THE BENEFITS AND COSTS OF

IMPORT SUBSTITUTION IN INDIA: A MICROECONOMIC STUDY

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INTRODUCTION

Since Independence, economic growth has been the major objective of the Government of India. One of the main instruments used to achieve this goal, has been the promotion of import-substitution in virtually all industrial sectors.

There can be little doubt that, by any criterion, rapid import-substitution has been accomplished, and rapid industrial growth fostered under these policies. More generally, it is unquestionable that some sort of import-substitution strategy should be adopted in any sensible development plan for a country such as India.

When the details of the controls and incentives employed to encourage import-substitution are examined, however, questions arise. While the benefits of import-substitution are undoubtedly large, could they not have been greater, and achieved at smaller cost, under an alternative set of policies?

Endless abstract debate has occurred over this issue. Economists concerned with allocative efficiency have tended to argue that import-substitution policies are indiscriminate and therefore inefficient, thereby seeming to imply that there should be no such policies. Growth-oriented economists have taken the view that import-substitution must be a part of the growth process, and therefore, by implication, import-substitution should be encouraged at all costs. Implicit in the debate have been differences in underlying empirical premises. The efficiency advocates have assumed that there are profitable alternatives to import-substitution, i.e., import growth, and have emphasized the desirability of the alternative. The

advocates of import substitution, by contrast, have generally been pessimistic with regard to export potential, both for traditional exports and the development of new export products. Rather, the questions are largely empirical, and center upon the relative costs and benefits of import substitution and export promotion.

The purpose of this study is to focus upon the empirical questions: what are the mechanics of import-substitution policies? What has been achieved by them and at what cost? In what ways could the benefits be increased, and the costs reduced? Are there viable export alternatives? Stated alternatively, can India achieve more rapid industrial growth with her limited resources?

These questions are, by their nature, microeconomic. The benefits of import substitution are realized in the production of tradeable goods and services. Since the production of a tradeable good is a substitute for the importation of that good, the benefits of import substitution are the net foreign exchange saved (or earned) in a given activity. The costs are the opportunity costs of the domestic resources employed in production. Opportunity costs are, by their nature, measured in terms of the alternative uses to which the same resources could be put. Empirically, therefore, if one finds a disparity between the benefit-cost ratios in different activities, the difference between these ratios reflects a non-optimal strategy. Moreover, if a disparity exists between import-substitution activities, it would generally pay to increase output in the higher benefit-cost activity and to export the product, trading for the lower benefit-cost product.

To ascertain the benefit-cost ratios in alternative activities therefore requires estimation of net international value added, and the domestic resources employed in production. It is a difficult and time-consuming process. Data are not readily available in any systematic form for such an undertaking. Yet, the importance of the questions is such that empirical estimates of costs and benefits are badly needed.

The results of the research presented here represent a first step toward empirical estimates of the alternatives for India. In view of the absence of readily usable data, it was decided to select an industry which could, insofar as possible, be taken as reasonably representative of the vast array of Indian industries, and to gather the necessary data from the individual units in that industry, so that empirical estimates of the costs and benefits of import substitution in that industry could be made.

This study, therefore, focuses upon the alternatives in the non-traditional sectors of the Indian economy. Many would argue that India, and most other developing countries, have tended to neglect the potential of their traditional export industries.[1] The results reported here cast little, if any, light upon this question. Rather, the research is addressed to the question: given that new resources are being allocated to the non-traditional industrial sector, can the present policies be described as optimal?

The criteria for selection of an industry for intensive scrutiny were several: 1) the industry should have been in existence for a sufficiently

[1]See Benjamin I. Cohen, "The Stagnation of Indian Exports, 1951-1961", Quarterly Journal of Economics, November, 1964.

long period so that some units, at least, would have had experience with the behavior of costs over time; 2) the industry should not, on a priori grounds, be subject to the suspicion that it was either exceptionally "good" or exceptionally "bad" as an example of import substitution; 3) the industry should produce a variety of products, with differing technologies, so that a range of costs and benefits might be estimable; and 4) the products produced by the industry should be comparable to goods produced abroad, so that domestic and international price comparisons should be readily available. In addition, at the time of the research, Indian industry was still experiencing the effects of the industrial recession of 1966-68, and there was extensive excess capacity in many capital-goods producing lines, while consumer-goods producers were, by and large, operating close to or at full capacity. It was decided that the industry chosen for anaylsis should, insofar as possible, combine some aspects of each of these experiences. After consideration of alternative candidates, it was decided to focus upon a sector or subsector of the Indian "engineering" industry. This industry is widely believed to have been a successful case of import-substitution, and has been promoted since the early days of Indian planning - the mid-1950's.

Within the engineering industries, capital goods' producers were ruled out because of their problems with excess capacity. Among the consumer goods, there were problems associated with the choice of most of them. It was finally decided to focus upon the Indian automobile ancillary industry, which supplies vehicle producers (cars, trucks, buses) and users with parts and components for original equipment and the replacement market. The

automobile ancillary industry was started in India in the early 1950's; there are no a priori grounds on which to believe that it is atypical of Indian industry in general; the industry has a wide variety of products; most of its products have comparable foreign counterparts. Lastly, the producer-good purchasers of the industry's output - trucks - have been experiencing idle capacity under the influence of the recession, while passenger car demand has been sustained. Consequently, insofar as any industry could, it was believed that the automobile ancillary industry would provide a "representative" history of import-substitution and its consequences. While no single industry can be typical of the vast array of Indian industries, there is no reason to believe that the ancillary industry is atypical in any important regard. It is hoped that the results of this study will provoke research into other industries, so that the degree to which the ancillary industry is representative can be evaluated.

At the outset, one other feature of this study should be mentioned. Import substitution, as indicated above, is controversial among economists and policymakers. Most advocates of import substitution have tended to the view that any attack upon the strategy must be ideologically based. Partly because of this, and partly for other reasons, every effort has been made in this study to provide the highest possible estimates of the benefits of import substitution and the lowest possible estimate of the costs. For this reason, it may well be the case that this study is biassed toward a higher estimate of the benefit-cost ratio for import substitution in India. Whenever a choice had to be made in data interpretation and manipulation, every benefit of the doubt was given to the import-substitution

strategy. In this study, however, the chief concern was not with the "right" or "wrong", or the average benefit-cost ratio, but rather with how the import-substitution strategy could become more effective. For this purpose, it is not the height of the absolute estimates which is important, but rather the comparability among estimates. Anyone reading the results of the study who concludes that costs are either "high" or "low" will have missed the purpose of the study; the question is: how much lower can future costs be?

Details of the structure of the ancillary industry, the research methodology, and the cost-benefit estimates will be given in ensuing chapters. Part I contains a sketch of the nexus of incentives, controls, and economic conditions under which import-substitution in the private sector in India has been encouraged. Like all other industries in the private sector, the automobile ancillary industry has been subject to these incentives and controls.

Part II outlines the growth of the industry, as measured by the conventional macroeconomic measures. Readers already conversant with Indian policies and the ancillary industry can omit the first two parts. Part III contains a summary of the qualitative aspects of industry operations and the functioning of government policy, as indicated in interviews with the industry's executives. In Part IV, domestic-resource-cost estimates for the Indian ancillary industry are given. Next, consideration is given to the reasons for the range of domestic resource costs found within the ancillary industry. Particular attention is given to the relationship between incentives confronting individual firms and the socially desirable

objectives. A final part deals with the general policy questions raised by the findings of the study.

PART I. INDUSTRIAL DEVELOPMENT POLICIES IN INDIA

Private and Public Sectors

Since Independence, "The central objective of public policy and national endeavor in India...has been promotion of rapid and balanced economic development."[1] This goal has included "reduction in inequalities in income and wealth and a more even distribution of economic power."[2] The dual goals for a higher national income and a more equal income distribution have been jointly referred to as "a socialistic pattern of society".

To further this objective, the Government of India has reserved some industries for the public sector of the economy. Government-owned enterprises have been established in these industries, as also in industries where there are private firms. Among these sectors are steel, machine tools, chemicals, and fertilizer. The public enterprises have generally been allotted a share of new investment resources considerably greater than their share in industrial output, and the rate of gorwth of public sector output has been considerably above that of the private sector.

The private sector nonetheless continues to account for the preponderance of industrial activity. To coordinate government and private development activities, the Government has formulated development plans, and devised a variety of instruments to insure that the private sector's

[1] Government of India, Planning Commission, Second Five Year Plan, 1956, p.1. This document will hereafter be referred to as SFYP.

[2] SFYP, p. 24.

activities will be consistent with these plans. Among these instruments are controls and incentives affecting investment, the use of scarce foreign exchange, prices, and exports. In the remainder of this part, the mechanics of each of these instruments, and their interaction, are sketched.

Industrial Licensing[3]

The major instrument for regulation of private investment is industrial licensing. All firms in the private sector with plant and machinery valued at more than Rs. 750,000 must have an industrial license before constructing a plant, installing equipment, or expanding their capacity beyond 125 per cent of their previous license. The Industrial License states the productive capacity of the plant, and in many instances specifies

[3]During 1970, industrial licensing policy appeared to be changing. This section outlines the way in which licensing operated up to 1970. The major features of the changes in policy are two-fold: 1) Companies in the "Larger Industrial Houses" will not be permitted expansion licences until they are approved by the newly-established Monopolies Control Commission; 2) other companies may expand up to RS 10 million without prior approval, provided that there are no import requirements for investments and that imported goods required in production will either be less than 3 per cent of purchased inputs or that the firm will export sufficiently to finance its imports within three years. See Commerce, July 25, 1970, and August 8, 1970.

The twenty "Larger Houses" are listed in Appendix II Government of India, Department of Industrial Development, Ministry of Industrial Development", Report of the Industrial Licensing Policy Inquiry Committee July, 1969. (Hereafter, referred to as "Dutt Committee" Report. These twenty houses are very important in virtually every line of economic activity, and have, in the past, expanded their share of industrial output. Their rate of return has been estimated to have been higher than that for the private sector as a whole.

The changes in policy will therefore have two effects: 1) licensing is effectively liberalized for medium and small-scale firms, although domestic capital goods will receive higher implicit protection, and 2) licensing is effectively more restricted for the larger firms. As of August, 1970, the Monopolies Control Commission had not rendered a decision, nor even been fully established. It is impossible, therefore to estimate the net effect of these two offsetting features at the time of writing.

the number of shifts' operation on which this capacity estimate is based. Other stipulations are sometimes included. For example, firms often have "indigenous content schedules" built into their licenses. These schedules specify a timetable for increasing the fraction of purchased parts and components to be obtained from domestic sources. There are reported to be instances in which firms must guarantee to export, over a specified time period, enough to repay the foreign exchange costs of their investment.

The purpose of investment licensing are several: 1) to insure that scarce capital resources are allocated in accordance with Plan projections of demand and priorities; 2) to avoid the development of excess capacity in any sector; 3) to prevent the development of capacity requiring imported materials beyond an amount consistent with India's foreign exchange position and the priority accorded to the sector; and 4) to avoid the concentration of economic power.

During the Second and Third Plan periods (1956-66), licenses were generally issued for each commodity to a point where the new licensed capacity equalled the Plan target for expansion. It is widely believed that firms, and especially the Larger Houses, applied for licenses in order to preventcompetition, even when they had no immediate expansion plans.

Receipt of an industrial license is seldom sufficient to enable the would-be entrepreneur to obtain needed materials. If any imports are required to establish or expand capacity, a Capital Goods License is also required, enabling the importation of capital goods. Since some foreign machinery has almost always been necessary, the potential producer must usually apply for a Capital Goods License once he has an industrial license.

In many instances, consultations with the Capital Goods Committee can be as extensive, or more so, than the Industrial Licensing procedure. The Capital Goods Committee screens import applications to insure that domestically-produced capital goods are used whenever they are available. In practice, therefore, the Capital Goods Committee's supervision provides a large element of protection for domestic producers of capital goods.

Should Indian firms require foreign technical collaboration to develop their production process, approval by the Foreign Investment Board is also required. Such approval has generally been granted only for "priority industries". Hence, for technically sophisticated production processes, three separate government clearances are required before orders can be placed for the needed capital goods. Even then, most collaboration agreements are approved only for a limited time period, usually five years.

Needless to say, there have been innumerable complaints from the private sector about delays, paperwork, and the like in the licensing procedure. These complaints have resulted in a series of investigations into the licensing system, of which the Dutt Committee performed the most recent. Government of India officials respond that delays are occasioned mainly because would-be entrepreneurs do not correctly file their applications, omitting relevant items of information, and so on. These officials, of course, have to protect themselves from subsequent investigation, and allegations of favoritism, etc., in the granting of licenses.

Economists have questioned whether the administration of the licensing system has, in fact, led to resource allocation on desired lines. Hazari,

for example, found that concentration of economic power had increased during the first decade of industrial licensing[4], despite the fact that a major purpose of licensing was to prevent such concentration. Others have suggested that licenses have been granted without effective cost-benefit analysis, and that inefficient firms have been sheltered against competition under the system.[5] In addition, the amount of scarce entrepreneurial talent devoted to obtaining licenses constitutes a real cost of the system.

Import Licensing

As mentioned above, imports of machinery and equipment must be approved, if they are for purposes of expansion, by the Capital Goods Committee. Current import allocations are made on a different basis. Import licensing procedures differ, depending on the size of the firm, the classification of the industry, and whether the importer is an Actual User (AU) in his production process, or whether he is a wholesaler or retailer of the material in question.

Perhaps the most important distinction is between traders and AU's. AU's are those who use the imported goods directly in their productive process. Organized sector firms must apply for their AU import licenses for raw materials, semi-finished goods, machinery, spare parts, and other needed inputs, to the Directorate General of Technical Development (DGTD) of the

[4] R. K. Hazari, The Corporate Private Sector, Asia Publishing House, 1966.

[5] A. H. Hanson, The Process of Planning, Pp. 489-93, Oxford University Press 1966, and Jagdish Bhagwati and Padma Desai, Planning for Industrialization: A Study of India's Trade and Industrial Policies since 1950. Oxford University Press, 1970.

Ministry of Industrial Development. After 1966, 59 industries, including the automobile ancillary industry but excluding the consumer vehicle assembly industry, were classified as priority industries. The purpose of the classification was to simplify import licensing procedures for these firms. Under this change, firms in priority industries are entitled to import licenses on a replenishment basis. That is, when it can be shown that stocks of imported goods have been used in production, and that remaining stocks have fallen below a certain level, import licenses will be issued for six months' requirements.

For a variety of reasons, import licensing for priority industries is probably not as liberalized as a statement of replenishment policy would make it appear. In general, firms with a constant or slowly growing level of output probably have little difficulty obtaining their licenses and imports as needed. Rapidly expanding firms have more difficulty. If a firm is attempting to increase its output at all rapidly, it will need additional imports in less than six months. In principle, it can get a license. In practice, the delays involved in first obtaining the license, and then in delivery of the necessary imports, generally are such that the replenishment policy causes difficulty for firms expanding their output.

Import licenses may be General Currency Area (GCA) licenses, valid anywhere for purchase of needed imports as specified on the licence. Many import licenses are valid only from a certain geographical area, e.g. from the United States (AID licenses), United Kingdom, or from countries with whom India has bilateral trading arrangements. The issuance of import licenses valid only for a given source of supply can create a number of

difficulties for the recipient firm, especially when the geographic region changes from one period to the next. In addition to the higher prices often prevailing in the country where the license is valid (whether due to a higher price levelor the perceived monopoly power of the exporting country's firms), problems arise from changing specifications, inability to develop buyer-supplier relations, and in obtaining needed spare parts in cases where the machinery was imported from a region other than the one for which the license is valid. AID licenses are the most frequent object of complaint: they are invalid for amounts less than $5,000, the would-be importer must first advertise in the Small Business Administration circular, and there are complaints about American prices. Whether AID licenses are generally more disadvantageous than others, or only are the most frequent kind in value and therefore most visible, is difficult to judge.

The criteria for granting an import license are several, even if a firm is in a priority industry. First, it must be ascertained that previous imports were actually used in the production process.[6] Secondly, DGTD scrutinizes license applications to determine whether: 1) the good in question is domestically available, and 2) if not, whether a domestic substitute might not be used. Determination of domestic availability is, usually, the more important. In some cases, when the good is not domestically available, the applicant is given a license, with an understanding that he will develop a local source of supply within a specified period. Generally speaking,

[6] The purpose of this requirement is to attempt to prevent imported goods from flowing into the black market. There is a flourishing black market in materials and components in India, about which more will be said later.

when production of a commodity commences in India, import licenses are restricted by the amount which it is believed that domestic sources can supply. When domestic production is deemed adequate to satisfy domestic demand, a good is placed on the "Banned List". Determination of domestic availability is generally made upon verification of producers' statements that they can supply the item in question. Once a good is declared banned, the would-be importer, if the domestic suppliers cannot meet his specifications, obtains statements from each possible source to the effect that his requirement cannot be met. Upon presentation of these statements to DGTD, he can obtain a license. On occasion, as for example when a major producer has a strike, import licenses will be issued without such a cumbersome procedure. Generally speaking, however, physical availability determines a commodity's status. Price and quality considerations seldom enter into the decision.[7]

Many industries and firms are subject to "indigenous content" schedules. These will be explained more fully below. At this point, however, it should be noted that the indigenous content schedules are enforced through the

[7]There is a story in India, which may or may not be true, which imparts some of the flavor of the system. A tea exporter is said to have realized that his German importer consigned the tea immediately upon receipt for bagging. He estimated that he could undercut the German bagger's price, and applied for an import license for tea bag paper. He was given the names of three firms, and duly received letters saying they could not supply paper of the appropriate porosity. He resubmitted his application, only to be given the names of two more firms. One of these firms agreed to supply him with the paper. He accepted it, and sent the first shipment of bagged tea. It was rejected, because Germans do not want tea in brown bags. Tea continued to be bagged in Germany. Similar stories abound.

administration of the investment and import licensing procedures.

The possibility of banned list status, and the implicit protection thereby afforded producers, provides a powerful incentive for firms to develop import-substitute products. Combined with industrial licensing, the banned list provides a situation in which producers can be sheltered from both domestic and international competition. As if these incentives were not enough, import licensing procedures and indigenous content requirements provide industrial users with strong incentives to develop domestic sources of supply.

It is the conjunction of the banned list, industrial licensing, and indigenous content requirements that has led economists to claim that the Indian control system results in a lack of competition and an absence of incentives for efficient production.[8]

Price Controls

Partly because officials have perceived the lack of competition sometimes resulting from licensing policies, and partly to attain other ends, price controls of various sorts have been imposed on some industries within the private sector. Sometimes the purpose of price controls is to provide items deemed essential to low-income consumers at controlled prices. This has been the case with many basic foods which then have been rationed. In other cases, price minima have been set, to protect new producers from low-cost firms, as in the case of steel (until 1966) and rubber.

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[8] Jagdish Bhagwati, "Economies of Scale, Distribution of Industry and Programming", Economic Weekly, September 1, 1962.

In some instances, prices have been controlled to curtail expansion of industries that have been deemed relatively inessential. In these circumstances, it has been recognized that market-clearing prices would yield monopoly profits in the absence of controls.

For present purposes there are two kinds of price controls: formal controls and informal price agreements. In the case of formal controls, the Government has statutory power to set prices of an industry's product.[9] It is illegal for producers to charge higher prices without governmental approval. The Tariff Commission makes periodic examinations of industry costs and profits, and recommends prices that would, in its judgment, be fair and equitable.

Informal price controls are affected by agreements between the members of an industry and the Government that prices will not be changed without governmental consent. In most instances, producers enter into an informal price agreement because of the alternative of formal controls. In some cases, formal controls have been discontinued after agreement that prices will not be raised for a specified period of time.

Regardless of the type of control, the Indian Tariff Commission is empowered to undertake investigations of an industry to determine whether its prices are "fair". Tariff Commission inquiries are normally undertaken.

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[9] Under the Essential Commodities Act of 1955, the Government is empowered to regulate the output, distribution and price of a group of listed commodities, and any others which may be deemed "essential". Distribution controls exist for iron and steel and non-ferrous metals, among the commodities with which this study will be concerned.

at the request of the Government. The Commission only has the power to make recommendations to the Government; it does not itself alter prices or tariffs. In effect, the Tariff Commission can make three types of recommendations: 1) it can recommend a "fair" selling price 2) it can recommend the raising or lowering of a "protective" tariff,[10] and 3) it can make recommendations to the Government and/or to an industry, as to how the industry can more efficiently be run.

In an environment where output is restricted through Industrial Licensing and producers are thereby accorded monopoly power, one can readily find a rationale for attempting to prevent large monopoly profits from resulting. In the presence of excess demand, however, the question naturally arises as to whether taxes on commodities would not prove preferable to price fixing. One cannot argue that the goods are "necessaries" in the face of excess demand, and simultaneously defend output restrictions. In the case of so called luxuries, where output is limited because it is believed that only the well-to-do will benefit, the theoretical case for taxes rather than price controls would appear to be compelling on income-distributional grounds. In studying the ancillary industry, the effects of price ceilings (on passenger vehicles) in practice will be examined.

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[10] In India, there are two types of tariffs: "protective" tariffs and "revenue" tariffs. In theory, the former are set so as to equate the imported price of a commodity with the "fair" selling price of its domestic competitor. The latter, by contrast, are in principle across-the-board surcharges designed to raise revenue. In practice, however, the distinction blurs. In some cases, the Tariff Commission has found that the "protective" tariff was too high, but has recommended a reduction in that tariff simultaneously with an increase in the "revenue" tariff. In practice, the tariff aspect of the Commission's domain is important only when there is insufficient domestic production, so that imports are allowed. Caustic soda is a case in point; import substitution has been encouraged, but despite the rapid growth in output, imports of caustic soda are still deemed necessary.

Export Incentives and Controls

Incentives to private firms in India take two forms, in addition to the normal profit-making motives. On one hand, for desired actions, subsidies and other rewards are set. On the other hand, performance criteria may be set, the incentive for which is the threat of adverse consideration on license applications, etc.

For present purposes, the treatment accorded to manufactured exports amply illustrates the reward-threat nature of the system. Desirous of stimulating manufactured exports, a number of incentives and privileges have been accorded to exporters of manufactured goods. In addition, firm-specific export targets have been set in numerous instances. Firms failing to meet these targets are threatened with unfavorable treatment in other regards.

Taking the incentives and privileges first, there are three main categories. These are the duty drawback, the cash subsidy, and the import entitlement. There are a number of other provisions on the books. Judging by the experiences of the firms in the ancillary industry, they are unimportant in practice. Among these provisions are: special credit to exporters, the right to purchase steel at international prices, and the like.

The duty drawback, as its name implies, is designed to compensate exporting firms for the duties paid on imported inputs. As an administrative simplification, the drawback rates are generally set for commodity classes as a fixed percentage of the export (f.o.b.) price. Firms with higher duty costs than these flat rates may appeal, although the process is time-consuming. Firms with a smaller actual duty component of costs than

the set rate are nonetheless entitled to the flat rate. As such, there can be an element of subsidy in the duty drawback.

The cash subsidy is a cash payment, equal to a specified percentage of f.o.b. value (again, subject to negotiation if the rate is shown too low) to exporters. In theory, such a subsidy serves to diminish the differential in incentives between export and import-competing activities, and should serve to improve resource allocation.

The import entitlement is an import license, usable for specified commodities (applied for by the exporter), usually in free foreign exchange. In some cases, import entitlements may be used to import goods that are normally on the banned list - up to five per cent of the value of the entitlement. Import entitlements are also usable to import capital goods up to twenty per cent of the value of the license. The import entitlement's value is equal to a percentage of the f.o.b. value of exports. There is a resale market in import entitlements, although many firms use them in their own production process. The value of the entitlement to the recipient depends upon the price differential between his sources of supply with an area-restricted import license and a free foreign exchange license, on the one hand, and on the savings he can achieve by importing goods he would otherwise have to purchase domestically. In many cases, particularly for non-priority industries, an import entitlement may sustain a higher level of production for the domestic market than would otherwise be achievable. This will be the case whenever the import entitlement enables sufficient imports to increase production, and is more likely, the lower the import content of the product.

The import entitlement is granted over and above "import replenishment", which is a privilege accorded to all exporters of manufactured commodities. Exporters are entitled to receive licenses sufficient to enable them to import goods used in the production of exports. Thus, except for differences in timing and any paperwork involved in obtaining the replenishment privilege, an absence of imported inputs should never be a consideration in the decision to export.

While rates of duty drawback, cash subsidy, and import entitlement vary, a typical firm, exporting a good worth $100 f.o.b., would be entitled to a $20 cash subsidy, a $20 duty-drawback, and a $20 import entitlement. Depending on the value of the entitlement to the firm, the combined value of these incentives can be 50-60 per cent of f.o.b. value, even after taking account of actual duties paid.[11]

In addition to export incentives, there are physical targets set for the export of some manufactured commodities. In some instances, these targets are set in the firm's industrial license: as a condition of receiving the license, the firm may have to undertake to export enough to repay the foreign exchange cost of its equipment and/or its imports needed as inputs in the production process. In other instances, the government has

[11] Prior to devaluation, cash incentives for exports were even higher than they are now. These incentives were reduced with devaluation to the point where the exporter's rupee proceeds per dollar of exports were actually reduced. It is widely believed that, when the export incentives were large there was considerable over-invoicing to collect the cash subsidies. The conjunction of a lower effective exchange rate and the disappearance of "paper" exports may well explain the drop in Indian exports in the period immediately subsequent to devaluation.

decreed that all firms in an industry shall export a given percentage of their output by volume.

In these cases, which appear to be increasing in frequency, there are a number of penalties which the Government may impose for the failure to meet the export obligation. Probably the most important is the questions officials will raise at the time of application for an import license or industrial license for expansion. This can involve costly delays in receiving import licenses, thereby jeopardizing the firm's overall production process. Legally, however, the major sanction to meet the export target is that firms failing to do so will be subject to less favorable treatment of their license applications than others, especially in the event of foreign exchange shortage. This might take the form of receipt of a license for a less preferred source of foreign exchange, on one hand, or granting an import license in an amount smaller than requested, on the other.[12]

There can be little doubt that, under Indian conditions, some export incentives are highly desirable. However, firm-specific export obligations, or the condition that each firm earn its own foreign exchange, cannot help but have deleterious consequences. The criticisms of this policy have been numerous: exporters have no bargaining power when foreigners know they must export; many firms are forced to dump their products to meet the obligation,

[12] Government officials with whom I talked stated that, to date, no sanctions of this nature have been applied. Among the firms interviewed, none reported being subject to either sanction, although most were meeting their obligation and seemed to believe that they had no alternative. Many executives did mention discussions with government officials about their export performance at the time of import license application.

on occasion selling below the foreign-exchange cost of production to do so; and such policies result in many small exporters, without the establishment of any viable exporters. It goes without saying that such bilateral, or firm-specific export obligations violate every precept of economics. Indian officials defend the obligation on the ground that Indian firms must learn about the international market, and that some coercion is necessary in the early stages or no one will acquire any export experience. They concede that the cost of exporting may be very high in some instances, but believe that the cost must be paid as a part of the development process. The actual costs and benefits of exporting will be examined in Part III. At this point, it need only be noted that, when export obligations are imposed upon import-substituting firms, the import-substituting firms are the same as the exporting firms.[13]

Policies to Promote Import Substitution

Import substitution in the private sector has been accomplished primarily through the administration of licensing procedures mentioned above, in conjunction with the Five Year Plans, "indigenous content requirements", and the incentives created by the administration of the regime.

The possibility of registering one's good with DGTD and of its subsequent enumeration on the banned list creates a sizeable incentive for firms to develop import-substitutes. Similarly, importers wish to establish

[13]The automobile ancillary industry is subject to the export obligation. Much as such an obligation may not be economically desirable, it is very convenient for research. There were very few instances when domestic producers did not know the foreign prices of products comparable with their own, as well as their own f.o.b. and domestic prices.

domestic supply sources before discovering that a critical input is banned. On one hand, the possibility of virtually unlimited protection provides considerable security to potential entrants in import-substituting industries.[14] On the other hand, firms relying on imported inputs are aware that, at any time, they may be informed that there is a domestic source of supply. Since specifications, etc., are not always adequate, especially from new producers, it behooves producers to try to establish their own sources before they are forced to scramble for supplies. DGTD will, if convinced that the new supplier cannot meet domestic demand, or is producing a low-quality product due either to delays in starting up his own production, or to technical difficulties in matching specifications, reconsider and allow imports for adversely-affected producers. However, the process of submitting evidence is time-consuming, and can result in costly plant slowdown or shutdowns.

The administration of licensing and the banned list is not the only inducement for import-substitution, however. Indigenous content requirements are also laid down. Indigenous content, at least in the case of the automobile ancillary industry, is defined as the percentage c.i.f. value of

[14] Government officials are aware of this possibility and have, in recent years, laid down various guidelines as to the percentage price differential that will be permissible for new applications' acceptance. However, it is virtually impossible for entrants in new industries to forecast their costs accurately. Moreover, there is no built-in mechanism to ascertain the degree to which cost and price forecasts are in fact met once licenses have been granted. Even if prices higher than those forecast were ascertained, it is not clear what action the government could take at that time. Consequently, it is not apparent what penalties, if any, there are for underforecasting one's future costs and prices. If the GOI is using a specific domestic-foreign price rule in evaluating applications, and if that information is known, license applicants have every incentive to underestimate their future costs and prices.

semi-finished and finished commodities which are produced domestically. Suppose, for example, that an imported car costs $2,000, but that a completely knocked down (C.K.D.) car, less the electrical system, costs $1,800. If the electrical system is domestically produced by a different firm, indigenous content is 10%, even if 80 or 90% of the inputs into the electrical system are imported. From the viewpoint of the electrical producer, his indigenous content is defined as the percentage of the c.i.f. value of the electrical system's components which are domestically manufactured. His indigenous content might be 100%, even if half his costs were imported copper, providing that the wire was produced domestically.[15] The rationale for this definition is that producers are in no way responsible for the domestic availability of their raw material, but do have control over the supply of fabricated goods.

In principle, therefore, the indigenous content percentage will typically over-state the percentage foreign-exchange saving in a given line of activity. Nonetheless, indigenous content requirements serve as a spur to individual producers, not only to develop operations in their own factories to fabricate imported components, but also to seek domestic suppliers, even if they must assist, financially and otherwise, in the development of these suppliers and pay more for their product than the landed cost of the imported item.

Indigenous content schedules are compared with actual performances at the time of applying for import licenses and/or amendments to industrial

[15] For further discussion, see below, Part II.

licenses. Failure to meet schedules can result in significant delays, if not refusal, of license applications, or alternatively, the striking of certain commodities applied for in import license applications.

In addition to the possibility that an item may be banned, and a firm's own indigenous content schedule, there are other reasons why indigenous supply will, other things being equal, be preferred to foreign suppliers. First, the delays, paperwork and uncertainties involved in the import-licensing procedure can be avoided by domestic procurement. Secondly, firms typically carry much larger inventories of imported materials, when they can obtain them, than they do of domestic materials. Hence, inventory costs can be reduced if domestic suppliers can meet the firms' needs. Thirdly, even given an indigenous content schedule and the banned list, DGTD officials usually scan items on an import application, and will often suggest that particular items could be obtained domestically.

The combination of indigenous content requirements and the incentives afforded by the administration of licensing policies, is sufficient to ensure that applications will be forthcoming to develop production in virtually every line of economic activity.[16] Decisions upon license applications have been made in accordance with the targets stated in the Plans. Hence, the licensing instruments, combined with incentives to the private sector, have been used to attempt to realize stated Plan objectives. The Plans themselves have laid great stress upon import substitution, enumerating

[16] Theoretically, a license is cancelled if it is not used within a specified time period. In practice, there has been an incentive to apply for licenses to preempt other firms obtaining them, as mentioned above. In this regard, the instruments of control have been inadequate to ensure the planned outcome.

the sectors where it should occur, and relying upon import-substitution activities to be the "leading growth" industries.

Conclusion

In this Part, the means by which the import substitution objectives of the Five Year Plans have been achieved have been outlined. Implementation of the Plans has been far from perfect, due to a large number of factors. These have included unforeseen foreign exchange bottlenecks, longer-than-anticipated gestation periods, physical shortages of required inputs, and numerous other causes.

The purpose of this study is not to evaluate plan implementation, but rather to evaluate the benefits and costs of the economic activities undertaken in response to the decisions to foster import substitution. We turn, therefore, to an overview of the automobile and ancillary industry, and its growth and structure, in the next Part.

PART II. GROWTH OF THE AUTOMOBILE AND ANCILLARY INDUSTRY

Relationship of Vehicle and Ancillary Producers

In India, the automobile industry is understood to consist of the final assemblers of passenger cars, trucks, buses and jeeps. Assemblers of these products, motorcycles and scooters, as well as ancillary producers come under the purview of the Automobile Directorate of DGTD for purposes of obtaining their licenses. This group of producers is, for statistical purposes, included in the Transport sector (which also includes bicycles and railway equipment, etc.) of the Engineering Industries. Assemblers of motorcycles and scooters are not considered a part of the automobile industry, in India. Nonetheless, they will be included in the industry for purposes of this study because they produce a product competitive with passenger cars and because they purchase many of their components and parts from the same sources as the other vehicle assemblers.

Ancillary producers are those who fabricate parts and components (including subassemblies, such as braking systems, electrical systems, and so on) primarily for use in any of the above-mentioned vehicles. Ancillary producers typically sell their products as original equipment (OE) to the assemblers, and, in addition, sell under their own brand names to wholesalers and others for the replacement market. The relative importance of OE and replacement sales varies with the type of product: carburetors and mufflers are sold as replacement parts much more frequently than rear axles and crankshafts.

Prices, ex-factory, for replacement are above those for OE throughout the world. The differential depends on the size of the replacement market,

and other factors. For some parts (e.g. tires) the ratio of replacement demand to OE is very high, and the differential in price rather small; for others, (e.g. door frames), there is little, if any replacement market, and the price differential is considerably greater. Part of the price differential between OE and replacement reflects the added costs of holding inventory for out-of-date parts, handling, special packaging, and the like. Part of it, however, reflects the bargaining power of the large assemblers, and the fact that use of a component as OE will increase the future replacement demand for it.

The definitions of the automobile and ancillary industry do not provide a neat dichotomy between vehicle and ancillary producers in any country. Vehicle assemblers almost always undertake the fabrication of some parts, components and subassemblies within their own plants. As such, from an economist's viewpoint, the vehicle assemblers are also ancillary producers, although there are many ancillary units that are not vehicle assemblers.

The extent to which vehcile assemblers facbricate their own parts or buy from other firms varies from company to company, and firm to firm, throughout the world. Swedish producers (Volvo and Saab) have the lowest fraction of in-factory fabrication (importing most parts and components), while Fiat is virtually self-sufficient.[1] American vehicle producers have steadily increased in-factory value-added as a per cent of ex-factory price over the years. There have been significant differences between

[1] Economist, October 23, 1965, Special Supplement, P. xiii.

the American companies (with General Motors the most integrated), but all now base their decision as to whether to make or buy on bids from their own shops and from ancillary producers.[2] The American companies, on average, tend to have a higher ratio of value-added to ex-factory price than any other country except Italy, where Fiat dominates.

Depending on how one counts, there are over 16,000 individual components in a vehicle, and 200 subassemblies.[3] Of the individual components, the vast majority, by number, are fabricated metal products. These items - crankshafts, frames, chassis, axles, wheels, valves, cylinders, exhausts, doorlocks, springs, bumpers, etc., - are generally cast, forged or stamped from various grades of steel, the grade depending in large part on the functions of the particular item in the operation of the subassembly or vehicle. In addition, however, there are a host of other operations: chemical processes, electrical and instrumentation parts manufacture, and the like.

As producers of components and parts, the assemblers compete with the ancillary firms. There are other features of the industry, however, which leads to close buyer-seller relations. One is quality control. At a minimum, parts must fit together. Moreover, the malfunction of a single part in a fully-assembled vehicle can entail high costs of disassembly and

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[2]Robert Crandall, The Journal of Industrial Economics, July, 1968.

[3]Henry M. Cunningham and William F. Sherman, Production of Motor Vehicles, McGraw-Hill, 1951, P. 79

replacement.[4] As will be seen below, quality control has been a major and difficult problem confronting the Indian automobile and ancillary industry.

In addition to quality-control considerations, other factors also lead to considerable buyer-supplier interdependence. Buyers cannot decide on a model changeover, or smaller changes in specifications, without collaboration with their suppliers. Similarly, suppliers will generally be relunctant, if not unwilling, to incur the costs of tooling for a particular specification unless they are assured of a substantial flow of orders. Moreover, the fact that a supplier is tooled up to make a component for car A does not mean that he can supply another assembler without additional investment in new moulds, dies, tools, etc.. The more special purpose a particular machine is, the more this tends to be true.

For all the above-mentioned reasons, and because vehicle output is an important component of demand for ancillary products, it is impossible to consider the growth of the ancillary industry independently from that of the main assemblers. That growth, in turn, cannot be understood without a knowledge of government policy toward the industry.

Government Policy Toward the Indian Automobile and Ancillary Industry

Automobile assembly plants were built in India in the interwar years. They were all foreign-owned, and were designed to import partially assembled or C.K.D. vehicles for assembly and distribution in India. During World

[4]An example of a very minor malfunction will illustrate. One Indian assembly firm received several shipments of lampbulbs whose insulation properties were, as it turned out, inadequate. The first time the headlamps were turned on, the bulb fused with the lamp. The removal of a fused bulb is a lengthy and costly operation. When the malfunctioning part is on the interior of the assembly, the situation is even more serious.

War II, two Indian-owned companies were founded, with the intent of fabricating some components, and assembling vehicles in India.

In the early post-war years, these two firms (Hindustan Motors and Premier Automobiles Limited - PAL) commenced assembly operations. Meanwhile, the Government was developing its policy toward the industry. This policy emerged over the next decade as a series of measures was adopted. The first was in 1949, when imports of built-up vehicles were stopped. By 1952, there were twelve companies assembling vehicles in India, of whom only Hindustan Motors and PAL did more than mere assembly.[5]

Several panels and commissions reported on the industry, between 1949 and 1953 and tariff levels were adjusted to encourage domestic production. This pattern changed markedly with the Tariff Commission inquiry of 1953.[6] Upon the Commission's recommendation, the Government decided that all firms without a definite timetable for the progressive manufacture of components in India should cease operations. Such a timetable was to indicate the nature and timing of new fabricating facilities, and to indicate the per cent indigenous content to be achieved at various dates. The Tariff Commission suggested a target of 50 per cent indigenous content by 1956.

Hence, import prohibitions and domestic control requirements became the chief instruments for encouraging the industry's development. Further,

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[5]For a fuller account of the history of the industry, see Association of Indian Automobile Manufacturers, The Automobile Industry of India 1964-65, Times of India Press, 1966; and Tariff Commission, Government of India, Report on the Automobile Industry, 1956, Government of India Press, Delhi, 1957. Statistical data are available in Hindustan Motors Limited, Automobile Facts and Figures, various years, N. K. Gossain & Co., Calcutta.

[6]Tariff Commission, Report of the Tariff Commission on the Automobile Industry, Government of India, 1953.

the Government decided that commercial-vehicle production should be treated as a priority industry, while passenger-car production should not. To offset the increases in costs anticipated with domestic production of parts and components, the Government lowered duty rates on some components whose importation was still allowed. The producers with definite manufacturing programs were given liberal treatment in their requests for foreign exchange to meet their tooling needs.

By 1956 there were four manufacturers with an approved manufacturing program. These were Hindustan Motors and PAL for passenger cars, Ashok-Leyland for trucks, and Mahindra and Mahindra for jeeps. In addition, Tata Engineering and Locomotive Company Limited (TELCO) had received approval for the manufacture of trucks in collaboration with Daimler-Benz A.G. Two companies were approved for the manufacture of diesel engines. Passenger car prices, however, had increased considerably.

Another Tariff Commission inquiry was held.[7] The Commission noted that the assemblers had not reached their 50 per cent indigenous content target, explaining that

> "Experience has shown,...,that the domestic costs of production of automobile components are very much higher than their import costs, with the result that in most cases each important step towards implementation of the manufacturing programme results in increasing the overall cost of the domestic producer and reducing his overall profit margin...Although it was originally intended to so administer the import policy as to confer a relative advantage on manufacturers as against assemblers, in practice the import policy has so operated that firms which have made less progress in manufacture have been able to build up a bigger turnover in relation to their capital employed."[8]

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[7]Tariff Commission, Report on the Automobile Industry, 1956, Government of India, 1956.

[8]Ibid., Pp. 48-49.

It was recommended that gradual increases in indigenous content continue, but that items whose domestic cost of production would greatly exceed the world prices continue to be imported. As of 1956, there was excess capacity in the automobile industry. Because of excess capacity and despite high domestic prices of vehicles, the Tariff Commission recommended against price controls. The Government essentially accepted the Tariff Commission's recommendations. Hence, the 1953 policies continued in force, with their outline somewhat clearer.

The Indian balance-of-payments crisis of 1957-58 fundamentally altered the situation. By that time, there were three passenger car producers: Standard Motor Products had entered the field. It was decided that, to conserve foreign exchange, each of the three assemblers should produce only one model of passenger car, that one being the one with the lower foreign-exchange content per unit. PAL and Standard Motors ceased production of the Baby Hindustan - the lowest priced car in India at that time. Even with a reduced number of models, the foreign exchange allotted to the assemblers was cut so drastically that passenger car production fell markedly. Simultaneously, with rising incomes, domestic demand for passenger cars increased, and a two-year backlog of orders quickly emerged.

The Government immediately imposed Informal Price Controls, and the manufacturers were instructed to deliver cars to dealers in the order in which the dealers had received and registered their orders, without discrimination. Individuals wishing cars were required to place a deposit with Indian Postal Savings. Interest was paid on these deposits at the

normal Postal Savings rate, and persons who had ordered cars were free to cancel their order and receive their deposit back at any time. The deposit system continues in effect at the present time.

In 1959, an Ad Hoc Committee was appointed by the Government to investigate the industry. Known as the Jha Committee, it summarized the state of the industry:[9]

> "Our enquiry began at a time when there was a great deal of consumer resentment against the industry. This was not altogether a new or sudden development. Ever since the automobile industry was given formal protection, the consumer had complained on one score or another. Initially the complaint was about the restriction of choice which was inherent in the shutting out of imports of built-up vehicles. Coupled with this there were complaints about the quality of the indigenous vehicle. Later the dissatisfaction was more acutely expressed about the increased prices at which the vehicles were available. Then came complaints about the prices charged being higher than those officially fixed. And on top of it all this (sic) was the grievance that vehicles were just not available, except after periods of prolonged waiting."

The Jha Committee evaluated the industry's progress. It urged that efforts be made to increase indigenous content more quickly, and to spur ancillary production. It reviewed the price controls then in effect, and recommended that they be continued. The Government accepted these recommendations and, in addition, announced that it would favor the development of part and component production by firms other than the final assemblers. Thus, the basic push for increasing indigenous content was continued, and the impetus to independent ancillary producers was given. Up to 1960, most increases in indigenous content resulted from the assemblers adding

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[9] Report of the Ad Hoc Committee on Automobile Industry, Government of India Press, New Delhi, January, 1960, P. 1.

to their production capabilities; after 1960, the development of domestic suppliers increased in importance.

The Jha Committee was also given one other issue to investigate: it was to ascertain the feasibility of a "Small Car Project". The idea behind this was that, if a passenger car could be produced and sold at a price to consumers in the range of Rs. 5,000 to Rs. 7,000, it would be possible for the middle-class consumer to buy an automobile. The Committee received and evaluated a large number of proposals, but recommended further study before accepting any of them, expressing doubts that any were feasible, and indicating concern as to the consequences should a project be accepted, and then be unable to meet the cost estimates. Hindustan Motors, incidentally, did offer to reintroduce the Baby Hindustan, whose production had been discontinued in 1957-58, at a price within the desired range, which would have been less than twenty per cent above the comparable United Kingdom ex-factory price, but the proposal was not accepted.

The "Small Car Project" has never been implemented, but there is still discussion of it. Virtually all recent studies have indicated that the project is not feasible, especially in view of the heavy tax component in the ex-factory price of passenger vehicles. Nonetheless, the project is not officially shelved, and has had two continuing effects. First, the government has not allowed expansion of capacity in the existing passenger car assemblers' plants because of the possibility of the project. Secondly, the "Small Car Project" has created uncertainty in the industry throughout the period since it was first mentioned. Most of the assemblers are on

record as favoring the project in the public sector, because they are convinced that their performance would appear favorable by comparison[10] and that they would therefore receive better treatment with regard to price controls, etc., from the Government. The "Small Car Project" continues to be a factor in decisions concerning the passenger car industry, although there is no way of ascertaining its effects quantitatively.

Since 1960, the push toward domestic self-sufficiency has continued. It will be seen below that, by the end of the decade, virtually all parts and components for vehicles were fabricated in India. The basic features of Government policy remain unchanged, and only a few events require mention. In 1965, the lines of production open to assemblers and ancillaries were formally demarcated. This will be discussed at greater length below. After the Indian recession of 1966-7, truck producers found themselves with considerable excess capacity, and price controls over commercial vehicles were discontinued in 1969.[11] In 1967, the Government appointed a Committee to investigate the quality of motor cars,[12], but no fundamental changes in policy resulted. More significant was the Tariff Commission inquiry into passenger car selling prices in 1968.[13] The Tariff Commission considered the producers' costs, and recommended a price for the Fiat

[10]See, for example, Standard Motor Products, Crossroads 4, Automobile Cars July, 1967, Pp. 6-7, (published by Standard Motor Products, Madras).

[11]Industry executives claim that there was an "understanding" that there would be no increases in price for one year after decontrol.

[12]Government of India, Ministry of Industrial Development and Company Affairs, Report of the Motor Car Quality Enquiry Committee, New Delhi, December, 1967.

[13]Government of India, Tariff Commission, Report on the Fixation of Fair Selling Prices of Automobiles, Bombay, 1968.

(produced by PAL) below the estimated unit cost of production.[14] Notwithstanding this, PAL increased the price of the Fiat, whereupon formal price controls were imposed. The passenger car companies have challenged this decision in the courts, but at the time of writing, no decision has been reached.[15]

One last item is worthy of mention. When priority industries were designated after devaluation for purposes of facilitating import procedures, the ancillary industry and commercial vehicle assemblers were included among them, but passenger car assemblers were not. Subsequently, an export obligation was imposed upon the automobile and ancillary industries, among others. In the winter of 1970, the obligation covered all firms which had been in production five years or more. Those firms were obligated to export at least five per cent of their output (by volume) and special inducements were available for those exporting in excess of ten per cent.

This brief description of Government of India policy gives some idea of the degree to which government officials are intimately involved in

[14] Ibid., The estimated cost (p. 56) of the Fiat was Rs. 13,812 while the recommended ex-factory price was Rs. 13,300 (p. 69). The Tariff Commission based its recommendation upon its view that Fiat's costs were excessively high and could be substantially reduced.

[15] Standard Motor Products claimed that it, also, would lose money if it had to sell at the prices recommended by the Commission, although the Tariff Commission estimated its costs to be below the price it set. After the research for this paper was completed, Standard Motor Products ceased production.

every aspect of private sector behavior and decision making. The general policies have been implemented through the licensing procedures described in Chapter I. Analysis of the effects of these policies is reserved to Part III.

Growth of the Automobile Industry

We consider first the growth of vehicle production in India. The simplest measure is number of vehicles produced. Table II-1 presents these data, by type, since 1948. Passenger car production has grown continuously, except when interrupted by foreign-exchange or materials shortages. Commercial vehicle production grew even more rapidly - encouraged by government policy, under conditions of excess demand and price controls - until the Indian recession started in 1966. Since then, truck production has declined, and there has been excess capacity in commercial-vehicle producing facilities.

The average annual increase in number of vehicles produced was 18.0 per cent during 1953-1969. While the absolute level of production is well below that of most automobile manufacturing countries (with the notable exception of some Eastern European nations), the rate of growth is impressive.

The composition of Indian output is more heavily weighted toward trucks than is the case in most countries. This can be seen in the last column of Table II-1. Almost half of vehicle output, by numbers, has been trucks. In value terms, the percentage is higher, and if jeeps were included as commercial vehicles, the percentage would be higher still. Prior to [illegible] trucks accounted for over half the total vehicle output over the preceding decade. [illegible] indicated above, this mix has been the result of deliberate government policy.

TABLE II-1. PRODUCTION DATA: VEHICLES 1948-1969

(Numbers Produced)

	Passenger Cars	Jeeps	Commercial Vehicles		Total	Per Cent Commercial
			Diesel	Petrol		
1948	3146		356	4345	7847	59.9
1949	1786		237	4487	6510	72.6
1950	2221		171	1720	4112	46.0
1951	3478		47	2134	5659	38.5
1952	2093		68	2613	4774	56.2
1953	2492	1175	292	2462	6421	42.9
1954	4995	2460	820	4234	12509	40.4
1955	10001	2864	4504	4683	22052	41.7
1956	13339	3988	9697	4411	31435	44.9
1957	12203	4029	12327	3578	32127	49.5
1958	8114	3550	11917	3088	26669	56.2
1959	11993	4555	15779	4007	36334	54.5
1960	19097	5501	23151	3387	51136	51.9
1961	21662	7052	22182	2765	53661	46.4
1962	23326	7557	23503	2542	56968	45.7
1963	15711	8104	24246	3348	51409	53.7
1964	23227	10391	25775	6034	65427	48.6
1965	24790	10488	30399	5269	70985	50.2
1966	27597	9777	29366	4228	70968	47.3
1967	33344	5561	26859	4595	70359	44.7
1968	37308	7293	29676	5264	79541	43.9
1969	34413	7467	28975	6128	76983	45.6

Source: Association of Indian Automobile Manufacturers, Bombay.
1969 Data include December estimates.

The data given in Table II-1 understate the growth in output of the assemblers, because they neglect the trend toward increasing in-plant fabrication. As mentioned above, there were no fabricating operations in any assembly plant in India in 1948. Not only has the number of vehicles assembled increased rapidly, but value-added per vehicle has increased as well. While it is impossible to estimate the growth in value-added, due to the unavailability of appropriate price deflators, it has surely been in excess of thirty per cent.

The data given in Table II-1 indicate that there has been a decline in the growth rate of vehicle production in recent years, even if allowance is made for the effects of the recession. Since in-factory value added per vehicle also increased most rapidly in the late 1950's, it would appear to be the case that the rate of growth of output, although high, has tapered off somewhat since the early 1960's.

Production data, of course, do not necessarily indicate the rate of growth of capacity to produce. Table II-2 gives data on production of vehicles and licensed capacity for selected assemblers. It is difficult to define capacity in an economically meaningful way, and more so to estimate what it is. This is especially so in India, where import licenses are granted upon the basis of licensed capacity. As such, there are built-in incentives to overstate capacity, and to overinvest.[16] Moreover, in the case of vehicle assembly, it is the flow rate of parts and components which governs the rate of output; little investment is required to establish

[16] See Bhagwati and Desai, op. cit. for a fuller discussion of this problem.

TABLE II-2 LICENSED CAPACITY AND ACTUAL PRODUCTION OF VEHICLE MANUFACTURERS

Selected Years

(Number of units produced)

	1956		1960		1963		1969	
	L.C.	A.P.	L.C.	A.P.	L.C.	A.P.	L.C.	A.P.
Hindustan Motors cars	18,000	8493	16,000	16,296	22,000	14,436	38,000	22,679
PAL cars	12,000	11,007	17,200	12,863	17,000	10,066	23,500	15,708
Standard Motors	6,000	1,836	6,000	3,364	6,000	3,340	6,000	1,705
TELCO	7,500	5,153	12,000	9,665	16,000	12,424	24,000	20,497
Ashok-Leyland	1,500	654	3,000	2,018	4,000	2,732	7,000	4,843
Mahindra & Mahindra	4,800	4,292	5,500	6,930	10,000	8,411	12,000	7,467

Sources:

1956: Tariff Commission, Report on the Automobile Industry, 1956

1960: Jha Committee Report, P. 67. These are "installed capacity" estimates.

1963: National Council of Applied Economic Research, Taxation and Price Structure of Automobile Industry, Table 15, p. 118, New Delhi, 1967.

1969: Handbook of Statistics, 1968/9 Indian Engineering Association.

L. C. = Licensed capacity

A. P. = Actual production

another assembly line, and very often the capacity of a single line can be increased by adding additional men at key points.

Nonetheless, the data in Table II-2 are interesting, and highlight certain economic facts of life in India which are important in understanding the ancillary industry and the environment in which it has developed. Superficially, it would appear that all firms have had idle capacity throughout their existence. This conclusion would be erroneous, however, Although part of the apparent unutilized capacity has resulted from delays between receipt of license and installation of capacity, that is only part of the explanation. Shortages of materials have served as an effective constraint upon output for some firms, while others have been unable to find markets for their output of the same materials. TELCO, for example, had a licensed capacity of 24,000 trucks in 1969, which was probably representative of its capacity to assemble trucks. It produced 20,497 trucks, and had a large backlog of orders. In fact, production was determined by the availability of men and materials. Ashok-Leyland, by contrast, produces two weights of commercial vehicles. There is a backlog of orders for the lighter-weight vehicle, for which licensed capacity if 5,000, and of which 4,500 were produced. By contrast, there is little demand for the heavier trucks, for which capacity is 2,000 and output several hundred. Ashok-Leyland's output of the lighter vehicle is limited by the availability of men and materials, and physical plant, while for heavier vehicles, lack of a market limits output. Contrasting sharply with Ashok Leyland and TELCO are Hindustan Motors and PAL, both of whom have idle capacity in commercial

vehicles. They, however, are confronted with backlogs of orders for their passenger cars.

Hence, actual output, even in the same industry, is determined by a number of factors. Some firms are producing all they can, with backlogs of orders; materials bottlenecks are frequently a more significant constraint upon output than physical capacity. Side by side with these firms, competitors may have excess capacity due to a lack of orders at their current selling prices.

It is noteworthy that, with the exception of Standard Motor Products, all firms have expanded their licensed capacity, even when existing capacity has not been fully utilized. In part, this reflects the more extreme nature of excess demand which existed prior to 1966. In part, it reflects the fact that supplies of materials, and especially imports, increase as licensed capacity increases. The fact of existing idle capacity, therefore, in the Indian context, is not an argument for failing to expand one's productive facilities.

It was mentioned above that value added per vehicle has increased, and that this increase should appropriately be considered part of the industry's growth. Unfortunately, such data are not available. Estimates of the indigenous content of vehicles are, however, available. From the viewpoint of rational resource allocation, the relevant criterion for examining this growth is the degree to which domestic resources were employed, and the net foreign exchange saving in the process of increasing indigenous content. By contrast, the Government has adopted a formula to measure

indigenous content C_i which is far different. In effect, it is:

$$C_i = 1 - \frac{M_i}{P_i}$$

where M_i is the ex-factory (foreign) value of components which are imported and P_i is the ex-factory foreign price of the assembled vehicle.

The difficulties with this approach are illustrated with hypothetical data in Table II-3. It is assumed that an assembled car can be imported for $2,000. We now consider five hypothetical alternatives. In the first situation, a C.K.D. vehicle is imported, with a consequent reduction in price of $200 in the C.K.D. pack and the indigenous content is 10 per cent. In situation II, a domestic manufacturer undertakes to make a part, importing $100 worth of components, and selling it to the assembler for $200. The domestic assembler then imports only $1600 of components so his indigenous content is 20 per cent, despite the fact that imports are reduced 15 per cent. Situation III is identical to Situation II, except that the vehicle assembler undertakes production of the components. Hence, in an identical situation from the viewpoint of the economy as a whole, indigenous content is less.

In Situation IV, it is assumed that the assembler undertakes production of a major component, importing $500 of raw materials, spending $500 of domestic resources, and reducing the value of imported components to $1200. His indigenous content is calculated to be 40 per cent, although the total import bill is the same as in Situations II and III. The rationale for

TABLE II-3. INDIGENOUS CONTENT PERCENTAGES,
various circumstances

	Imports of Raw Materials		Components Purchased from Domestic Sources	Domestic Cost of Components Fabricated in Plant	Imported Components	Indigenous Content
		Price	Import Content			
I	0	0	0	0	1800	10
II	0	200	100	0	1600	20
III	0	0	0	100	1700	15
IV	500	0	0	500	1200	40
V	500	2000	1000	500	0	100

considering the entire component indigenous is that "...it is no part of the automobile manufacturers' (SIC) responsibility to produce his own raw materials."[17] In Situation V, the vehicle manufacturer continues his fabrication, as in IV, while domestic firms, with imports of $1000, sell him all other required components. In that case, the vehicle assembler's indigenous content is 100 per cent, even though the total import bill is $1500.

The indigenous content calculations also apply to automobile ancillary producers. Hence, they can, either by buying from yet other firms, or importing raw materials, show very high indigenous content percentages which may or may not bear any relation to the import content of their product. The stated reason for regarding an indigenously purchased item as 100 per cent indigenous

[17] Jha Committee Report, op. cit., p. 11

is that, "...it is desirable to encourage development of the ancillary industries and to give every inducement to automobile manufacturers to buy components from outside..."[18] Similarly, imported raw materials are not considered an indigenous content calculations because that would discourage domestic producers from undertaking fabrication of items requiring imported raw materials.

Hence, indigenous content measures are virtually meaningless economic indicators from the viewpoint of estimating foreign exchange saved, or international value of production. They do, however, give some indication of the changed structure of the industry over the years, and are therefore presented in Table II-4 for selected years. In 1956, only Hindustan Motors' indigenous content was as high as 50 per cent. By 1964, all assemblers except Standard Motor products had increased their indigenous content to the range of 74.82 per cent. By 1969, all assemblers had indigenous content in excess of 94 per cent.

While the indigenous content percentages do not provide reliable estimates of foreign exchange saving, they do indicate the extent to which the vehicle manufacturers have reduced their direct dependence on foreign sources for vehicle components. This reduction in direct dependence on imports of finished goods has been accomplished very rapidly, and is truly remarkable as a technical feat. The economic costs and benefits of this reduction will be considered below.

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[18] Jha Committee Report, op. cit., p. 12.

TABLE II-4. INDIGENOUS CONTENT ESTIMATES
Selected Years

	1956	1960	1964	1969
Fiat 1100 (PAL)	30	47	74	99
Ambassador (Hindustan Motors)	50	70	82	95
Jeep (Mahandra & Mahandra)	45	65	81	99
Leyland Comet	35	39	82	94
Telco	45	64	76	95
Standard	20	32	62	97

Sources: (1) 1956: Association of Indian Automobile Manufacturers, Automobile Industry of India, op cit.

(2) 1960: Jha Committee Report.

(3) 1964: average of estimates by NCAER, Taxation and Price Structure...p. 130 and Government of India, Ministry of Industrial Development and Company Affairs, Report of the Motor Car Quality Enquiry Committee, 1967.

(4) 1969: estimates given to the author by company officials. The Hindustan Motors estimate includes all direct imports, not just components.

Prices and Taxes

Prices. As indicated above, passenger cars were subjected to informal controls at the time of the foreign-exchange crisis of 1957-8 and continued to be so until formal controls were imposed in 1969. Truck prices were also subject to informal controls from the late 1950's until 1969.

There are price controls over passenger cars, but none on the ancillary producers. The official rationale for this anomoly is that the passenger car producers cannot pass on price increases without delays and administrative action; therefore, they will resist attempts to raise prices on the part of the ancillaries. However, the ability of each component supplier to delay the entire production process affords each such supplier a fair degree of monopoly power, at least in the short run. The large vehicle producers have a partial offset, however, in that the decision to change suppliers would virtually assure the failure of the present supplier. This threat, of course, can only be effective when there is a viable alternative source of supply. In most instances, any alternative supplier would have to import some equipment (dies, moulds, etc.) before they could start production, even if they were already producing a similar component for another type of vehicle.[19]

Table II-5 gives the prices of selected vehicles for the period 1955 to 1968. The last four rows give the percentage price increases for the intervals 1956 to 1960, 1960 to 1965, and 1965 to 1969, and for the 1956-to-1969 period as a whole. The Indian wholesale price index has increased, over the comparable periods, by 21, 31, 34, and 115 per cent respectively. The ex-factory prices of vehicles, therefore, fell in real terms in the face

[19] Many Indian officicials are hopeful that the revision of industrial licensing policy made in the summer of 1969, will make it easier for new sources of supply to be established. As indicated above, it is difficult to forecast the effects of the changes.

TABLE II-5. EX-FACTORY PRICES, PASSENGER CARS AND SELECTED COMMERCIAL VEHICLES, 1955 to 1969

(Rupees)

	Ambassador	Fiat	Standard	Jeep	TMB	Dodge	Bedford
1955	8,380	7,690	8,043	10,591	21,898	21,520	20,632
1956	8,380	8,043	8,043	10,591		21,520	22,180
1957	9,090	8,043	8,591	10,591	21,795	21,660	22,180
1968	10,146	8,868	8,591	11,055	22,861	21,982	22,180
1959	10,146	8,909	8,591	11,425	23,311	23,221	22,180
1960	10,506	8,937	8,621	11,470	23,711	23,983	22,180
					(27,601)*		
1961	10,506	8,816	9,129	12,388	23,718	23,992	22,180
					(28,315)		
1962	10,619	8,815	9,381	12,753	24,395	24,162	22,180
					(28,562)		
1963	11,083	8,929	9,444	12,928	24,642	24,172	22,247
					(30,831)		
1964	11,147	9,502	10,182	14,237	26,911	25,559	24,699
					(31,046)		
1965	11,507	9,558	10,191	14,237	27,126	25,751	24,880
1966	12,422	11,219	11,102	15,129	(34,230)	27,637	26,067
1967	13,857	12,664	12,154	16,222	(35,220)	29,605	29,844
1968	14,843	12,679	12,598	16,275	(36,530)	31,066	
1969	15,310	14,862	N.A.	17,496	(38,180)	34,601	41,124
Percent Increase							
1956-60	24	16	7	9	9	11	7
1960-65	9	7	18	8	10	7	12
1965-69	33	55	N.A.	22	*	34	65
1956-69	83	85	N.A.	65	*	61	99

SOURCES: NCAER, and Report on the Fixation...

Data for 1968 and 1969 supplied by the Association of India Automobile Manufacturers

*Figures in parentheses reflect quotations on the L312/42 which are not available for earlier years. Price quotations are therefore not comparable.

of rapidly increasing indigenous content. The Ambassador, for example, rose in price by 83 per cent (although in 1956 the car was the Landmaster), compared with a 115 per cent increase in wholesale prices generally. Hence, increasing indigenization did not raise the ex-factory real price of vehicles over the period. Since there is evidence that components purchased domestically cost more than the landed cost of imported components, this reduction in real cost of vehicles in India is the more remarkable. Either price controls resulted in decreasing profit margins, the quality of vehicles produced deteriorated, or the vehicle assemblers achieved sizeable increases in productivity.

There remains, however, the question of the level of vehicle prices, relative to that prevailing in other countries. If, for example, the big increase in relative prices of vehicles occurred in the 1953-1956 period (for which price data are unavailable), then the level could have been very high by the start of the period under examination.

Comparisons of price are always perilous, and never more so than among non-comparable vehicles. While all Indian vehicles are built from specifications supplied by foreign collaborators, the vehicles are generally models that were current in earlier years in the collaborators' countries. All other things equal, this should mean that, if comparable models could be priced, Indian prices should be lower, since older designs are presumably of somewhat lower quality. However, even on comparable models, there can be quality differences. This can result from the use of inferior materials (of which Indian glass is perhaps the worst horror story), inadequate quality

control, or inferior components.[20] There is no way of making allowances for these differences.

Despite these qualifications, there have been a number of attempts to compare the prices of Indian and comparable foreign vehicles. These comparisons are summarized in Table II-6. The 1956 estimates, made by the Tariff Commission, compared landed cost of a C.K.D. pack with the domestic costs of partial manufacture (less those items which had to be manufactured in either case). At that time, of course, well over half the cost of domestic manufacture was imported components. The domestic ex-factory costs averaged about 30 per cent over comparable foreign makes.

The 1963 and 1967 estimates are probably fairly comparable, in terms of the underlying methodology, and both were made with care. In these cases, and for 1969, comparison is made of the domestic and foreign ex-factory prices. It is difficult, therefore, to contrast the later estimates with the 1956 ones. Given the predominance of Hindustan Motors in the passenger

[20] See Government of India, Ministry of Industrial Development and Company Affairs, Report of the Motor Car Quality Enquiry Committee, December, 1967, Delhi. Excerpts from the introduction of the report will indicate the nature of the problem: "...There is hardly a new car which...does not have defects which could easily have been rectified...Door rattling and hard closing, poor finish of paint, defective switches, slipshod finish of body trim, and improper alignment of body components are but a few of the defects easily noticeable...Some of these troubles, like stiff steering...or the distortion of the engine hood...or early tire wear...are, to some extent, influenced by inadequacy of basic design for prevailing operating conditions. On the other hand there are many defects such as smoky engine, excessive oil consumption, early deterioration of paint and failure of electrical fittings, which are the end result of poor workmanship and inadequate quality control... There have been cases of rear axle breakage...found to have been caused by piping and inclusions in the raw material itself...Defective gears, incorrect machining, ineffective synchro-meshing, hard engagement, etc...The steering box...is secured by four set screws but without any locking device. These set screws are working loose and there have been a number of cases of the cover plate falling off in service, leading to complete loss of steering control..." (excerpted, Pp. 9-11).

car field, it would appear that the ratio of Indian to foreign prices of passenger cars declined slightly between 1963 and 1967. However, in view of the devaluation of the rupee, the decline (from 181 to 157) was not as marked as would have been expected with a 40 per cent devaluation.[21]

The 1969 figures are not comparable with the preceding estimates. They are data supplied to the author, giving Indian ex-factory prices for export and for the domestic market. Since the exports went to countries where India had bilateral trading agreements, even the export prices may not reflect the differential between India and other producers.

When it is recognized that the 1956 comparisons are landed cost with domestic cost, while the 1963 and 1968 estimates are ex-factory prices (which is less favorable to the Indian producers), comparison of price changes is hazardous, especially in view of the overvaluation of the Rupee prior to 1966, and the domestic inflation since then. Nonetheless, there is nothing in the domestic-foreign price comparisons which is inconsistent with the conslusion that the real price of vehicles in India has declined. Further, the evidence suggests that Indian vehicles are not more costly, relative to those in other countries, than they were in 1956, and they may even be less so.[22]

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[21] Taxes imposed upon vehicles' inputs in India are probably higher than abroad, and rose between 1963 and 1967. Differences in taxes must be taken into account before any interpretation of relative prices is made.

[22] This conclusion is consistent with that of Jack Baranson. He used Fiat and a truck manufacturer as a basis of comparison, and concluded that trucks were competitive, but cars were not, internationally. It will be a recurring theme of this work that there can be large differences in efficiency among firms producing comparable products within India. See Baranson, Automotive Industries in Developing Countries, Pp. 33-5. International Bank for Reconstruction and Development, 1969.

TABLE II-6. COMPARISONS OF INDIAN AND FOREIGN VEHICLE PRICES

A. 1956 Comparisons

	Hindustan	Studebaker Truck	Dodge Truck	Standard Car
India	7,131	9,609	10,299	7,709
Foreign	5,298	7,200	8,102	6,061
Index	135	133	127	127

B. 1963 Estimated Ratios

	Passenger Cars	Commercial Vehicles	Jeeps	Motorcycles
Index	181	181	161	143

C. 1967 Estimates

	Ambassador	Fiat	Standard Herald
India	12,817	13,312	11,577
Foreign	8,160	7,200	6,523
Index	157	192	177

D. 1969-70

	Truck 1	Truck 2
India domestic	29,559	43,150
Export	21,000	31,898
Index	140	135

SOURCES:
1956: Tariff Commission, Report on the Automobile Industry 1956, Pp. 86-92. Foreign prices are for a C.K.D. pack (with normal deletions) landed cost, without duty, Domestic prices are estimated costs, less customs duty and costs of items comparable to those deleted from C.K.D. pack.

1963: NCAER, op. cit. P. 21. Ex-factory prices are the basis of comparison.

1967: Report on the Fixation..., loc. cit.

1969-70: Data on ex-factory price for domestic sale and for export supplied to the author.

Taxes. Thus far, the discussion has been carried out in terms of ex-factory prices. In India, the ex-factory price of a vehicle is the same throughout the country; delivery costs are absorbed by the manufacturers and dealers. However, ex-factory prices are not the same as net prices to dealers. Net dealers' prices include an excise tax, imposed by the Center, and sales taxes, imposed by the States.[23] Moreover, there are numerous taxes and import duties imposed upon materials and fabricated products at earlier stages of the production process which constitute an element of cost to producers at those and later stages of production.

Turning first to the build-up from ex-factory to consumer prices, there are three elements: 1) costs of transport from the factory to the dealer, 2) dealers' margins, and 3) the excise and sales taxes. In practice, the vehicle producers and dealers absorb the cost of delivery, as already mentioned. Dealers' margins are regulated by the Government of India, and were set in fixed rupee amounts as a percentage of the 1956 price of vehicles.[24] These amounts remained in force until the Tariff Commission study of 1957, when it was recommended that manufacturers and dealers work out margins between themselves for all vehicles except passenger cars, for which a 7 1/2 per cent margin was recommended.

[23]The terminology used in this section differs from that used in India; the excise taxes are in fact paid by the final assemblers. It will simplify the discussion of costs here and later to consider the ex-factory price the rupee amount received per vehicles by the assemblers. The prices quoted above are ex-factory in that sense.

[24]See Fixation of Fair Selling Prices..., loc. cit., Pp. 108-115.

Even without considering the indirect taxes paid by the assemblers and their suppliers, the excise tax is substantial. Table II-7 presents the ex-factory prices, dealers' margins, and the combined excise and sales taxes, in force in 1964 for a selected group of vehicles. As can be seen, excise and sales taxes constituted 19-20 per cent of consumer price, and almost 30 per cent of the ex-factory price at that time. While taxes have been increased somewhat since that date, there has been little change in the order of magnitude of taxes relative to ex-factory prices and consumer prices.

The excise taxes on passenger cars have been imposed because cars are deemed a "luxury". In the face of excess demand for cars (which has diminished markedly since the recession, but may well increase as the level of economic activity rises), two questions can legitimately be asked: 1) would it not make sense to increase the tax on passenger cars to eliminate this excess demand, and 2) if commercial vehicles are viewed as "priority" and there is excess capacity in production facilities, should not taxes upon these vehicles be reduced? The first question is the easier to answer: it makes little sense to subsidize purchasers of passenger cars.[25] Given the long waiting list for cars, it has been illegal for a purchaser to resell his vehicle within two years of purchase. Nonetheless, the price of two-year old vehicles was, throughout most of the 1960's, well above the price of a new vehicle. Even with the reduction in length of waiting

[25] Members of Parliament and senior civil servants have received preferential treatment in the distribution of cars. Many Indians, in conversation, have suggested that it is this implicit subsidy to the policy-makers which has led to maintenance of controlled prices and failure to increase taxes.

list that has occurred since the recession, the price of a two-year-old Fiat was above the controlled new-car price in the winter of 1970.[26] Hence, the wealthy could (and did) in effect own and operate a car without any depreciation cost. The net result of the failure to raise taxes has been an implicit subsidy to car-owners, presumably the wealthy.

Whether commercial vehicle taxes should be lowered is more difficult to judge. It could be argued that road wear-and-tear costs are such that taxes on commercial vehicles are warrented, and that encouragement of use of the railways is socially more desirable. In that event, it is difficult to understand why commercial vehicles should be deemed "priority". If expansion of the fleet of Indian trucks and buses will result in congestion of roads, new road building, and/or greater wear and tear on them, user taxes are presumably more desirable than taxes upon vehicles purchased. However, the case for altered taxes upon commercial vehicles is far less strong than that for increased taxes upon passenger vehicles, about which there can be little doubt.

The sales and excise taxes discussed above are imposed upon the assembled product. In addition, the manufacturers and ancillary producers also pay taxes on their inputs and purchases. These include customs duties, estimated to be 12 per cent of the ex-factory price at the time of the NCAER study, and excise and sales taxes on purchased inputs. These items were estimated to account for 16 to 18 per cent of ex-factory price

[26] The above analysis also applied to scooters. There was, as of mid-1970, a six-year waiting list for scooters, taxes were about the same as on cars, and prices were controlled. Meanwhile, all applications for industrial licenses to expand scooter capacity in the late 1960's had been rejected.

TABLE II-7. TAXES AND DEALERS' MARGINS, 1964

Selected Vehicles

	Ex-factory Price	Dealers' Margins	Taxes	Consumer Price
		A. Rupee Amounts		
Fiat	9,563	890	2,513	12,966
Ambassador	11,179	1,048	2,862	15,089
Jeep	12,562	1,042	3,203	16,807
Leyland Truck	35,686	2,490	9,335	47,511
TMB Truck	27,296	1,840	7,039	36,175
Motorcycle	3,580	413	757	4,750
		B. Per cent of Consumer Price		
Fiat	74	6	20	100
Ambassador	74	7	19	100
Jeep	75	6	19	100
Leyland Truck	75	5	20	100
TMB Truck	75	5	20	100
Motorcycle	75	9	16	100

SOURCE: NCAER, Taxation and Price Structure, op cit., P. 19. Taxes ex-factory were taken as the difference between consumer price and the sum of ex-factory price with taxes and dealers' margin. Dealers' margin was decreased from the differences between consumer price and ex-factory price without taxes.

in 1964. Of course, the incidence of customs duties falls as foreign exchange saved by the industry increases. There is an offset, however, in that the direct and indirect excise and sales taxes paid increase with increasing indigenization.

Adding these elements together, and neglecting the fact that dealers' margins should decline (due to lower carrying charges) if the prices they paid for vehicles fell, it is reasonable to estimate that about 45 per cent of the price paid by final buyers of vehicles represents taxes.

While it is not the purpose of this study to evaluate the Indian tax structure, two points are important for present purposes: 1) care must be taken to distinguish between consumer vehicle prices and factory prices, and 2) in estimating the economic costs of production, the tax component must be dealt with carefully. In Part III, the data presented are net of tax costs, insofar as adjustments could be made. They therefore do not coincide with the accounting costs actually observed in India.

Demarcation of Ancillaries

As indicated above, the initial impetus to ancillary production resulted from government encouragement to the assemblers. Until the early 1960's, import-substitution in ancillary production took place primarily through assemblers' increased capabilities to fabricate parts and components in their plants. The assemblers still constitute a significant source of part and component production, as can be seen from the following values (in Rupees per vehicle) of bought-out versus self-manufactured components in 1967:

	Bought-out	Self-Manufactured
Ambassador	4631	7099
Fiat	5533	6197
Jeep	10087	6122
Dodge truck	12191	8320
TMB (medium heavy)	21829	18340

Starting with the Jha Committee report, government policy shifted toward encouraging ancillary production in separate firms. In 1965, the Government issued a formal statement, demarcating those items which could be produced only by the ancillaries ("subject to considerations of quality, delivery, and price; it being understood that the vehicle manufacturers would give the necessary assistance and technical guidance to the Ancillary Industry to enable the latter to cater to the O.E. market"), and those components which could be produced by either. Manufacturers who already had production of reserved items in their manufacturing programs were allowed to continue them, but could not expand. The two lists are reproduced in Appendix I. The lists are of interest, not only to indicate the degree to which regulation is detailed, but also for the vast area reserved to the ancillaries. It is of interest to note that three components for which the Tariff Commission (1969) found the largest cost differentials in 1967 were propeller shafts (Rs. 203 vs Rs. 122), crankshafts (Rs. 239 vs. 109) and shock absorbers (Rs. 152 and Rs. 76). All these items, were, by Government-of-India policy, reserved to the ancillaries. In all three cases, Hindustan Motors was cited as the lowest cost producer. In addition to the encouragement of potentially higher-cost firms in some instances, such a "Reserved List" reduces the bargaining power of the manufacturers,

in that they cannot threaten to make a component themselves. In practice, many of the reserved items are made by the vehicle producers. However, as their production expands, they will be forced to rely on the ancillary industries for additional supplies, so that the percentage of bought-out items will increase over time.

The Growth of Ancillary Producers

The push toward increasing indigenization, in the middle 1950's, led the vehicle manufacturers to undertake the production of components and parts within their own plants. Naturally, they started with the simpler components. In 1960, the Jha Committee classified ancillary production into three categories: those items in which India was self-sufficient;[27] components for which production had started but was not yet adequate to meet domestic demand[28]; and components for which production schemes had been approved and production was likely to start in 1961.[29]

During the 1960's, production has started in virtually all lines of part and component manufacture. As the indigenous content estimates of Table II-4 indicate, the final assemblers have reduced their reliance upon imported parts and components steadily, and, for most vehicles,

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[27]These included: paints, varnishes, upholstery materials, fan belts, hoses, horns, weather stripping and all rubber components except fuel and brake hoses and brake parts, mufflers, tail pipes, spark plugs, and car truck bodies.

[28]These included: leaf springs, hub caps, shock absorbers, brake lining and clutch facing, gaskets, piston pings and rings, horns, wire harnesses, car dynamos, fuel injection equipment, inlet and exhaust valves, fuel and air filters, etc..

[29]These included: starter motors, dynamos, most other electrical equipment, instruments, oil seals, oil pumps, fuel pumps, carburetors, brake and valve parts, steering assembly, wheels and rims. See Jha Committee Report, P.29.

direct imports are now negligible. While assemblers and independent units have shared in the growth since 1960, it is likely that the proportion of ancillary production undertaken by independent units has increased since 1960.

It is much more difficult to obtain reliable indicators of overall ancillary industry growth than it is to estimate the growth of vehicle production. First, there are no reliable data on production for the period before 1961, and no data on production of parts and components by the vehicle assemblers. Secondly, while it is somewhat meaningful to count the number of cars, trucks, etc., produced, the vast number of ancillary components and parts renders any physical measure of aggregate output meaningless. Hence, a value measure must be used. Such a measure, if not adjusted for price increases, will overstate the growth of ancillary output; yet such a measure is all that is available.

Data on the value of ancillary output by units other than the final assemblers are presented in Table II-8 for the years 1961 to 1968, by types of components. Since the assemblers' output of ancillaries probably grew more slowly than that of the independents, the omission of assemblers' output would tend to bias the estimate of growth upward. Similarly, no adjustment for price increases has been made, which imparts a similar bias. The available evidence suggests that prices have probably increased by about 30 per cent over the period. As an offset to these two upward biases, value-added to ancillary production has increased far more rapidly than gross output, as import-substitution has occurred with remarkable

TABLE II-8. ANCILLARY INDUSTRY GROWTH, 1961-68

(millions of Rupees)

	1961	1962	1963	1964	1965	1966	1967	1968
Engine Parts	81	104	139	176	212	261	291	327
Electrical Parts	7	10	22	40	55	65	64	81
Drive, Transmission, & Steering Part	12	30	59	84	108	133	148	187
Suspension & Braking	37	52	75	96	121	178	178	199
Equipment	8	12	21	31	32	38	44	52
Chassis and Body	7	12	13	19	25	34	32	32
Miscellaneous	26	40	44	51	61	109	85	84
TOTAL	178	260	374	497	614	819	842	961

SOURCE: All India Association of Automobile and Ancillary Industries Association, Automobile Ancillary Industry, Selected Years.

Data are for years ending the following March.

rapidity in the ancillary production processes. Therefore, the fact that assemblers' output of ancillaries and price increases are not adjusted for is probably more than offset by the increase in value added domestically per rupee of final output.

The data in Table II-8 suggest that there has been a four-fold increase in ancillary production in an eight-year period. As can be seen, the growth in ancillary output has been spread across all varieties of components. While no comparable data are available for earlier years, one estimate puts the value of ancillary output at Rs. 4.5 million in 1955.[30] This would indicate that growth between 1955 and 1961 was at a rate of around 90 per cent per year, while the data in Table II-8 suggest a growth rate of 30 per cent from 1961 to 1965 and 20 per cent for the period since 1965. In physical terms, this tapering-off of the growth rate must have been even more pronounced, since price increases (especially after devaluation) were probably greater for the latter period.

Despite the qualifications surrounding the reliability of the data, it seems incontrovertible that growth in ancillary production has been extremely rapid, judged by any standard. In Part III, the costs and benefits of this rapid import substitution will be examined from a microeconomic point of view.

Before turning to that, a fundamental question must be raised that is relevant to the consideration of the costs and benefits of the import-substitution strategy. The rapid growth of ancillary production, to date,

[30] Association of Indian Automobile and Ancillary Industries Association, Automobile Ancillary Industry 1969, Bombay, 1969, P. 5.

has been accomplished by replacing imports with domestic production. In physical terms, that growth has been remarkable. Even if one concluded that such rapid growth justified the costs, however high, one would still have to inquire whether that growth can be sustained. To be sure, the tapering off in the growth rate already noted can be explained largely by the fact that extremely rapid initial growth was a function of a small initial base and could not be continued. However, for import substitution to be a viable long-term growth strategy, some industrial sectors must have rapid growth prospects beyond these initial stages.

To date, rapid growth has been possible partly because of the growth in final demand for the ancillary's output (both OE and replacement) but mostly because the industry has been able to increase its share of the Indian market as it replaced imports.

The assemblers already have extremely high indigenous contents; it will be seen below that most of the ancillary producers do, too. Given that, little future growth can be expected from import displacement. Either the growth rate must slow down to the rate of growth of domestic demand for the final product, or export markets must be developed. If the growth rate must taper to the growth of final demand, the prospects are rather bleak. The number of motor vehicles in use in India (probably the best indicator of replacement demand) has grown at about 10 per cent annually since 1955.[31] This growth, too, is tapering off, due to the failure of

[31] Data are from All India Automobile and Ancillary Industries Association, Automobile Ancillary Industry 1969, Bombay, 1969, p. 5.

automobile production to increase, and the decline in production of new commercial vehicles. Moreover, there is evidence that some of the increase in motor vehicles resulted from an increasing average age of vehicles on the road. If production of new vehicles attains a plateau, the net increment in vehicles will approach zero; even if production increases, the rate of growth of the stock of vehicles will surely decline. Hence, if replacement demand grows pari passu with the number of vehicles on the road, it will surely grow at something less than ten per cent per year.

The outlook for the growth rate of OE demand is, in many ways, less bright. There is little evidence that passenger car production will grow more rapidly in the near future than it has in the recent past: there appear to be no expansion plans on the part of either assembler at the present time.[32] The growth of commercial vehicle output will be conditioned by general economic conditions, but it would require a twenty per cent rate of growth to attain anything like a ten per cent overall growth rate in the number of new vehicles produced each year.

If these rough orders of magnitude are essentially correct, the ancillary industry will be unable to sustain a rate of growth of more than approximately ten per cent per year if it relies upon the internal market. Even ten per cent is probably an overly optimistic estimate. While a ten per cent growth rate may at first sight appear reasonably good, it is less so when it is recognized that there are many slowly growing industries in India, and that rapid growth must come from somewhere; there are few

[32] As indicated above, Standard Motor Products ceased production during 1970, so Hindustan Motors and PAL are the only passenger car assemblers.

import-substitution opportunities left which are capable of generating the same volume of new industrial output as in the mid-1950's to mid-1960's. Clearly, some other source of growth for the now-established industries must be found.

The logical place to find such a market is through international trade. India's production of ancillary components represents considerably less than .01 per cent of world output, and less than 1 per cent of the volume of international trade in these commodities. Hence, it would appear that, if Indian ancillary products were internationally competitive in terms of price and quality, there should be ample opportunities for continued growth at a rate in excess of twenty per cent through exports.

Sustained export growth at this rate would be possible, however, only if the underlying economic conditions in India are such that India can compete. Hence, benefit-cost calculations are of double importance. They not only serve to indicate the cost of what has already been achieved, but they can be used as an indicator of the viability of the industry from the viewpoint of its future growth potential.

PART III. THE ECONOMICS OF IMPORT SUBSTITUTION IN THE ANCILLARY INDUSTRY

Introduction

The set of incentives and controls which fostered import substitution in the ancillary industry, and the consequent growth of import-substituting output, were the subjects of the preceeding discussion. It has been seen that sizeable incentives were created for import substitution in the ancillary industries, and that the resulting increase in Indian capability to produce vehicles and their components has been impressive.

There are no reliable data on the aggregate of new resources employed in developing vehicle and ancillary production facilities, but it is evident that new investment, foreign exchange, entrepreneurial talent, and skilled labor - - all scarce in India - - were devoted to the development of the industry. The question naturally arises as to the costs and benefits of this particular allocation of resources. The question is of importance for three reasons: 1) the answer should provide guidance for policy decisions regarding the industry's future growth; 2) as indicated in the introduction, the available evidence suggests that the broad outline of policies to foster import substitution in the ancillary industry is fairly comparable to that in other industries, and hence understanding of Indian economic development may be enhanced; and 3) the general bias toward import substitution as a development strategy continues in India. As indicated above, the preponderance of opportunities for import-substitution-led growth in the ancillary industry has probably been exhausted. The same is undoubtedly true for a

large number of other industries in which import substitution started in the mid-1950's. Nonetheless, a large number of capital goods are still imported into India, and the import-substitution strategy is being applied to that sector. For that reason, it is useful to evaluate the results of import-substitution policies of the past in the hope of gaining insight into the ways in which these policies can be improved in the future.

Investigation of the costs and benefits of import-substitution policies requires microeconomic data, which are not available from published sources. Hence, overall evaluation of import substitution was completely impractical, and the ancillary industry was chosen for investigation. Even at that level of disaggregation, data had to be gathered. For that purpose, a sample of firms within the industry was chosen, and data from the sample used. The properties of that sample are the subject of the next section. Thereafter, the technology of ancillary production, the execution of government policies, and some general aspects of the industry's operation, are considered. The next part of this paper contains empirical estimates of the costs and benefits of various import-substitution activities within the automobile and ancillary industries.

The Sample

The procedure followed was to visit each firm, and conduct an interview, inquiring as to certain general phenomena it would be difficult to ascertain in a questionnaire of reasonable length. Questions pertained to the determinants of actual output (limited by demand, capacity, raw materials, etc.), experience in applying for industrial licenses, import licenses and in exporting. In addition, inquiries were made about the firm's

ability to compete in foreign markets, the way in which costs would alter with increased size, and so on. Altogether, fifty-five firms, including all the assemblers, were interviewed.

At the conclusion of the interview, a questionnaire was left behind, to be completed and forwarded to the author. Assurances were given that the responses would not be used in any way that would reveal the identity of the individual firms.

The questionnaire had five major parts. One copy of the first part was left with each firm. The remaining four parts pertained to individual products, and one set was left for each major product produced by the firm. The first part dealt with the overall particulars of the company: equity capital, indebtedness, number of employees by skill classes, value of sales for the first year of production and the years from 1965 to the present, and so on. The second part dealt with the cost structure for the first year of production and the years since 1965: physical volume of output, value of sales, purchases of raw materials, semi-finished and finished goods, wages, salaries and other employment costs, interest, depreciation, administrative, overhead, and other expenses. The third part of the questionnaire asked for a detailed history of investment: the cost of imported equipment c.i.f., duties and landing costs, domestic capital equipment purchases, construction and installation costs, and other capital expenditures. In many cases, firms were able to supply investment data only for the company as a whole.[1]

[1] In these cases, where cost accounting appeared adequate for each product line (judged by whether the interest-depreciation, and depreciation-wage ratios differed between products) investment was allocated among products in proportion to depreciation charges.

The fourth part of the questionnaire asked for an enumeration of the major categories of purchased inputs, with their domestic and foreign unit prices, and the percentage of materials costs. The final part asked about the firm's export experience under the export obligation: the domestic price at which the commodity was sold, the f.o.b. price, the amount of duty drawback, cash subsidy, and import entitlement received, and the value of exports.

The firms chosen for interview were selected with a variety of purposes: to obtain a representative group of ancillary production processes; to get a "balanced" distribution of firms as to the period of time in production; and to reach as many firms as possible within the limited time available. The ancillary industry is concentrated in four major areas: Calcutta, Bombay, Madras, and Delhi. All firms in the sample had their headquarters in one of these areas, or in Bangalore or Poona. Since accessibility of the firms' management was one criterion for selection, and the characteristics of the firms were not well known before the interview, it was impossible to obtain a "random" sample.

Of the fifty-five firms interviewed, questionnaires from forty-three firms were returned. Altogether, these questionnaires provided data on 67 products.[2] Needless to say, not all respondents answered every question. In many cases, it was possible to supplement the information provided with

[2]Of course, two or more firms provided data on a similar product in several instances. Therefore, there were smaller number of products in the sample than the number of product-questionnaires returned.

data from published sources and from other questionnaires.

The responses given were subjected to several tests to verify their reliability. They were checked against the information received in interviews, and, in most cases, against the firms' annual reports. In almost all cases, it was possible to verify the domestic price of output given by the respondent with the information given on input prices by the assemblers. In addition, internal consistency checks were made for each individual questionnaire, and data given by producers of comparable products were compared. In some cases, correspondence clarified ambiguous responses or provided further data.

Since almost every questionnaire, even when supplemented by other available information, provided less-than-complete information, and some responses were rejected because of inability to ascertain their reliability, it was decided to include each response that could be verified in analysis of a particular question.[3] Hence, in what follows, the actual size of sample varies from one item to the next.

Table III-1 gives data providing some evidence on the characteristics of the entire sample relative to the ancillary industry. For both number of firms and value of output, the first column gives the estimates provided by the All India Automobile and Ancillary Association on ancillary firms for the year ending March 31, 1969. The second column gives comparable data for all the firms in the sample - assemblers, and all ancillary producers,

[3]For example, some firms provided unit cost data, which were adequate to calculate domestic resource costs, but their overall profit rate could not be ascertained. These firms are included in the domestic resource cost data, but not in the test of the relationship between cost and profitability.

TABLE III-1. CHARACTERISTICS OF THE SAMPLE

	Number of Firms			Value of Output millions of rupees		
	Industry	Sample	Ancillary Sample	Industry	Sample	Ancillary Sample
Under 100 employees	43	3	3	58.5	4.9	4.9
101-200 employees	40	4	4	146.6	20.0	20.0
201-500 employees	45	12	12	278.6	120.0	120.0
500 and over	32	24	16	476.8	1960.0	467.3
TOTAL	160	43	35	960.5	2104.9	612.2

including those not so classified by the Association (e.g. tire producers). The third column provides data on the sample for firms classified as ancillary producers.

The first item to be noted is that, even after eliminating the assemblers and those not considered ancillary producers, the value of output in the sample for firms with more than 500 employees is almost equal to that estimated by the Ancillary Association for all firms with over 500 employees, yet the sample contains about half the number of firms in the industry. There are several reasons for this: first, there are some firms which had fewer than 500 employees in March, 1969, and more than that number in the winter of 1970. Secondly, the sample data pertain to the most recent accounting year - often, a year later than that available for the March, 1969 estimates.[4] Two other sources of disparity are possible,

[4]The Ancillary Association data indicate 17 firms in the industry with more than 500 employees in 1968, contrasted with 32 in 1969. By contrast, the total number of firms declined by one. The value of output of ancillary producers with more than 500 employees was estimated to rise by 30 per cent between the year ending March 31, 1968 and that ending on the same date in 1969. See All India Automobile and Ancillary Industries Association, Automobile Ancillary Industry, 1968 and 1969 editions.

although their effect, if present, is now known: 1) it is not known whether firms producing both ancillary and non-ancillary products are classified by the total number of employees or number of employees in ancillary production; the former procedure was used in classification of the sample firms; and 2). it is not known whether assemblers who market part of their ancillary output are included in the industry data; they are included in the sample value data, (for the value of their ancillary output) and in the number of ancillary firms (since double counting would be involved).

Regardless of the reasons for the disparity in value of output for large firms between the sample data and industry data, the sample is biassed toward larger firms. It would appear that, even allowing for some firms' moving up in size class, about half the ancillary firms in the sample have more than 500 employees, whereas only about one-fourth of the firms in the sample have more than 500 employees, whereas only about one-fourth of the firms in the industry are in that category. Similarly, three-fourths of sample output, by value, originated in the large firms, whereas large firms accounted for just over half of industry output in 1969. For the industry as a whole, the fraction of output accounted for by firms with more than 500 employees has, of course, been increasing over time.

It should be mentioned that part of the over-representation of large firms is accounted for by bias in response rates: of those firms failing to respond to the questionnaire, the majority were in the smaller size groups.

One other feature of the industry should be noted. There are innumerable small "one-man" and family shops in India in which small parts and components are produced. These shops are not included in either the sample or the ancillary industry tally of firms in the industry. These shops produce a sizeable amount of replacement parts, and are occasionally a source fo supply for the assemblers.[5] Little is known about these small producers, and they are not considered in evaluation of the industry in the discussion that follows.

The value-of-output data in Table III-1 involve some double counting. The assemblers' sales, of course, include their own value added, plus their purchases from the ancillary producers and others. In addition, many ancillary producers, especially those making subassemblies, purchase components and parts from other assemblers. Hence, both industry association and the sample data reflect gross, rather than net, output of the industry.

Table III-2 provides information as to the length of time the firms in the sample have been producing ancillary products. As can be seen, the bulk of the firms started operations in the early 1960's, at the time when the push toward indigenization in the ancillary industry was the greatest. These dates of entry are slightly misleading in that many of the firms have added new components to their production line, and some of them were in existence prior to the time they entered the ancillary industry.

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[5] In interviews, many executives mentioned that the small shops provide substantial competition in the replacement market. Some claimed that there is an active market in the containers of brand-name replacement parts, which are then filled with the one-man shop products. It was frequently asserted that this practice created a major headache for the larger producers, since the small-scale sector output is often of inferior quality, and the larger producers get blamed for it.

There is one firm in the sample which was in the ancillary industry prior to 1955, but abandoned production of those components in 1968 and entered an entirely different production process, still in the ancillary industry. There appears to be little relation between size in 1969 and date of entry into the industry. A few of the firms in the sample had experienced sizeable contractions in output and their labor force since 1966; these, however, were primarily in the "over 500" group. The assemblers are not included in Table III-2. As indicated above, most of them started operation in the last half of the 1950's.

TABLE III-2. THE SAMPLE OF ANCILLARY FIRMS CLASSIFIED BY SIZE AND DATE OF ENTRY

Number of employees:/	Started production:			
	Before 1955	1955-59	1960-64	1965-67
Less than 100	2	0	1	0
101 to 200	2	0	1	1
201 to 500	2	1	7	2
Over 500	2	4	9	1
TOTAL	8	5	18	4

Table III-3 gives a breakdown of the number of ancillary firms producing different categories of product. Some firms produce more than one product. Hence, the number of product lines represented is greater than the number of firms, even though the assemblers themselves are not counted. As can be seen, all groups of ancillary products are represented.

The Technology of Assembly and Ancillary Production

One reason for choice of the ancillary industry for intensive study was the diversity of parts and components, and hence, of technology that

would be found among the ancillary producers. Many of the important questions about industrialization and development strategy depend, often critically, upon the underlying nature of technology. If, for example, there are huge indivisibilities, or significant economies of scale, in certain production lines, it makes little sense to devote domestic resources to those activities unless either the internal market is large enough to enable economic levels of output or it is anticipated that sufficient export markets can be profitably developed. On the other hand, when there are products where it is possible to substitute labor for capital over a wide range without significant losses in quality, a priori it would seem to be sensible to develop domestic production, and, perhaps, to export.

The passenger-car assembly industry is one in which it is widely believed that significant economies of scale exist, although it is generally argued that truck assembly is economic at much lower scales of output.[6] Although it is seldom explicitly stated, it is generally assumed that these same phenomena are true of the ancillary industry. In passenger car assembly, it has been argued that an annual production level in the United States of 100,000 cars will exhaust virtually all economies of scale.

There are some grounds for questioning the relevance of these estimates in Indian circumstances. The estimates apply to American and Western

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[6]See Jack Baranson, op. cit., Pp. 33-4

[7]See the testimony of George Romney, quoted by Robert Lanzilotti, "The Automobile Industry", in Walter Adams, Structure of American Industry, 3rd Edition, MacMillan Co., 1961.

European production, where there are frequent model changeovers.[8] A large part of the cost of passenger car production in the west lies in the cost of model changeovers.[9] New tooling is required for each part and component whose specifications are altered. Insofar as it is the indivisible nature of tooling which leads to apparent economies of scale, there would appear to be little reason why a smaller rate of output over a longer period of time, without design and specifications changes, might not be just as economic as a higher rate of output with more frequent model changeovers. Moreover, if labor is substitutable for capital, there are further grounds for questioning whether economies of scale are as great as usually believed.

In fact, the majority of vehicle parts and components are made of steel. Steel fabrication requires the shaping and finishing of the metal to specifications. For this range of processes - whether the metal is cast or forged - there are generally a variety of technologies available. For forging, one can employ the simplest of forges, with the parts shaped by manual labor. For casting operations, a single machine can be used, with frequent changes of the dies by hand. A general-purpose mechanical lathe can be employed for virtually all shaping and cutting. If the size of run

[8] Cunningham and Sherman cite the case of a model changeover in an American firm in the early post-World War II years: "...a medium-size company found it necessary to purchase and install 164 new machines, ranging in size from small special-purpose units to a million-pound press. In addition, 979 machines and presses were moved to new locations, 1,550 new dies and 805 fixtures were designed and built for the body plant, 2,615 new tools were made for the assembly plant, and 13 1/2 miles of conveyor belt were installed. This represented over two years of work on factory change-over at a cost of $16,000,000. Presumably this estimate did not include the costs of change-over at supplier factores. Henry M. Cunningham and William F. Sherman, Production of Motor Vehicles, McGraw-Hill, 1951.

[9] F. Fisher, Z. Griliches, and C. Kaysen, "The Cost of Automobile Model Changes Since 1949", Journal of Political Economy, October 1962.

increases, it may pay to go to more specialized machinery: the decision will depend on the size of run and the relative costs of capital and labor. Machinery of all degrees of complexity exists -- from the mechanical lathe all the way to a computer-controlled integrated series of automated operations.[10]

In interviewing executives in the Indian ancillary industry, one question asked was the extent to which costs would decline should the scale of production increase two-fold. Half the replies were to the effect that such a scale of output would require switching technique of production completely, and the experience of the firm to date would be of little use. The remaining firms indicated that their costs might fall by ten per cent, or less.

For some operations, e.g. those requiring heavy presses, capital-intensive techniques are unavoidable, and the indivisibilities may be such that a high rate of output is necessary for economic operations. For many other processes, however, use of less specialized machinery for several functions can be optimal at small scales of output if the wage rate is low, as in India.[11] In these cases, India might well have a comparative advantage in the fabrication of parts and components.

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[10] See Richard C. Vaughn, Introduction to Industrial Engineering, P. 63. Iowa State University Press (Ames) 1967

[11] One of the parties interviewed in India told of his having visited a plant of identical capacity in Germany. He said that the Germany plant had only ten workers on each shift, compared to his own 300. He then added that the German factory's capital equipment had cost DM20 million, and his own had cost $50,000.

In addition to the metal-working operations, there is a multitude of other parts and components, whose technology of production differs widely. Wiring, batteries, tires, instruments, and glass production have vastly different technologies. Production of a braking system is an altogether different operation, with technologically sophistocated procedures, and little possibility of substitution toward less-capital intensive techniques. Assembly operations are different yet again from any of the others. Some of these operations are inherently more capital intensive than others, and sometimes there are large indivisibilities. Yet, for the most part, there is a fairly wide range of choice of technique, ranging from small-scale output with labor-intensive methods, to large-scale operations with highly capital-intensive techniques.

In addition to indivisibilities and economies of scale, there is another technological feature of the ancillary and assembly industry which merits attention. That is the importance of quality control. At a minimum, parts must fit together. Moreover, the malfunction of a single part in a fully-assembled vehicle can entail high costs of disassembly and replacement.[12] It will be seen below that quality control has been a major and difficult problem confronting the Indian assemblers and ancillary producers.

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[12] An example of a very minor malfunction will illustrate. One Indian assembly firm received several shipments of lampbulbs whose insulation properties were, as it turned out, inadequate. The first time the headlamps were turned on, the bulb fused with the lamp. The removal of a fused bulb is a lengthy and costly operation. Bulb production has been reserved to the small-scale sector, and producers have, at least for the time being, despaired of enforcing quality control. One producer was shipping his vehicles with the bulbs on the seat of the vehicle to avoid fusion and its costs. When the malfunctioning part is on the interior of the assembly, the situation can be even more serious.

The importance of quality control, and other factors, lead to considerable buyer-seller interdependence. Assemblers cannot decide on a model changeover, or smaller changes in specifications, without collaborating with their suppliers. Similarly, suppliers will generally be reluctant, if not unwilling, to incur the costs of tooling for a particular specification unless they are assured of a substantial flow of orders. Moreover, the fact that a supplier is tooled up to make a component for one model of vehicle does not mean that he can supply another assembler without additional investment in moulds, dies, tools, and so on, even if he has excess capacity with his existing equipment. The more special purpose a particular machine is, the more this tends to be true.

Just as the degree to which smaller runs can be economic varies from part to part, so too does the degree to which new tooling is required to supply other assemblers. Some parts, e.g. tires and batteries, can generally be used almost interchangeably. Others, e.g. engine blocks, radiators, must meet the specifications of each particular vehicle.

In India, the technology of production has several ramifications. Given the small scale of production, it would often be uneconomic to have more than one firm tool up to produce components for a given vehicle manufacturerer, even if there are several firms producing the part in question. Moreover, given the investment licensing procedure and capital goods committee, even if a buyer should wish to switch his source of supply, it could be done only after a fairly lengthy interval, if at all.[13] Hence, the element

[13] The liberalized licensing policy inaugurated during 1970 will not improve the situation, insofar as the necessary tools must be imported to develop production. This is because capacity increases required imported capital goods will still be subject to Government approval.

of bilateral monopoly between assemblers and suppliers is even larger in India than in countries with a wider market and greater ability of firms to order and install equipment rapidly.

This aspect of the industry also results in a certain fragility of assembly operations. A strike at one supplier plant, or the inability of a supplier to obtain his needed imports on time, can stop assembly line operations. Most firms, therefore, tend to build in excess capacity into their assembly lines. They can then continue fabricating operations, and "catch up" on assembly when the missing items are received.

The Execution of Government Policies

In Part I, Government regulations and policies toward the private sector were outlined, as they are intended to function. One important question with regard to any set of economic policies in how they are in fact executed. One purpose of intervening executives in the ancillary industry was to learn how, in fact, licensing, export incentives, indigenous content requirements, and other policies are in fact carried out. In this section, the interview responses are indicated. Most of this material must, of necessity, be somewhat impressionistic.

One question asked of all firms whether they had ever had a license application rejected. Among the assemblers, the passenger-car and commercial-vehicle producers indicated that they generally knew whether the government would permit expansion or not, and only applied when they believed that Government of India policy would permit approval of their applications. The scooter assemblers, by contrast, had had applications rejected. They believed that Government policy did not currently permit expansion, and

therefore were not applying. This was against the background of six year's unfilled orders for scooters, and the industrial recession in India.

Of the ancillary firms interviewed, approximately half had applied for an expansion license before 1969. More than half of the applicants had received their licenses, with an average lag between application and receipt of the Capital Goods License of 28 months.[14] Of the remainder, half were refused, and the other half still pending. Those pending had been under consideration for two years or more. In general, industry executives appeared to have formed judgments as to what licensing policy toward their operations was and to have waited until such time as they deemed the government would be willing to consider expansion.[15]

On average, there appeared to be more delay in receiving a Capital Goods License than an Industrial License. This seemed to result from disputes between the applicants and the government over whether or not there was an acceptable domestic machine to substitute for one the applicant wished to import. Most executives guessed the price of domestically-produced machinery to be about twice the international price. This, however, was not the source of complaint. Rather, the domestically-available machinery very frequently was of the wrong capacity for the firm's purpose. That is, domestically-produced machinery is available in a smaller range of capacities

[14] Much of the delay is attributed by government officials to inadequate preparation of licenses. While this may be the case, this attribution, in itself attests to the complexity of the application documents.

[15] The liberalized licensing policy may improve the situation somewhat for those firms which are not included in the Larger Industrial Houses. This change occurred after the research for this report was prepared. It will require one or two years to learn how the new policy, in fact, works.

than imported machinery. In some cases, firms were persuaded to accept several smaller capacity machines in lieu of a single, larger, imported machine. It was alleged, in several instances, that higher domestic prices and inappropriate sizes, resulted not only in increasing the initial machinery cost three fold but also led to higher operating costs than would have been obtained with appropriate machine size. In two cases, the author was shown a machine, domestically produced, whose capacity was ten times or more that required by the firm's operations. In both cases, an imported machine of the appropriate capacity would have cost the firm less than 7 per cent the price paid for the domestic machine.

To the extent these observations accurately reflect the results of import substitution in capital-goods production, they raise serious questions for development policy. However, consideration of import substitution in machine tools is beyond the scope of this study, although it merits careful attention.

A frequently-commented on problem was that most import licenses specify the geographical region from which importation can be done. This often leads to plants with Eastern European machinery (under bilateral payments arrangements), American machinery, and Western European machinery all under the same roof. In many instances, the engineering and other problems associated with differences in specifications, tool size, and spare parts inventories, appeared to be major headaches for the management. Some firms reported maintaining two machines, where one would have been sufficient, for some major functions. This was done so that, if one broke

down, the other could either be used, or pirated for spare parts until the necessary imports arrived.

In several cases, firms were operating well beyond the 125 per cent of licensed capacity legally permitted. Other managers felt constrained to keep production within legal limits. One firm, with a large backlog of orders, reported closing down their factory in early December, when 125 per cent of licensed capacity had already been produced. The employees spent the rest of the year building a beautiful garden. Of the firms operating well over licensed capacity, some were having grave difficulties obtaining imports, whereas others de facto had their capacity recognized, and reported no difficulties with import licenses.

About one-fifth of the firms reported that their licenses were issued on a single-shift basis. In many others, the license understated the true capacity of the plant. Most interviewees appeared to believe that, except for continuous flow operations, a third shift is not a paying proposition in India. However, it is difficult to understand why licenses should ever be issued on a single-shift basis.

A second topic raised in all interviews was the experience with import-licensing procedures. Almost all firms reported that, for materials with no domestic substitute, there was no difficulty with receiving one's import licenses so long as one was operating at a constant rate. If a firm attempts to increase output, however, it was claimed that import licenses on a replenishment basis are inadequate. The reason is that, while one can apply after using half of one's previous assignment, the next import order does not arrive in time if output is expanded. Several

instances of air-freighting raw materials and other needed inputs were reported in order to maintain operations. In five instances, plants reported slowdowns or complete shutdowns due to failure to receive an import license before stocks were exhausted.

The major difficulties reported with the import licensing procedure (aside from delays, to which most firms had adjusted) pertained to items placed on the banned list. (In addition, the shortage of indigenous raw materials was extensively commented upon. This is discussed below.) Many managers claimed that if a new firm reported itself ready to produce, import licenses were no longer issued.[16] In many cases, however, initial production difficulties resulted in delays in production, or volume of production inadequate to meet domestic needs in the initial periods. Three firms reported shutdowns of their plants due to such a shift, followed by later receipt of an import license. The shortest delay reported in obtaining a license for an item, once banned, was seven months.

Some executives also commented that difficulties arose when items were suddently placed on the banned list without notice;[17] in many cases, specifications of the part or component changed slightly, and engineering modifications were required in the plant. The converse also happened, however. One company reported that, subsequent to notification that an

[16] Government officials do attempt to ascertain that quality and quantity of production will be adequate. It is not surprising, however, in view of the enormity of the bureaucracy's tasks, and the inherent difficulty of forming such judgments, that mistakes are made.

[17] In fact, items are seldom placed on the banned list without a period of import quotas' reduction, and the government publishes lists of items that will be banned. However, many hard-pressed executives do not have the time or staff to check these publications systematically, and can get caught by surprise.

item would be indigenously available, it changed its tooling to the new specifications. Once that was done, it received import licenses, as the new firm was unable to commence production.

Virtually all firms either maintain a full-time office in New Delhi to deal with license problems, or alternatively, the major executives fly to Delhi once a month, or more. Impressionistically, firms with full-time representatives in New Delhi appeared to have less difficulty with obtaining needed licenses than those where company executives commuted to New Delhi. To the extent this is correct it is one of the reasons why large firms have faired better than small firms under the licensing system.[18]

A last major problem with the import-licensing procedure pertains to would-be exporters. Seven firms reported being forced to turn down export orders (from hard-currency areas in five instances) either because they could not obtain the needed raw material imports, or because they could not order the necessary tools, in time to fill the order. Several firms reported refusing export orders because they would have had to add several full-time persons permanently to their payrole to do the necessary paperwork, and they could not be sure that the flow of orders would be sustained. The ancillary industry will be unable to export significantly without tooling to other specifications than those for Indian vehicles. Difficulties when imports are required to fill export orders will prove a major barrier to the development of export markets, even in the absence of other obstacles.

[18] See Dutt Committee Report, op. cit., for documentation. This is one of the motivations for the changes made in the licensing procedure in the summer of 1970. However, the requirement that imported capital goods will still require licensing may offset a part of the intended liberalization.

Although mechanics for "import replenishment" exist, the delays and paperwork involved lead most executives to believe they are inadequate if firms really wish to enter the export market. One case was reported of a prototype being sent by a foreign customer to the Indian firm; it was not allowed through customs, since it was on the banned list.

Since all firms in the ancillary industry, who have been producing for five years or more, are subject to an export obligation, firms were also asked about their export experience. Only three firms reported that, including cash subsidy, import entitlement, and duty drawback, they could earn as much in exporting as they could in the domestic OE market. Of the remainder, half covered materials and other direct costs, once the export incentives were taken into account. Even of this group of firms, most exported only enough to meet their obligation, because they were pressed to meet their domestic orders.

Experience with the export incentives varied. Some firms did "not bother" trying to get the cash subsidy and duty drawback, because the volume of their exports was sufficiently small, and the paperwork involved in obtaining the incentives so great, that they judged it did not pay. Those applying for cash subsidies and duty drawbacks reported varying experiences, but delays of eighteen months to two years were not uncommon. The most varied experience seemed to be with the import entitlement. Some reported that the entitlement was valid for anything, and therefore made exporting worthwhile. Others reported that the entitlement was restricted to items they did not need, and was of little value. As with import licenses, there appeared to be some relationship between the size of the

Delhi office and the degree to which experience was favorable in this regard.

When asked about expansion plans, many executives referred to the Fourth Plan targets. However, in most cases, these targets were subject to some doubt. Some executives who increased capacity in anticipation of earlier plan targets, appeared quite skeptical about the realism of the Fourth Plan. Others, however, were developing expansion plans and license applications based upon the Fourth Plan objectives.

A final subject of inquiry was about price controls, and the nature of pricing between the ancillary producers and the assemblers. As indicated above, commercial vehicle prices were decontrolled in 1969, but executives in the industry indicated that there was a "gentlemen's agreement" that there would be no price increases for at least a year. Hence, for all practical purposes, these controls still appeared operative. Some of the assemblers indicated that they did, on occasion, knowingly order cheaper, lower-quality components, when subject to a price-cost squeeze. They felt there was no practical alternative, given the small or negative margins, allowed under the controlled prices. Some ancillary producers reported that there was an "informal control" so that the replacement price of their products should not be more than twice landed cost. Such a price would represent approximately three times the c.i.f. price of a comparable import. Other producers, however, indicated that they had received special exemptions due to their "high costs", or that the controls were not operative.

All assemblers were, of course, willing to discuss ancillary pricing. In general, the consensus appeared to be that ancillary prices are extremely high whenever monopoly power existed on the part of the producers, and that little can be done about it. All assemblers try to keep two possible suppliers for every item, in part to insure that they will not find their supplies cut off, and in part to reduce the bargaining power of the ancillaries.

The observations of the ancillary producers confirmed the assemblers' views. The consensus, as to which products were high priced relative to imports, and which ancillary producers enjoyed and exploited their monopoly positions, was remarkable.

The overall impression gained on the basis of these and other interview responses, was the extent to which government officials are expected to be competent to evaluate every detailed aspect of a firm's functioning. In such an environment, the complaints of the individual executives are easily understandable, and, in many cases, justified.

On the other hand, there is every evidence that most responsible government officials conscientiously try to do their jobs and to facilitate economic growth. The enormity of the tasks they are expected to perform, and the detailed knowledge they are expected to have is, however, a heavy burden. More fundamentally, distrust between government officials and industry executives exists, and is inevitable.

No official can pass over hiatuses in a license application; at the least, he would be open to a charge of favoritism. This is particularly so in India, where opportunities for extra-legal profit are huge. It is

well known that there is an active black market in imported materials in India, and that firms can profit if they can obtain more than their needed imports; they can then resell their excess, at sizeable profits. Government officials are well aware of this, and therefore scrutinize applications to insure that imports are, in fact, needed in production. Since import licenses are allocated on the basis of licensed capacity, there is an incentive to apply for more capacity than will be utilized, on the part of firms. Again, officials must inevitably be suspicious.

In this environment, two observations emerge. First, as a result of the inevitable mistrust between government officials and businessmen, a considerable portion of entrepreneurial talent must be devoted to obtaining the necessary licenses and government clearances. Not only are real resources used up in the process, but entrepreneurs' attention is diverted from increasing productivity, reducing costs, and insuring quality control toward facilitating continuation of production at all. With excess demand and highly protected domestic markets, considerations of cost are of relatively lesser importance than are those of obtaining the necessary materials to produce at all.

Second, in addition to the diversion of attention from productivity considerations, there is a natural tendency on the part of the private sector to blame its difficulties upon government decision makers. While there is every reason to believe that all the responses indicated above were genuine, and that most led to problems for management, it is likely that, at least in some cases, mistakes were made by management. Yet, with government decisions interposed upon each aspect of production, it is

only human nature to blame those decisions, rather than management's own calculations, for anything going wrong.

At the time the research underlying this study was conducted, profitability was far more a function of obtaining licenses than it was of efficiency, cost-consciousness and quality control. Entrepreneurs, not surprisingly, responded to this, devoting most of their energies to obtaining the necessary materials, and government clearances, in order to sustain production at all.

Some General Aspects of Industry Operation

One frequently asked question in developing countries is the extent to which excess capacity exists. For the firms interviewed, the median percentage of licensed capacity utilized was 80 per cent. Eight firms reported working at over 100 per cent of their licensed capacity, while two reported operating less than 50 per cent. These figures are somewhat deceptive however, since some of the licensed capacities are, as indicated above, on a single-shift basis.

All firms were asked what determined their production levels. More than half of those operating at less than licensed capacity reported a significant backlog of orders, and were limited in their production levels by a lack of raw materials. About one-third indicated a lack of demand as the reason for not producing more. These firms were typically suppliers primarily to the commercial vehicle assemblers. The other firms indicated that a combination of shortage of working capital and/or physical capacity limited their production.

Even those firms reporting inadequate demand or other factors commented upon various aspects of the raw-materials situation. Desired inventory levels are typically six to nine months' needs for imports, and three to four months for domestically-produced goods. In general, the shortages which appear to be most binding are of domestically-produced goods. Although steel, which was in short supply at the time of the interviews, was the most frequently mentioned item in short supply, nylon, rubber, rayon, and a host of other raw materials were mentioned. In addition, parts requiring inputs of these raw materials were frequently in short supply, and caused production slowdowns, if not stoppages.

Among indigenous raw materials, imports are typically not permitted except in cases of acute shortage. The prices of these raw materials can be some multiple of world prices. It will be seen below that high materials prices preclude international compentitiveness of firms, even when their own production processes are competitive. In addition, however, one wonders as to the future of any industry tied to the use of Indian raw materials: such an industry cannot expand any faster than the source of the materials unless imports are allowed.

Materials shortage has become such a familiar part of the conditions under which Indian businessmen must produce that most firms adapt to it. Many build in excess assembly capacity so that when parts or materials fail to come in, they can continue some varieties of fabrication, and "catch up" when the missing items are delivered. Others maintain very heavy inventories. Another line of defense is the "open market", (black market).

Items under price or delivery control (such as steel, and imported commodities) can be purchased at two to three times the official price in the "open market". Because of the effect of these high prices on cost structure, firms do not enter the open market unless the quantities they need are very small (and hence the licensing procedures are too costly) or until they are threatened with a shutdown in their absence. In these circumstances, however, the open market provides another avenue for the prevention of the complete disruption of production.

In every interview, executives were queried as to the degree costs would be reduced if output expanded by a large factor. Most executives responded initially in terms of the cost saving that would result if they went to full capacity (as contrasted with licensed capacity) operations. In many cases, additional expansion beyond their current capacities could be obtained by the addition of "balancing equipment": i.e. there existed excess capacity for much of their machinery, so that they would not have to add very much to expand total capacity. Within this range -- of reaching full capacity and adding balancing equipment -- some firms estimated that they could reduce average cost by as much as 12 per cent.

When asked what would happen thereafter, as production tripled or increased tenfold, most responses were that there would be little, if any, additional saving. About one-fourth of the ancillary firms indicated that to achieve such increases in production, different production methods would be required, and that the experience gained to date would be of little value. In particular, a shift to special-purpose machine tools, and continuous-process operations would often be required for a larger scale

of output. It appeared that there were great misgivings about attempting continuous flow operations under Indian conditions, where raw material and spare part availability, labor troubles, power interruptions, and other factors (including switchovers in specifications) would prevent the economical use of continuous-process, large-scale production methods.

In some processes, of course, there is little alternative to continuous process, capital-intensive techniques. In those cases, there was no possibility of achieving average-cost reduction through increases in volume. By and large, this author concluded that the opportunities for cost reduction through increases in scale were far more limited than is generally believed. While the degree to which economies of scale exist varies from one type of process to another, it appeared that there were sufficient substitution possibilities between alternative technologies for the same product that firms could compete successfully with their small scale of output.

Another subject of inquiry was the effect upon firms' costs of switching to indigenous sources of supply. Most responses suggested that indigenous content had increased rapidly over the decade. Of the executives who gave an indication of their indigenous content early in the 1960's and at the time of interview, the median indigenous content had increased from 37 per cent to 89 per cent. The degree of difficulty encountered in switching to indigenous sources varied from firm to firm. However, this author concluded that at the outset of indigenization in the mid-1950's there were opportunities for producing previously imported components

without very high increases in costs; as these opportunities became exhausted, however, the marginal cost of additional indigenization had increased markedly. One firm dramatized this by suggesting that, from its present indigenous content of 90 per cent, it would cost as much to go to 91 per cent as it had to go from 83 to 90. This was particularly the case for firms where a large number of different items constituted the remaining import content. In that case, firms often must purchase machinery, etc., for very small production runs to meet their indigenous content schedules.

The experience with export incentives was indicated above. In terms of the industry's operations, however, several other observations are in order. Perhaps most important is that the vehicle assemblers, by and large, produce models that were current in other countries in the late 1950's and early 1960's. In many ways, this makes good economic sense, since a large part of the capital cost of vehicles is the cost of model changeovers.

From the viewpoint of the export prospects of the ancillary firms, however, the fact that their domestic market is limited to makes that were prominent in the late 1950's causes difficulties. While some ancillary products are easily transferable among makes (e.g. tires, batteries, etc.), many others must be made to individual models' specifications (e.g. wiring, pistons, carburetors, etc.). For many ancillary firms, the challenge of exporting has been that of finding places where similar-make models exist, and a need for spare parts is therefore present. In some cases, firms

have been able to supply the Western European countries with parts for those items where it has not paid the foreign collaborator to produce in small scale. In others, sales have been primarily to neighboring countries where the average age of vehicle is also high.

To export beyond the level determined by replacement demand for models similar to those produced in India would generally require at least some additional tooling, and the development of new specifications for the export market, at least for those parts where design characteristics are important. To date, this has not been done, and exports have remained a small part of most ancillary producers' business. With a highly profitable domestic market, and high raw materials prices, it would be a rare entrepreneur indeed who would invest in tools and equipment designed exclusively to produce items for export.

IV. DOMESTIC RESOURCE COSTS OF IMPORT SUBSTITUTION IN THE ASSEMBLY AND ANCILLARY INDUSTRIES

Introduction

Up to this point, the Indian Government's policies toward the private sector, the resulting growth of import-substituting activity in the automobile and ancillary industry, and the general economic aspects of ancillary production as perceived by persons in the industry have been discussed. The growth of the industry, as seen above, has been impressive, but future prospects may not be so bright. Macroeconomic data, however, cannot provide an indication of whether growth could have been more rapid, or of appropriate policies for the future. Similarly, interview responses and economic theory can provide some guidance as to the qualitative aspects of the industry's operation, but they are not useful guides to quantitative estimates of the benefits and costs of the system, nor do they shed any light on how any alternative policies might work.

In this part, we focus upon the domestic resource costs of import substitution in the automobile and ancillary industries. The next section explains the domestic resource cost measure; thereafter, the data used to make such estimates are described, and the estimates presented for individual activities, and for the industry as a whole. In the next part, attention is turned to the explanation of the pattern of domestic resource costs.

Domestic Resource Costs

When the objective of economic policy is to foster rapid economic growth, as it is in India, the costs and benefits of any economic activity

must be evaluated in terms of the activity's contributions to economic growth. Consequently, the benefits of a given activity are the goods produced; the costs are the resources and materials employed in the production process. Measurement of goods produced and of inputs cannot be conducted in purely physical terms, however, if evaluation is to be meaningful. The statement, that a tractor was produced with 10 workers, a ton of steel products and 7 machines, and that a yard of cloth was produced with one worker, a pound of cotton, and one machine, is meaningless. Prices must be used to render comparisons meaningful.

When goods can be internationally traded or domestically produced, the relevant prices for evaluating outputs and material inputs are the international prices at which the outputs and materials can be bought and sold internationally. If, for example, one machine and one worker can produce either a yard of cloth or a gallon of gasoline (with the same cost of crude oil and cotton), it would make no sense to undertake both activities if the price of cloth and gasoline were different; there could be more cloth and more gasoline available for consumption if a country produced only the good with the higher international price and used the foreign exchange so earned to purchase the other commodity.

Of course, the real world is much more complicated than this simple example: machinery is not comparable, there are many types of workers, and many commodities. So, comparisons of both inputs and outputs must be made in value terms. If domestic markets for factors of production were competitive, and reflected the social value of factors, market values of

domestic factors could be used for comparing alternatives. Then, whenever it was found that it cost more to earn a dollar of foreign exchange in one activity than another, it would always be sensible to choose the other activity.

In fact, however, in most developing countries, factor markets are not perfect, for a variety of reasons. To make economically meaningful comparisons, economists have come to employ the concept of domestic resource cost. This measure enables one to compare the social costs of earning or saving a dollar of foreign exchange in different activities. When the cost of earning or saving a dollar is low, it is presumptive evidence that the industry should be expanded; when the cost is high, it is evidence that the industry should not be expanded unless there are strong reasons for believing that costs will decrease sharply over time. Moreover, if one observes two activities in which new investment has taken place and domestic resource costs are very different, one can safely conclude that the community could have invested more in the low-cost activity and less in the high-cost activity, exported some output from the former and imported more of the latter, with more of all goods available to the community.[1]

Some people have objected that often one cannot expand one's export markets at constant prices, and hence the domestic-resource-cost measure may be inappropriate. When that is true, the measure must be adjusted

[1]For a fuller discussion, see Anne O. Krueger, "Evaluating Restrictionist Trade Regimes: Theory and Measurement", Journal of Political Economy, forthcoming.

to take the inelasticity of export demand into account; for present purposes, there can be little doubt that any commodity produced in the Indian ancillary industry could experience (with appropriate specifications) rapid export growth for several decades before the objection had empirical relevance.

Another line of argument is that costs may not be constant; when that is so, adjustments are once again needed in the domestic-resource-cost measurements. Again, this objection lacks force in the Indian ancillary industry. As seen from the interview responses, there is every indication that expansion in output could occur at constant, or at most, slightly declining costs.[2]

One last aspect of the domestic-resource-cost measure requires a brief explanation. This has to do with the treatment of material inputs used in production. Most people are accustomed to think in terms of producing commodities. From the viewpoint of economic analysis, however, an industry consists of firms engaged in a value-adding activity. A commodity, such as a passenger car, is not made by a firm; rather, it is made by the iron ore and coal producers, the steel firms, the ancillary producers, and the assemblers.

An example of the problem, and its treatment, will illustrate why this is important. Consider the production of steel. Suppose it takes two tons of coal, and one ton of iron ore to produce steel. Suppose further that a country has abundant iron ore and coal resources, and that

[2]The relation between changes in costs and ancillary firms' domestic resources costs will be examined below, however.

iron ore and coal can each be exported at $100 a ton, while steel can be imported at $500 per ton. In considering whether it is worthwhile establishing domestic production of steel, it is value-added in steel production which is important, i.e., $200 per ton. Neglect of the fact that the iron ore and coal could be exported can be very misleading in forming the appropriate judgment as to which industries to expand. The domestic resources employed in steel production must be evaluated against the $200 of foreign exchange saved per ton of steel produced. In some instances, inputs such as coal and iron ore are subjected to tariffs and taxes. Even an efficient steel industry could not export, if the hypothetical figures given above were correct, and there were 50 per cent excise duties upon coal and iron ore: his costs of purchased inputs would be $450, and it would be unfair to ask him to compete with firms in other countries whose input costs were $300.

To take account of differences in input prices, the domestic-resource-cost measure contrasts value-added domestically (when factors are valued at their social prices) with value-added internationally. In so doing, the real costs to the economy of alternative uses of resources are indicated.

The Data

To estimate the domestic resource cost of ancillary production in India, the sample of firms which completed questionnaires with enough information to provide the necessary data were used. Altogether, such data were available for thirty-four products, including both assemblers' and ancillary producers' products. Published information, data from other questionnaires, and interview findings were used to supplement the questionnaire information.

The forty-three questionnaires gave information on about 100 product lines. In many instances, however, problems of joint costing were such that the information was not deemed independent (e.g. the wage and salary bill stood in exactly the same proportion to depreciation and interest charges for each item, or the firm's products differed only in model specification). In addition, there were instances where the firm produced outside the ancillary industry, as well as ancillary products, and could not provide an adequate estimate of costs for ancillary production alone. Some other products were not included in the sample because critical pieces of information were not available, or were deemed unreliable.

By the time the criteria of reliability, completeness and independence were used, thirty-four products, produced by twenty-nine companies remained. These included six final assembly products,[3] thirteen ferrous-metal fabricating products, nine non-ferrous metal and chemical products, and six miscellaneous products.

Domestic resource costs are estimated only for this group of products. In the author's judgment, there is no particular bias in the sample, and the results are probably representative of the ancillary industry. The data are based on a hybrid 1968-69 year: some firms had not yet completed their 1969 books, while others had. The latest year for which data were available was used, so that the figures refer to an "artificial year".

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[3]At the outset of the study, it was not intended to estimate the domestic resource costs of vehicle assembly in India. The assemblers were given questionnaires so that a check would be available upon the price data supplied by the ancillary producers. However, the assemblers were sufficiently generous in providing information so that it was relatively simple to calculate their domestic resource costs, and they were therefore included.

This would, of course, be true even if all figures were for the same year, since different firms end their accounting years on different dates.

To compute domestic resource costs, the following data are needed: domestic and international prices of outputs and purchased inputs; the amount of purchased inputs employed per unit of output; any other foreign exchange costs incurred in production; and the amounts of domestically-owned factors employed in production.

It is usually not difficult to obtain information on the domestic prices of outputs and purchased inputs. This was the case with the ancillary industry. OE prices of output were readily obtained from producers, and in all but one product line, they tallied with the price quotations provided by the assemblers.

Obtaining international prices for items comparable to those produced domestically is generally far more difficult than obtaining domestic prices. A major reason for selection of the ancillary industry for study was the belief that price comparability could be obtained. This turned out to be the case, although in an unanticipated manner. Only about one-fourth of the product-questionnaires not included in the sample were rejected because the international price quotation either could not be verified, or was inconsistent with data from another source.

There were three international prices potentially available for each ancillary product: the collaborator's ex-factory price, the c.i.f. price of the commodity when imported into India, and the prices at which Indian firms were exporting under their export obligation. As a matter of course, one would anticipate that the Indian export price was the lowest of the

three, that the ex-factory collaborator's price would be in the middle, and the c.i.f. price highest for any given commodity.

At first, it was intended to use c.i.f. price as the basis for calculating international value added. The drawbacks turned out to be threefold: 1) producers knew the c.i.f. price only for the most recent date the commodity was imported; since different products' imports were banned at different times, that would bias comparisons in favor of more recently-banned items; 2) use of c.i.f. prices would have made no allowance for quality differences between Indian products and their foreign counterparts; 3) in the event, it turned out that the prices at which Indian ancillary producers were exporting were above the c.i.f. prices.

It was finally decided to use the ancillary producers' own export prices as a basis of comparison, whenever they were available. In addition to the drawbacks of using c.i.f. prices listed above, export prices had a number of advantages. First, they were available for all but two of the products for which domestic resource costs were estimated.[4] Hence, there would be more comparability among price quotations used than could be obtained using either alternative. Second, the use of prices at which the ancillary producers exported insured a greater degree of product comparability among price quotations used than could be obtained using either alternative. Second, the use of prices at which the ancillary producers exported insured a greater degree of product comparability than could otherwise be obtained, and the margin of error in the estimates was

[4]Ex-factory prices were available for twenty-one products either from collaborators or assemblers, and c.i.f. price quotations were available for twenty two.

deemed to be smaller than with either alternative. Third, if one looks to the future of the Indian ancillary industry, rapid growth can occur only through exporting. From that viewpoint, export experience to date is highly relevant.

In calculating domestic resource costs, therefore, export prices were used except when they were unavailable, and exceptions will be so indicated. Since they are used, and the choice appears unconventional, it is important that the nature of these prices be understood. It will be recalled that all firms in the industry, except those which have been in existence for less than five years, are under an "export obligation". Although no sanctions have yet been enforced for failure to meet the obligation, almost all products in the sample had been exported, at least in small quantities. In fact, several of the products which had been produced for less than five years were exported, at least in small quantities. The motive, according to managers in the new plants, was to gain experience so that the obligation could be met when the five-year period was over. There were a few instances in which the collaboration agreement of an ancillary producer prevented exporting a product. In these cases, the collaborator's price was used as the international price.

Because all firms feel obliged to export, they sell their products internationally at whatever price these products will bring. In some instances, the firm's proceeds -- even including cash subsidy and duty drawback -- do not cover the firm's direct materials cost per unit of output. In other cases, the export price does not cover materials cost but the cash subsidy and the duty drawback make up the difference. In a

few cases, the firm's total recovery (f.o.b. price plus cash subsidy and duty drawback) is equal to, or almost equal, to the OE price received for domestic sale.

As indicated above, one would a priori anticipate that the export prices from India would be below the c.i.f. prices of comparable items imported into India. If this were the case, using export, rather than c.i.f. prices would bias the domestic-resource-cost estimates upward.[5] However, it turned out that Indian export prices were above the comparable c.i.f. prices in all cases (twenty) in which both prices were available. The reasons for this were several: 1) the preponderance of ancillary-product exports go to countries with whom India has bilateral trading agreements;[6] 2) the quantitites exported are typically very small, and intended primarily for the replacement market. The fact that most of the importing countries do not permit imports of ancillary products from the convertible-currency countries means that Indian firms, in exporting, are not generally competing with European exporters. As such, export prices are typically above the c.i.f. prices to India from Western European countries.

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[5]So long as there was no reason to believe that the proportionate differential between f.o.b. and c.i.f. prices differed between products, it would not affect the relationship of domestic resource costs between products; it is this relationship which is important.

[6]Of total ancillary exports of Rs. 31 million in 1968-9, the largest imports were, in descending order: Egypt (Rs. 5.2 mil.); Ceylon (Rs. 3.1 mil.); Sudan (Rs. 2.5 mil.); Iran (2.4 mil.); Singapore (2.3 mil.); the Philippines (1.4 mil.); and West Germany (1.4 mil.). No other country imported even a million Rs. of ancillary products; most of these importers were Middle Eastern, African or East European.

Another fact should be noted: a unit of foreign exchange in inconvertible currency is worth less to India than would be a unit of convertible currency (calculated at the official rate of exchange). Hence, in the estimates given below, the domestic resource costs are generally the rupee cost of earning or saving a dollar (at the official exchange rate) of inconvertible currency.

In addition to data on the prices of outputs, price comparisons for inputs are required for domestic-resource-cost estimation. These data were obtained from a large number of firms, and verification did not prove difficult for major inputs: various types of steel, major components, rubber, copper, nylon, etc..

Similarly, physical input requirements per unit of output are needed. In practice, these proved more difficult to obtain; over half of the questionnaires which could not be used for domestic-resource-cost estimation were rejected because of inadequate data on input requirements.[7]

The remaining data requirements were fairly readily obtained: other foreign-exchange costs of production, and domestic factors of production used in ancillary manufacture. The major foreign-exchange costs - other than direct and indirect imports - generally incurred are of two types: 1) royalties and technical assistance fees paid to collaborating firms, and 2) depreciation allowances for the replacement of imported capital

[7]The problem of input requirements gave particular difficulty because of the active black market in raw materials. This meant that it was especially important to verify input requirments in physical terms. In particular, some firms resell some of their imports in the black market; on their books, these raw materials are recorded as used in production. Hence, special care had to be taken to be sure that this was not reflected in the domestic-resource-cost estimates.

equipment used in production. The former was readily obtained. The latter created a more difficult problem: the replacement requirements for imported capital goods are below the initial requirements because of progressing import substitution; on the other hand, to the extent domestic machinery and equipment are more expensive than their foreign counterparts, this should not be charged to firm inefficiency. It was decided, therefore, to treat investment in machinery and equipment at international prices, and the depreciation on this machinery as a foreign exchange cost of ancillary manufacture, while construction and installation costs were treated as domestic inputs into the production process.

Domestic input data included the number of workers (by skill classes), the wage and salary bill, short and long term indebtedness, administrative and maintenance costs, and so on. Except for the skill distribution of the labor force, these data were available for all products whose domestic resource costs were calculated. We turn, therefore, to the estimates.

The Micro-Aspects of Import Substitution

Table IV-1 presents the price differentials between Indian products sold as original equipment in the domestic market and the export or foreign price, the *de facto* effective tariffs, and domestic resource costs of different ancillary producers and assemblers. In most cases, the price comparison is made with the f.o.b. price of exports, which, as already indicated, were generally above c.i.f. prices.

In order to protect the identity of individual producers, products are grouped by category in Table IV-1. The first category includes all the assemblers including scooter producers for whom sufficient information

TABLE IV-1. PRICE RATIOS, EFFECTIVE TARIFFS, AND DOMESTIC RESOURCE COSTS

	$\frac{\text{Indian Price}}{\text{Foreign Price}} \times 100$	Effective Tariff (Percent)	Domestic Resource Cost (Rupees per dollar)
Assembler 1	137	-5	8.25
Assembler 2	139	2	8.62
Assembler 3	125	-6	7.87
Assembler 4	197	74	34.95
Assembler 5	140	14	10.91*
Assembler 6	118	-14	8.85
Metal fabricator 1	128	135	19.95
Metal fabricator 2	236	123	27.80
Metal fabricator 3a	161	203	83.92
Metal fabricator 3b	149	86	17.85
Metal fabricator 4	260	642	neg. *
Metal fabricator 5	175	91	14.62
Metal fabricator 6	137	32	9.45
Metal fabricator 7	180	155	26.47
Metal fabricator 8a	180	117	11.17*
Metal fabricator 8b	181	125	20.41*
Metal fabricator 9a	167	80	20.10*
Metal fabricator 9b	167	71	8.67*
Metal fabricator 9c	167	77	21.45*
Chemical 1a	227	104	17.47
Chemical 1b	202	68	11.55*
Chemical 2	133	14	10.95*
Chemical 3	173	178	33.75
Chemical 4a	244	332	33.15*
Chemical 4b	309	537	neg.
Chemical 4c	278	257	184.27
Chemical 5	175	89	12.07
Chemical 6	286	411	180.60**
Miscellaneous Product 1a	192	354	44.47*
Miscellaneous Product 1b	158	66	12.81
Miscellaneous Product 2	183	103	17.53*
Miscellaneous Product 3	156	75	18.15
Miscellaneous Product 4	167	69	17.25
Miscellaneous Product 5	262	331	49.05*

All price data are based on ex-factory domestic price and Indian f.o.b. export price except where denoted by an asterisk. One asterisk indicates that the relevant foreign price is the United Kindgom ex-factory price; two asterisks indicate that the foreign price employed is a c.i.f. Bombay price.

was available to make the calculations. The second category includes the various metal-fabricating producers. When there are "a" and "b" designations, this indicates that the products of the two firms are the same. For example, metal fabricators 3a and 3b produce products which have identical functions. The third group contains the chemicals non-ferrous metal-using group of ancillary producers, and the final group contains the miscellaneous products which do not fall into any other grouping. In part, the assignment of firms to individual groups is arbitrary.

In Column I, the Indian price of each component is given, as an index, with the foreign price equal to one hundred. Chemical product 1a, for example, is priced domestically, ex-factory, at 2.27 times the price at which the firm exports the product. As can be seen, all products in the sample are priced above the comparable foreign price. The range is from 18 per cent over the foreign price to three times the foreign price.

Such price comparisons indicate that Indian assemblers are producing at a cost disadvantage relative to assemblers in other countries whose component costs are lower. However, in view of the high prices of raw materials in India, the price comparisons of parts and components tell little about the individual firms' competitive abilities. Since material prices in India are well above the international prices, firms which are internationally competitive in their stage of production would still have prices very much higher than foreign firms.

To estimate competitiveness in value-adding processes, economists have developed a measure of the "Effective Tariff". This measure indicates

the degree to which a firm's value-adding process is protected. The effective tariffs which are implicit in the protection accorded to Indian producers are given in Column II. An effective tariff is calculated as the percentage protection accorded to a producer less the protection given to his suppliers times the importance of those suppliers.[8] Assembler 6, for example, sells his product at a price 18 per cent above the world price. However, he buys his parts and components at well above the world price. In fact, in his case, the inputs he purchases cost so much more than those his foreign counterparts buy that he is really not protected at all, but rather he is discriminated against. Stated another way, Assembler 6 could sell his product at less than the world price if he were able to obtain his inputs at world prices; he would still earn the same rate of return and profits.[9]

As can be seen, several of the assemblers are subject to negative protection, despite the fact that their prices are above world prices.

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[8]When countries rely upon tariffs as the only barrier to foreign trade, tariff rates can be used in the computation. In countries like India, however, use of quotas and banned lists, as well as tariffs, means that it is the tariff-equivalent of all these forms of protection which must be used in the computation. Hence, it is the actual price differentials which are used in computing the effective tariffs in Column II.

[9]In symbols, and effective tariff, e_i, on the ith good, is defined as:

$$e_i = \frac{t_i - \sum_j t_j a_{ji}}{1 - \sum_j a_{ji}}$$

where a_{ji} represents the fraction of cost that the jth input represents in the ith production process at international prices. The denominator, therefore, represents international value added per unit of output in the ith production process.

With the exception of Assembler 4, all assemblers are subject to either low or negative rates of effective protection. For the ancillary industries, the effective protective rates range from 14 per cent (Chemical 2) to 642 per cent (Metal fabricator 4).

This range of rates of effective protection afforded to domestic producers is extremely wide. Most economists would consider that any effective tariff over 50 per cent was high, and over 100 per cent highly undesirable. Yet sixteen of the thirty-four value-adding processes in the sample - almost half - are protected from foreign competition by more than 100 per cent. While the banned list was designed to encourage domestic production, it is doubtful whether this degree of protection was intended. This is one reason why it is argued that tariffs are generally superior to quotas and import prohibitions: the decision-makers can then decide upon the maximum protection they wish to confer upon firms, and can avoid these exceptionally high protective rates. Moreover, a tariff system always allows foreign competition at some price. As such, it can serve as a spur to the efficiency of individual firms.

The third column of Table IV-1 presents the domestic resource costs of the various products. As explained above, these estimates are designed to reflect the economic cost to the economy of producing various goods. The domestic resource costs given in Table IV-1 are based upon the assumption that the "social" rate of return (before taxes) on capital in India should be 20 per cent. In this author's judgment, these are the "best" estimates of domestic resource costs in the ancillary industry. Attention

will return below to the sensitivity of the estimates to changes in assumptions about appropriate shadow prices.

The range of domestic resource costs is even greater than that of effective tariffs. The highest domestic resource costs are negative. A negative domestic resource cost implies that the foreign exchange value of the output, i.e., foreign exchange saved is negative. This, in turn, means that the production activity in question could be shut down, the imports for that activity ceased, the domestic materials used in that industry exported, with the good in question imported, and foreign exchange would actually be saved: the trade balance could be improved by stopping production, and importing the good. In the case of Chemical 4b, the product was actually exported for less (to a bilateral trade agreement area) than the (hard currency) foreign-exchange cost of its inputs. While data from the questionnaires cannot be revealed, there are published instances of this phenomenon for other firms. For example, the Indian institute of Foreign Trade published cost data on radiators, and showed that to realize Rs. 175 f.o.b. on the export of a radiator, the direct imports were Rs. 183. Of course, there are undoubtedly some indirect imports, so the actual foreign exchange loss is even greater.[10]

By contrast with ancillary products where the foreign-exchange saving is negative, there are some producers whose domestic resource cost is very low. The lowest is Rs. 7.87 per dollar (soft currency equivalent), which

[10] See Indian Institute of Foreign Trade, Study on Automobile Ancillaries, Radiators. IIFT Commodity Series No. 24, New Delhi, 1970. There are, in the same series of publications, many instances of direct imports being so close to the f.o.b. value of exports that it would be astonishing if domestically purchased materials did not have an import content sufficient to make the commodities in question negative exports.

is barely above the official exchange rate.

These wide variations in domestic resource cost have obvious implications for future Indian policy: if new resources are channeled into the low domestic-resource-cost firms, the total foreign exchange saved or earned can become some multiple of that which has occurred under the past allocation strategy. When there are commodities for which it costs 8 to 10 Rupees per dollar of foreign exchange saved or earned, and others where it costs 80 Rupees or more, it is evident that an appropriate allocation strategy in the future could result in large increases in output for the same resource inputs. We shall return to further consideration of this below.

It is of interest to note that the same product is, in several cases, produced under widely differing cost and price conditions. Consider, for example, firms 3a and 3b. Firm 3a uses the same technology as its foreign collaborator, using more skilled labor, and more capital per unit of output than Firm 3b. Firm 3b has substituted raw materials in response to Indian relative prices. Both firms export at the same price, but sell domestically at different prices.[11] Firm 3b was established six years after firm 3a. Both firms' outputs are limited by their import licenses. The bargaining power of the ancillary producers is evidently sufficient to prevent the low-cost firm from raising its price. While the lower cost firm

[11] This information came both from the individual firms' responses, and also from two assemblers who indicated differing prices from the two sources. The possibility of two prices for the same product seems to arise because neither firm alone can supply the market; in bilateral bargaining between the assemblers and the ancillaries, knowledge of their profitability appears to enter the discussion. In several cases, ancillary producers told of abandoning product lines when assemblers would not meet their price.

realizes a higher return on capital, it could do far better if it could expand output. To do so, however, would require assurances about imported-material availability, and a license for the importation of capital goods. The phenomenon of differing costs for the same product has also been noted by the Tariff Commission, and the Indian Institute of Foreign Trade.[12] Hence, it does not appear to be an isolated phenomenon.

These domestic resource cost estimates will be used in the remainder of this paper to evaluate the effectiveness of the import-substitution strategy to date and to analyze the causes of variations in domestic resource costs among firms and products. Before doing so, it is important to inquire into the sensitivity of the domestic resource cost estimates.

Sensitivity Tests on Domestic Resource Cost Estimates

Since the "true" shadow prices of factors of production are unknown, it is important to test the estimates to see how sensitive they are to changes in these shadow prices.

In principle, both labor and capital services should be evaluated at shadow prices, and at the outset of this study it was intended to do so. As indicated above, the questionnaire contained queries on both the history of investment for each product line and the skill composition of the labor force in each process. Generally, the investment data were provided so that shadow prices could be used. In the case of the labor force, however, the data were inadequate.

[12] See above P. 39, and Indian Institute of Foreign Trade, Study on Automobile Ancillaries, Brake and Clutch Linings.

In a country such as India, it is often argued that the actual wage paid to unskilled labor is probably greater than the opportunity cost of that labor, i.e. that that shadow price of unskilled labor is probably below the actual price. By contrast, it is alleged that skilled workmen are in very short supply, and the shadow price of skills is above the actual wage rate paid to skilled workmen. This is particularly so when firms are required, as they are in India, to undertake training programs for their labor force, and when fringe benefits to employees constitute a sizeable fraction of the total payroll.

Unfortunately, the information on skill composition of the labor force was inadequate to attempt to adjust the costs of unskilled workers downward and that of skilled workers upward. Only about half the firms provided information on the skill composition of their workers, and even then it was not always clear if the classification was comparable across firms. The only available alternative indicator of the skill composition of the labor force in each production process was the average wage paid per worker. This information does not provide a means of adjusting actual wage bills to an opportunity cost basis.

Although this is a drawback of the estimates, it turned out not to be serious in practice. In Table IV-2, the first column gives the domestic resource costs from Table IV-1, and in the second column estimates are given of domestic resource costs on the assumption that labor is a free good - i.e. that the shadow price of all labor is zero. While this assumption is extreme, it is evident that even in this extreme case, the rankings of domestic resource costs are not significantly altered by making it. The

TABLE IV-2. TESTS FOR SENSITIVITY OF DOMESTIC RESOURCE COSTS (rupees per dollar)

	20% Return (1)	20% Labor free (2)	10% Return (3)	30% Return (4)
Assembler 1	8.25	6.42	7.53	9.22
Assembler 2	8.62	8.15	7.88	9.45
Assembler 3	7.87	6.65	7.35	8.32
Assembler 4	34.95	34.22	28.12	41.70
Assembler 5	10.91	10.52	8.32	13.50
Assembler 6	8.85	7.60	6.60	11.17
Metal fabricator 1	19.95	18.51	16.50	23.32
Metal fabricator 2	27.87	25.49	22.12	33.56
Metal fabricator 3a	83.92	79.57	78.52	89.25
Metal fabricator 3b	17.85	17.02	16.12	19.57
Metal fabricator 4	neg.	neg.	neg.	neg.
Metal fabricator 5	14.62	12.83	13.40	15.81
Metal fabricator 6	9.45	8.29	7.50	11.40
Metal fabricator 7	26.47	26.02	21.52	31.42
Metal fabricator 8a	11.17	10.09	9.00	12.75
Metal fabricator 8b	20.41	19.02	18.93	22.04
Metal fabricator 9a	20.10	17.84	17.25	23.02
Metal fabricator 9b	8.67	7.97	7.50	9.86
Metal fabricator 9c	21.45	19.42	18.75	24.45
Chemical 1a	17.47	16.06	15.07	19.08
Chemical 1b	11.55	10.42	9.45	13.65
Chemical 2	10.95	10.28	7.95	12.22
Chemical 3	33.75	30.17	26.92	41.65
Chemical 4a	33.15	31.28	29.47	38.16
Chemical 4b	neg.	neg.	neg.	neg.
Chemical 4c	184.29	169.02	150.15	217.87
Chemical 5	12.07	10.42	10.47	13.67
Chemical 6	180.60	143.22	125.51	225.04
Miscellaneous Product 1a	44.47	38.12	40.27	48.75
Miscellaneous Product 1b	12.81	11.12	11.38	14.25
Miscellaneous Product 2	17.53	15.86	15.91	18.61
Miscellaneous Product 3	18.15	16.37	14.02	22.20
Miscellaneous Product 4	17.25	15.49	15.37	19.27
Miscellaneous Product 5	49.05	47.21	41.17	56.92

reason for this was that labor costs, as a percentage of domestic value added by the firms in the sample, were generally small, and ranged from a low of 8 per cent to a high of 38 per cent. In other words, the variation in labor costs among firms was sufficiently small so that it is unlikely that, within any conceivably relevant range of shadow prices, the relative ranking of any commodity can be significantly altered. Only when the domestic resource cost of production is very high does the domestic resource cost alter by more than two or three Rupees.

Data are available to test the sensitivity of the estimates of changes in assumptions about the shadow rate of return on capital. These are presented in Column 3 and 4 of Table IV-2. As indicated above, the estimates in Column 1 are based upon a twenty per cent rate of return. In Column 3, domestic resource cost estimates are given on the basis of before-tax shadow rate of return on capital of 10 per cent. Column 4 is based upon a 30 per cent rate of return. As can be seen, capital costs allow more variations in the estimates than labor costs, but still do not alter the range of estimates nor the rankings of products significantly. Columns 3 and 4 are derived using actually-paid labor costs. The interested reader can calculate domestic resource costs with a zero shadow price of labor and the 10 and 30 per cent rates of return by subtracting the difference between columns 1 and 2 from columns 3 and 4. Similarly, if it is believed the shadow price of labor is a fraction, x, of the market price, the difference between column 1 and 2 can be multiplied by x and subtracted from the rate of return believed relevant. Interpolations can also be made for rates of return between 10, 20, and 30 per cent.

Inspection of the data in Table IV-2, however, should be sufficient to indicate that the estimates of domestic resource costs, and their relative rankings, are fairly insensitive to alterations of shadow prices within the relevant range. To this author, the 20 per cent rate of return and market wage rates, given the problem of inability to sort out skilled and unskilled workers, seemed the best estimates. The conclusions based upon the estimates would not, however, be significantly altered by different assumptions with regard to shadow prices.

Relevance of the Estimates

There can be little doubt that domestic resource costs vary widely among products in India, and that some are extremely high. The relevant questions, therefore, are two-fold: 1) what costs are entailed in an import-substitution policy that permits such a wide range of domestic resource costs, and what could a more selective strategy of import substitution have achieved? and 2) what explains the large variation in domestic resource costs? In the remainder of this part, focus is upon the answer to the first question. In the next part, the explanation of domestic-resource-cost variation is undertaken.

The costs of an import-substitution strategy permitting the establishment of very high cost firms can only be estimated if one compares the results of that strategy with what would have happened under a more selective set of policies. Most economists would argue that probably the best way of selecting import-substitution projects in the private sector is to impose fairly uniform (effective) protection for all industrial commodities. Private firms can then select their most profitable

alternatives; they will not enter into activities which will be very high cost because they will know that it will be unprofitable to do so; if they misestimate their future costs, they and not society as a whole, will bear the loss involved.

There would be other advantages to such a policy. Domestic firms would be confronted with some degree of international competition; they could not take advantage of their monopoly position within the domestic market. Moreover, they would have greater incentives for seeking ways of improving productivity when they are sheltered from competition.

It is possible to ask what the results of such uniform protection toward the automobile and ancillary industry would have been. For this purpose, three hypothetical levels of protection are considered. First, it is assumed that all firms were protected to the point where the rupee costs of import-substitution could have exceeded the official exchange rate by 50 per cent. Secondly, it is assumed that protection would have been accorded to the point where rupee costs could have been 100 per cent above the official rate. Lastly, 200 per cent protection is assumed. Fifty per cent higher domestic resource costs would imply an effective exchange rate of Rs. 11.25 per dollar; 100 per cent would be equivalent to an exchange rate of Rs. 15.00 per dollar; 200 per cent would imply Rs. 21 per dollar.

Under each of these policies, it can be assumed that firms whose costs would have exceeded the cut-off mark would not have started production. The question then is, what would have been done with the imports of capital goods, investment funds, and entrepreneurship and labor actually used in the

high cost industries? The simplest assumption to make is that each firm below the cut-off point would have increased its scale of operations proportionately to absorb the excess resources.

Table IV-3 presents estimates of the costs of import substitution in the ancillary industry as contrasted with each of the three alternative strategies. Part A gives the estimates for the assemblers and ancillary firms together. Part B provides estimates for the ancillary products alone. The first column gives the average domestic resource cost of a dollar of foreign exchange earned or saved that would have resulted from each of the various protection strategies, assuming that the resources not used by the high-cost firms would have been reallocated to the low-cost firms in proportion to their size.[13]

With a 50 per cent effective protection accorded uniformly to all assemblers and ancillaries, the average domestic resource cost of import substitution would have been Rs. 9.64 per dollar, contrasted with the actual average cost of 12.97. For the ancillaries alone, the average cost would have dropped from Rs. 17.42 to 9.66. Another way in viewing the same phenomenon is to ask the extent to which international value added, with the same resources, would have increased. This is given in Column (2). For assemblers and ancillaries in the sample, the actual international value added in production was $55.6 million. Had a 50

[13] In an important way, such a procedure biasses an estimate of the costs downward. This is because, had uniform protection been granted, the lower-cost firms would have been more profitable than the higher-cost firms below the cut-off point, and presumably would therefore have expanded more rapidly.

TABLE IV-3. EXCESS COST OF PROTECTION:

ALTERNATIVE ESTIMATES

Cut-off Rule:	Average Domestic Resource Cost	International Value-Added (million dollars)	Per Cent of Actual Allocation
	1) Assemblers and Ancillaries		
11.25 Rs/$1 (50 per cent)	9.64	74.7	134
15.00 Rs/$1 (100 per cent)	9.97	72.3	130
22.50 Rs/$1 (200 per cent)	10.69	67.4	121
Actual Allocation	12.97	55.6	100
	2) Ancillaries Alone		
11.25 Rs/$1 (50 per cent)	9.66	39.8	188
15.00 Rs/$1 (100 per cent)	11.05	34.8	164
22.50 Rs/$1 (200 per cent)	14.13	27.2	128
Actual Allocation	17.42	21.2	100

per cent cut-off rule been used, it would have been $74.7. For ancillaries alone, the comparable figures would have been $21.2 contrasted with $39.8 million. The third column expresses the potential gains from a more selective strategy as a percentage of the net international value added resulting from the actual allocation.

One way of interpreting these results is the following: with the same resources employed in the assembly and ancillary industry, it would have been possible for India to have as much of each vehicle and component as was actually consumed, with a net improvement in her trade balance of almost $20 million, had a 50 per cent cut-off rule been used, and a part of the output of the low-cost producers exported. Of course, this $20 million could have been used to import needed materials and capital goods, had that been preferred.

Lest it be objected that the low-cost firms could not expand at comparable costs, nor could they find export markets, four of the nine firms in the sample with costs below Rs. 11.25/$ had been denied expansion licenses. Moreover, four of them had refused large export orders, either because they could not import sufficient raw materials (two cases) or because they already faced excess demand in the domestic market where the profit margin is much greater.[14] Moreover, the domestic resource costs are calculated on the basis of a 20 per cent rate of return to

[14] Of the fifty-five firms interviewed, seventeen mentioned refusing export orders. In four instances - two in the low-cost group - the order was for as much as the firm wished to export to be supplied to the firm's (hard-currency) foreign collaborator.

capital - above that received by most of the low-cost producers in the domestic market.

The bottom part of Table IV-3 presents estimates for the ancillary producers alone. The average domestic resource cost of ancillary production is much higher than that for the assemblers - 17.42 Rupees per dollar. The explanation lies in the fact that the very high cost firms are concentrated among the ancillary producers. A cut-off point of Rs. 11.5 - i.e., effective protection of 50 per cent would have resulted in an 88 per cent increase in international value-added in ancillary production.

Even if one objects that 50 per cent effective protection might be too low (taking into account possible currency over-valuation) it is of interest to note that even a 100 per cent effective protective rate could result in a 30 per cent increase in international value added for the assemblers and ancillaries, and a 64 per cent increase in ancillary production.

Of course, these estimates are made upon assumptions about what would have happened. No one would seriously advocate the shutting down of existing firms (except probably in the case of negative foreign exchange saving). The capital invested in them is fixed, and cannot be readily transferred to other enterprises. However, the underlying policies of banning goods produced domestically and sheltering domestic production still exist in India. As such, it can be taken as a reasonable premise that if these policies continue, investment will continue to be spread across the board, much as it has been in the past.

In this light, the estimates given in Table IV-3 can be taken as representative of the gains that might be achieved through alteration in import-substitution in the ancillary industry. While it is impossible to estimate whether these gains would be of the same order of magnitude in other industries, the size of the potential gains, in the ancillary industry, in terms of future growth, are surely sizeable enough to warrant serious investigation of the potential in other industries.

If the range of domestic resource costs found in the ancillary industry is representative of all Indian import-substitution projects, it would suggest that there could be large gains through putting a ceiling - even at effective protective rates of 100 or 200 per cent - on the cost at which import substitution will be carried out. If this were combined with a set of measures rendering exports of low-cost products attractive, substantial gains could be realized. If the range (not the level) of costs is representative of new investment in India as a whole, it would imply that a more rational policy of import-substitution project selection could result in an increase in the rate of growth of manufactured output of one-third or more. Such a change would imply an easing of the foreign exchange bottleneck, and greater competition confronting individual firms. It would, therefore, be consistent with the objectives of Indian planners. Of course, it would have to be combined with assistance to already-existing high cost firms. Proposals to effect such gains will be the subject of the final part. Before turning to those, it is interesting to inquire into the causes of variation in domestic resource costs and prices among firms.

PART V. REASONS FOR VARIATIONS IN RELATIVE PRICES AND DOMESTIC RESOURCE COSTS

Introduction

When the growth of the ancillary industry was reviewed, it was pointed out that many of the factors which gave sizeable impetuses to growth in the past had diminished, and that future growth would either have to be slower or would have to be augmented by an increasing share of exports in total output. The data on domestic resource costs suggest that there are many firms in the ancillary industry which could, if they could obtain their inputs at international prices, compete profitably on the world market. Many others, however, have very high domestic resource costs, and do not appear efficient.

Two questions, therefore, naturally arise. The first pertains to how low domestic-resource-cost firms can still have prices far in excess of the international prices which they must compete. The second is the explanation of variations in domestic resource costs among firms. In this part, each of these questions is examined in turn.

Price Differences

In the automobile and ancillary industry, two-thirds to three-quarters of most firms' costs are for purchased inputs and materials. Of the thirty-four products, there were seventeen for which the cost of purchased inputs exceeded the international value of output. These included high- and low-cost firms alike, although the mean domestic resource cost of those products for which materials costs exceeded the world value of output was above that of those whose materials costs were below the world value of output.

More than two-thirds of the Indian-foreign price ratio indicated in Column I of Table IV-1 can be explained by higher materials prices alone. Even for the low-cost firms, it is highly unprofitable to enter the export market, relative to domestic market profitability even given the subsidies available. As long as the prices of Indian raw materials remain high contrasted with those on the international market, it is extremely unlikely that Indian comparative advantage in any material-using manufacturing industries can be realized.

A second consequence of the high materials prices is firms' ability to blame their high prices on them. One executive, when interviewed, blamed high raw material prices for his high costs, and illustrated by telling the author that the U.K. price for his product was Rs. 45; the materials cost in India was Rs. 55. Later, however, it turned out that the price of his product in India was Rs. 110. That is, in-plant costs in his firm also exceeded the sales price in the U.K.

The domestic resource costs given in Table IV-1 are calculated on the basis of international value added at international prices. Hence, while the high price of raw materials can explain a great deal of the price differential, and the unprofitability of exporting, it does not explain high domestic resource costs. In terms of Indian development, it is understanding these which is important.

Domestic Resource Cost Variations: Rejected Hypotheses

A number of hypotheses frequently suggested in the development literature were tested against the Indian data. None of them explained the variations within India. One hypothesis is that new firms have higher

costs for a period. However, there was no significant difference between the newer and the older firms in the sample. The low-cost group had averaged 11 years in production, whereas the highest cost group averaged 10 years in production. Among the lowest-cost firms, two been established in 1964 or later. As indicated above, executives were asked about how their costs would behave with increases in volume. They did not believe that to be important, and there was little correlation between firm size and average cost for the sample. Nor, for that matter, did the fact that some firms underutilized capacity in the year in question affect the average domestic resource cost. Some of the low-cost firms had very low percentages of capacity utilized, and some of the high-cost firms were operating at or above capacity.

Lastly, the hypothesis that differences in capital-intensity might account for differences in domestic resource costs was tested. Although there appeared to be some slight relationship, it was not significant.

Causes of Domestic Resource Cost Variation

Detailed examination of the data and statistical testing revealed that the high-cost firms used both more capital and more labor per unit of output than did the low-cost firms.[1] There are vast differences in the efficiency with which resources are employed by different firms.

[1]For a description of the tests used to confirm this hypothesis, see the author's "The Costs and Benefits of Detailed Planning: A Case Study of the Indian Automobile Ancillary Industry", paper presented to the Second World Congress of the Econometric Society. Copies are available upon request from the author.

Reference to Table IV-1 will illustrate the point. Metal fabricators 9a, 9b, and 9c produce an identical product, which is purchased by the same assembler as OE. Their raw material purchases are very similar. Yet firms 9a and 9c employ almost three times as much labor and capital as firm 9b.

Chemical firms 4a, 4b, and 4c produce similar products, also. This product probably is not one suited to Indian conditions, judging by the high costs of all three firms. Yet manufacturer 4a manages to produce the product at a domestic resource cost of Rs. 33, while manufacturer 4c uses almost six times as many domestic resources per unit of output, and manufacturer 4b, on net, uses more imports directly in production than the commodity's export price.

These very large cost differences among firms have been noted by others, and usually have been regarded as an anomoly. In fact, there is probably a straight-forward explanation. Before turning to it, however, it is necessary to reject some notions which have been put forward to explain these differences. One suggestion is that high-cost firms may be producing a higher-quality product. In this sample of firms, however, the lower-cost producers, on average, were rated by the assemblers and their competitors to produce higher quality products than were the high-cost producers. As indicated above, the newness of the firm similarly is not an explanation of cost differences. Lastly, while it is possible that there are some errors in the estimates, they cannot possibly be sufficient to explain even one fourth of the observed differences in resource costs.

We conclude, therefore, that there are simply large differences in efficiency among firms. The basic question is why these differences exist. Such differences can have a number of causes. Some firms may have been required to reduce costs in the face of government regulations. As judged from interview data, there are undoubtedly numerous instances of this sort of phenomenon. Other firms may have established their plant at a time when certain needed components were imported, and then have been confronted with the need to switch to a domestic item. Often, redesigning and retooling costs can be significant, too.

Then, there are costs attributable to materials shortages, and there can be little doubt that these costs affect different firms in varying degrees. If the flow of materials ceases, production can be disrupted, it is difficult to lay off staff, and costs can increase in any number of ways. In one factory which was visited, the normal assembly line flow was almost entirely disrupted because the assembled vehicles were missing one side panel, and all of them were being stored in the factory.

Also, there are undoubtedly differences in the ability of entrepreneurs to organize resources, the nature of foreign collaborators, and their ability to adjust to Indian conditions. A problem with the Indian system is that there are few rewards for lower-cost operations: there was no significant difference between the profit rates of the low domestic-resource-cost firms and those of the high-cost firms. Some of the highest cost firms also had the highest profit rates!

More generally, however, under Indian conditions, the most important problem for entrepreneurs to worry about is simply assuring that production

will take place at all. After all, if goods can be produced, they can be sold, generally under conditions of excess demand. Entrepreneurial attention is therefore devoted to those factors which are the most important determinants of profitability: obtaining import licenses and other necessary government clearances, assuring a flow of materials, avoiding labor troubles, and so on.

Under these conditions, the incentives for spending time to obtain cost reduction and productivity increases are small relative to those for other uses of scarce entrepreneurial time. It may be that the largest cost of the policies to promote import-substitution has been the diversion of entrepreneurial talents away from productivity and efficiency considerations.

It is impossible to estimate the degree to which the various factors enumerated above may be important in determining the differences in efficiency. There is one significant piece of information, however, which suggests that the lack of incentives for low-cost operation may be a major part of the explanation. The data in Table IV-1 indicated that the assemblers' domestic resource costs were substantially below those of the ancillary industry. One possible explanation is that the assemblers have been subject to price control, even though subject to excess demand, and generally could not expand their capacity. Hence, the only route to profits for them may have laid with attention to cost-minimization. Price adjustments granted to the assemblers have typically lagged behind increases in costs. The assemblers, unable to respond to increases in input costs, have had greater incentives to attempt to control costs. By contrast,

many of the ancillary producers have been producing in a sheltered market, where the bargaining element between themselves and the assemblers determines their profit rate. Therefore, they have considerably less incentive to control their costs, and devote more time to obtaining the necessary material inputs.

There can be little doubt that each of the above-mentioned factors contributes to differences in efficiency among firms. An important part of economic growth occurs through increases in efficiency. Part of these efficiency increases result from managerial efforts to reduce costs within each firm. To the extent that incentives to managers are weaker in India than in most countries, managerial efforts may not be as focussed upon cost reduction as they might be.

Moreover, if the lack of incentives for efficiency is an important factor in explaining high domestic resource costs, it would suggest that, with greater rewards for cost reduction, the lower-cost firms might also achieve more rapid productivity gains. In this sense, simple examination of the disparities in domestic resource costs among firms may well underestimate the loss attributable to across-the-board import substitution, by neglecting the decrease in domestic resource costs that might result from greater rewards for efficiency.

While one part of increased productivity can be explained by intra-firm cost reductions, another important component is changes in the relative importance of efficient and inefficient firms over time.

In a well-functioning market system, inefficient firms either raise their productivity, or suffer low profits or losses. Low-cost firms, by

contrast, tend to have higher profit rates, and therefore expand their output more rapidly than the high-cost firms. When this mechanism works, the total productivity increase achieved by the economy is greater than the intra-firm rates, because the rapidly growing (low-cost) firms become increasingly important relative to the high-cost firms. As such, greater productivity growth is attained.

A major problem with the present set of import-substitution policies in India is the failure to provide adequate incentives for cost reduction. Equally important, however, may be that investment licensing and import licensing procedures tend to permit more rapid growth of the high-cost firms, and slower growth of the low-cost firms, than is desirable.[2] We turn, therefore, to a consideration of alternative policies.

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[2]As mentioned several times in previous sections, the changes in Industrial Licensing policy brought about during 1970 will tend to liberalize conditions for expansion for firms not associated with the Larger Industrial Houses which do not require significant imports of capital equipment or materials. This will surely provide some easing of the system for smaller firms, but there will be a partial offset in that many firms associated with the Larger Houses tend to be low-cost producers.

PART VI. POLICY IMPLICATIONS AND CONCLUSIONS

Criteria for Policy

The ancillary industry was originally chosen for intensive examination because there was reason to believe that it would be representative, in many respects, of the experiences of other import-substitution industries.

In the absence of considerable research on other import-substitution industries, it is impossible to know whether experience in the ancillaries is "better" or "worse" than average. In this author's judgment, the ancillary industry may well be respresentative of the range of engineering industries in India. There are many grounds for believing that engineering goods' import substitution has been more successful than average, and that, therefore, the ancillary industry represents a relatively successful case of import substitution, even in terms of cost.

Even so, it is difficult, on the basis of the experience of one industry, to discuss or question general policies. However, it is also difficult to consider policy toward the ancillaries without getting into far more general policy issues. The kinds of alternative policies that would greatly increase the ancillaries' future growth prospects could not be adopted toward the ancillary industries alone. Therefore, in what follows, discussion will focus upon policy toward the ancillary industry, on the assumption that it is reasonably representative, and that, as a result, policies which would enhance the industry's growth prospects would also enhance those of other industries.

In evaluating alternative policies, the underlying question is: could policies be altered in such a way that future Indian industrialization can be achieved with greater benefits, and smaller costs, to the Indian economy? Stated otherwise, can industrialization be rationalized in such a way that, for the same new resources, the overall rate of growth of output and productivity can be increased? If there are such ways, and they were adopted, it would, of course, imply that very quickly, there would also be additional resources available for growth.

Background Considerations

Given this criterion, consideration of policy alternatives must be made in light of the present state of the industry. Here, two considerations are relevant: 1) that future growth through import substitution will of necessity decrease; and 2) that there already exist many high-cost firms. It is extremely doubtful if the past rate of growth of the ancillary industry (and presumably of other industries where import substitution has progressed to a comparable extent) can be sustained by reliance upon growth of the internal market. While this is surely true for the ancillaries, there is good reason to believe it to be true of Indian industry more generally. Virtually all opportunities for consumer-goods import substitution have been exhausted. While there is still some scope in intermediate producers' goods, import substitution has progressed considerably. It is doubtful whether the remaining opportunities there, and in capital goods industries, are sufficient to sustain the rate of growth earlier achieved with broader import-substitution alternatives.

That there already exist many high-cost firms is a fact of life. Any consideration of policy alternatives must take this into account, since sudden shifts in policy which exposed these firms quickly to international competition could result in serious domestic dislocations. A legitimate object of policy would certainly be to prevent the establishment of new firms, or expansion of existing ones, if they are or will be very high-cost producers.

There can be little doubt that considerable progress has been made under existing policies. There are many firms in India which developed under these policies that, confronted with competitive prices for their inputs, could compete favorably in international markets. From this viewpoint, import substitution has been successful. There is no question, moreover, that most import-substitution activities would not have started without the impetus of government inducements in their initial stages, although a different set of incentives might have achieved the same result. The growth of the ancillary industry, as that of many other import-substitution industries, has been impressive. Any policy changes would have to be such that future import-substituting industries could develop.

While the benefits of import substitution in the ancillary industry have been substantial, so have the costs. Side by side, low-cost and high-cost production processes have been established. Policies and incentives have been insufficient to discriminate between projects destined to remain costly and those where real promise of future viability existed. If new policies can be found to deter the emergence of additional high-cost operations, future gorwth could be enhanced. These same policies

could also serve to stimulate productivity increases in existing firms, and some of the high-cost producers might become more efficient.

The fact that some firms could compete at a realistic exchange rate suggests that, if materials were available, there is possibility of growth stimulated by rapid increases in manufactured exports. This possibility has been largely unexploited to date. While Government policies have been instituted which are designed to promote the growth of manufactured exports, these policies to date have been largely indiscriminate. It was seen above that there have even been cases of negative exports. It makes little sense to require the very high-cost firms to export a small percentage of their output. It would be far better if low-cost firms could be induced to expand their output rapidly and develop sizeable export markets.

What is required, therefore, is a set of policies which will enable the selection of both import-substitution and export projects on the basis of their potential. This should apply both to the expansion of existing firms and product lines, and to the inaugeration of new ones. To achieve these goals, raw materials must be available to producers, and incentive must be revised. These topics are discussed in turn in the remainder of this Part.

Materials Availability and Prices

The first prerequisite for attaining these goals would be to provide firms with raw materials at international prices. Unless firms have access to materials at competitive prices, there will be no real possibility of developing export-oriented firms. It would be impossible to compensate firms on an item-by-item basis for differences in materials prices:

such a procedure would not only be cumbersome and time-consuming (and invite the possibility of corruption), it would also prove impossible in practice. Ascertaining the relevant international prices of all materials would overtax the competence of any bureaucracy. Across-the-board incentives and subsidies do not do the job either. It was shown in Part IV that the cash subsidy and other export incentives can lead to a chaotic pattern of exports, sometimes entailing foreign exchange losses. It makes no more sense to have a domestic resource cost of more than Rs. 21 for exports than it does for imports.

The freeing of the flow of materials would have advantages beyond those of enabling efficient firms to compete effectively in international markets. It would eliminate one cause of production stoppages and delays, which are one source of high costs. It would also enable firms to operate with smaller average materials inventories, thereby achieving further cost reductions for the firms and a real saving for the economy as a whole. Moreover, freeing up materials supplies would enable managers and executives to turn their attention from obtaining materials to other aspects of their operations. In a country where entrepreneurial abilities are allegedly in scarce supply, this might be the greatest saving of all.

While interviewing executives in Indian firms, this author could not help but be impressed by the degree to which firms are materials-starved. It was tempting to conclude that, if raw materials were available to firms at competitive prices, Indian development might well follow the Japanese pattern: India could well become a net importer of raw materials and an exporter of manufactured goods. Even with considerable research,

such a conjecture is beyond the realm of testing by known methods. Nonetheless, there can be little doubt that the Indian economy is materials-scarce. Obviously conditions in 1969 were better than conditions prevailing in 1965 and earlier years, but the future is in doubt should demand increase with the end of the recession.

The only way in which raw materials prices can be made competitive is to open up the possibility of importing these goods. For items for which the Government wishes to provide assistance to domestic producers (e.g. rubber), such assistance could be provided through subsidies to these producers. To finance these subsidies, a moderate duty rate (say, less than 25 per cent) could be charged on raw materials imports, or excise taxes could be increased for domestic sale of products made with these materials.

The increased flow of raw materials into the Indian economy would, in the long run, probably generate enough foreign exchange to pay for the increased imports, provided that a realistic exchange-rate policy were followed. In the short run, however, additional foreign exchange would undoubtedly be required. The Government of India has been accumulating foreign-exchange reserves over the past two years, and could, without assistance, probably move somewhat in the direction of easier materials imports. For a genuine liberalization, however, and to avoid speculation that the policy could not be continued, Indian resources are inadequate, and the Government would be unable to insure that the increased flow could be sustained. Hence, foreign aid would be required. Since many of the needed materials imports could not be obtained from the major donor countries,

untied aid would be highly desirable. While it might be that the additional foreign exchange required to effect a genuine liberalization in the flow of materials was not very great, the Government of India does not have the reserves or resources to underwrite such a move, much less to give assurances to Indian firms that it could be sustained.

Providing Incentives

Freeing raw materials imports would insure that efficient firms could export competitively. However, if the present policy of banning items once they are domestically produced is maintained, the incentives for import-substitution will remain as great as ever. The international market is highly competitive, and considerable effort is required to be successful. Few sensible entrepreneurs would choose to operate in that market if their alternative was a comfortable, sheltered domestic market. Moreover, lower raw materials prices could do nothing to provide incentives for efficient production, nor could they insure that additional high-cost production processes would not be established. This problem is inherently a very difficult one, and in the existing situation, there is no short-term solution.

Government officials are aware of the problems involved. To date, the attempted solutions have consisted largely of bureaucratic efforts to impose physical regulations (export obligations, obligations to export enough to repay the foreign-exchange cost of investment, etc.) upon individual firms. In part, the underlying philosophy would appear to be that incentives are not working appropriately, and that government intervention, at a very detailed level, is therefore required.

To date, there can be little doubt that incentives to firms are not working appropriately. Perhaps the most telling piece of evidence is the absence of any relationship between firms' profit rates and the level of their domestic resource costs. However, the existence of a profitable black market and other indicators also substantiate the view that incentives do not appropriately guide economic activity.

There is really a fundamental choice to be made in planning as a result: either planners and government officials can leave the present incentive system intact, and attempt to superimpose their judgments of appropriate behavior upon firms' decisions; alternatively, incentives can be altered in such a way that firms' responses to those altered incentives more appropriately accord with that which is socially profitable.

A decision as between these two approaches must be made largely on a pragmatic basis: which alternative is likely to be more successful in practice? In this writer's judgment, it is impossible for any Government official, no matter how able, to predict the likely course of productivity increases and behavior of costs for any given firm. Moreover, it is impossible to devise an enforceable mechanism to force efficiency, or to provide the information necessary for Government officials to make the detailed assessments of the likely viability of projects on an item-by-item basis that would be required for centrally determining resource allocation.

Finally, government officaldom in India is already overtaxed. There are innumerable functions that can only be carried out by the Government; if incentives can be provided so that less detailed supervision of individual

firm activities is required, the resulting reduction in workloads for government officials can be used to enable the government to undertake extremely vital functions, such as the provision of technical assistance to firms, the development of better information flows about possible export markets, and so on.

Given these considerations, it would appear that altering incentives, and moving toward less detailed supervision of firms' operations would be the more desirable course. To achieve this would require a gradual shifting of policies from the very detailed investment licensing, import licensing, banned lists, and so on toward regulation of the overall level of investment through fiscal and monetary policies, while simultaneously imposing excise taxes on those final commodities which are deemed to have lower social priorities.

An important ingredient of such a policy shift would be to reduce, and gradually eliminate the banned list and import quotas, gradually replacing them with tariffs as the instrument of protection for domestic industry.[1] This cannot be accomplished quickly. Indeed, too rapid a move would undoubtedly cause more disruption to existing industry than benefit to new firms. However, it should be possible to start toward these goals quickly. If entrepreneurs are aware that their privileged sheltered positions in the domestic market will disappear after a period

[1] In the first draft of this paper, equal stress was placed upon eliminating the detailed investment licensing procedure. As indicated in Part II, a step in this direction was taken during the summer of 1970, although licensing procedures for the larger Industrial Houses were apparently tightened. The considerations underlying the argument that removal of bans is important also apply to detailed investment licensing.

of a few years, that would serve, in many instances, as a spur to greater cost-consciousness even before the bans are removed.

One can think of a number of general appraoches to this problem, and it is not the place of this paper to select among them. It might be decided, for example, to replace all import prohibitions with 100 or 200 per cent tariffs after 5 years. Alternatively, policy could proceed somewhat more selectively, shifting to tariffs for capital goods and producers' intermediate goods before a shift were made for final items of consumption. After the initial transition was accomplished, further gradual tariff reductions could be contemplated. If the orders of magnitude indicated in the ancillary industry are at all representative for Indian industry as a whole, the gains achieved through any gradual transition toward tariffs would be sizeable. Any such shift would necessarily require a realistic exchange-rate policy.

Regardless of the exact pattern and height of tariffs actually selected, two problems would have to be dealt with. The first would pertain to the encouragement of new import-substituting activities. For these activities, one possibility would be to permit a temporary ban. If the would-be entrepreneur knew that the ban would be temporary, to be replaced with a tariff after, say, 5 years, there would be a strong disincentive to start production in lines where costs would remain extremely high. An alternative policy, of course, would be to allow tariffs above the generally accepted height for the first five years of a new product's existence.

The more intractable problem would result from the existence of high-cost firms which have already been established. One important aspect of shifting from bans to tariffs would be for the government to provide technical assistance to firms in the period prior to the switch to tariffs.

Some firms may be able to reduce their costs, given the prospect of international competition. Others may, given greater incentives to reduce costs, and government technical assistance, be able to become competitive prior to the time that bans are eliminated. There would inevitably remain, however, a hard core of high-cost firms, which could not adjust to the changes. These firms should surely not be provided with any assistance for expansion. However, except in cases where foreign exchange saved were negative, it would be desirable to provide subsidies to these firms so that they would not go out of existence.

Meanwhile, if the Government decides that passenger car or other particular lines of production are socially less desirable than most activities, it could raise the excise duty on those items, while allowing expansion of production. If, on that basis, the producers wished to expand production, they could then be allowed to do so on the same conditions as other firms. At a sufficiently high tax rate, of course, they would find it unprofitable to do so unless they could find export markets.

Obviously, there are a number of variants on the way such a gradual transition to a planning system relying on monetary, fiscal, tax, and tariff policy might be conducted. Choice among them would depend in part on the tastes and preferences of the Indian planners. In part, also, it would depend upon the responses to the first changes made in the regime.

It is impossible to estimate the effects such an opening-up of the Indian economy would have on India's rate of economic growth. The evidence from the automobile ancillary industry suggests, however, that the imposition of at least some ceiling on the cost at which import-substitution will be undertaken could result in at least a 2 per cent increase in the growth rate of the international value of output. If, in addition to this, Indian firms' productivity growth increased under the impetus of the threat of competition from abroad, the benefits could be far more sizeable.

Appendix I

DEMARCATION OF AUTO PARTS TO BE MANUFACTURED BY ANCILLARY

INDUSTRY AND VEHICLE MANUFACTURERS

(as Notified by Dept. of Industry, Ministry of Industry & Supply, Government of India, vide their reference A.E. Ind. 1(42)/62, dated 16th March, 1965)

LIST "A"

Items normally expected to be manufactured by the Ancillary Industry

Engines

1. Pistons
2. Piston Rings
3. Piston Pin Bushings
4. Piston Pin Retainer Rings
5. Piston Rings
6. Crankshaft bearings (steel backed white metal or copper lead)
7. Roller Chain
8. Valves
9. Valve Springs
10. Radiator
11. Radiator Cap
12. Fuel Tank Cap
13. Exhaust Muffler
14. Exhaust Pipe
15. Tail Pipe
16. Fuel Lines
17. Carburettor
18. Fuel Pump
19. Injection Pump
20. Fuel Filter
21. Oil Filter
22. Fuel Hose
23. Oil Hose
24. Air Cleaner
25. Cylinder H. Gasket (all types of gaskets and packings)
26. Nozzles
27. Nozzle Holders
28. Fuel Pump Elements
29. Delivery Valves
30. Thin Walled Bearings
31. Ball Bearings
32. Bowden Cables
33. Oil Seals, all types
34. Bolts, Nuts, Screws, etc.

Clutch, Transmission, Propeller Shaft and Differential

1. Clutch Plates
2. Clutch Facings
3. Clutch Carbon or Bearing
4. Clutch Spring
5. Clutch Pressure Plate
6. Clutch Cover
7. Universal Joint
8. Propeller Shaft
9. Transmission Bearings
10. Disc Wheel
11. Wheels
12. Wheel Bolts and Nuts
13. Front and Rear Wheel Bearing
14. Differential Bearings
15. Oil Seals
16. Brake Linings
17. Grease Nipples
18. Bolts, Nuts, Screws, Etc.

Chassis Frame, Front Axle and Steering

1. Leaf Springs
2. Spring Brackets, Shackles, Hangers (cast type)
3. Shcok Absorbers
4. Hydraulic Brake System
5. Vacuum servor or Air Brakes
6. Brake Cables
7. Brake Fluid
8. Ball Bearings
9. Roller Bearings
10. Taper Roller Bearings
11. Bolts, Nuts, Screws, etc.
12. Suspension Leaf Springs
13. Suspension Coil Springs
14. Sprin U. Bolts'
15. Spring Centre Bolts
16. Spring Shackle Bolts
17. Spring Shackle Pins
18. Spring Clips
19. Spring Bushes
20. Spring Seat

Electrical Equipment

1. Dynamos
2. Starter Motors
3. Battery
4. Starter Cables
5. Wiring Harness
6. Ignition Coils
7. Sparking Plugs
8. Distributor with Vacuum Controls
9. Voltage Regulators
10. Electrical Cables, all types
11. Ignition Switches, all types
12. Head Lamps
13. Tail Lamps
14. Side Lamps
15. Fog Lamps
16. Stop Lamps
17. Spot Lights
18. Control Lamps
19. Direction Indicators
20. Flashers
21. Stop Lamp Switches
22. Horns, Electrical
23. Horn Buttons
24. Electric Bulbs
25. Bulb Sockets
26. Wind Shielf Wipers
27. Electrical Fuses
28. Electrical Fuse Boxes
29. Contact Brake Points

Rubber Parts

1. Tyres
2. Tubes
3. Flaps
4. Fan Belts
5. All types of Rubber Hoses
6. Bulb Horns
7. Weather strip
8. Door Buffers and similar other rubber components
9. Silent block or resilient mountings

Body

1. Door Locks
2. Hinges
3. Windows for bus and trucks
4. Seats for bus and trucks
5. Safety Glass (Laminated or Toughtened)
6. Window Regulators
7. Window Guides
8. Ornamental Fittings
9. Upholstery Materials
10. Trimming Materials
11. Rear View Mirrors
12. Dash Board Instruments
13. Ammeter
14. Speedometer
15. Flexible Shafts for Speedometers
16. Oil Pressure Gauges
17. Fuel Gauges
18. Air Pressure Gauges
19. Thermostats
20. Paints, Lacquer, Varnishes
21. Sun Shades
22. Sun Visors
23. Luggage Carriers
24. Ash Trays
25. Door Handles
26. Bolts, Nuts, Screws, etc.
27. Mascots and Motifs

Service Equipments

1. Tool Kits
2. Starter Handles
3. Tyre Levers
4. Mechanical and Hydraulic Jacks
5. Hand and Foot Tyre Inflators
6. Air Pressure Gauges
7. Lubricating Equipment

LIST "B"

Items which may be manufactured either by the Vehcile Manufacturers or by the Ancillary Industry

Engine

1. Cylinder Liners
2. Connecting Rod Bolts
3. Starter Gear Rings
4. Oil Pan
5. Timing Gears
6. Valve Seat Inserts
7. Valve Guides
8. Water Pumps
9. Fuel Tanks
10. Oil Pumps
11. Tappets
12. Valve Seats
13. Engine Mountings

Clutch, Transmission, Propeller Shafts & Differential

1. Clutch Levers
2. Clutch Housings
3. Flywheel Housings
4. Transmission Case
5. All types of Transmission Gears (excluding bearings)
6. Brown Wheel and Pinions
7. Differential Gears
8. Differential Housings
9. Rear Axle Shafts
10. Brake Drums
11. Hubs

Chassis, Frame, Front Axle & Steering

1. Tie Rods
2. Tie Rod Ends
3. King Pins
4. Steering Column
5. Steering Gears
6. Steering Arms
7. Spring Shackle (forged type)
8. Torsion Bars

Body

1. Cabs
2. Bus Bodies
3. Truck Bodies
4. Car Seats
5. Hub Caps

Appendix II

Abbreviations

SFYP	Second Five Year Plan
AU	Actual User (Import License) p. 12
DGTD	Directorate General of Technical Development, Ministry of Industrial Development
GCA	General Currency Area (Import Licenses) p. 13.
AID	United States Agency for International Development
C.K.D.	Completely knocked down, p. 19 (i.e. packaged and shipped, requiring only assembly at distinction). p. 25.
OE	Original Equipment. p. 28.
PAL	Premier Automobiles Limited. p. 32.
TELCO	Tata Engineering and Locomotive Company. p. 33.
c.i.f.	Cost, insurance and freight.
f.o.b.	free on board.
NCAER	National Council of Applied Economic Research.