The quest for alternative strategies in the context of the Indian development experience has gained urgency as the passage of time has made clearer the shortcomings of the trajectory of growth which we chose 40 years ago. This trajectory, whose clearest expression is found in the Second Five Year Plan, was based on the Dobb-Sen principle of the postponement of consumption in the current period in favour of reinvestment of surpluses in capital intensive, heavy and basic industries. A reassessment of this strategy would therefore involve an appraisal of (1) the extent of the benefits associated with it and (2) their translation into higher levels of living for various sections of society. While a complete delineation of this task is beyond the scope of the present essay, we shall confine ourselves to two pertinent observations.

First, employment generation was never an integral part of the modernization strategy. A capital intensive industrial modernization and development plan meant that the scope for employment generation in the industrial sector was limited. The Mahalanobis model assigned to the khadi and village industries the dual role of employment generation and the production of wage goods. This employment generation was howwever meant to take place in the near absence of technological change. This was to prevent technological unemployment in the short run, regardless of the compensatory output expansion based employment benefits in the longer period (Karve Committee Report 1955). Hence the policy did not provide means for integrating the sector with a rapidly changing social and economic environment, with the result that it could fulfill these functions with only very limited success. At the beginning of the financial year 1990-91, the backlog of employment using the usual principal status criterion was 13 million person years, which increased to 16 million and 20 million person years when the current weekly status and the current daily status criterion respectively was used (Planning Commission 1990).[1] As Table 1 shows, open unemployment, as measured by usual status increased between 1972-73 and 1987-88. However, daily status unemployment, which is a more comprehensive measure has shown a decline. Since this measure also includes underemployment, we may conclude that there is a trend towards open unemployment at the expense of what was previously underemployment. Employment in the organized manufacturing sector has only grown by 1.44% per annum between 1973 and 1987 (Planning Commission 1990).

1. These figures are the projection of unemployment figures for the 43rd Round of the NSS (1987-88) on the population estimates for 1990-91.

Table - 1

Unemployment Rates

No. of Persons Unemployed per 1000 persons in the labour force

Year	Measure	Unemployment Rates			
		Rural		Urban	
		Male	Female	Male	Female
1987-88	U.S.	18	24	52	62
	C.W.	42	44	66	92
	C.D.	46	67	88	120
1983	U.S.	14	7	51	49
	C.W.	37	43	67	75
	C.D.	75	90	92	110
1977-78	U.S.	13	20	54	124
	C.W.	36	41	71	109
	C.D.	71	92	94	145
1972-73	U.S.	12	N.A.	48	60
	C.W.	30	55	60	92
	C.D.	68	112	80	137

Note: U.S. = Usual Status (excluding subsidiary status workers).
C.W. = Current Weekly Status.
C.D. = Current Daily Status.

Source: Government of India, Ministry of Planning 1990.

Second, the lack of sufficient employment generation meant that redistribution of income could not take place in the course of the growth process, but had to be grafted on from the outside. Re-distributive schemes have tended to be piece-meal and inadequate in their coverage; their success depending solely on their implementation, which, as has been well documented, has left a lot to be desired.

It is therefore imperative that these issues are addressed and brought to the forefront of any new developmental strategy. It is our contention that an essential element of such a strategy is a greater decentralization of manufacturing production based on a system of subcontracting from the large to the small sector. The reasons for this are manifold. First, in any strategy of development the manufacturing sector has to occupy a position of centrality to be able to capture the benefits from the fruits of progress. The linking of the large and the small sector has important implications for the diffusion of skills,

technology, employment throughout the economy. The small-scale sector has proved far more labour using than the large sector,[2] and emphasizing its production can be an important source of employment generation. Second, such a strategy facilitates a greater spatial spread of industry and a possibility of regional diversification as the monolithic structure of the production process is broken up. Third, the possibility of a reduction in the concentration of ownership by big industry also exists as barriers to entry are lowered by the reduction in the size of initial investment required as a result of the splitting up of the production process.[3]

This essay is a preliminary examination of the possibilities of decentralized production in the economy and the issues involved therein. We shall have occasion to discuss all of the above propositions in greater detail and severely qualify some of them. We shall not consider commercial subcontracting of the type practiced by the large (predominantly multinational) sector in the consumer goods industry where it buys up the production of one or more small industries (see Appendix 1 for some examples of this). This practice only serves the limited purpose of utilizing the comparative advantage of multinationals in the field of marketing and distribution with very few advantages in terms of technical diffusion. It is therefore worth discussing whether marketing and distribution of consumer goods is the optimal role which foreign investment should play in the economy. Thus it is industrial subcontracting we are mainly interested in. This could be defined as an aspect of the organization of production which involves some participation of the large unit in the production process of the small firm. In other words, industrial subcontracting is an inter-firm contractual relationship where the sub-contractor performs a given task within the production process (such as production of materials, parts, components or performance of sub-assemblies or assemblies) for the sub-contractee according to the latter's technical parameters and design specifications. This involves informal cooperation in production and very often in investment decisions as well.

At the outset, it would be desirable to make clear what we mean by decentralization, at least in the sphere of manufacturing production[4] and discuss how it has been conceptualized in our economic policy in the context of the small sector. The earliest discussion of decentralized development in official policy documents can be found in the Report of the Village and Small Scale Industries (Second Five Year Plan) Committee

---

2. In the small sector (i.e. factories employing less than 100 workers), the ratio of employment to output was 0.44 in the 1980s as opposed to the larger factories where it was only 0.15 (Planning Commission 1990).

3. There may be, however, a possibility of erecting other barriers to entry. As has been seen in Japan, one of the major problems faced by new non-Japanese firms is the replication of the intricate network of subcontracting firms which domestic firms enjoy based on ties strengthened by years of custom and loyalty. However this may not be detrimental to national interests if it provides an edge to products both in the domestic and the international markets.

4. While decentralization in the political and economic sphere would call for alternative systems of governance which would necessarily affect the organization of manufacturing production, a discussion of these will be beyond the scope of this essay.

(1955), commonly known as the Karve Committee report. The pattern of the economy envisaged by them was

> "... one composed chiefly of small decentralized units of economic activity in which the increase in scale required in any activity is brought about chiefly through mutual cooperation, horizontal and vertical, and in which centralization and large scale operation are resorted only to the extent necessary to derive appropriate advantage from modern technology." (Karve Committee Report 1955, p.2).

This Committee was required to frame its recommendations for the development of the small sector keeping in mind the following objectives:

> "1. that the bulk of the *increased production* during the Plan period of consumer goods in common demand has to be provided by the village and small scale industries;
> 2. that employment provided by these industries should progressively increase;
> 3. that production and marketing in these industries is organized, in the main, on cooperative lines." (p.3, emphasis added).

This decentralized framework of the economy was sought to be achieved by measures which included reservation of spheres of production (notably in consumer goods) for the small sector, the imposition of a cess on large industry, arrangements for supply of raw materials for the small industries, coordination for research, marketing, and training etc. Such measure were thought essential not only in terms of achieving the desired industrial structure, but also for the provision of cheap consumer goods. As the Report put it,

> "Consumer goods may be taken to be the end product of the process of economic development. The building up of the complex structure of modern economy systematically from the base involves *some postponement of the availability of consumer goods produced through modern processes* otherwise a consumer goods structure will develop which for all practical purposes rests on the underlying base of producers goods industry and super-structure (sic) of important services of foreign economies. It would thus be an advantage for the economy if in the building up of the modern structure it could *for some time* rely on the production of consumer goods from another source." (p. 16, emphasis added).

There is a curious dichotomy between the stated objectives and the means chosen to achieve them in the Karve Committee Report. On the one hand it talks of the small sector as the foundation on which the entire process of decentralized production is based; on the other it seems to imply that the production of these consumer goods by the village and cottage sector is in some way temporary and this trend will be reversed as soon as the economic compulsions underlying it are removed (see emphasized portions of above quotations). This coupled with the policy of reservation which merely reserved the *additional production* of certain goods for the small sector meant that the presence of large units was not curtailed in any significant sense. In fact, the legislative framework and

concessions granted to the small sector provided strong incentives for the practice of commercial sub-contracting and for the presence of the large sector in the small sector. Genuine decentralization of the sort which ensured that local markets were catered to by local production based on a diversified system of ownership did not take place. Nor did the influence of the large sector in the economy and polity diminish, in fact it was reinforced by developments in the "modern" sector where massive public infra-structural investment and the industrial regulatory structure biased the benefits of the system in its favour (Corporate Studies Group 1983).

Thus the official discussion on decentralization of manufacturing production is somewhat inadequate and contradictory. It is our contention that genuine decentralization rests on the devolution of power to the small units to enable them to develop a bargaining position which can combat the onslaught of the larger units effectively. Half hearted policy measures such as reservations and relief packages for specified target groups are not enough. In what follows, we shall attempt to identify some of the areas where the bargaining power of large units is manifested vis-a-vis the small units and caution that in the absence of appropriate action in these spheres, any talk of decentralization is meaningless (See Section 4).

The organization of this essay is as follows. In the second section, we shall examine the theoretical literature on subcontracting and discuss various approaches within it. We shall argue that both the new institutionalist as well as the Marxian streams ignore certain important dynamic questions of technology and labour control in their approaches which should be taken into account for a more complete understanding of the question. In the next section we will discuss the experience of some countries where such strategies have been adopted, notably Japan and Italy, and argue that whereas there are several features of these countries' experiences which are specific to them, scope for generalization of their strategy exists, with an important role to be played by the government. The fourth section will consider the success (or otherwise) with which subcontracting arrangements are already working in India, and existing policies which are conducive or detrimental to their functioning. It will explore the scope of subcontracting in manufacturing in India and caution against an across-the-blanket acceptance of such a policy without a consideration of the specific features and history of large-small interaction. This section will unfortunately be somewhat meagre due to the paucity of secondary data on these issues and will draw heavily on existing case studies of industries and areas. The concluding section will set out the agenda for further research and possible fieldwork.

The neo-classical institutionalist literature provides one approach to the study of the

problem of subcontracting at a micro level, although in a somewhat indirect fashion. The issue it addresses is the reasons for the existence of the firm in a capitalist economy within which it studies the rationale for the choice which each firm faces between buying and making a good.[5] The terms of discussion were set out in a seminal paper by Coase (1937) which analyzed the make/buy choice in terms of the transactions costs associated with each option. In other words, in a world of incomplete information and imperfect foresight, the task of using the price mechanism is not cost-less and expenses are incurred in discovering relative prices, and negotiating, concluding, policing and enforcing contracts. Efforts to minimize costs therefore include efforts to cut down on the use of the price mechanism by choosing the "make" option over the "buy" option. The former is preferred because it eliminates the need to conclude a series of contracts with several suppliers and replaces it by a single incompletely specified contract[6] between the producer and the labour. The limits to this option are reached by what is termed as "decreasing returns to management" which are set against the transactions cost benefit in making the choice.

Subsequent literature in this genre (Williamson 1975, Alchian & Demsetz 1972, Alchian, Crawford & Klein 1978, Aoki 1984) has worked within this framework to develop theories of contracting. Thus, Williamson focusses on uncertainty and bounded rationality as the main reasons for preferring intra-firm to inter-firm transactions. The former implies that it is very costly or impossible to anticipate all future contingencies and specify ex-ante contractual safeguards to prevent opportunistic behavior, making it necessary to supplant the market by internal organization. The latter, on the other hand, explains why there are limits on the firms transactions at all, i.e. why the firm does not fully replace the market due to limits to the management function. A similar view is taken by Alchian, Crawford & Klein (1978) and Aoki (1984) who see the problem as one of appropriation of quasi-rents on specific assets[7] as detrimental to inter-firm transactions.

---

5. This literature views the firm and the market as two distinct organizational forms. Williamson (1975) is a typical example of this.

> "Markets and firms are alternative instruments for completing a related set of transactions. Whether a set of transactions ought to be executed across markets or within a firm depends on the relative efficiency of each mode." (p.8)

These instruments are distinguished by the fact that the firm embodies conscious intervention whereas the market is an uncoordinated entity where rational pursuit of self interest leads to desired results. In other words, firms are " islands of conscious power in a sea of unconscious cooperation " (Robertson 1930, in Coase 1937). This differs significantly from the Classical school (Smith, Marx, and their adherents) who sketch a crucial link between the market and the organization of production, and view them as complementary rather than alternative institutions.

6. This implies that the employment contract is of the form giving the producer jurisdiction over the labourers' time for a specific period. The labourer can be compelled to perform any of a broadly specified range of tasks without a separate contract having to be written for each of them. This is in contrast to the sales contract where each fresh transaction has to be specified resulting in higher transactions costs and consequently lower welfare gains (Simon 1951).

7. These are assets whose usefulness is limited to a particular user, e.g. trademarks, machines

Only in a situation of repeated interactions where penalties can be imposed on the defaulters in subsequent periods is contracting out a feasible scenario.

Another common feature in this literature is the repudiation of the role of technology in determining contractual relationships.[8] This is somewhat surprising since a recognition of technology as a factor in this analysis could add an element of dynamism to the theory which is conspicuously missing. The statement that given technology, transactional costs are the consideration on which contractual relationships are decided is a somewhat trivial one since one of the determining features of the magnitude of transactions costs is technology and its diffusion and assimilation in the economy. Changes in technology may cause changes in transactions costs and may alter the firms "make/buy" choice. This is especially conspicuous in the case of specific assets (Alchian, Crawford & Klein, 1978) where the specificity of the asset may decline when its use is more widely diffused in the economy. Consequently, the firm may find it advantageous to vertically disintegrate and farm out what was previously in-house production.

The classical school, on the other hand, following Adam Smith's well known dictum that "the division of labour is limited by the extent of the market" have looked at the issue of inter-firm division of labour in a more macro context. The main proposition is that when the size of the market expands sufficiently for economies of scale to be realized, it is advantageous for a greater division of labour to take place between firms (Stigler 1951). Consider a firm which is undertaking several processes to produce a finished product. Some of these processes may be carried out at uneconomic scales due to insufficient demand for the intermediate good produced by it. However, as the market expands, demands for the intermediate goods also increases proportionally and their production can be farmed out to other producers who can manufacture them at an economic scale. Thus, according to Smith's proposition, we would expect to find a tendency for disintegration in growing industries and a tendency to integration in declining industries.

While this view presents a more dynamic scenario, it is assumed that economies of scale are realizable only when production increases. This may not be a very important factor in the modern world where size is not a determining factor for production and economies of large scale production do not obtain due to the skill-intensity of the process. Also, computer aided technology and flexible production processes make the concept of returns to scale somewhat redundant. In addition to this, increasing product differentiation would also mean a reduction in the batch size of at least specialized components which

---

which are used for a specialized purpose, trained human capital etc. Since such assets commit a firm very heavily to a particular supplier and vice versa, the possibility of post-contractual opportunistic behaviour means that either of the two parties (usually the one who can make the more credible threat, depending on bargaining power and the ease of alternative sourcing) can expropriate quasi-rents accruing to the asset.

8. For example, Williamson, 1975: "Transactional considerations, not technology, are typically decisive in determining which mode of organization will obtain in what circumstances and why." (p.2)

could usefully be taken up by the small sector.

It is our contention that control over the labour process plays a very important role in determining the decision to make or buy, which is vitally linked to the question of technological diffusion and the standardization of technology. While Marx, and following him Braverman (1974) discuss the nature of control exercised by the capitalist over labour and the production process,[9] the implications for the issues we are examining are not considered. Thus, while we would expect our conclusions to be broadly similar to Stigler (1951), the route by which we arrive at them is somewhat different.

When a product embodying a new process is introduced, the firm developing it is likely to monopolize the entire production process since it is not possible to get the intermediate goods produced elsewhere in the economy. Even if the technology for such a process can be shared with a sub-contractor, it is unlikely this will happen unless it is with a supplier with whom the firm has long standing ties[10]. This is because of two reasons. First, the element of monopoly profit on the product may be eroded if the supplier leaks the process out to other firms. Second, and perhaps more importantly, since the development of the process is closely associated with human capital and machinery in a particular firm, its application elsewhere may not be possible without the direct control and supervision which takes place within the firm. Also, farming out a part of the production process may imply loss of control over that segment in terms of cost,[11] delivery time, batch size etc.

The diffusion of this technology can take place in many ways. The most common is that of skilled human capital migrating from the firm and setting up for themselves for at least a part of the production process. Since they have an intimate knowledge of the production process as well as of the market, they are in a situation to attract orders and establish a market. Also, as the production process gets more defined, it is possible to isolate sub processes as distinct entities which are amenable to easy transfer. The firm may feel that since the process is now clearly developed and perfected, with little scope for individual discretion or judgement, contracting it or parts of it out will not involve a significant loss of control over the production process. This may also be because the need

---

9. Marx differs from the neo-classical school discussed earlier in that he considers the control exercised on the labour process within the firm a necessary corollary of the discipline imposed by the market on capital. Thus, the goal of profit maximization, which provides the raison d'etre for the existence of capital compels it to extract maximum surplus value out of labour which can be best accomplished by direct supervision (Marx 1887, reprinted 1954).

10. This is what happened in Japan where large firms undertook massive upgradation and modernization of their subcontractors, with most of whom they had long standing ties, to improve the quality of their goods (See Section 2).

11. The problem of fixing a price for a newly introduced good is one which has never been examined satisfactorily in the literature. The market institution as a repository of norms and information on price matters fails us here since it does not have precedents to deal with such situations. In such circumstances, individual bargaining power becomes important, and a producer may not want to expose himself/herself to this, fearing that they may come out the losers. The same situation may also hold for the supplier.

for direct control is replaced by control embodied in the machine itself. Production outside the firm becomes less risky, and markets develop in goods and services which did not exist before. Thus, production spills out of the shop-floor and into smaller firms.

However, we are somewhat sceptical about the reintegration of these processes into the firm when faced with a declining market.The firm may find it more profitable to buoy up its suppliers rather than to restart production for itself, given the fact that it is already facing unfavourable market conditions, and may be unwilling to reorganize its own production structure. Reintegration of production may however occur due to some quantum jump in technological knowledge when small units cannot adapt due to lower technical capabilities.[12]

Thus we see that while the neo-classical literature concentrates on purely static considerations in deciding the make/buy choice, the Classical position has some elements of dynamism in it. However, this dynamism has to do more with returns to scale, while we feel that economies to scale are neither necessary nor sufficient for subcontracting to occur. Rather, it is the nature of technology, the speed of its diffusion, the need for control over the labour process which are the important features. Any study of industrial subcontracting must take these into account.

-3-

A large part of the success of the Japanese economy has been attributed to its domestic organization of production, based on strong reciprocal vertical intra-firm as well as inter-firm ties. Similarly, in recent years, the superior economic performance of some regions in Italy is being described in terms of its distinctive productive structure, characterized by a very low level of vertical integration and the preponderance of smaller firms (Brusco 1982). In the following we shall briefly review the salient features of both systems and evaluate their applicability to India.

Industrial organization in Japan has historically taken the form of either subcontracting (putting out) or subcontracting of management and employment within the factory. During 1900-1945, the petty and household producers who undertook these putting out manufacturing activities adapted to the changing times by mechanizing and by using electricity. Their presence was prominent in the traditional industries like cotton weaving and silk, and imported industries like electric bulbs, umbrellas, celluloid, rubber products (Annavajhula 1989).

The interesting feature of the Japanese experience is that when decisive structural

---

12. For example, when ITI shifted from electro-mechanical to electronic exchange line equipment, 94 of its ancillaries became irrelevant. The new equipment was made in large volumes requiring very strict quality control and production was thus not considered viable in the small sector (Annavajhula 1988).

change was taking place from light to heavy leading industries such as metal, machinery, automobiles, electronics, aircraft, in the period 1955-61, the dual industrial structure was incorporated as an important element. The small enterprises did not wither away in the face of the development and expansion of large enterprises. Industrial subcontracting developed as an integral part of the modernization and low cost rationalization programmes of the big firms. In an expanding milieu with an unprecedented introduction of technology and greater pressure from international competition, large firms concentrated their investment in core production processes and farmed out for subcontract hitherto own produced parts, components and gadgets to smaller firms. In order to reduce costs, the large firms had to increase not only their own productivity, but also that of their affiliated subcontractors. This process has been commented on by various scholars of that period, for example Shinohara in Hoselitz ed.(1968):

> "... not only with a view towards economizing fixed capital, evading the instability of business fluctuations, and making use of cheap labour, the strengthening of *keiretsuka* (vertical inter-firm hierarchy) has now also become imperative for the big enterprises in order to reduce their costs and increase their competitive export power. Consequently, this involves reshuffling and drastic rationalization of the production process of subcontracting plants." (p.75)

Thus, financial accounting systems, scientific management techniques and other guidance in technological, financial and managerial matters was passed down from the parent firm to the smaller firms down the subcontracting chain.

By the 1970s the Japanese industrial structure was like a multilayered pyramid where the apex was occupied by the parent firms, and the body made up of layers of subcontractors (primary, secondary, tertiary, quartenery and so on), each of who received orders from firms above them. This is amply demonstrated by the following.

> "According to a Survey by the Agency for Small & Medium Sized Enterprises conducted in 1977, an auto prime manufacturer had direct relations with 122 first-tier suppliers and indirect relations with 5437 second-tier suppliers and 41,703 third-tier suppliers. Adjusting for double counting, this manufacturer stood at the apex of corporate grouping fabricated by hierarchical transactional relations whose number amounted to 35,768." (Aoki 1988 pp. 39-40).

When we contrast this system of industrial organization with Western style hierarchical production[13] several features stand out in contrast. The Western system draws its efficiency from the greater scale benefits accruing as a result of specialization, saving of transactions costs, and centralization of information. As a result, it is somewhat top-heavy, with larger amounts of sunk costs in plant and equipment, larger inventories and a greater

---

13. We are undoubtedly presenting a very stylized picture of such industrial organization and possibly distorting its accuracy. This however, is being done to highlight the features of the alternative form of organization we are studying and therefore stands as a useful contrast.

vulnerability to labour problems[14]. This makes these enterprises inflexible, unable to respond quickly to changes in market conditions, and unable to sustain product differentiation effectively.[15] In contrast, a more decentralized production organization when a substantial part of production is subcontracted out to smaller firms, is not burdened by the large initial investment or inventory costs which are split up among the various units which form the composite production process. This also enables them to adapt to local shocks more effectively since they affect only a part of the production process. However, as far as coping with large shocks is concerned, such as breakdown of transportation systems or natural disasters, smaller firms may find themselves at a disadvantage since the operation of the network of small units, so crucial to decentralized production, may not be possible.

As far as the problems of effective communication and minimization of transactions costs with the smaller firms are concerned, the Japanese have evolved a novel system known as the *kanban*. The *kanban* is, formally, an order form placed in a vinyl envelope. It serves as both an order form from the larger to the smaller firm as well as a delivery notice in the reverse direction and is a cheap and effective means of communication whose usefulness increases with greater use and time. The *kanban* also serves as a channel of communication between the various departments within the firm.

Smaller units faced a different economic environment in terms of factor prices and availabilities as compared to the large. First, capital was more expensive and less available to small firms. Second, these firms paid lower wages which was feasible in a situation of labour surplus. This meant that the smaller firm was biased towards a choice of far more labour intensive techniques and helped draw surplus labour from agriculture to industry. This labour was typically hired on far more unfavourable terms than the labour in the large sector. The other notable feature was the existence of a well developed second hand market in machinery which the large firms sold to their subcontractors (Paine 1971). It has been estimated that in the 1950s the ratio of second hand to total fixed capital was 80% in real terms (Shinohara 1968, p.51). This, combined with the fact that Japanese manufacturers preferred to reform rather than abandon subcontracting in the modernization period meant that a range of techniques were used in production which would have been otherwise unutilized. The number of viable labour intensive techniques were increased. The utilization of second hand machinery by the smaller enterprises meant that the available capital was spread out more widely and was associated with a higher labour coefficient. In other words, the entire spectrum of available techniques was utilized, and not only those

---

14. It has been argued that decentralization of the production process is an attempt to decimate the labour movement by splitting up the work force and prevent it from combining effectively (Murray 1983). However, we feel that this is an essentially short run problem since industry unions, as much as enterprise level unions, have enjoyed a fair degree of success.

15. This is because the batch size for differentiated products is typically small and will therefore be uneconomic in large firms where massive capacity for standardized parts exists. In a more decentralized system, small modifications to some parts (which is the essence of product differentiation) will be easier since they will not affect the production process in its entirety.

techniques which were to the forefront of the production possibility frontier or constituted the more capital intensive techniques on the isoquant.

When we consider the case of Italy, we find some very interesting features which illustrate the working of a decentralized system in an economy which does not have a chronic labour surplus. There are many instances of industrial districts, characterized by firms with a very low degree of vertical integration. Most of these districts have monocultural zones which concentrate on the production of a single product such as knitwear in Modena, clothes and ceramic tiles in Reggio, cycles, motorcycles and shoes in Bologna, tomato canning and ham in Parma, packaging machinery in Bologna, agricultural machinery and oleodynamic apparatus in Modena and Reggio, food processing machinery in Parma and many more.

There are several reasons for the existence of such a structure. The most important reasons seem to be technological in nature (Brusco 1982) and stem from the increasing demand for varied and customized goods. The production of these goods requires that the one machine-one product link is broken as more flexible machinery is needed for making a variety of diversified parts for automobiles, clothing, shoes, refrigerators, sewing machines etc. This obviates the need for mass production techniques. The lower level of investment required for this type of machinery, makes it compatible with the needs of the smaller firms. The second technological aspect is that most of these products are manufactured by production processes which can be fragmented and are characterized by limited economies of vertical integration. This means that they can be subcontracted out easily. It is also interesting to note that the techniques used by small firms do not vary significantly from those which would be used by the large firms if they were undertaking own production, unlike Japan. This seems to indicate that the availability of a cheap, non-unionized labour force is not a decisive factor in the determination of the choice of technique.

The structure of the labour force in these areas is, however, an important feature in maintaining the financial viability of the smaller firms. The labour force in the larger firms is strongly unionized and plays an active role in wage determination and, with intermittent success, in determining the organization of work and the establishment of job ladders within the firm. The smaller firms, in contrast, are characterized by a high level of heterogeneity in their labour force which consists of highly skilled workers, homeworkers, moonlighters and pensioners, women and students. The first often prefer to work in this sector because it frees them from the restrictions of national wage agreements which place upper bounds on the incomes they can earn. The other groups are not unionized and can therefore be deprived of social security payments and other fixed components of their remuneration. This segment of the labour market is also characterized by a dispersed wage profile and a very high degree of labour market flexibility. In upswings, when demand is increasing, these workers are considerably mobile, especially the skilled workers. Wage differentials between the two segments narrow down considerably and workers are able to choose the segment in which they would like to work, weighing the security benefits of being a part of the unionized work force with the greater flexibility of working conditions, possibilities of

acquiring skills, adjustments in work schedules possible in the non unionized sector. In downswings, however, we would expect the situation to be far more grim with the unprotected workers bearing the brunt of adjustments. However, as far as individual firms are concerned, a failure of one primary firm (i.e. a firm which has direct access to the final product market) does not mean as many layoffs as would have been the case if its production had been more centralized. This is because the smaller firms who are supplying this firm can shift to other firms and are therefore unaffected by its collapse.

Another interesting feature of the small firms is the cooperative arrangements which they have made to offset disadvantages which they may face because of their small size and weaker bargaining position. There are associations which provide administrative services like obtaining raw materials and credit at the same price as larger firms, coordinating purchase and credit negotiations, book keeping and paying taxes for the smaller firms at very nominal fees. These organizations also offer technical consultancy, form consortia for marketing and for the purchase of raw and semi fabricated material.

The existence of such organizations is important because it points to the redundancy of the neo-classical argument of the determining feature of the size of the firm being transactions costs. These organizations, as well as channels of communication like the *kanban* system in Japan is proof that there are many ways of economizing on transactions costs other than undertaking vertical integration and that the crucial determinant of firm size is not transactions costs but technology. The nature of the product produced, considerations of scale, the capacity of the large firm to retain control over the production process either by machines or by direct supervision, all determine whether subcontracting is a preferred option vis-a-vis own production.

It is interesting to see that in Italy, the main advantage of decentralized production is viewed as the possibility of a more flexible production structure producing more diversified and customized goods than would be possible with mass production techniques. The one product-one machine link necessary for mass production implies that the production of capital goods is an extremely specialized and expensive affair. On the other hand, flexible production requires that this one product-one machine link be snapped. The capital goods required for this, namely numerically controlled machine tools embody a standardized technology where discretionary control over the production process by the workers is limited. Thus, the investment goods required for a flexible production structure are, paradoxically, far more standardized than those required for mass production.[16]

When considering the lessons that can be learnt from the Japanese and Italian experiences, several things come to mind. First, the relationship between the large firm and the small firm was based on the fact that most of the processes subcontracted were either technologically standardized or required intensive application of traditional skills which

16. While it is true that in some sectors production has to be highly skill intensive for customization, e.g. garments, footwear etc., this is usually the case in low technology industries.

could not be replicated in mass production, or were not subjected to increasing returns to scale in general. This coupled with the savings on wages which accrued to the smaller firms, constituted the advantage which could be got from the subcontracting practice. The hierarchical nature of Japanese society and their tradition of intra-firm solidarity spilled out to the subordinate subcontractors as well, leading to supervision and upgradation of their technology and thus ensuring that they did not get marginalized in the production process. Second, the existence of a cheap second-hand capital goods market for the smaller firms was of utmost importance as a source of cheap, non-subsidized capital. It meant that economic obso-lescence was slowed down and scarce capital resources were economized.

In Italy, the linkages between large and small firms in terms of technical assistance are not so important. This may be because the division of labour between the large and the small firms has a sound technical base and small firms undertake tasks which are advantageous to them either due to their skill intensity or because the technology utilized and the market demand are such as to make small firm production more efficient.

In the Indian context, the second issue is perhaps of a more generalizable nature. The sale of second-hand machinery by the large sector can be routed through state agencies like the NSIC (who already have a hire-purchase scheme for machinery). The other issue, namely that of technical assistance by the large firms to the smaller firms is somewhat problematic. While it can certainly be enforced in public sector enterprises, the circumstances under which it can be profitable for private sector enterprises to undertake are somewhat unclear. There is some evidence that at the time of inception several companies have extended technical assistance to smaller subcontractors (Lall 1980). In actual fact, the level of assistance required and extended varies from industry to industry, being greater for newer, growing industries with expanding markets than for older, stagnant or declining industries. This is an aspect which would require greater investigation.

The other issue is that of the nature of the utilization of the work-force in the smaller firms. As has been seen in Italy and in Japan, the labour force employed in this sector faces far greater uncertainty and lower wages than the large organized sector. In India too, as will be discussed elsewhere, the wages of the non unionized work force are much less and far more insecure than those of the organized sector. Advocating a decentralized production strategy does not necessarily mean advocating the proliferation of such a work force. As was seen in Italy, the availability of a low cost work force was not a decisive factor in the choice of technique of small firms, probably because Italy was not a labour surplus economy. On the other hand, this was certainly not the case in Japan where the availability of cheap surplus labour influenced the techniques employed. However, we cannot consider the wage cost (or as in the case of India, policies like the restriction of capacity creation in the larger firms) as the sole determinant of the make/buy choice. If this was indeed the case, the entire production of the large sector could be farmed out to the small sector. The choice of the processes which are to be farmed out and those which are to be retained is done on considerations of technology which has been seen in the case of both Italy and Japan. The point which needs to be considered is to what extent is the wage

cost advantage crucial for the existence of small firms. This would in turn throw up considerations of bargaining power of small firms vis-a-vis large firms, which determines the extent of the profit squeeze these firms face which they, in turn, try to recoup by lowering wages. In cases where the position of the small firms is unfavourable, government intervention in price and wage fixation would be of utmost importance as long as the subcontracting practice has a sound technical base. Alternatively, assistance to these firms in diversification of production and ensuring that they are not dependent on a few major buyers only could go a long way in improving their bargaining power. Also aiding the development of associations of smaller firms, as in Italy, would increase the strength of the small sector. All these measures, to the extent that they would contribute to greater profits in the small sector, would also raise the bargaining power of labour.

In fact what is at issue here is decentralization in the true sense of the term, encompassing all aspects of production, ownership, control and organization. The subordination of small firms by large would only imply the creation of a work structure identical to that of the large firms in smaller firms in a more unfavourable environment. Unless the smaller firms have countervailing power vis-a-vis the large firms, the task of securing for the workers benefits comparable with those of the organized labour force remains an extremely difficult one.

-4-

The development of the manufacturing sector in India was strongly coloured by the colonial past of the country. Unlike Japan, where the small traditional, artisan based firm was carried along in the process of modernization, the development of large scale industry in India supplanted the artisan based industry from the forefront of the growth process, vitiated as it already was by a century of competition from British imports spearheaded by imperial force. Small and medium sized industrial units experienced their brief moment of glory in the Second World War led boom when India was developed as a major Allied supply base for the Eastern theatre of the war. Government departments placed bulk orders for a variety of goods at reasonable prices. However, official patronage and government orders withered away after the War and with them, several of the small industrial units which had come up in this period (Government of India, Ministry of Industrial Development 1973 p.4).

The post-Independence initiatives to revive and promote small scale and rural industries stemmed from a belief that they would contribute to employment generation, decentralization of production and ownership, promote the development of entrepreneurship, local self sufficiency and full utilization of raw materials. A unit was originally defined as a small scale unit in 1955 if it employed less than 50 persons with power and less than 100 persons without power (Planning Commission 1955 p. 61). In

1958-59, the criterion was modified to take into account employment per shift (DCSSI 1959 p. 1). In 1960, the employment criterion was done away with and a small unit was defined as one with investment in capital assets not exceeding Rs. 5 lakhs. Simultaneously, in the Third Plan a programme of establishment of small scale industries as ancillaries to large industrial projects was also initiated. The investment limit for these industries was initially fixed at Rs 10 lakhs (Ministry of Industry and Supply 1965 p. 293). Ancillary industries have been defined as units which sell not less than 50% of their output of manufactured goods and services to one or more large industrial units (Ministry of Commerce and Industry 1959). This was thought to mark the opening up of the small sector in high technology areas. The investment limit was modified in 1966 to include only investment in plant and machinery, not total assets. Subsequent revisions have been taking place periodically and the current limit stands at Rs 60 lakhs for small scale industries and Rs. 75 lakhs for ancillaries.

The regularity with which these upward revisions is taking place is somewhat misplaced in view of the composition of the small sector. In 1972, when the investment limit for the small and the ancillary sector was Rs. 10 lakhs and Rs. 15 lakhs respectively, the Census of Small Scale Industrial Units revealed that 91.27 per cent of the units had an investment in plant and machinery of less than Rs. 1 lakh (Goyal et. al. 1984 pp. 16-17). In fact, the move to hike the investment limit from Rs. 35 lakhs to Rs. 60 lakhs was opposed by all representative bodies of the small sector (namely the FACSI, FASSI, and the ICSI) on the grounds that about 97 per cent of the small units were well within the previous limit (Business Standard 27 May 1990). Also, since one of the distinguishing characteristics of the small sector is supposed to be its labour intensity, it is surprising that this criterion has been done away with entirely.

The programmes of technical assistance to the small sector and the ancillary units is situated within an institutional network of the Small Industries Development Organization (SIDO), 27 regionally dispersed Small Industries Service Institutes (SISIs), branch SISIs, extension centres etc. and the National Small Industries Corporation (NSIC) which supplies machinery under a hire purchase scheme. In April 1960 a Standing Committee on Ancillaries was constituted by the Small Scale Industries Board, which initiated the first serious efforts towards the promotion of ancillaries. A separate Ancillaries Division was created in the SIDO to spearhead this effort. Its functions include the preparation of lists of parts and components that can be farmed out to small units by various public and private sector undertakings, provision of technical assistance and know-how to existing and prospective units (through the SISIs), registering small units as ancillary units, compiling information on the technical capability of units registered with it etc. In addition to this, subcontracting exchanges have been set up at various SISIs to establish contact between large and small units by registering the product, process and machine profile of the small units registered with it and matching it with the requirements of large units. These large units are approached on the behalf of the small units and requested to off-load items which could be manufactured by them. Also, information relating to the needs of the large units is

provided to small units which can then approach them independently (Ministry of Industrial Development 1973). Table 2 shows the working of subcontracting exchanges in 1979-80, Table 3 the growth of these subcontracting exchanges over the years, and Table 4 the extent of purchases made by the public sector from ancillary units.

Table 2

Business Effected through Sub-Contracting Exchanges for 1979-80

SISI	Extent of business handled (Rs. Lakhs)	No. of tie ups effected
Ahmedabad	28.75	121
Bangalore	169.47	107
Bombay	125.00	1294
Calcutta	1800.00	420
Cuttack	2.50	40
Guwahati	328.00	34
Hyderabad	80.00	137
Indore	28.00	60
Jaipur	..	..
Kanpur	624.00	3
Ludhiana	21.00	33
Madras	0.44	97
New Delhi	13.78	124
Patna	0.38	2
Srinagar	..	..
Trichur	91.49	421
Total	3314.71	2893

Source: Government of India, Ministry of Industry 1980-81.

Table 3

Year	No. of units regd with Subcontracting exchanges	No. of cases of Small Units helped by exchanges
1975-76	955	4510
1976-77	1381	1561
1977-78	1223	4152
1978-79	1448	5329
1979-80*	624	4209

* Incomplete

Source: Office of the DCSSI, in Nagraj 1984.

The functioning of these institutions, however, by all accounts, seems to be far from satisfactory. The Patil Committee Report (1985) on upgradation of technology in the small scale sector, a task in which these institutions are expected to provide material assistance, observed that

> "...designs, equipment and process technology used by the small scale industries still remains out of date as compared to industrially advanced nations" (p. 42).

Table 4

Progress of Ancillary Development in Public Sector Enterprises

Year from	No. of PSES reporting	Total No. of Units	Total value of Procurement SS/Anc. units (Rs. crores)
1977-78	-	550	80.57
1978-79	73	5072	96.44
1979-80	80	4729	119.96
1980-81	80	5324	151.90
1981-82	102	8221	233.26
1982-83	113	14037	283.84
1983-84	132	14904	319.43
1984-85	151	15039	363.04
1985-86	153	16166	448.00

Source: Government of India, Ministry of Industry, 1980-81.

A study by the Confederation of Engineering Industries (CEI) in Punjab revealed that all the 18 Industrial Development Centres in the state meant to provide technical service to small enterprises are not only uncompetitive but also grossly underutilized. Most of their equipment and machinery is obsolete and frequent breakdowns are not uncommon. The skills of the technical staff were limited and customer orientation was missing. All the centres were facing financial problems even in meeting their current expenditure (Financial Express 1991).

Other studies also tend to confirm this hypothesis. It has been found that although SIDO has been useful in identifying entrepreneurial opportunities but has been unable to keep up with the diversity of modern technology (Vepa 1987). In many new thrust areas such as pollution control, low cost automation, energy conservation etc., it is not capable of assisting entrepreneurs. It should also be remembered that the small sector covers a very wide range of products and processes ranging from artisan based rural industries to

sophisticated micro-processor equipment which cannot be catered to by one organization and its branches. Some decentralization of Government assistance is therefore in order to cope effectively with the varied needs of the small sector. It would be necessary to enlarge the number of specialized centres catering to specific technologies within the SIDO, as well as explore the possibility of further co-operation between industry and government in this regard. The problem could be reduced by establishing a pool of regionally dispersed technically skilled manpower in diverse areas registered with the SIDO who can offer their services depending on the nature of the job and the area in which it is located. This would mean that the particular skills required cannot be obtained by the small units only fro the particular institution it is closese to, regardless of its capabilities, but can be made available in a far more flexible and personalized fashion through technical consultants.

The new policy for small scale industries proposed in August 1991 is a departure from the usual in many respects. For the first time a comprehensive policy statement has been made exclusively on the small sector. The main features of this new policy are (1) the setting up of the Technology Development Cell in the SIDO to provide technology inputs into the small sector by coordinating the activities of the tool rooms, process and product development centres etc. (2) the legitimization of the entry of the large sector into the small sector by allowing equity participation by "other industrial undertakings" in the small sector upto a maximum of 24 per cent of the total shareholding (3) a seperate package for tiny units (units which have an investment limit of Rs. 5 lakhs in plant and machinery) entitling them to support on a continuous basis as far as priority in government purchases, easier access to institutional finance, relaxation of labour laws was concerned.

The technology upgradation measures seem to be suffering from the previously mentioned defects and its impact on technical upgradation remains to be seen. Allowing equity participation of the large sector in the small sector seems to be a definately retrogressive step as far as the process of granting greater autonomy to the small sector is concerned. An equity participation of 24 per cent, coupled with the fact that the share holding large enterprise is also likely to be the principal customer is likely to increase the dominance of the large sector. It also makes available to the large sector the concessional facilities and finance which the small sector is entitled to, a move which is entirely unnecessary. This move militates against decentralization of ownership, which is a crucial determinant of bargaining power of the small units.

Official data on the growth of subcontracting is very sparse. Data is published on the small scale units registered with the various State Industrial Development Corporations, but this does not cover the unregistered units which apparently form a large segment of the small scale sector. Also, since the upper limit for investment in the small scale sector has been increasing periodically, it is difficult to assess the magnitude of expansion of the sector in real terms as the criterion for the units included keeps changing over time. Second, the data on subcontracting only takes into account units which are registered as exclusively ancillary units. This may be a serious misrepresentation since units have no incentive to register themselves as exclusive ancillaries and may in fact want to spread risks by selling to

a number of parties (Nagraj 1984). Hence, on the basis of official statistics it is impossible to assess the growth and nature of subcontracting in India.

Thus, we are forced to rely on case studies to provide us a more accurate, although fragmented picture of subcontracting in India. Case studies on Keltron, a public sector unit manufacturing television sets,(Annavajhula 1988) and on Ashok Leyland and TELCO, two leading truck manufacturers in India, (Lall 1980) almost universally show that simpler and more standardized parts are the first to be farmed out[17]. The latter study showed that this process of vertical disintegration proceeded slowly over time. Both units had to initially produce what would have been subcontracted immediately in a developed economy. However in the case of Keltron, since it was set up as a public sector unit with one of the aims being to develop an extensive network of smaller supporting industries it started off with a higher degree of vertical disintegration.

The links between the large and the small scale sector seem to be the most developed in the technological sphere. In Keltron, even this was minimal and consisted of the provision of blueprints and designs and initiation into the simplest procedures of quality control. However in Ashok Leyland and TELCO the technological spinoff seemed much greater with the principals rendering considerable assistance with the development and tooling of new designs, production scheduling, inventory holding, layout and labour training problems. In some cases the employees of the smaller firms were even taken in for training by the larger firm. It is also interesting to see that some of the specialized component manufacturers, usually the larger ones, were able to provide design knowledge to the parent firm. This indicates that some amount of learning was taking place in the ancillary firms. It would be interesting to study this phenomenon further to try and see the conditions under which greater technology transfer takes place as well as the factors governing in-house learning in small ancillary firms as compared to the rest of the small scale sector.

Another extremely interesting case is that of the ancillaries of the public sector company, ITI (see footnote 12). In response to the sudden dearth of orders which these firms faced due to massive technological upgradation in ITI, forty of them banded together to form a consortium (called Anco Communications Ltd.) which has been since amalgamated into a public limited company (Shetty 1991). This was done with the help of ITI, which also transferred the technology for the manufacture of main and extension instruments with battery eliminators. The individual ancillary units (all of which have an equal stake in the consortium) supply components to both ITI and the consortium. The latter supplies finished products needing electronic expertise to ITI which in turn markets it to the Department of Telecommunications. Subsequently, the company has obtained licenses for making electronic switching systems and open wire carrier multiplex systems. This has put them in a position to diversify and reach customers other than ITI.

---

17. The percentage of bought out parts to total sales was 25% for Keltron in 1980-81. For Ashok Leyland and Telco in 1977-78, it was 59% and 35% respectively.

It is important to note that although initially production of electronic components was not considered viable in the small sector, it was undertaken very successfully following technology transfer from the parent firm. This was probably facilitated by the fact that each of the forty shareholders of the consortium were technically qualified and could assimilate this knowledge, not only for the consortium, but also for their own units. We do not have information on the type of technology transfer i.e. whether it was in the form of training personnel or technical knowledge embodied in machinery. This would have given us a better idea of the type of control exercised by the parent firm on the production process of the ancillaries.

On the other hand, financial links between large and small firms were found to be minimal in both the studies. In very exceptional cases loans or advance payments were made to small units by Ashok Leyland, but no other evidence of financial linkages was found. Also the consortium of ITI ancillary units, Anco Communications Ltd., financed its entire paid up capital by the contributions of individual members in equal shares. However, according to preliminary studies which we have carried out in Eicher Tractors, the financing of initial investment of ancillary units was quite common. In the absence of more detailed information we can say little on this subject.

Another important aspect of the relationship between large and small firms is their bargaining power vis-a-vis each other. The main determinant of bargaining power between two agents is the extent to which association with one is crucial to the existence and viability of the other. Small units which are able to diversify both in terms of products and customers find themselves in a better position than those which are tied to one particular large firm. The ancillarization policy in India, however, has promoted the dependence of ancillaries on large industries by recognizing ancillaries as only those units who supply 50% or more of their production to a single unit. Also, the regional development policies in India have been such as to establish a single large public sector unit with a plethora of highly dependent ancillary units, which, faced with a lack of alternate customers are forced to accept terms and conditions laid down by the large firm, as has been seen in the case of Keltron (Annavajhula 1988). Bargaining power of the smaller unit also depends on its access to some quasi-rent yielding specialized process or machinery which is valuable to a number of firms[18]. However in the absence of all these factors the crucial determinant of relative strength is size, which is, by and large, the case in India. However, this is not to say that the bargaining power of the small units cannot be increased by combination, as the experience of Italy clearly demonstrates.

There are several ways in which this bargaining power can be manifested. We have divided them into the following heads and will discuss them individually in the following:
1.Price determination 2.Quality control procedures 3.Scheduling of payments and

---

18. If however, the small unit invests in a process which is useful to only a particular producer it is more likely that the quasi-rent will be appropriated by the large firm since the diversification possibilities for the small firm are limited.

deliveries 4.Stability of work orders.

As far as price determination is concerned all small units felt that they had no role in fixing prices (Shaw 1990, Annavajhula 1988, Lall 1980). However in the last study, some suppliers felt that this was compensated for to some extent by the technical and product development assistance which was provided to them by the principals. Also, large suppliers of Ashok Leyland or TELCO, who also had a considerably diversified customer profile did not seem to face the problem of unremunerative prices.

Quality control is another area in which large units are able to supervise production in small units and control it according to its specifications. Rejection rates of Keltron were found to vary between 0 and 30%. According to the small units, this rejection is sometimes deliberate to enable the large unit to keep its inventory in check in slack periods or to enable them to delay payments to the smaller units. Lall (1980) also found that the rejection rate is higher for smaller than for larger units. While this may partly be a reflection of the inability of firms to undertake sufficient standardization and quality control, the fact that higher rejection rates are associated with smaller firms points to the greater ability of the large firms to shift their inventory management or financial burdens to these firms.

Small units also frequently complain of delayed payments or delayed collection of orders (Shaw 1990, Annavajhula 1988). Such delays amount to the large units availing of interest free loans from the smaller units for the time of the delay in the settlement of bills and, in the case of delayed collection of orders, an unloading of inventory maintenance costs on to them. This, in many cases causes liquidity crises for the small units and are a crucial factor in determining their financial viability. Infact one of the major causes of sickness in the small sector is said to be the delayed payments by large enterprises (Vepa 1987).[19]

Another source of insecurity for the smaller units is the irregularity of orders from the large units. This problem is particularly pronounced for the units supplying Keltron as they have very few alternate customers. Not only does this instability undermine the financial health of the enterprise but the threat of cancellation itself (especially in the face of cut-throat competition from other small units) may be sufficient to force the small entrepreneur to comply with the wishes of the large firm. This problem would not be so pronounced in more industrially diversified areas. In fact, suppliers for Ashok Leyland and TELCO are consciously encouraged to diversify to other customers to maintain their position.

---

19. In this context, new policy initiatives for the provision of factoring services for small firms (under the supervision of the Small Industries Development Bank of India, SIDBI) may be a useful development. Factoring is an arrangement under which a financial institution assumes the credit collection role for its clients. It purchases the recievables from the small units as they arise, at rates which are fixed on the merits of individual cases depending on the riskiness of the proposed transactions. However, in the long run, unless the bank is motivated by non-profit motives or is able to extract payments from large enterprises (including public sector undertakings), the rates for the purchase of receivables may go down and the small industries may still be at a disadvantage.

Thus we see that the larger units are clearly in a position of greater strength and bargaining power vis-a-vis smaller firms. An across the board acceptance of widespread subcontracting without any measures taken to help small firms develop countervailing power will therefore only lead to the proliferation of dependent small units which derive their financial benefits from squeezing the labour they employ.[20] Legislation is required not only to enable the smaller units to have a greater say in the sharing of gains in the production process but also in safeguarding the interests of the workers in these units.

Government policy in terms of reservations of some products for exclusive production by the small sector is also an important determinant of the extent of vertical integration or disintegration. At present 869 items are reserved for the exclusive production of the small sector (Government of India, Ministry of Industry 1990) from a beginning of 47 items in the mid-sixties.[21] It is, however, very difficult to find a common criterion on which the reservation of all these items is based. As far as the auto industry was concerned, reservation was done in a very pragmatic manner so as to include all traditionally bought out items and hence speed up the division of labour in these industries (Lall 1980). In other words, scale or other technical inefficiencies were not promoted in the name of encouraging the small sector in this case. Evidence from other sectors, however, is somewhat different. In light and mechanical engineering industries, the items reserved for the small sector are characterized by complex assemblies whereas the technical bias for the optimum division of labour between large and small industries favours large scale assembly operations supplied by a diversified base of component manufacturers and ancillary units (Little, Mazumdar & Page 1987). This has led to a situation of greater vertical integration than is normally desired. It has been seen that the smaller units are unable to produce finished goods of comparable quality to the larger units and the market has therefore been segmented between the large and small units. The small units therefore face a greater degree of stagnation and are unable to upgrade technologies and undertake extensive modernization. On the other hand, captive ancillaries of the larger units have been seen to produce good quality components at low prices, showing that perhaps their comparative advantage lies in component production.

Thus, the existing reservation policy seems to be fairly ad hoc. It also has several loopholes. For example, large enterprises are allowed to produce these reserved items for captive consumption. This runs contrary to the policy of encouraging subcontracting. Also,

---

20. In almost all the small units covered by case studies, the wages paid to workers, wherever they could be found out, were less than the minimum wage. This was especially true in the case of women workers who were almost always classified as unskilled and were the first to be dismissed when the firm was facing financial difficulties.

21. However a lot of this massive expansion in the reserved list is fraudulent. Several items which previously were clubbed under one head have now been entered as single items. For example, in earlier lists "wire products" was one category. In the new lists each item such as wire nails, hob nails, panelpins, animal shoe nails are separate products. Similarly, the single entry of paper conversion products has now been replaced by 29 items (Goyal et. al. 1984, p.74).

large producers who have been manufacturing these goods at the time the reservations were announced are allowed to maintain production capacity at that level, a condition which is often violated.[22] With the new liberalization measures which remove the checks on capacity and production in large units, this practice is likely to get aggravated further. In addition, large units are also allowed to produce these goods for export. Therefore, the reservation policy as practiced over the last 30 years does not seem like a very effective tool for the promotion of greater interaction between the two sectors. There seems to be a pressing need for the re-ordering of this list based on sound technological principles to enable the maximum comparative advantage to be derived from the large and the small sector.

It is also true that several of the benefits meant for the small sector have been appropriated by the large, corporate sector. It has been observed that a number of ancillary units have the same ownership patterns as that of their principal customers, several cases of which have been cited in Goyal et al 1984. In some cases this has been to circumvent restrictions on the production of certain items by the large sector, avail of concessions in excise duty, soft loans etc. Despite these units being small units in terms of their paid up capital,the presence of the large sector in ancillaries cannot count as true decentralization in terms of ownership and control. Although it is impossible to estimate the magnitude of the large sectors participation in the small sector, it would be interesting to see how the performance of such ancillaries differed from that of those owned by independent entrepreneurs in terms of choice of technique (since the former would presumably not function under the same financial constraints as the latter and could therefore use state of the art technology), financial viability, conditions of employment of labour etc to assess the implications of decentralization of control and ownership as opposed to a mere decentralization of the physical act of production.

-5-

We therefore see that subcontracting in India is a fairly widespread practice with a significant presence in the Indian industrial scenario. It is impossible to quantify this presence with any degree of accuracy due to the paucity of official statistics. Case studies provide us with a fairly accurate picture at the level of the individual enterprise, but it is impossible to form an idea of the macro implications of such strategies from the few case studies available. It is however fairly clear that there exists considerable scope for

---

22. For example, the Annual Report of Colgate Palmolive (India) Ltd., a company which manufacture toiletaries reserved for the small sector for 1978 reports that

"The Government's endorsement of the annual productive capacity .... is much below the Company's installed capacity and actual production achieved during 1978 in respect of tooth powder and tooth paste", (p. 4).

subcontracting in India. Table 5 shows the technical limits to subcontracting in various sectors of the economy.

Table 5

Extent of Ancillarization possible in various industries

Name of industry	Ancillarization Range (%)
Transportation industry	60 to 90
Communications industry	50 to 75
Prime movers and power based industry	30 to 50
Consumption goods and Consumer Durables	10 to 30
Industrial Machinery and Machine tools	20 to 40
Chemicals and Pharmaceuticals	15 to 30
Basic industries (Metals, Minerals, cement & petroleum)	5 to 10
All other industries (wood, paper, fibres, glass, ceramics, leather & rubber)	2 to 10

Source: FICCI 1981.

In some industries there seems to be a substantial interaction between the small and large units in terms of transfer of technology, product design and quality control. However, the nature and value of this interaction differ according to the industry in question. As mentioned earlier, an important item on the agenda for further research would be the conditions favourable to such transfer of technology, the ease of its absorption and the benefits it confers on the economy.

However, it is also clear that much of the development of small subcontracting units is highly dependent on the larger units where the subcontractor has little, if any, bargaining power. This is also associated with an inadequately paid labour force which not only faces violations of the Minimum Wages Act, but also bears the brunt of the small units' unequal interaction with the larger units.

This aspect of the employment of the labour force has other important implications. We have been discussing the phenomenon of subcontracting with the wider perspective of employment generation. However, our discussion has been confined to supply side factors, namely, the organization of production and ownership. The magnitude and quality of labour employment has a demand dimension which cannot be neglected. The generation of more employment is an important factor in changing the income distribution and therefore altering the consumption basket of the economy. A move from the satisfaction of import-intensive, luxury goods and consumer durables demand to wage goods, coupled with a reduction in the demands of the ever burgeoning middle classes could go a long way in

restoring both the internal and external macroeconomic balance in the economy. Neglect of this aspect would mean that any efforts to promote subcontracting would amount to merely welfarist measures and not impart dynamism to the economy.

It is clear that without further information, our understanding of subcontracting practices and its importance in the Indian industrial structure in India is severely incomplete. First, we need to arrive at a better understanding of the technological linkages between the large and the small units and the motivations underlying them. This would also throw up questions of technological control over the small firms' production process by large firms and the mechanisms employed. Second, we need to also investigate the nature of the information channels between small and large firms, which, as we saw, played an important role in imparting flexibility to the production system in Japan and Italy. Third, we need to investigate the extent to which scale considerations are responsible for the farming out of in-house production. In other words, we have to see whether small units are subject to constant or decreasing returns to scale. This would also indicate the relative importance of scale vis-a-vis differential labour costs as underlying factors motivating subcontracting and would also shed light on the determination of the choice of technique. A related issue would be the examination of the nature of products manufactured by the small sector in terms of the standardization of technology underlying them as well as the control exercised over production by the large sector. Lastly, a more detailed delineation of the factors determining the bargaining power between large and small units in terms of the nature of Indian society and polity would help us understand the factors which could help the smaller units develop countervailing power vis-a-vis the large units.

In the absence of systematic published sources of data as well as due to the fact that a lot of the questions we seek to answer are qualitative in nature, it is essential that our data collection methodology is of the case study type, based on first hand information obtained through field surveys. Detailed data on input and cost structure of small enterprises, their technical change profile, the prevailing labour conditions and a history of their interaction with large enterprise is essential for arriving at a better understanding of the issues we have presented in this essay.