularly significant in view of the fact that payment conditions by large contractors hold such importance to the subcontractors. Financial assistance is mostly rendered by discounting bills and re-lending loans. The paper used for discounting consists mostly of bills receivable from large enterprises. Most of the subcontractors' co-operatives rely on the Central Bank for Commercial and Industrial Co-operatives to obtain funds for lending to their members. The co-operatives are also instrumental in increasing the



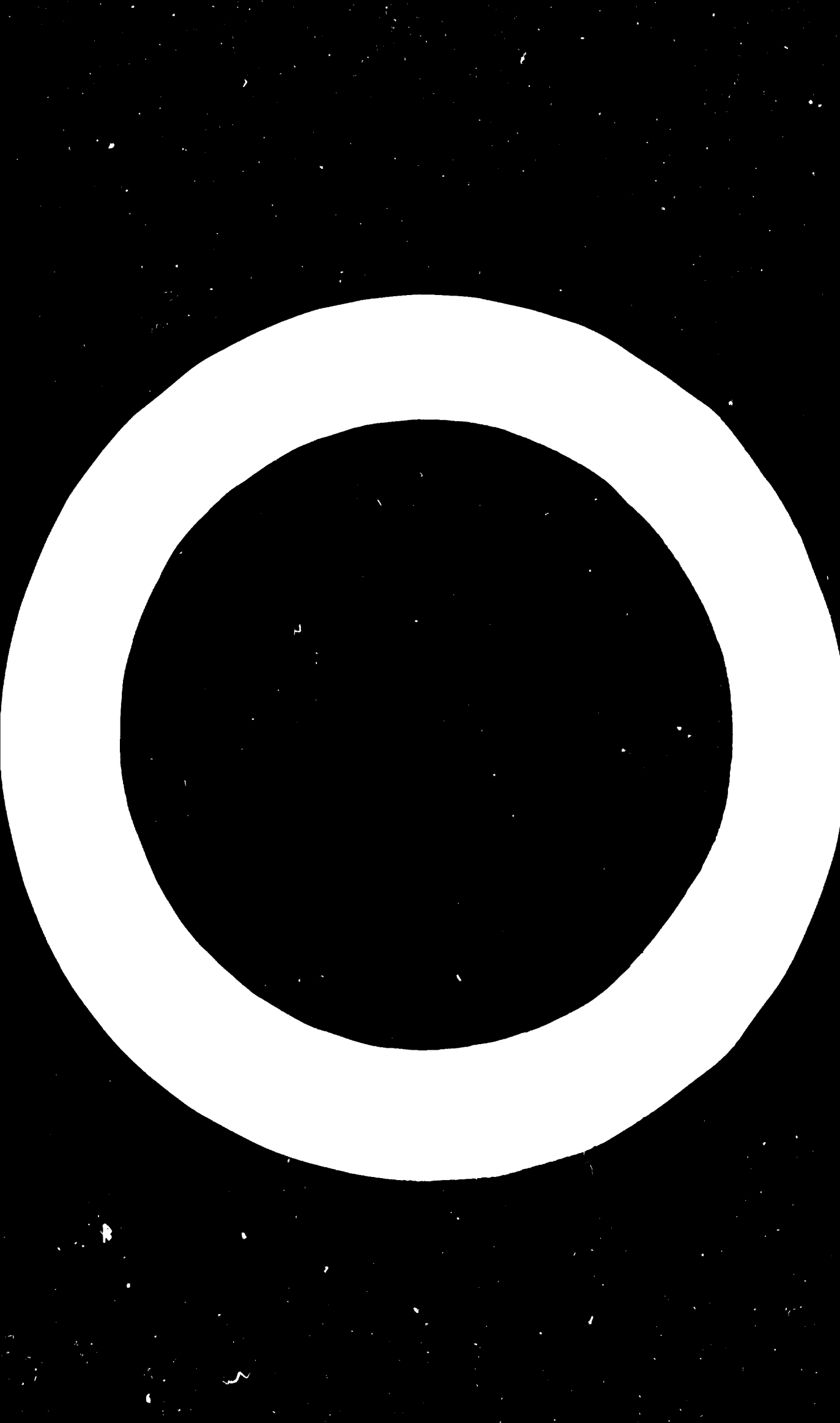
productivity of their members through various management and technical assistance measures and help in obtaining legislative and other protective benefits.

A particularly useful function that could be carried out by private groups would be to help in drawing up subcontracting contracts, in particular by providing well-informed legal counsels.

The drawing up of a subcontracting contract represents, like other legal contracts, a private agreement between the parties involved. The terms of reference, conditions and policies with respect to the stipulations agreed to will usually differ from case to case.

The subcontracting conditions may cover such topics as: terms of payment; pricing policies; shipment conditions; cancellation clause; quantity of orders; variations; liabilities accepted; insurance limitations; prosecution of work, delays etc.; surety bond; permits, licenses, fees, taxes etc.; changes, additions and deductions; disputes, terms of labour agreements.

Until subcontracting practices have prevailed in a country for some time, during which a learning process is acquired, there will be occasional malpractices carried out by both contractors and subcontractors. These malpractices might affect any of the above items. Trade associations or associations of subcontractors might help in the negotiations, might draw up uniform standards in legal matters, and might even serve as arbitrators in disputes. As stated earlier, some legislative action might also be needed to correct abuses.



Annex

## SUMMARY LIST OF PARTS AND COMPONENTS

The parts and components, the production of which may be subcontracted under the various categories of industries listed by the Government of India, include the following among others.

(1) Industrial machinery

In this category, the production of the following parts and components may be subcontracted:

grey iron castings	- pump bodies, bed plated, gear wheels etc.
steel castings	- gears, liners, trackets etc.
non-ferrous castings	- bushes, bearings, impellers etc.
fabricated components	- brackets, mounting pads etc.
forgings	- handles, fulcrums, levers etc.
complete components	- circulating pumps, fans, blowers etc.

The value of subcontracted items such as those listed above varies from item to item; in the average, it is estimated that it might account, in India, for about 10 to 15 per cent of the total cost of the complete machinery.

(2) Agricultural and earth-moving machinery

Items that can be subcontracted in this category are:

idler rollers for drive  
 bronze bushes for rollers and sprout wheels  
 U bolts for bolting idler rollers  
 chains for drivers  
 bank rollers for serving gear rim  
 hoist and crowd-out clutch handles and levers  
 brake bands  
 pawls and ratchetets for booms  
 springs of various types  
 hoist sheaves  
 grease nipples  
 tractor guards  
 shafts of various sizes  
 oil seals  
 axles of various sizes  
 cylinder lines of various sizes  
 miscellaneous brackets, screws, bolts etc.

It is estimated that the average value of subcontracted items of this type might reach in India about 15 to 20 per cent of the total value of production.

(3) Machine-tools

Parts which can be subcontracted for machine-tools like milling machines and lathes are:

Machine vices, circular table, universal dividing head and  
toil stock, spur, level, and other types of gears  
arbors  
collets  
three- and four-jaw chucks  
face plates and lathe carriers  
steady rest, knobs, pulleys  
dead centre, revolving centre etc.

It is estimated that the average value of subcontracted parts and components of this type might account for about 10 per cent of the value of a machine tool.

(4) Industrial, scientific and mechanical instruments

The components normally required under this industry group are:

bronze and steel pulleys  
soft brass  
brass and steel screws  
brass stampings  
cast iron stands  
die-cast parts  
perforated sheets  
fine wires and springs  
dials  
low wattage electric motors etc.

It is estimated that the average value of subcontracted components might account for nearly 50 per cent of the output value of this industry group.

(5) Locomotives, rolling stock, ships and aircrafts

Parts and components that can be subcontracted in this industry group include:

gauge cock fittings

boiler mountings

hand wheels

levers

handles

couplings

safety valves

axle boxes etc.

Subcontracting of these parts and components might account for about 10 per cent of the value of the products. In India, nearly all subcontracting units in this group supply almost exclusively to assemblies. This may be due to the fact that the replacement market for these items is very limited.

(6) Bicycles

The bicycle industry is essentially an assembly industry and subcontracting can account for 50 to 60 per cent of the value of the complete product. Standardization and the consequent inter-changeability of parts and components have given impetus to the development of this industry. The bicycle industry is claimed to be one of those best suited for development on a geographically decentralized basis.<sup>12</sup> There is also an important replacement market in this industry.

(7) Boilers and steam-generating plants

There are few large-scale manufacturing units in this industry group in India and the scope for subcontracting has so far been limited. It has been estimated that the value of components which could be manufactured by subcontractors might amount to about 5 per cent in the case of pumps and steam-generating plants and about 10 per cent in the case of boilers.

../.

---

12 A study of the contribution of small-scale industries to the production of bicycles is being published by UNIDO under the title: Small-scale Manufacturing, No.1: Bicycles.

(8) Steam engines, turbines and internal combustion engines.

Parts and components that can be subcontracted under this industry group are:

forging stop to forging crank shaft connecting rod, cam shaft  
machining of crank shaft, cam shaft and connecting rod  
machining of liners and pistons  
main bearing  
valves and valve guides  
gudgeon pin, connecting rod bolts  
stud and key-sets  
air and oil filter  
fuel tank, silencer and other parts

Subcontracting of these parts and components might account for about 20 per cent of the value of output.

(9) Automobiles

It is well known that the automobile industry offers wide scope for subcontracting. In many countries, the percentage of the total value of production of the automobile industry contributed by subcontracting units is of about 50 to 60 per cent. Following is a partial list of automobile component parts, components and sub-assemblies which can be subcontracted:

Engines

pistons  
piston pins  
piston pin bushings  
piston pin retainer rings  
piston rings  
crankshaft bearings (steel backed white metal or copper lead)  
roller chain  
valves  
valve springs  
radiator  
radiator cap  
fuel tank cap  
exhaust muffler  
exhaust pipe  
tail pipe  
fuel lines  
carburettor  
fuel pump

injection pump  
fuel filter  
oil filter  
fuel hose  
oil hose  
air cleaner  
cylinder casket (all types of casket and packings)  
nozzles  
nozzle holders  
fuel pump elements  
delivery valves  
thin walled bearings  
ball bearings  
boden cables  
all types of oil seals  
bolts, nuts, screws etc.

Clutch, transmission, propeller  
shaft and differential

clutch plates  
clutch facings  
clutch carbon or bearings  
clutch spring  
clutch pressure plate  
clutch cover  
universal joint  
propeller shaft  
transmission bearings  
disc wheel  
wheel bolts and nuts  
front and rear wheel bearings  
differential bearings  
oil seals  
brake liners  
grease nipples  
bolts, nuts, screws etc.

Chassis frame, front axle  
and steering

leaf springs  
spring brackets, shackles, hangers (cast types)  
shock absorbers  
hydraulic brake system  
vacuum serve or air brakes  
brake cables  
brake fluid  
ball bearings  
roller bearings  
taper roller bearings  
bolts, nuts, screws, etc.

### Electrical Equipment

dynamos  
starter motors  
battery  
starter cables  
wiring harness  
ignition coil  
sparking plugs  
distribution with vacuum control  
voltage regulator  
all types of electrical cables  
all types of ignition switches  
head lamps  
tail lamps  
side lamps  
fog lamps  
stop lamps  
spot lights  
control lamps  
direction indicator  
flashers  
stop lamp switches  
horn electrical  
horn buttons  
electrical bulbs  
bulb sockets  
wind shield wipers  
electrical fuses  
electrical fuse boxes  
contact brake points

### Rubber parts

tyres  
tubes  
flaps  
fan belts  
all types of rubber hoses  
bulb horn  
weather strip  
door buffers and similar other rubber components  
silent block or resilient mountings

### Body

door locks  
hinges  
windows for bus and trucks  
seats for bus and trucks  
safety glass (laminated or toughened)  
window regulators  
window guides



ornamental fittings  
upholstery materials  
trimming materials  
rear view mirrors  
dash board instruments  
ammeter  
speedometer  
flexible shafts for speedometers  
oil pressure gauge  
fuel gauge  
air pressure gauge  
thermostat  
paints, lacquer, varnishes  
sun shade  
sun visor  
luggage carrier  
mascots and motifs  
ash trays  
door handles  
bolts, nuts, screws etc.

Service equipment

tool kits  
starter handle  
tyre levers  
mechanical and hydraulic jacks  
hand and foot tyre inflators  
air pressure gauges  
lubricating equipment

(10) Commercial office and household equipment

Parts and components which could be manufactured in small-scale sub-contracting units in this industry group include:

manufacture of automatic and drawer locks  
ball bearings  
paint manufacturing unit  
plastic cane unit  
castor wheels  
label holders and handles

manufacture of seam welded tubes  
metal labels  
machined screws and nuts  
wooden frames and handles.

The value of these components might vary from 5 to 50 per cent depending on the major product. The scope for development seems to be immense, especially as electrical household equipment becomes popular.

(11) Electrical machinery, equipment and appliances

Important items of machinery and equipment that come under this industry group include motors, transformers, switch gear, starters, relays etc., all of which offer great scope for subcontracting units. It has been estimated that parts and components worth about 20 per cent of the value of motors, 25 per cent of the value of transformers and 80 per cent of the value of switch gear could be made by subcontracting units.

(12) Telecommunications equipment

There are very few large-scale manufacturing units in this industry group in India. The Indian Telephone Industries, Bangalore, which is the most important unit in this line, has developed an ancillary unit to supply cables, induction coil and relay adjusting. The subcontracting unit is located close to the parent unit, and supplies its entire production to it.

(13) Industrial instruments (electrical)

There are few large-scale manufacturing units in this industry group in India and subcontracting is little developed.

(14) Radios and electronic equipment

As in the case of bicycles, the radio receiver industry has benefited by standardization and interchangeability of parts. It has been estimated that components and parts worth about 50 to 60 per cent of the cost of a radio receiver could be supplied by subcontracting units.

(15) Air-conditioners and cold storage equipment including refrigerators

The parts and components which could be made by subcontracting units in this industry group include:

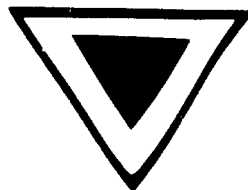
../.

air filters  
condensers and heat exchangers  
cooling towers  
nozzles for cooling towers  
ducking  
expansion valves  
dehydration unit  
compound, pressure and temperature gauges  
copper tubing with nipples etc.  
relays  
thermostat

It has been estimated that these components would account for about 15 to 20 per cent of the value of the finished product.

(16) Mineral oil and petroleum industries

This industry, and in particular the manufacture of equipment for marketing of refined petroleum products, is the latest addition to the list drawn up for intensive development and only a few small enterprises work as subcontractors.



7.7.72