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INDUSTRIAL POLICY IN THE DEVELOPING COUNTRIES:

AN ANALYSIS OF LOCAL CONTENT REGULATIONS*

Prepared by the
Global and Conceptual Studies Branch
Division for Industrial Studies

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PREFACE

UNIDO is entrusted with a mandate to maintain a world-wide perspective on industrial development in the developing countries and to analyze the process of industrialization so that the appropriate policies and strategies for accelerated industrial development in the developing countries can be formulated. In a global meeting preparatory to UNIDO IV the Organization was called upon to assist the developing countries in formulating policies and strategies for industrial development, and a request for the Organization to strengthen its assistance to the developing countries in the formulation of national development programmes in sectors in which industrial restructuring is taking place and to prepare case studies of the implications of these policies was made at UNIDO IV.

With this background, the present study has been carried out with the objective of providing a review and analysis of one specific policy for stimulating industrial production in the developing countries that has been applied in a large number of developing countries and which is regularly under discussion, namely local content regulations. Such a policy is also viewed in the report as a possible component of a set of industrial development policies and strategies which could serve to strengthen the process of industrial co-operation among developing countries, and hence takes cognizance of the resolution of UNIDO IV which requested UNIDO to exchange experience on industrial policies in this area.

Finally, the study emphasizes the role of local content regulations as a possible vehicle for facilitating the entry of the developing countries into the capital goods industry, thereby following up on the recommendations of UNIDO's Second Consultation on the Capital Goods Industry that UNIDO should study appropriate strategic responses that would promote the capital goods industry in the developing countries. It is hoped that through analyses such as this, of specific policies or strategies currently being applied in the developing countries and considered for future application in others, UNIDO can assist the developing countries in achieving their development objectives, including that of increasing their share in world manufacturing value added.

Following an executive summary, section I of the document defines local content policies by their common objectives, and provides some evidence on the countries and sectors in which they are applied and their specific requirements. In section II some issues of protection and economies of scale are discussed, followed by short desk reviews of local content policies in selected developing countries. In view of the prevalence of these policies in the auto industry, these reviews focus on this sector. Section III then offers, by means of contrast, an overview of the recent debate in the United States on this issue, and section IV draws some policy conclusions.

Throughout the paper, an attempt is made to place local content regulations in the wider context of government industrial policy and strategy (particularly with respect both to the development of the capital goods industry and of small- and medium-scale enterprises) and of national macroeconomic policy (and the nurturing of technological capacity, entrepreneurship, and labour skills) and the changing international policy framework, as well as to evaluate the cost and the effectiveness of the policies.

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EXECUTIVE SUMMARY

Local content (LC) legislation represents a form of performance requirement which host countries have been increasingly applying on the activities of foreign corporations in order to attempt to increase their degree of control and benefits from the activities of foreign investors, while not being forced to bear an increased share of risk or responsibility for the project in question. As such, LC is designed to end the inseparability of control and ownership of investments (particularly by transnational corporations in developing countries), and represents an attempt by governments to increase their say in the forms and components of the foreign contribution, and in its relationship to the domestic economy of the host country and the country's own strategy for indigenous industrial development.

Local content policies require that a fixed percentage of the output of a given industrial product - generally produced by transnational corporations in the developing countries - be composed of input with a local origin. As such, they represent both an industrial and a commercial policy and have implications both for the industrial structure and the structure of the foreign trade of the developing country adopting the legislation. Such regulations have generally developed as an extension of import substitution policies from consumer goods to the capital goods sector as the industrial sector has expanded and the development process progressed. Simultaneously, countries that have entered capital goods production have also seen the potential for the export of standard, and even more of complex capital equipment, and have therefore also seen local content as a potential policy instrument for fostering increased production for export.

To be effective and to justify their cost, local content policies must be integrated into domestic macroeconomic policy making - as opposed to being seen as simply an industry-specific policy to save foreign exchange. And national policy makers must ensure that strong and effective linkages are created with domestic policies designed to raise the technological level of

production, stimulate the spirit of entrepreneurship, and increase the skills of the labour force, as well as with those oriented towards expanding the role of small- and medium-sized enterprises in the industrial development of the country. When combined with policies on technological unpackaging and standardization of product lines, and in a manner appropriate to the existing industrial structural and factor inputs available in the country, such policies can also provide a vehicle for policy-induced expansion of the capital goods and electronics industry in the developing countries.

At the same time, the application of local content policies can often be seen to have attained only a marginal impact because of inadequate links with the domestic economy, not been especially labour-intensive, and had only a limited long-term impact on training because no critical work was transfered to the local production facilities and the labour force received no increase in skill levels. Moreover, they often have failed to contribute to the indigenous technological development of the country and represented only a pseudo-transfer of technology, not trained entrepreneurs or managers in the developing countries and therefore led to poorly managed enterprises, and not generated significant - if any - foreign exchange savings. In a word, to have often failed to have contributed to the ability of the developing country concerned to pursue an independent path of development.

Thus, local content can, when properly designed and implemented as part of comprehensive macroeconomic policy, make an important contribution in each of these areas, and therefore serve as an important policy alternative for a developing country. Simultaneously, local content can, if improperly applied, be inefficient and cause considerable waste of resources (though excessive unit cost of production and low quality of final output) and hence damage the development efforts of the developing countries. Policy makers must therefore have a constant awareness of the extra cost involved, as well as of the presumed benefits which led to the decision to impose local content legislation in the first instance. This is particularly true at the moment, when output and investment - and hence technological accumulation - have been falling in the developing countries. This has led to 'flexible interpretations', often equivalent to freezes or cuts, in LC levels and, in general, to a situation where LC regulations have been overcome by internal and external macro-economic forces plus those of global technological change.

Over-zealously applied, and without a full understanding of the macro-economic aspects of the situation, LC policies can also generate "negative content protection" when firms react to the constraint of LC regulations by producing below the level that would attain in the absence of LC. In the extreme case maladroit LC policies can lead to "perverse content protection", where firms cease production altogether, or decide against initiating operations in the given country.

At the industrial policy level the developing countries should be concerned to employ local content as a policy tool to enter into or expand production in the capital goods and electronics industry (and thereby to create or strengthen the basis for their long-term industrialization), to facilitate the later export of these parts and components. It should also be used to shape an industrial structure that takes advantage of the tendency in a number of important sectors of the capital goods industry (including machinery and equipment, electronics, motor vehicles, and appliances) for major international corporations to reduce their level of vertical integration and to shop increasingly for lower cost components abroad. Simultaneously, local content should be seen in a strategic framework and used as one of the policy instruments for fostering the process of technological unpackaging as well as being employed in conjunction with policies designed to increase the degree of standardization of basic capital goods employed in the South.

Viewed strategically, local content can also enter as an element of a co-operative international development strategy if it is utilized to orient production away from the industrial sub-sectors that are seen as most 'critical' (on social as well as industrial grounds) in the industrial market economies, thereby mitigating direct confrontation between southern industrial development strategy and policy and industrial policy in the North. This would mean developing themselves as one element in an international production network that harmonizes and is complementary with the more modern and advanced sectors in the developed countries within the framework of intra-firm and intra-sector trade rather than competing for shares of a static market as in the case of, for example textiles. At the same time, such a global co-operation strategy would require the latter countries to open their markets generally to the developing countries and to allow offsetting import and export flows rather than attempting to impede or prohibit import flows which compete directly with domestically produced goods.

For policy makers particularly in countries which do not have large internal markets, local content can also be seen as a potential vehicle for developing a "southern content", in the sense that the more industrially advanced developing countries would purchase components from other developing countries who would then in turn agree to require a certain southern content in their (capital goods) imports. Given the great potential for growth in the capital goods sector that lies in the South, the potential for a policy oriented towards southern content is enormous; and it would simultaneously work to overcome the tendency to high cost production levels that represents a major threat to the efficient utilization of resources under local content regulations. In an industry such as the automobile industry, moreover, with the growth of large transnational component producers, and the advent of the requirement by corporations like GM - which will clearly be followed by others - for component suppliers to be connected to their automated data communications system, developing countries are being marginalized in the components industry as well as in the automobile industry per se, and a policy of southern content may be the only efficient alternative for a country without a large internal market that is not already established in the international market.

On the basis of the belief that an industrial country needs a healthy auto industry, a number of developing countries have devoted considerable resources to the development of an assembly and components industry, leading in some cases to full-scale automobile production. On the basis of the conviction that lessons from these attempts at a policy-induced development of the automobile industry could be applied to the development of the capital goods (and, increasingly, the electronics) industry in general in the developing countries in the future, the development of the industry in a number of different developing countries has been analyzed - with some of the policies found judged to be successful in macroeconomic terms and some very wasteful of resources.

Today the point is as valid as ever that the auto industry is important in the industrial market economies as a driving force for the development of electronics and as a provider of new management techniques which other engineering sectors can copy. But there is reason to believe that, due to forces such as increasing automation, tightening links between manufacturing

and suppliers, and computer-aided design, in the short- to medium-term, no more than the five or so developing countries which have already established themselves have a future in the international auto industry.

For the other developing countries the only possibility for a country with a large local market, appears to be the use of policies such as LC to develop an indigenous industry, or, for smaller developing countries, the development of a 'local' market in the sense of sub-regional, regional, or southern market through a policy of southern content .

Local content could therefore be seen as a vehicle for fostering policy-induced international co-operation among developing countries, in the spirit of the discussions at and pursuant to UNIDO's Second Consultation on the Capital Goods Industry. Assisted by international organizations such as UNIDO, developing countries could select standard designs for basic capital goods critical to their development effort which limit the number of makes and models and simplify the design, follow this up by policies of technological unpackaging of the capital goods in question and then, through the use of local content policies which have not only a national but also a sub-regional - e.g., Asean or Andean Pact - regional, or southern dimension, stimulate 'local' manufacture of these capital goods.

INDUSTRIAL POLICIES AND STRATEGIES IN DEVELOPING COUNTRIES: AN ANALYSIS OF LOCAL CONTENT REGULATIONS

LOCAL CONTENT: THE CONCEPT, ITS COSTS AND BENEFITS

Introduction

Over the recent past the developing countries have learned that a number of the industries which they established in the past, and which were appropriate for the golden age of development of the late 1960s and early and mid-1970s, have turned out to be inappropriate to the conditions of the 1980s. In these circumstances many countries are searching for new ways of reducing their net dependence on the world economy, or of increasing the benefit to the national economy of this dependence - both 'benefits' that in the recent past have often been much less than originally forseen. In such circumstances there is an intensified search for effective policies and strategies for industrial development. One measure that has been employed by the developing countries in the past and which could appear particularly appealing in the future would be one which - potentially - improves the balance of payments through reducing the share of imports in final output, while simultaneously stimulating the level of development of technology, entrepreneurship, and labour skills in the domestic economy and strengthening the role of small- and medium-sized enterprises in the economy: local content legislation.

Viewing development in the developing countries in a longer perspective, the nurturing of infant industries, both as a form of import substitution and, later, as a source of potential exports, is an industrialization strategy that has been pursued by the vast majority of the developing countries at some stage of their industrialization. In analyzing these policies, considerable attention has been devoted to tariff structures, while other forms of protection have been relatively neglected. Over the last two decades the developing countries have increasingly adopted, generally within the context of an import substitution development strategy, trade-related performance requirements designed to ensure that foreign direct investment serves specific national objectives. These have fallen into two categories (although, in fact, they are often applied simultaneously to the same firm): export requirements, which specify percentages of production that must be exported by

an investing firm, and - the focus here - local content (LC) regulations, which specify that a certain percentage of final output must be obtained from local sources.

The argument of this study is that such local content regulations should be seen as an integral part of an entire industrial policy and strategy designed to transform the industrial structure of the country - to change the nature and complexity of the output generated, its technological sophistication, the quality of the entrepreneurship and skilled labour employed in its production, the composition and balance of foreign trade, and the relationship between foreign and domestic (small- and medium-sized) suppliers of particular capital goods.

Thus, it is not simply a question of increasing the output of a specific component or product. Properly conceived it is as much a qualitative as a quantitative transformation of the national capacity, not just to produce a product, but to master new processes and to enhance the country's capacity in such a way as not only to be able to reproduce a given production process, but to build on this technology and entrepreneurship and these skills to contribute to creating an ever more complex and sophisticated industrial structure. It will be seen throughout this study that in both the implementation of LC in developing countries as well as in the analyses of these policies in the literature, it is the narrower conceptualization of LC as an isolated policy measure that clearly predominates. And that the potential costs and benefits of such measures have been inadequately assessed.

The Nature of Local Content Policies in Developing Countries

Local content provisions are essentially a government policy which requires that a certain amount of inputs (by value or quantity) in a given industrial output be of of domestic origin. As such, it is one of the newer, less easily quantifiable, barriers to trade . Being a disguised means of protecting the intermediate stages of production, it "averts some of the domestic and international opposition that additional tariffs might evoke". (Grossman 1981, 583.) Economic penalties, such as payment of a high tariff rate on all intermediate imports, are imposed for failure to comply. Widespread use of LC occurs in subsectors of the capital goods industry such as the production of pumps, motors or similar equipment, in vehicle assembly,

and automotive component production, and in the production of components for consumer durables such as television and refrigerators, especially by developing countries who are attempting to establish their own local industries. But the policy of LC can be applied whenever intermediate goods are imported for further processing, when component parts are imported and used in assembly operations, or when the component parts are to be produced domestically and utilized in a foreign- or domestically controlled production enterprise.

Local content regulations were generally born at a time when the country in particular was following a policy of import substitution - e.g., in Latin America and India. But, along with tariffs and non-tariff barriers, they continued to be applied in the same countries when they switched to a strategy of export promotion. (Or when they switched to what appears as a policy of export orientation, but which in reality is an attempt on the part of a country that generally pursues import substitution to induce import substituting firms to export part of their output.)[1/]

On the one hand, LC has been developed as a policy measure to foster an extension of import substitution policies from imported consumer goods to the capital goods sector as the development process has progressed (and consequently the industrial sector, and the demand for capital goods, expanded). Simultaneously, the countries that have entered capital goods production have also seen the potential for the export of standard, and even more of complex, capital equipment - and have therefore also seen LC as a potential policy instrument for fostering increased production for export.

Explicit LC represents a further stage in the development of host government regulation of production than implicit rules such as import tariffs, however, because an explicit rule generally contains a penalty for violating the rule and fixes a given and certain percentage of value added necessary to qualify as domestic production. And LC policies, while achiving the balance of payments savings of policies to force exports to offset imports, also foster linkages with the domestic economy and mitigate against an enclave industry. LC also complements the existing system of effective protection in the developing countries, which through the system of effective (as opposed to nominal) tariff rates fosters forward - but discourages backward - linkages in the industry by fostering the development of the local components industry (i.e., backward linkages). On the other hand, joint

of ownership controls by host governments represent a yet stronger form of control over foreign operators who wish to produce in the developing countries than LC.

In developing countries LC regulations are commonly imposed after assembly activities have been set up behind tariff walls and import controls, and are usually, though not necessarily, directed at subsidiaries or affiliates of transnational corporations (TNCs). The rationale of LC is that by stipulating that a given amount of value added be produced within a country, a larger part of the benefits of TNC-generated activities could be captured by the host country. And while the fact that TNCs have high import propensity is well known, the domination of much of the capital goods industry, as well as its technology, by the developed countries forces the developing countries to co-operate with the TNCs in the capital goods sector. Foreign corporations, in turn, have generally accepted the inevitability of the rising tide of 'nationalism' in developing countries and have looked upon LC as just another trade-related performance requirement and as a 'price' that has to be paid for operations in those countries. And LC policies are seen by TNCs as less objectionable than, say, joint venture requirements.

The industries where LC regulations are applied generally fall within the capital goods sector, and are therefore intrinsically highly capital intensive, are characterized by long lead-times in recouping early outlays, and include the most technologically sophisticated sectors of the economy. These are considerations that have historically often been considered to put large scale development beyond the capacity of any one individual developing country, and have led to reliance on TNCs[2/] as agents to assist in the development of these sectors. And LC legislation has been viewed as a major policy instrument for ensuring the participation of the developing countries in this development.

For the TNCs, while the imposition of LC has generally been considered a 'cost of doing business' with developing countries, more enlightened TNC managment has also focused on ways to exploit the local goverment incentives that generally form part of the LC package to the maximum extent possible. In some cases the force of competitive pressure on the TNCs has strengthen their interest in sourcing more of their components in the developing countries,

generating a congruence of interests between the corporations and the local governments. But in other cases the TNCs have used their economic leverage to induce weak monitoring of LC levels and non-adherance to LC timetables.

Simultaneously, in the industrial market economies there is a growing risk of trade barriers which would restrict or even prohibit these imports from the South - a clear potential challenge to the longer-term dimension of LC policy as a platform for generating potential exports. But, since the major investors are the TNCs (who are often in a position to influence the discussions on these trade barriers in the industrial market economies), the risk is reduced for the developing countries. At the same time, to the extent that much of the protectionist pressure is directed against Japan, this actually creates potential opportunities for the developing countries, since Japan is interested in using developing countries as final assembly points. The assembled products, such as cars, can then be shipped to third markets and sold as not-wholly-Japanese products (to circumvent quotas placed on totally Japanese products).

Designed with the objective of providing a means for backward integration into parts and component manufacture, LC policies have often been seen as a vehicle for facilitating the policy-induced entry into capital goods production, the 'muscle industry' of development. As such, these LC policies have been extremely important policy measures, given the fact that entry into the capital goods industry is crucial as a key to an independent development policy. At the same time, there is considerable evidence that this has been at a very considerable cost in economic efficiency due, among other things, to the limited size of the domestic market, aggrevated by the proliferation of makes and models (which meant that, even if the potential scale economies were present, they were squandered by the inability of any one producer to attain the requisite minimum efficient scale), and the opportunity cost of heavy protection. (These points are discussed later.)

As a form of commercial and industrial policy, LC policies can have strong interactions with government policy in areas such as technology, manpower training, entrepreneurship, and the balance of payments. But, de facto, LC policy has not been seen as an integral element of overall domestic policy making, but has been employed almost exclusively as an ad hoc, industry-specific policy supplementary to existing tariffs and quotas.

Further, LC could be conceived as a part of an overall industrial policy, and as a policy instrument for carrying out structural change and structural adjustment in industry. In practice, however, it has - at most - been seen as part of an overall policy of trade restriction, again supplementing existing tariffs and quotas, for a given sector. It has often also been co-ordinated with exchange rate policy, an important point since a highly overvalued exchange rate can have a marked impact on the de facto impact of any given set of LC.

LC regulations have also been conditioned in part by 'export pessimism' and skepticism about the reliability of the international market prevalent in developing countries, which holds "that export earnings of developing countries [can] grow only slowly, if at all, while economic growth [leads] to rapidly rising demand for import-type goods." (Krueger 1984, 525.) When formulating policy under such assumptions LC appeals, since it mitigates against rising levels of import content of production. Especially when combined with policies on export promotion or with export requirements, LC regulations can also be seen as a means to stimulate exports, particularly since they apply to the manufacturing sector, whereas export pessimism generally implicitly identifies developing countries with primary commodity exporting.

More specifically, LC policy can be seen to have been implemented for several interrelated reasons. One very prominent desire was for the increased industrial capacity, income and output expected to be generated as a result of the policy. It was hoped - and assumed - that by imposing or encouraging domestic content, linkages - and in particular backward linkages - would develop, thereby fostering a more integrated industrial structure, as well as a more self-sufficient national industrial system. The policy was then seen as a vehicle for moving away from an industrial structure characterized by enclave-type assembly activities. In addition, the development of a suppliers industry with an appropriate mix of large-, medium-, and small-scale firms has sometimes been a policy objective - the argument being that the Japanese industrialization experience, based in part on extensive subcontracting, illustrates the advantages of such extensive linkages.

Further, LC policy would facilitate a transfer of technology in so far as technological upgrading and mastery is necessary for local sourcing. In view of the fact that most assembler firms in developing countries are either TNC subsidiaries, foreign affiliates, or at least licensees of foreign firms, the issue of technology transfer and the desire to maximise technological spinoffs and other benefits (such as managerial competence) can also be seen as critical. Viewed optimistically, LC could be seen as a vehicle to assist a developing country to make a technological leap to a higher technological level (e.g., into sophisticated electronic automobile components) and hence to serve as a key element of a country's policy-induced attempt to 'move' with technology.

Moreover, in addition to increasing employment opportunities generally, in some cases the possibility of upgrading the skill level of the work force has clearly motivated LC requirements in developing countries. This contrasts with the situation in the developed countries, where LC legislation is being simply seen as a tool to create and preserve jobs. (On the later point see section III.)

Indeed, content protection can be viewed as a tax on consumption where the tax is embodied in the excess cost of domestic production rather than being explicit. This can in turn be viewed as an investment in technology and the labour force, where the investment is made in the expectation that the higher technial level of the labour force and the technological spinoff will generate benefits for the countreis that are not easily purchased. (See Munk 1969.)

Finally, and apparently most importantly for developing country policy makers, there is the positive impact which LC can potentially have through reducing the demand for foreign exchange, urgently required either to finance a deficit on the balance-of-trade or a large foreign debt. Since the mark-up, and hence the value, of many components imported by TNCs is generally considered to be particularly high, LC regulations can serve to offset the international price setting policies of the subsidiaries of TNCs in the developing countries. In practice, as the desk studies suggest, not only have the foreign exchange savings from moving from the importation of vehicles to the importation of kits been less than was often expected, local component firms also employ imported inputs in their production. (Also see UNIDO 1986.)

These multiple objectives, however, do not receive equal attention - the priorities varying both between countries and industries. In recent years, against a background of severe balance-of-payments and external debt crises, foreign exchange saving has in many cases become a compelling factor in the formulation and application of LC.[3/] From the longer-term perspective, however, for the developing countries it is primarily the existence of potential externalities from an investment - including the economies of scale that can arise from an infant industry after a learning period, technological overspill from the development of relatively more sophisticated industrial processes, or training and experience which raises the skill level of the labour force - which could be potentially captured by the national economy under an LC policy that have been the motivating force.

The reasons why the local private sector has failed to supply the products without the support of LC legislation could include the case of market failure, where the local private market did not have a sufficiently long-term perspective or to have ready access to the required capital financing. But it is perhaps more often the case that there is a need for access to technology, licenses, or skills which the foreign companies possess and are unwilling to fully release, combined with their preference either for in-house sourcing or outsourcing from traditional partners. Moreover, a LC policy guarantees a market for the local producer and therefore markedly reduces the risk faced by the investor. At the same time, as will be shown later in the desk studies, a realistic appraisal of LC regulations must view them in a content where developing country governments are forced to react to changing circumstances - often of a totally external nature - to cope with short-term problems, thereby making the formulation of a well-conceived and integrated, long-term industrial strategy difficult.

A successful policy of localization can be an effective way to stimulate the growth both of assembly ability and component production as well as of the inputs into these operations. But in designing the relevant policies it must be borne in mind that the successful entry into the capital goods industry has at least three critical factors - skilled manpower, technology, and entrepreneurship - and that the nature of the LC requirement for specific sub-sectors must depend directly on the presence or absence of these factors.

Moreover, LC policies for a given sector should be conceived of as part of the totality of policies being designed and enacted in the area of "technological unpackaging", where the 'technology package refers to the collection of all the hardware and software activities involved in the establishment and operation of an industrial sector or sub-sector. The process of indigenous development in this case is then defined as the progressive mastering of each of the elements of the technology package. One of the approaches for overcoming the difficulties inherent in the achievment of this objective - such as the technology complexity of the equipment, investment costs, entrepreneurial demands, and skill requirements - is that of technology unpackaging, by which is meant the decomposition of an industrial project into its component activities and the progressive mastery (and indigenization) of each activity.[4/]

One of the main aims of technology unpackaging is to avoid turn-key operations which exclude domestic participation. And LC represents one of the policies which can be employed to achieve technology unpackaging, and hence foster development, via, for example, requiring an LC component in turn-key operations. This is not to suggest that LC policies alone are sufficient to attain the objectives of technology unpackaging, and other policies must focus on such areas as civil engineering, construction, assembly, and repair and maintenance - all activities within the capabilities of many developing countries and representing a large portion of their total investment expenditure. Thus, LC policies should be seen as an integral element of a larger strategic concept for industrialization.

As part of the import-substitution package, LC regulations are, of course, accompanied by tariffs and import restrictions, with the former taking a complimentary role. Table 1 shows that in the automotive industry for instance, import restrictions always exist in cases where LC policies are applied. From the point of view of policy makers, there are several reasons why LC regulations are imposed even when there already exists protectionist measures designed to promote local industries. First, there may be uncertainty and difficulty in the estimation of the level of tariff protection required to stimulate local production. This is especially true in industries where numerous parts and components are involved. LC rules, if strictly observed, ensure that the desired degree of local integration is undertaken.

Table 1: Summary of Automotive Trade Restrictions Maintained by Selected Nations

Country	Local Content Requirements	Import Restrictions	Export Requirements	Operations by TNCs from Japan	Operations by TNCs from United States
Algeria	no	yes	no		
Argentina	yes	yes	yes	yes	yes
Australia	yes	yes	no	yes	yes
Austria	no	yes	no		yes
Belgium	no	yes	no		yes
Bolivia	yes	yes	no		
Brazil	yes	yes	yes	yes	yes
Chile	yes	yes	yes		yes
Colombia	yes	yes	yes		yes
Denmark	no	no	no		
Ecuador	no	yes	no		yes
Egypt	yes	yes	no		
France	no	yes	no		
Germany, Fed. Rep. of	no	no	no		yes
Ghana	no	yes	no		yes
Greece	yes	yes	no	yes	
India	yes	yes	no		
Indonesia	yes	yes	no	yes	yes
Israel	no	yes	no		yes
Italy	no	yes	no		
Japan	no	no	no		yes
Kenya	no	yes	yes	yes	yes
Korea, Republic of	yes	yes	yes		
Kuwait	no	no	no		
Malaysia	yes	yes	NA		
Mexico	yes	yes	yes	yes	yes
Morocco	yes	yes	no		yes
Netherlands	no	no	no		yes
New Zealand	no	yes	no	yes	yes
Nigeria	yes	yes	no		
Norway	no	yes	no		
Pakistan	yes	yes	yes		yes
Peru	yes	yes	no	yes	yes
Philippines	yes	yes	yes	yes	yes
Portugal	yes	yes	no	yes	yes
Saudi Arabia	no	no	no		
Singapore	no	yes	no	yes	yes
South Africa	yes	yes	no	yes	yes
Spain	yes	yes	no		
Sweden	no	no	no		
Switzerland	no	no	no		
Taiwan, Province of	yes	yes	no		
Tanzania	no	yes	no		
Thailand	yes	yes	no	yes	yes

Table 1 contd.

Turkey	yes	yes	yes		yes
United Kingdom	no	yes	no		yes
United States	no	no	no	yes	
Uruguay	yes	yes	yes		yes
Venezuela	yes	yes	yes	yes	yes
Yugoslavia	yes	yes	no		

Notes: The data are for circa 1980. The measures cited are for new cars, and trade restrictions on used cars are not reflected.

Source: United States 1980.

On the other hand, the reliance on quantitative import restrictions entails a detailed knowledge of the imported items that need to be import-substituted, knowledge which policy makers often do not possess.[5/] The last point has implications for the way LC regulations are formulated which are returned to later. Finally, a LC policy, as a non-tariff barrier to trade, falls outside certain important international rules and negotiations on the level and nature of barriers to trade.

While LC policies frequently take the form of a government decree, in some cases they may be more indirectly applied. For instance, the use of domestic inputs may be one of the criteria used in the screening of evaluation of foreign investment proposals. Mexico, Colombia, Argentina, Nigeria, Egypt, Phillipines and Pakistan are some of the countries whose authorities examine, among other things, the balance-of-payments or foreign exchange saving impact of the proposed projects. (UNCTC 1983b; Business 1983, 1984.) In many cases, investments in natural resource-based industries such as hydrocarbons need the approval of government agencies. Where such proposals are screened, the use of local inputs and a projection of the local value added would normally be considered. In some developing countries, the planned level of LC is one of the criteria used in the evaluation of whether an industry qualifies for 'pioneer' status. Such status may allow higher degrees of foreign capital participation and/or a variety of special incentives. (UNCTC 1983c.) Governments may also discriminate in their procurement policy in favour of products which incorporate a relatively large amount of LC.

The incentives for industrial investment and development offered by national governments come in a large number of different forms - including investment codes or laws specifying the criteria for awarding benefits, policies on tariffs and quotas, credit and interest rate policies, fiscal stimuli, labour regulations, wages and prices policy, infrastructure investment, and government participation.[6/] These factors interact with LC regulations in both the industrial and commercial area, thereby generating a very large space over which incentive policies and LC policies can be, from the point of view of the country's interest, complementary, off-setting, or self-defeating. While the nature of this interaction is crucial in determining the effectiveness of the LC policy, it has recently been argued that "in many cases, the incentives offered by a country, when taken together, are inconsistent, contradictory or redundant." (Galenson 1984, 1.)

Making reference to interviews with some thirty transnationals carried out by Guisinger (1983), Galenson further argues that performance requirements - including LC laws, as well as employment or export targets and limitations on the transfer of funds - had a fairly strong negative impact on locational decisions, and in the food industry, for example, clearly outweighted the positive effect of incentive measures. (Ibid., 40.) This is a further example of the interlinking of performance requirements and investment incentives, and argues once again for a reform of existing policies (as recently carried out in the Ivory Coast, for example) so as to establish a consistency among the tariff subsidies, quantitative restrictions and investment codes that evolved in the developing countries over the 1960s and 1970s.

Local Content Legislation and Economic Policy Making

As with all policy making, LC policy cannot be formulated in a vacuum - both as regards the industries in which it is applied as well as with respect to the overall programme of national economic development. With respect to the first point, a survey of LC policies (see Table 2 below) reveals that they are generally applied in the capital goods sector, on industries of crucial importance to the long-term industrialization process of the country. This means that decisions regarding the design and implementation of LC policies in these sectors are more critical than many policies in the non-capital goods sector because of the implications for the long-term efficient allocation of resources. Moreover, the capital goods industry is an international industry, and the need to make the right strategy assessment in an uncertain and changing international environment can, in the words of Jones (1982), "raise the stakes by an order of magnitude", in the sense that the consequences of mistaken judgements are far more serious in economic and industrial, as well as social and political, terms.

At the present time the concensus of observers of those sectors where LC is generally applied is that the future international structure of the industries concerned is unclear, this being a particularly uncertain period for the passenger and commercial vehicle industry - the industry where, together with the allied components industry, LC is most often applied. This in turn provides an even greater challenge, and creates even more difficult policy decisions for developing countries' governments. And, given the large

uncertainty element in international developments, it strengthens the need for flexible industrial policies, combined with the capability for rapid response, in the developing countries.

The uncertainty facing policy makers in their efforts to formulate a LC policy in the vehicle and components industry, for example, is compounded by the lack of agreement as to the strategy of the TNCs in this sector. The prevalent assumption is that they will continue to seek to position themselves in selected developing countries and to establish - alone or in joint ventues with developing countries - assembly and components production which are ahead of demand in the local market and therefore export the rest of their production back to the developed countries. This is clearly a strategy which is potentially ripe for LC regulations on the part of the developing countries that see the TNCs as a vehicle for diffusing technology, entrepreneurship, and skills to the local economy. The dominant alternative variant to this 'world car' strategy (Jones 1982) does not forsee the almost inevitable transfer by the TNCs of production to (lower cost) locations in the developing countries - the feature of the above TNC strategy which made it particularly amienable to the application of LC regulations - but, rather, forsees TNCs taking advantage of the growing spectrum of technological alternatives with a less vertically integrated production structure.

What is clear in this respect is the necessity of policy makers in developing countries, through LC legislation, to attempt to integrate the activities of the TNCs and the local assembly operations and component producers more closely into the national production mix, rather than simply allowing them to exist as marginal sectors grafted onto the national economy. And to use LC as part of a tougher bargaining position that insures that the effect of TNC activity is not of "dubious" value to the economy and "inappropriate". (Billerbeck and Yasug; 1979.) This is part of the more general requirement for effective policy formulation on the part of developing countries' policy makers that they integrate into the international market that part of the economy which is internationally oriented and actually or potentially competitive, while simultaneously attempting to ensure an increase in the quantity, quality, and sophistication of the technology, entrepreneurship and labour skills utilized in the national economy generally. (See Bienefeld and Godfrey 1982 and UNIDO 1983a.)

The policy dilemma facing the developing country governments is that they cannot apply LC if the TNCs are not there, and for many low-income developing countries the TNCs have shown only limited inclination to invest, despite advantages such as low wage costs and proximity to markets. This is presumably due to the fact that these were outweighted by the low level of skills and absence of infrastructure. But even in the middle- and higher-income developing countries the TNC presence depends partly at least on factors which these countries are powerless to control - including not only their choice of global strategy, but also the nature of labour agreements reached in the developed countries and on the development of international trends in protectionism. Acting together, these two forces can lead corporations to adopt strategies redirecting production back to the domestic labour force working behind the industrial countries' protectionist borders, minimizing the role of the periphery in the what becomes de facto primarily a series of northern production and trade flows.

With respect to the above point concerning the overall programme of national economic development, in designing LC programmes it is important that government policy makers pay careful attention to the assembly and manufacturing activities that already exist in the country in related sectors. These activities may well be only small-scale undertakings that have perhaps developed out of maintenance and repair shops and/or have been based on copying imported pumps, motors, and other machinery. Since the technology, entrepreneurship, and skill requirements at this level exist in many developing countries, and because the scale economies are not yet significant, barriers to entry are slight and such activities have sprung up in many developing countries independent of any supportive government policy measures.

At the same time, as the complexity, scope, and scale of such operations expands, the requirements in the area of technological sophistication, entrepreneurship, and labour skills, the potential economics of scale, the importance of a secure market, and the potential competition from exports all increase. In each case, the demand for policy intervention by the government - in the form, for example, of LC legislation - increases.

Further, the requirement for active and positive policy initiatives increases when national policy makers turn their attention to designing

policies for specific branches or types of manufactured goods, or to enacting policies focusing on the fostering of technological learning, stimulating the development of entrepreneurship, or increasing and diffusing labour skills. In such cases considerations of scale economies on the production side and of market size on the demand side underscore the importance - for almost all developing countries - of expanding production beyond that appropriate to the domestic market - which, for most developing countries, implies an increased role for the national policy makers. Moreover, as the scale of such branches and industries increases, so do their tangencies with Government policy in other branches and other sectors. It is therefore crucial that these enterprises be seen as seedbeds for further augmenting development efforts in the developing countries, and not merely as sources of domestic supply for a specific tool, motor, or pump.

In each of these areas LC policies are one possible policy alternative. But it is clear that they only have a chance at being an efficient and effective policy measure if they are integrated in a realistic and long-term way with policies for other industries (e.g., suppliers of inputs), industrial policy generally (e.g., technological unpackaging), national policy for other sectors (e.g., technology and entrepreneurship), and macro-economic policy (e.g., balance-of-payments policy).

It is a fundamental fact that some 80 per cent of capital goods production in the developing countries is accounted for by six countries (Brazil, China, India, the Republic of Korea, Mexico and Yugoslavia) (UNCTAD 1985, 146), and for the electronics sector - an increasingly critical sector - the degree of concentration is even higher. But just as there exists an informal sector in many other developing countries which carries out the small-scale manufacture of simple products such as implements, tanks, pumps and so forth, so is there also in the economy - albeit often outside the scope of existing government policy - the experience of metalworking and the entrepreneurial talent that could serve as the starting point for repair and maintenance and spare parts production that often serve as the first steps on the path to the assembly, and then the manufacturing, of components in the capital goods sector. LC regulations, then, should be seen as one policy measure relating to assembly and manufacturing in the capital goods industry, rather than as ad hoc measures relating to a specific firm or the production of one individual product.

Further development in this direction, as with the expansion of the capital goods sector in general, makes heavy demands on the entrepreneurial talent and skilled manpower, as well as on the technological infrastructure, of the developing countries. This requires a detailed policy which is both broad in its scope (to capture linkages outside the production and assembly operations) and of a rather longer duration than in the case where no resource gaps were present. Otherwise LC regulations may well only be fulfilled in the most formal (and minimal) sense, using only the simplest technology - what has been labelled a form of the "pseudo-transfer of technology". (UNIDO 1985b, ch. 4.) In addition, it must be recognized that the development of the capacity for assembly and components production is a cumulative process based on learning-by-doing which can only succeed if pursued on a continuous basis over a long-term. Since the development of these sectors depends on, and also has an impact on, the development of other machine building and the capital goods industry in general, a successful policy on LC must be based on a comprehensive view of the capital goods sector and of the process of industrial development in general.

It appears, however, to be more the norm for government policy makers to see LC as a vehicle for the policy-induced entry into assembly or component production for the country concerned, generally through completely knocked-down (CKD) assembly, where the requirements for the key factor inputs are rather minimal. In such cases, it is crucial that the localization programme not be allowed to stagnate at this stage, where the spillover benefits for the economy at large are marginal, but be oriented to progressively raising the level and quality of the technology-, entrepreneurship- and skilled labour-intensity of the local production.

Having argued the potential benefits for including LC legislation as a component of industrial as well as macro-economic policy, it must be emphasized that the examination of the experience of LC regulations [7/] suggests that this policy is not without its costs. In particular, numerous studies (see Westphal 1981, and the discussion in section III below) present estimates of unit costs of production under LC policies in developing countries which sometimes exceed the unit cost under best international technology by well over 100 per cent: one striking example quoted by Lim (1985) is that of the Philippines, where LC requirements were raised from 10

per cent in 1973 to 62.5 per cent in 1978, and where prices of locally assembled automobiles also rose by 100 per cent or more between 1973 and 1978. And clearly even with the falling minimum efficient scale (MES) of production that has characterized automobile production over the last three decades (see Table 4 below), the minimum size of at least 2000,000 units - which is only for one model - is well beyond the marketing capabilities of almost all developing countries.

But, as White (1977) has argued, a one-make company would have a difficult time surviving in a higly variable and unpredictable market. Therefore, a company needs at least two models to protect it from a wrong guess on styling or engineering and to allow it to hedge it bets. The realistic MES is therefore twice that normally quoted. But the logic of this argument would suggest that three markets - and therefore three times the quoted MES - would be optimal. But there are relatively few developing countries with a present local market for even 200,000 units: in 1980 only Brazil, Mexico, and Argentina surpassed this level (Jones and Womack 1985), with the Republic of Korea expected to hit it by 1985/86 (ESCAP 1985). This forecefully argues for a policy of 'southern content' on the part of the developing countries in vehicle assembly and production of the sub-regional, regional, and southern levels.

MES is therefore an extremely effective barrier to entry into automobile production, as it is in many sophisticated capital goods. Developing country policy makers in all countries except the very few with highly sophisticated industrial sectors have wisely focused on assembly operations and on production of components - both of which have an appreciably lower MES. But since such operations generally employ markedly less sophisticated technology and make considerably less demand on entrepreneurship and skills, policy makers must be particularly cautious in designing such poicies to ensure that they are carefully directed to attain the desired spinoff for the macro-economy as a whole.

Caution must also be exercised in examining the scale of production of all capital goods in the developing countries with respect to the technology employed, since even if a developing country produces at the MES, this will only be relevant for the specific technology they have available to them. But

it can be expected that there will exist technologies in operation in the internationally more advanced countries that will have a MES curve that is lower than that of the developing countries at all output levels - i.e., the technologically more advanced country can always produce cheaper than the developing country, no matter how efficiently the developing country employs its existing technology.

This, of course, does not mean the developing country should not produce the specific component or product in question - viz. the infant industry argument. Moreover, entry into production under LC protection is one possible policy tool to assit the developing countries to make the jump into hi-tech components - or to a new technology with a lower unit cost curve. But it does mean that the policy makers must have a constant awareness of the extra costs that are clearly going to be involved in decisions to adopt LC policies, as well as of the presumed benefits which led to the decision to impose LC in the first instance, and regularly weigh the one against the other to determine if remedial action is needed to bring the implemented policy closer to that originally conceived.

An Overview of Local Content Policies in Developing Countries

Table 2 shows the various forms of LC policies in some twenty developing countries and the industries in which they are applied. In almost all the countries examined, some form of LC policy is adopted. In a desk study of this nature, the very limited resources preclude an accurate assessment as to how extensively the diverse forms of LC policies are applied. Certain countries, including Mexico, Brazil, India, Phillipines and, recently, Nigeria, however, are known to emphasize LC. In general, the more closely a country follows a strategy of import substitution, the more comprehensive are the LC regulations. Nonetheless, in some developing countries such as Chile and Argentina, which are attempting to liberalize their trade policies, LC is still enforced, albeit in a more relaxed manner. Even in the "outward-oriented" Republic of Korea and Province of Taiwan this form of protection is not alien, although it is more applied on a narrower more case-specific, basis. Explicitly stated LC rules for some 22 developing countries are listed in Table 3.

Table 2: Formal and Indirect LC policies in Selected Developing Countries

Country	Sectors in which formal LC rules are applied	Indirect policies
Argentina	Automobiles, tractors	
Brazil	Automobiles, capital goods (e.g., steelmaking, railroads, and electric energy)	
Chile	Automobiles	
Colombia	Automobiles, electronics	Exporters who wish to qualify for tax credit have to satisfy certain LC requirements. Under the 'Buy Columbian' policy, state organizations give preference to 'local' products (defined as incorporating more than 50% local value added).
Egypt	Automobiles	Foreign exchange shortage has resulted in pressure for local sourcing.
Hong Kong	No rules	But its trading partners increasingly require some level of local value added as a condition for importing Hong Kong's products.
India	No formal rules	LC requirements are decided at the time of foreign investment approval. Maximum use of local components, raw materials, and equipment is sought.
Indonesia	Automobiles, pharmaceuticals	Firms which process local materials are highly favoured.
Kenya	Automobiles	LC requirements may be written into foreign investment agreements, LC has been emphasized since the trade deficit has grown considerably.
Korea, Republic of		LC is negotiated individually with foreign firms. For instance, in a recent joint venture in the auto industry between General Motors and Daewoo Motors, all components are expected to be supplied locally.
Malaysia	No formal requirements	To be eligible for extended incentives, manufacturers of certain products must meet LC requirements. Firms whose products contain over 50% LC are entitled to one extra year of tax holiday, or a 5% additional investment tax credit.

Table 2 continued:

Mexico	Automobiles, pharmaceuticals, appliances	A firm whose products have 50% LC is considered Mexican, and as such it can participate in tenders limited to local firms. Procurement of locally manufactured capital equipment gives an entitlement to tax credits in the range of 5-15%, depending on LC. Government explicitly favours domestic products in its procurement services, and allocated a 750 billion pesos fund for the purpose.
Nigeria		A recent comprehensive programme has been established that aims at 'maximisation of local value added'. Under the New Economic Policy, government will avoid committments with high foreign exchange content - serious attention would only be given to projects based on locally available resources.
Pakistan	No formal rules	Foreign investment approvals often depend on committment to increase LC. Non-essential consumer industries may have to rely on local materials alone. The 1982/83 import policy enforced the 'deletion' programme and limited the number of parts and components that may be imported by such industries as TV sets, refrigerators, and air conditioners, and motorcycle assembly plants.
Peru	Automobiles, tricylces, appliances, electronic, musical and TV equip.	
Philippines	Automobiles, motorcycles appliances	To qualify for 'pioneer' status, firms use local materials whenever possible.
Singapore	No formal rules	High local value added products are heavily promoted under the New Economic Policy.
Taiwan, Province of		Foreign investors may be obliged to meet LC targets (if they fail to export a specified amount of production). Requirements are formulated on a case-by-case basis, and are normally applied in the auto industry.

Table 2 continued:

Thailand	Automobiles, motorcycles	For promotional status, very favourable consideration is given to projects incorporating LC.
Venezuela	Automobiles, appliances tobaccos	

Notes: The information given is not exhaustive, neither with respect to industry nor country.
Here and elsewhere in the study 'developing countries' covers, as a shorthand phrase, countries, territories, and areas.

Sources: ABECOR.

Business International (1981).

Business International (1983, 1984). Various country issues.

Economist Intelligence Unit.

Hill (1982a).

UNIDO (1984).

Carbaugh (1983).

Table 3: Selected LC Rules and Specific Requirements in Developing Countries

Country	Sectors	LC Requirements	Specific Requirements and other Information
Argentina	Automobiles	88%	LC requirements lowered from 79% in 1979.
Bolivia	Automobiles	45%	Three year grace period to attain this level.
Brazil	Automobiles	85-100%	LC achieved by auto industry is close to 100% by weight.
	Some capital goods (e.g., steel, electric energy)	80-90%	
Chile	Automobiles: less than 850 cc. capacity	30%	
	Light commercial vehicles	15%	
Colombia	Automobiles		LC requirements currently being revised.
	Electronics		Manufacturers are required to use the maximum possible amount of local materials and to export a quantity equivalent to their imports. (Opposed in principle to LC requirements on the grounds that they lead to high cost, inefficient production.)
Egypt	Automobiles	40-60%	Announced goal of 100%.
India	Automobiles	98%	
Indonesia	Automobiles	25%	
Kenya	Automobiles	20%	LC specified by item (but not necessarily enforced).
Korea Republic of	Automobiles	20-95%	Requirement depends on model, with most cars having 60-95% LC.
Malaysia	Automobiles	18%	Planned to rise to 36% by 1994.

Table 3 continued.

Mexico	Automobiles	50% (current), to rise to 60% by 1987	LC measured as value of import content divided by total value of a typical unit.
	Commercial vehicles (light)	65%, to raise to 70% by 1985	A minimum of 40% LC for exports but LC regulations may be waived on new lines designed for exports.
	Medium and heavy Vehicles	65%, to raise to 80% by 1987	
	Auto components	80%	
	Pharmaceuticals	43%, to raise to 65% by 1987	Generic labelling rather than brand names is required - intention is to reduce dependence on imported ingredients and to increase domestic raw materials production.
	Domestic appliances		Between 10-25% of parts may be imported, depending on the output of 'basic' appliances such as refrigerators, washing machines, etc.
Morocco	Automobiles	40-50%	The 60% requirement is for new investment and must be attained after three years.
Nigeria	Automobiles	15%	
Pakistan	Motorcycles	77%	
Peru	Automobiles	30%, to raise to 47% by 1988	LC based on value. Exports of components considered in calculating the LC requirements.
	Auto components	10%	
Philippines	Automobiles	60% (planned 1984)	The previous plans are now being revised downwards.
	Appliances		Varying levels of LC.
Taiwan, Province of	Automobiles	32-70%	Most manufacturers also agree to produce certain types of components.
Thailand	Automobiles	45% (1982) 50% (1983)	Government has recently abandoned its schemes for pushing LC beyond the present targets. Indeed, the 50% target has been abandoned.
	Motorcycles	55%	
Turkey	Automobiles		Varies by vehicle type and with foreign exchange situation.

Table 3 continued:

Venezuela	Automobiles	59%	LC based on weight and value. LC of about 50% has been achieved though it is short of the original plan which envisaged a 62% LC by 1975. Firms may meet up to 30% of the requirements by exporting locally manufactured auto parts. This figure will decline to 15% by 1985.
	Cigarettes	100%	Achieved 98%.
	Domestic appliances		LC rules apply to assembly of refrigerators, air conditioners, TVs and washing machines. Specific components are listed for local manufacture after consultation with assemblers.
Yugoslavia	Automobiles		LC percentages and other performance requirements negotiated with each assembler.

Specific Note: The data are for ca. end-1982.

Other Notes: As Table 2.

Sources: US 1983; as Table 2.

Tables 2 and 3 also reveal a striking feature that the auto industry is almost invariably a candidate for direct LC regulations. (See also Table 1.) Other sectors where LC rules are observed include the appliance industries (Mexico, Venezuela, Peru, Phillipines); electronics (Peru, Colombia, Phillipines); television (Venezuela, Peru, Phillipines); capital goods in general (Brazil, Mexico); pharmaceuticals (Mexico); tobacco (Venezuela), as well as some processing industries.[8/] Technically, any industry in which the production process can be decomposed into many separate stages or operations is conducive to the application of such a policy. In this type of manufacturing, a large number of intermediate inputs constitute the make-up of the final product. Thus industries such as chemicals, where continuous processes are involved, are not suitable for a 'gradualist' approach to increasing LC (apart from the raw materials inputs). In automotive manufacturing, on the other hand, thousands of components are required with a wide variety of supply sources.

While the above rationalization for LC regulations is clear, the balance of costs and benefits associated with their application is a fundamental an issue that has to be addressed.

Costs and Benefits of Local Content: Some Issues

Import-substitution industrialization has been severely castigated by a number of economists who argue that protection has led to costly, inefficient industries as well as biases and distortions in the economy as a whole. Many examples of ill-conceived import substitution policies in developing countries could be cited where very high rates of effective protection were provided without generating significant or tangible benefits.[9/] In some cases, as is frequently pointed out, negative value added at world prices was all that the protected industry could show for its favourable treatment. Writing on the auto industry in the 1960s, Baranson (1969) emphasized the problems created by high cost, poor quality and unreliability of local suppliers in the developing countries where the pace of buying local inputs was forced by the government.

Indeed, there is evidence to show that the auto industry in developing countries has been typically high cost. (UNCTC (1983a). A study of the Iranian auto industry in the early 1970s estimates that the various LC requirements

and tariffs on imported components amounted to between 536% and 2,555% effective protection rates for the auto firms. (Biswas and Shahrok 1982.) Such high rates, indicative of (static) inefficiency and welfare loss in terms of resource misallocation, may not be untypical of the auto industry in developing countries.[10/] High cost production is not, however, entirely attributable to LC requirements. And, while it is clear that the criticisms of import substitution are well grounded, there are also distinct limitations to the static efficiency analysis. Its tendency to emphasize the short-term costs, and to downplay important externalities, such as the benefits of a wide diffusion of technological learning, limits its value for policy-oriented analysis of regulations such as those on LC.

Further, while it is quite correct to point out the failures, such analyses omit the experience of the success stories of industries which have 'grown up' under protection. The industrialization history of developing countries (not to mention developed countries like Japan) is not short of such cases. Even the "outward-oriented" Republic of Korea and Province of Taiwan, both regarded by orthodox economists as paradigm cases to be emulated by other developing countries, have combined selective import-substitution (with relatively higher protection rates)[11/] with export promotion; but this fact is often not discussed.

At the same time, the infant industry argument is the oldest and best known rationale for intervention, and is generally considered to be a possible legitimate exception to the case for free trade. The argument presupposes first that, over time, a small (and therefore uneconomic) industry could develop in such a way that costs would decrease sufficiently so as to repay initial excess costs. Secondly, at least part of the decrease in costs must consist of externalities, since otherwise private producers should be willing to incur the costs in order to reap the benefits. Finally, the protection should be temporary. (Krueger 1984, 522ff.)

In fact, when LC regulations have been applied in the automobile industry in the developing countries, no attention has been paid to attaining a savings from large-scale production sufficient to repay initial excess costs with an acceptable rate of return: simply attaining a pattern of production characterized by falling unit costs has become an end in itself. Moreover, vested interests to maintain protection have clearly been created. And,

whereas it could be argued that part of the decreases in unit cost have entailed externalities, so do manufacturing projects almost by definition in the developing countries. Indeed, it can be argued that the manufacturing sector as a whole in the developing countries (rather than any one industry) can itself be seen as the infant with externalities proceeding from the sector no matter what is produced.

These externalities have, however, in fact often been less than expected because the countries concerned embarked on the assembly of vehicles - or even the production of components - with little experience in machine building. Further, a preferred method of entry was through the assembly of vehicles from CKD kits, a process that is rather simple technologically and highly labour-intensive. As such, government policy backed a mode of entry that minimized the critical skill requirements, but at the cost of not generating any significant technological spinoff.

Recent empirical research further suggests that the process of learning is not as straightforward as is usually assumed. The 'implicitness' in technology, difficulties in imitating and teaching, and uncertainties regarding what modifications will work and what will not, combine to make effective technology transfer and learning a complex and difficult process. (See Nelson 1979.) Summerizing the evidence, Westphal concludes that "even for an 'efficient' infant industry, and evaluated at prices that properly reflect relative scarcities, the domestic resource cost of production might initially be as much as twice the value of the foreign exchange saved (or earned), with up to a decade being required to bring costs down to competitive levels."[13/]

It has, in addition, long been established (Johnson 1965) that a production subsidy to producers [12/] could provide the same benefits at a lower cost to consumers over the period during which the infant becomes efficient. But it has clearly been a consideration of the developing countries that the policy measures adopted applied to TNCs in such a way as to both generate guaranteed markets and reduced risk for local suppliers and to create more propitious conditions for capturing technological externalities that cannot be appropriated by the TNCs, while not imposing expenditure obligations on the government (as a production subsidy would).

It is a basic principle of the design and application of industrial and commerical incentive measures that the more direct the instrument, the less likely it is to create costly side effects, and conversely. (Galenson 1984) Thus LC policies encourage local production by restricting imports, but also tend to raise the price of the protected products, thus reducing the marketability of the product, discouraging consumption, and probably creating an unnecessary welfare loss for society. A more direct production subsidy (or a direct subsidy for employment or new technology-intensive investment) would be expected to cause fewer distortion in the economy - but, of course even if financed by a neutral tax such a production subsidy, it involves a direct, overt burden on society, whereas LC regulations impose the overt burden on the foreign producer and only imply a potential indirect burden for the local economy.

Emerging out of this brief discussion is the point that both import substitution and infant industry arguments have certain theoretical and empirical justification. But also that there are very clear reasons why they have not always worked. This suggests, as with the examination of industrial development in developing countries in general, that the issue is not one of principle, but of the application of the principle in practice, and of the careful examination of why protection has succeeded in some cases, but failed in others.

While it is correct to argue the LC case in terms of dynamic effects and externalities, LC controls can also be analysed in a partial equilibrium setting analogous to that employed for tariffs, quotas, import licenses and the like. It can then easily be demonstrated (Grossman 1981) that LC policy can be regarded as the equivalent of tariff protection for intermediates coupled with a subsidy to final goods producers. But it appears that for developing country policy makers the appeal of LC regulations often was centered on truly dynamic aspects such as the potential for technological overspill, while the implications of LC controls for increasing costs (and thereby generating the higher consumer and producer costs and welfare losses of the increased domestic production) were accorded less priority. The data given below and the desk studies presented later will both show clearly that higher unit costs have indeed been the norm, and such a static analysis is presented later as part of the discussion of LC in developed countries.

An appraisal of costs and benefits of the imposition of LC regulations by national policy makers must also look at the behaviour pattern of the other major actor in the relationship, the TNCs. Locational decisions by TNCs are traditionally highly influenced by factors such as the degree of political stability, the terms for the transfer of profits and repatriation of capital, the pattern of discrimination against foreign ownership and control and the level regulation and control.[14/] Further, the extent to which future conditions in the country can be predicted (e.g., country risk analysis) and the degree of arbitrariness in local government policy (i.e., the degree to which the relevant rules and codes are established in advance) (Frank 1980, 111-12), as well as the nature of the assurance regarding compensation in the event of nationalization, may be even more important factors in influencing decisions by foreign corporations to invest in export-oriented industries.

In many developing countries the nature of such factors was - or still is - such as to increase the risk and uncertainty, and hence to reduce the rate of return, to foreign firms associated with investing in the specific country. In order to encourage such investment, trade and exchange rate, as well as tax and subsidy, policies particularly conducive to foreign firms have therefore often been introduced in developing countries. As the stick to these carrots have come LC policies. The net effect of this combination of policies depends on the extent to which the LC policies are similarly designed in harmony with the comparative advantage and national resource allocation, as well as with existings tariff and exchange rate controls and incentives, tax concessions, and employment and technology policy. LC compliance can often only be extracted from foreign firms at a price - i.e., tax and tariff exemptions.

But these measures can be very costly to the Treasury, to which must be added the tax revenue loss, as well as the domestic consumers' welfare loss when losses in production efficiency lead to high costs of production (and loss of exports). And, to the extent that the non-policy considerations mentioned above, as well as basic economic performance, are often considered more important by transnationals than special incentives - because the latter tend to increase the firm's visibility and vulnerability, as well as being too volatile or transitory (Ibid) - the question immediately arises as to the wisdom of such comprehensive 'carrot and stick' policy altogether.

An evaluation of the costs and benefits of LC should, then, extent beyond the traditional analysis of the development of new industries, often from scratch, to produce products previously imported. This perspective has already been reflected in the focus of the analysis thus far on more dynamic considerations related to the industrial policies and strategies of the developing countries than to the analysis of consumer and producer welfare costs as in the analysis of tariffs and quotas. But it should be extended not only to an evaluation of LC policy as part of an attempt by developing country governments to come to terms with the reality of TNCs and the role of TNCs in their national economy, but also of the role of transnational corporations and transnational banks in international trade in manufactures and international finance. A developing country must confront the impact of these actors on its economy as part of its process of developing its long-term strategy of industrialization and development - and LC is clearly one possible step in this direction. In this respect the 'costs' of LC are not just to be compared with its 'benefits' as traditionally seen, but also with the opportunity cost of allowing the TNCs to proceed unconstrained and without the developing country's involvement.

DESK STUDIES IN LOCAL CONTENT IN DEVELOPING COUNTRIES

Introduction

As with an evaluation of import substitution policy, so must one analyze LC policy within the broader context of overall government national industrial strategy. A basic result of the analysis presented here is that an LC decree by itself, without a battery of complimentary policy instruments, is bound to fail. Given the ambitious and multiple objectives of LC policy discussed above, an integrated strategy is necessary.

Because of the lack of data and the quantification problems, no attempt will be made to evaluate fully the net costs and benefits associated with local integration strategy in the desk studies presented here. Due to a time constraint only sources of information available at UNIDO headquarers, no original research or field study could be carried out. The study therefore has drawn extensively on the work of other UN bodies, such as the UNCTC and UNCTAD, as well as on previous studies by UNIDO itself. Moreover, the purpose of the study was not to pass judgement in any way on any one particular policy in any given country. This does not mean, however, that no conclusion may be reached regarding the effectiveness of LC regulations. As will be shown, in many cases government policies leave a great deal to be desired. Insofar as the objectives or benefits of local integration strategy have not been realised to any appreciable extent, and the initial costs of the policies have been high, then they may be said to have failed.

Given the prevalence of LC regulations in the auto industry as well as the fact that it is a sector on which information is more readily available for a desk study, the case studies presented here will be mainly concerned with local integration policy in this sector. Many policy considerations and conclusions, however, are applicable to other sectors where LC rules are enforced, as the economics of local sourcing is not unique to the auto industry.

Mention was made earlier of the traditional production characteristics of the auto industry - thousands of components from a wide range of suppliers - that make it suitable for LC regulation. In addition, the auto industry has been regarded as a strategic pole for industrial growth - in part because of the rapid expansion of demand as incomes increase - and it has been believed that a large and growing auto industry would yield considerable benefits. In particular, the variety of engineering and other skills required, as well as the extensive linkages involved, have seemed to make LC legislation almost irresistible. Furthermore, the auto industry is viewed in many cases as a prestige or priority sector, its establishment a symbol of industrial maturity.

The industry is clearly an important one in the industrial system of the countries which have already successfully industrialized - a fact which clearly influenced the developing countries. Thus, in Canada, for example, autos and parts are the largest export item and amount for over half of Canada's exports of finished manufactured goods. (Winham 1984, 473.) In addition, the auto industry is a highly technical industry, and is becoming (and will continue to be) increasingly so. After the military, they are the biggest customers of high technology in the United States. Further, the auto industry is one where governments have traditionally imposed a full gamut of industrial and commercial policies.[15/]

The auto industry is also a global industry where low-cost, offshore production is a by-word. In such an environment, there can be a positive interaction between the global production and marketing strategies of the TNCs and the national development strategies of the developing countries. Thus, chairman Kim Woo-Choong of the Republic of Korea's Daewoo Motor speaks of combining US technology and low-cost Korean labour "to compete head-on with Japan". (Quoted in Kraar 1984, 126.) To the extend that the US car makers see such offshore processing as part of "a global survival scheme", then it is very rational that the developing countries should respond with LC regulations. And the need for the potential benefits of such contacts is illustrated by the fact that, to quote the results of a study by one developing country government research organization, the country's auto components suffer from "low quality and lack of reliability". (Ibid.)

Before turning to examine the case studies of local content in the vehicle and components industry, however, it seems appropriate to take a quick look at the data on economies of scale in the industry, since the scale of production is perhaps the most important determinant of the efficiency of the industry, and hence of the rationality of LC regulations in the auto industry.

Economies of Scale, Costs of Production and Local Content in the Automobile Industry

Despite the labour cost advantage of developing countries, none of these countries can be said to have a competitive advantage in automobile production. The reason is not simply that labour productivity is lower than in the developed countries, but much more the fact that wages account for a small proportion of costs: capital intensity, scale economies and technical know-how are far more important determinants of efficiency in the auto industry.

While it is dangerous to apply data on the economies of scale from one country to other countries at different periods in time, it is nevertheless very clear that the production of certain parts and particular processes are characterized by enormous scale economies. They have been estimated by the United Nations Centre on Transnational Corporations (1983a, 73) to be one to two million for body pressing, one million units for casting of engine blocks, 100,000 to 750,000 for other castings, 600,000 for power-train machining, 500,000 for axle machining and assembly, and 250,000 for painting, and by Bhaskar (1980) at 1 million for stamping, 500,000 in engines, and 250,000 in assembly. (See also Pratten 1971, Rhys 1972, and Bloomfield 1978.)

At the same time, it is clear that differences in engineering capability, technological sophistication and adaptability, industrial structure, managerial flexibility, patterns of work organization, labour productivity, and the communications and information network can markedly affect the MES in the sector. This means that specific MES data such as that presented in Table 4 can only be seen as presenting the most general frame of reference for discussion purposes; but at the same time one should note the very clear tendency for the value of the MES to fall. The most recent figures of plus 200,000 as efficient production levels contrast sharply with the much higher

TABLE 4. ESTIMATES OF THE MINIMUM EFFICIENT SCALE OF PRODUCTION IN THE AUTOMOBILE INDUSTRY

Row	Publication Date	Author	Country of Reference	Estimated Minimum Efficient Scale (units/year)
1	1956	Joe S. Bain	United States	600,000
2	1958	George Romney	United States	400,000
3	1969	Society of Automotive Engineers of Japan	Japan	240,000
4	1971	C.F. Pratten	United Kingdom	250,000
5	1982	Stuart Sinclair	(modern technology)	200,000+

Note: Due to publication delays, the figures given in the table will generally refer to the technological situation some time prior to the publication date given.

Sources: Row 1: Bain (1956); Row 2: White (1977); Row 3: Society of Automotive Engineers of Japan 1969, Zidosha Kogaku Handbook (Tokyo: Tosho Publishers), quoted in UNCTAD (1985); Row 4: White (1977); Row 5: Sinclair (1982).

figures that have often been quoted in the literature, and appear to put the efficient production of automobiles back in the realm of possibility for more than a very, very small number of developing countries.

But still, the engineering, technological, managerial, and informational requirements mentioned above are binding constraints on many of even the more industrially advanced developing countries, and mean that even at the, for them, relatively high output levels (of plus 200,000 units) production can still be, in international terms, inefficient and non-competitive. And these are minimum figures for just one model. For a modern auto producer to be both internationally competitive and profitable a figure of up to 2,000,000 units per year is still considered valid. (See Jones and Womack 1985 and Gooding 1985a.) Taken together, this suggests that in almost all cases the attention of the developing countries is best devoted to the production of components, or other segments of the vehicle sector. And to fostering policies of southern content.

The production of commercial vehicles, on the other hand, particularly in the medium-heavy (over 5 tons) range, is much less subject to scale economies. Thus, most major producers in developed countries manufacture between 20,000 and 40,000 medium-sized, and between 5,000 and 6,000 heavy vehicles of a given model. (UNCTC 1983a, 20-21.) These estimates should, however, be interpreted with care, since most were based on technology in use in the early 1970s; and it must not be forgotten that the market for such vehicles is also much smaller than for automobiles, and the importance of finding the right niche even more critical. The situation with respect to the economies of scale, as well as the market size, is also much more favourable for so-called low-cost vehicles. (UNIDO 1978.)

The fact that scale economies escalate from relatively modest level for CKD assembly to high levels for manufacturing of particular key components, and even higher levels for complete production of automobiles has obvious implications for production costs at varying levels of LC. If the market is small, rising LC leads to higher production costs. As will be seen, however, in at least some developing countries, the problem is not so much that the domestic market is too small to justify a relatively high degree of localisation, rather it is the fragmented market structure - which in turn is often the result of poorly designed government policy which encouraged this proliferation and/or did nothing to discourage it. This being said, it is undoubtedly true that for the developing countries with small markets, complete or near complete local integration has very high cost penalties.[16/]

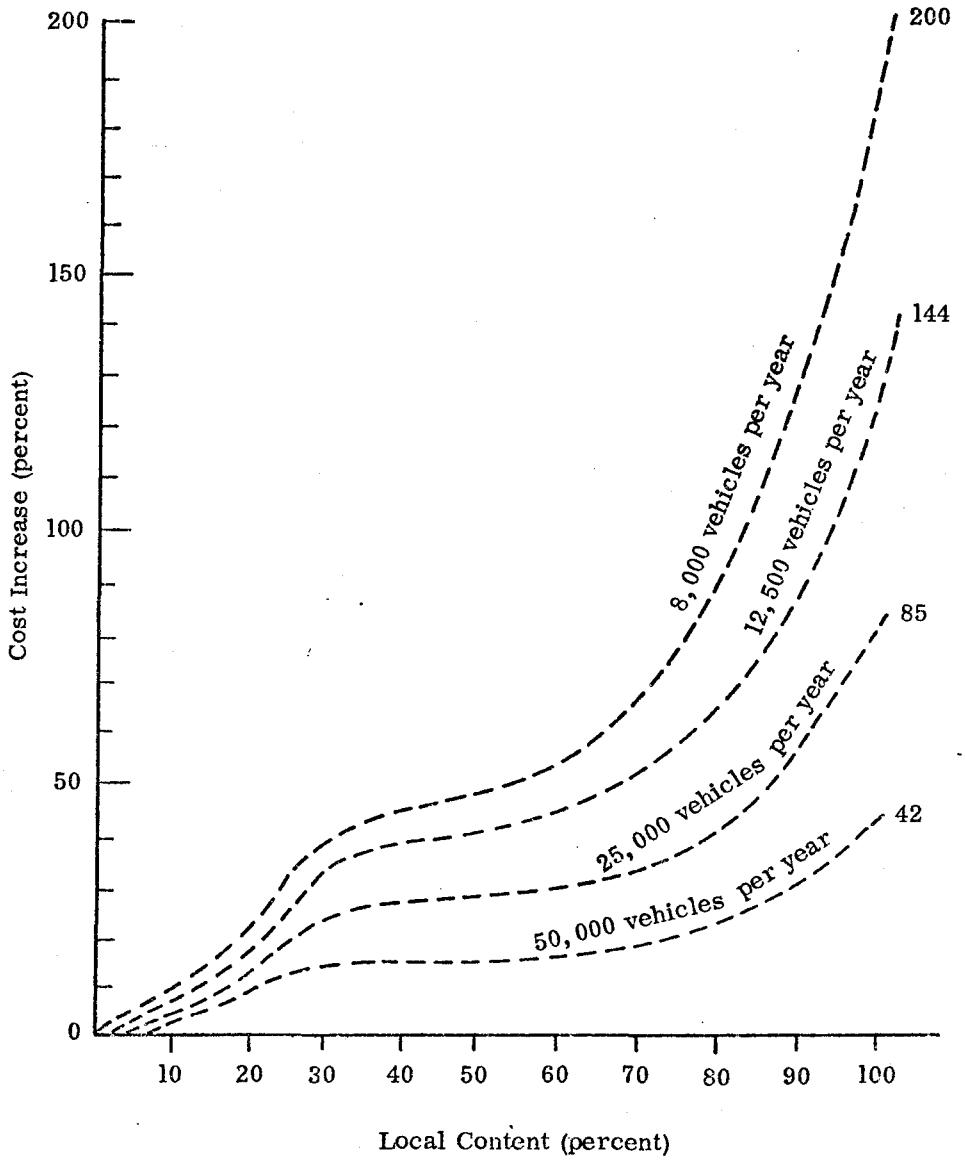
One attempt at representing the cost-penalty of LC (for Brazil) is shown on Figure 1. At a low level of LC (up to about 20-25%) different scales of output appear to make relatively little difference to costs over a range of 8,000 to 50,000 units a year, while above that level, cost increases for small scale production become high. And when LC exceeds 65%, cost disadvantages of small scale are enormous. (This corresponds roughly to the body stampings stage which entails appreciable economies.) Such an attempt at depicting the relationship between LC and cost at varying production scales can, however, not be generalized to all developing countries, since it depends, among other things, on the industrial structure of the specific country, the sophistication and efficiency of application of the technology employed, and the degree of refinement of the LC policies applied.

Another major factor that tends to raise production costs in developing countries is the technical complexity of many components. As was mentioned previously, this is reflected in the high initial costs of importing and, more importantly, of assimilating the technology in terms of quality problems, delays, rejections and learning. Over time, these costs tend to fall as producers gain industrial experience. These two factors - scale and technological complexity - combine to make the costs of launching automotive production extremely high.[17/] If localisation is pushed too far and too fast, and if the policies are not sufficiently sophisticated, the consequence can only be inefficient production. Experience suggests that a successful LC programme can require a gestation period of 20-25 years, during which times the legislation must pass through a number of stages, each of which must be flexible in its implementation.

The discussion has focused on the MES in the automotive sector because the attainment of economies of scale are traditionally seen as the key to attaining the cost reductions that will allow a firm to produce competitively. And while the case for the production of passenger cars in the developing countries appears only potentially promising for a few developing countries, the outlook for production of commercial vehicles appears brighter, and that for vehicle components even more promising - at least from the point of view of the volume of output required to attain economies of scale in production. And while this discussion has been confined to the vehicles sector, the capital goods inustry in general is characterized by economies of scale, and scale considerations must always be taken into consideration. In point of fact, however, the situation is more complex - and much more challenging - than a simple examination of the MES would suggest.

Thus, while there are selected developing countries where the development to complete automobile production has been carried out, (e.g., the Republic of Korea, the Province of Taiwan, and Malaysia), at least for the first two cases it has also been pointed out (Jones 1982; Kraar 1984) that this production was fostered by US and Japanese producers[18/] primarily to circumvent the US-Japanese voluntary export restraint agreement, and more lately to reduce the volume of "Japanese" imports into the US. And not for reasons of the product-cycle, economies of scale, lower labour costs, etc. indeed, even though in 1980 hourly wage rates in vehicle production in Japan were seven times that in the Republic of Korea, the Korean Ministry of Commerce has estimated that in 1979 Hyundai's production cost for the Poly built in Korea was $3972, compared with $2300 for a Toyota Corolla made in Japan. (Jones and Womack 1985.)

FIGURE 1: COST INCREASE AS A FUNCTION OF LOCAL CONTENT



Source: Asociación de Fabricas de Automotores, Informe Económico 1969 (Buenos Aires: ADEFA, 1969), 24. Cited in Jenkins 1977, 93.

Further, even if production was efficient, this is only for the technology employed in the developing country. But, due to the very rapid introduction of new materials and new technologies into automotive production (UNIDO 1984), there will be a continuous movement downward and outward of the supply functions of the TNC producers, and it will be exceedingly difficult for developing countries to match these advances and therefore to stay competitive. This is particularly true since the introduction of new materials and new technologies generates an ever smaller labour input - and hence possibilities for savings through lower labour costs. To quote from the results of the MIT Figure of the Automobile Programme: "The future for anyone plotting a low wage, high labour content strategy to gain world export markets is bleak". (Jones and Womack 1985.)

The nature of these advances underscores the necessity for the developing countries to negotiate agreements with the TNCs that will insure them a place for their component producers in these new developments. And a key policy instrument for the developing countries to use in these negotiations is LC legislation. And while in most cases the TNCs, as the purveyor of the advances, may be seen to have the upper hand, those developing countries with relatively large internal markets can use LC legislation to literally charge admission to their (potential) domestic markets. (But they must shop intelligently.) And, of course, by offering preference to southern multinational enterprises (MNCs), the developed countries could also use LC as a vehicle for fostering the development of an independent southern capital goods sector.

Local Integration of the Auto Industry in Brazil, Argentina and Mexico

The development of the auto industry in Argentina, Brazil and Mexico - the three largest producers in Latin America, and among the largest in developing countries - set the pattern of assembly operations, followed by components import substitution and local integration, and leading to the maximum possible degree of LC, which was to be repeated in other developing countries that attempted to set up an auto industry. Since the early 1970s, 'outward orientation' began to assume its importance and took the form of export promotion in Brazil and Mexico, and/or import liberalization in Argentina.

The early phase of the development of the auto industry was characterized by assembly activities with minimal LC and high import dependence. In Brazil, imports of vehicles and parts accounted for 11% of the total import bill in the early 1950s, and a similar level of imports was reported in Mexico. (UNCTC 1985, 101.) The heavy import dependence naturally gave rise to concern and was a chief motivation for designing policies around at the establishment of an integrated auto industry. The package of government policies included: heavy protection (both tariffs and import restrictions); very liberal treatment accorded to TNCs; various tax concessions; and large fiscal and exchange subsidies for foreign investments.

It was in this content that the LC requirements were imposed - in the late 1950s in Argentina and Brazil, and in early 1960s in Mexico - and the various regulations aimed at a highly integrated auto industry. LC was to be 98% for trucks and 99% for cars by 1961 in Brazil, 80-90% by 1964 in Argentina, and 60% by 1964 in Mexico. (Jenkins 1977, 53-54.) With its imposition of LC requirements in 1962 Mexico effectively 'gave birth' to the Mexican automobile industry (Bennett and Sharpe 1979), and saw the measures as a means of conserving foreign exchange, creating jobs, and promoting other related industrial sectors of the economy.

The immediate consequence of the various policies was the proliferation of firms in all three countries. In general, "all the firms that met the requirement of promotional legislation had their investment plans approved, and no attempt was made to limit the number of firms entering the industry". (UNCTC 1983a, 105-6.) Argentina alone attracted 21 assembler firms; there were 11 in Brazil and 8 in Mexico. Though the number was reduced during the 1960s, overall market fragmentation remained mostly unchanged. The reason for the proliferation of firms lies in the fact that once an TNC sets up manufacturing and assembly activities in a protected and lucrative market, the other firms, if permitted, have little choice but to follow suit in order to safeguard their market shares. And the industrial policy makers in the countries in question failed to develop the appropriate policies to harmonize with the policy making being carried out in their foreign trade and external finance sectors. (In reality, of course, the situation was even worse, since LC policies for different sectors were also not co-ordinated.)[19/]

The Role of TNCs

The liberal policies towards TNCs as reflected in the general lack of screening and restriction of direct foreign investment resulted in a situation where the TNCs' better access to capital and technology gave them the decisive edge over the national firms. (Jenkins 1977.) During the course of the 1960s the major TNCs increasingly penetrated the market and acquired former licensees and local firms, aided by the lack of government action to strengthen the latter (by means of mergers, for instance). By the late 1970s, TNCs accounted for over 95% of the terminal industry in Argentina, Brazil and Mexico.[20/]

More importantly for the purpose of assessing local integration strategy, penetration by TNCs in the components sector is also extensive. A large part of the technologically more sophisticated parts and components are produced by foreign firms. The tire industry, for instance, is almost totally accounted for by the major TNCs. In the early 1970s, about half of the production of components was by foreign-owned firms - 50.4% in Argentina (1972), 47.5% in Brazil (1974), 65.6% in Mexico (1970).[21/] Recent data do not show any sign of the process slowing down, although the precise extent is not known. In Mexico, among the ten principle component firms, eight have equity participation from the US. In Argentina a majority of the 50 firms, which account for three-quarters of the market, have foreign participation.

The evidence on Brazil is unclear. One source reports that the TNCs are the principal suppliers to the foreign vehicle producers, the latter relying on equity holding in parts producers to increase their control and "at least 15 of the main products required by the vehicle industry have been so verticalised". Of the 100 major suppliers, 52 had foreign equity participation; and half of the local supplies purchased by Volvo of Brazil came from TNCs or foreign affiliates. (UNIDO 1984, 120 and 135.) At the same time a World Bank study on Brazil found that, in order to meet the LC requirement, VW, by far the largest producer and exporter, had developed local suppliers who were given technical, training and financial assistance. "In 1957, VW had 150 suppliers, increasing to 1,300 in 1965, 3,000 in 1970 and 4,300 in 1974 (only 900 of which were foreign). Many of the suppliers produce not only vehicle parts, but also machines, machine tools, castings, forgings, etc. which were also used in other industries. The auto industry had helped

to stimulate Brazilian technological developments in industry through backward linkages to such suppliers of parts and components and probably even further back to basic industries such as steel, glass, rubber and plastics." (World Bank 1983, 123.)

The important issue as far as externalities are concerned is the extent of indigenous (Brazilian) involvement in this suppliers industry, and the learning as a result of linkage formation. The evidence given by the above World Bank study, as well as results of other World Bank Work (e.g., World 1980) which emphasized the rise in the "rationalization index" - defined as the share of domestic (as opposed to imported) equipment purchased for investment projects - over the 1970s, is inadequate in this respect, for it does not reveal the nature and significance of the operations of the large numbers of Brazilian suppliers. Yet the foregoing optimistic conclusion depends crucially on the extent to which key national suppliers are indeed local and not merely foreign affiliates situated in a developing country, are engaged in the technologically more sophisticated sectors of auto component manufacturing, are co-ordinated with overall macroeconomic policy (which the World Bank 1980 study argues was not the case), etc.

Against the general background of the permissive 'open-door' policies towards TNCs, it is no coincidence that in those three countries with the highest LC, particpation by foreign-owned or -controlled firms is most extensive. It has been noted that a chief consideration behind the LC regulations was the saving of foreign exchange. But in forcing the pace of LC, greater TNC participation was all the more necessary to reach the demanding targets (given the relative weakness of domestic firms). The result of this is the creation of a large transnational network of terminal and component firms which in many respects is a reproduction of the sub-contracting relationships found in the developed countries. As a corollary, the linkages with indigeneous firms, and hence the various potential technological and other spinoffs which would have accrued to them were minimised. Thus, the objective of foreign exchange saving has often been in conflict with the goal of fostering an indigeneous suppliers' industry and capability.

Moreover, despite the emphasis on the conservation of foreign exchange, the industry continued to have a negative impact on the balance-of-payments in the early 1970s. This reflected an outflow of profits and royalties to parent firms and a continued inflow of imports of machinery, parts and components, and raw materials. The outflows were not compensated by exports, partly because the auto products were still uncompetitive, and partly because of the restrictive practices by TNCs limiting exports in many agreements. In Brazil vehicle producers represented a net outflow of foreign exchange of $114 million in 1974, equivalent to 12.2% of the country's balance-of-payments deficit. In Argentina, the vehicle manufacturers had a trade deficit of $80 million in 1971, equal to 20% of the total payments deficit over the 1971-75 period. In Mexico, six TNCs producing vehicles had trade deficits of $143 million in 1971, equivalent to over 16% of the total trade deficit in that year. (UNCTC 1983a, 113-4.) While these data do not show the precise impact of the local integration strategy on the balance of payments, they suggest that the amount of foreign exchange saved (compared to a situation without the LC policies) was probably not that significant. (But still, in a long-term analysis, a LC policy could still be deemed successful because of the multitude of objectives at which the policy could be said to be aimed.)[22/]

The Situation in the 1970s

The industry in the early 1970s was still characterized by inefficient production. A study of the effect on production costs of the small average firm size concluded that "the average Argentinian car in 1967 cost 122 per cent more than in the country of origin. Fifty-seven per cent, or almost half of this excess cost, could be accounted for by the low scale of production in Argentina and this could be further broken down into 44 per cent accounted for by differences in scale economies in the terminal industry and 13 per cent by differences in the parts industry." (Jenkins 1977, 198.) In the case of commercial vehicles, the requirements for virtually full domestic value by the end of the 1950s and early 1960s led to local production of some very complex parts at extremely high cost, which contributed to the high prices charged for those vehicles. It was not until the 1970s that levels of output were reached which supported efficient production of those items. (World Bank 1980, 44.) I.e., after a fifteen-year learning period.

Apart from the mushrooming of firms already mentioned, oligopolistic practices of TNCs gave rise to a proliferation of models and their frequent changes. Product differentiation was heavily relied upon once, after the initial boom years, the demand slowed down. The range of models produced by the nine most important car producers in Argentina increased from 10 in 1960 to 48 in 1974. In Mexico, the number of models produced has fluctuated around 40 since 1965. The average production was 4950 units per model in 1975, about the same as in Argentina, and well below the minimum scale requirements taking into account the levels of LC. (Ibid., 185 and 199.) Hence, fragmentation of the auto industry in the major Latin American producing countries has been a much more important factor in explaining the high price of locally produced vehicles than the small absolute size of the market. I.e., a high level of LC would not necessaily be incompatible with efficient production if the industry were rationalized.

Since the early 1970s, local integration strategies have been re-formulated in response to the problems that beset the auto industry. The major problems, as discussed above, were the continuing balance of payments difficulties and the costly production. Broadly speaking, Brazil and Mexico have devoted greater attention to export promotion, while export promotion and import liberalization have been pursued jointly by Argentina. This outward orientation represents a shift of strategy away from relative self-sufficiency with only limited links to the international economy to one that is more integrated into the TNCs' location and production plans. Nevertheless, as a result of the previous localisation programmes, LC in the three countries has been progressively rising so that by the seventies the ambitious targets set earlier have been largely achieved. In Brazil, about 90 per cent LC was reached, in Mexico around 58 per cent, and in Argentina some 80 per cent. (UNIDO 1984, 149.)

Due to the foreign exchange crisis of the early 1980s, as well as the excessive costs due to the fragmented market that was incompatible with export promotion, the Mexican Government issued a decree in September 1983 that further increased the minimum levels of LC - from 50 per cent in 1984 to 60 per cent in 1984 for passenger cars, and from 65 per cent to 70 per cent for light vehicles - while also requiring each manufacturer, over this four year period, to reduce their range to a single type, available in up to five

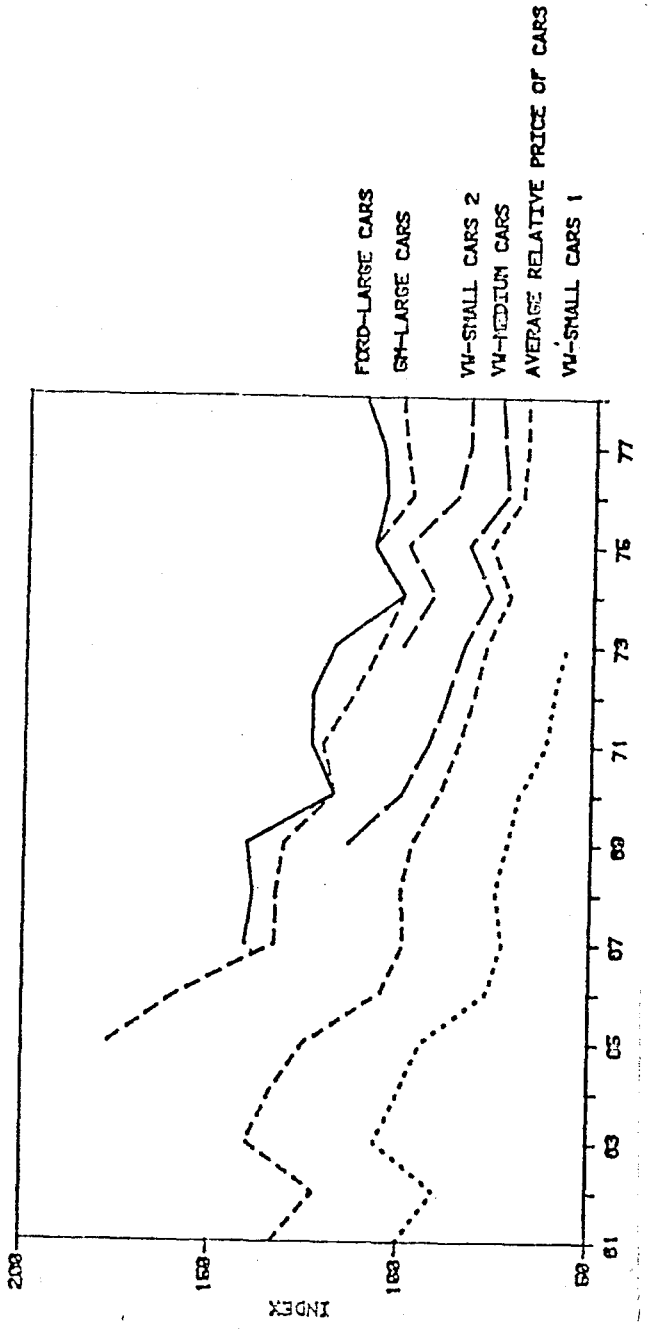
models. In addition to these efforts at reducing fragmentation, the industry was also required (by an unspecified date) to become self-financing for the foreign exchange needed for component imports.

At the same time there is evidence, at least in Brazil, of an increasing efficiency in automotive production. Indirect evidence is supplied by the average weighted index which shows that the relative price of a Brazilian passenger car has fallen by 100 per cent in the period 1961-78. (See Figure 2.) Secondly, prices of Brazilian vehicles compare favourably with those of similar foreign models. (World Bank 1983, 122.)

On the basis of this account of the development of the auto industry in the three Latin American countries, it might appear that the traditional industrialization strategy of a period of import substitution leading to export promotion has been vindicated by the Brazilian and perhaps the Mexican auto industry. Thus, the recent World Bank study mentioned above concludes that "the rapid development of the Brazilian auto industry over the past 20 years is a success story of infant development". While a full assessment of local integration strategy - even if it were possible - is not appropriate to this study - such a confident pronouncement must be critically examined.

First, although the data on Brazilian price efficiency seem to suggest that the problem of costly production observed in the late 1960s has been solved, caution is necessary. As the same study points out, for example, while the Brazilian prices are lower than those of the foreign vehicles, they are not directly comparable due to differences in quality. Moreover, the factors that brought down the costs need to be understood. To what extent was increasing efficiency due to economies of scale and to technological learning? It would appear that since the cost improvements were mainly made before 1974 - i.e., during the "miracle" growth period when the auto industry saw rapid expansion - they are largely attributable to increasing scale. If this is true, and given the fragmented market, then the cost efficiency of the Brazilian industry was conditional upon rapid growth of the economy. And once the economy stagnates or declines, as in recent years, the cost problem may once again come to the fore unless rapid export expansion is achieved.

FIGURE 2: EVOLUTION OF BRAZILIAN CAR PRICES, VARIOUS MODELS



Source: World Bank 1983, 124.

Moreover, the Brazilian case is somewhat special because of the relatively large domestic market. Certainly the market of few other developing countries can support the type of proliferation of types and models found in Brazil. Recent data on the market structure suggest that the proliferation of models persists, and not only Brazil but in all three countries. (See Table 5.) On the other hand, such data conceal the wide variations in scale between different firms and models, and firms such as VW in Brazil and Mexico account for a large part of production in the two countries (and are therefore in a relatively good position to reap the benefits of economies of scale.) But, on the other hand, the efficiency of other segments remains a serious problem.

Table 5: Car Models Produced and Average Output per Model, 1980

Country	Models	Average Output per Model
Argentina	33	6,622
Brazil	79	12,301
Mexico	40	7,576

Source: UNCTC 1983a, 110.

With respect to the export performance which might indicate the success of an industry in reaching 'maturity' after a protracted period of protection, certain points again need to be borne in mind. The dramatic expansion of exports has been mainly the result of generous government incentives as well as pressure on the auto firms. To preserve or expand their market shares, the firms were required to undertake export promotion. The value of fiscal incentives granted to the Brazilian auto industry was 62 per cent of the value of exports in 1971, and 67 per cent in 1975. (UNCTC 1983a, 116.) Under the BEFIEX scheme introduced in 1972, exporters were exempted from restrictions on imports and receive large reductions in various taxes on imported equipment, components and intermediate products. In addition a 26 per cent export subsidy was given.[23/] In Mexico, exporters received fiscal incentives equal to 11 per cent of the exports, and various tariff incentives were also provided to those which met LC and export requirements. Fiscal and various incentives and subsidies in Argentina could add up to around 60 per cent of the export price for cars and 75 per cent for heavy trucks. (Ibid., 115-6.)

All of this suggests that the costs of export promotion in terms of revenues foregone by the governments have been very large. It also raises the questions whether a reduction in incentives could generate the same level of exports, and whether the auto industry in these countries has really 'matured' and is internationally competitive in the longer term. For one thing, the policies adopted towards TNCs made no attempt to restrict their numbers, and their take-overs of national firms continued over the period. There was also a failure to directly rationalise the structure of the industry and to adequately strengthen domestic industrial capability; and the pace of LC was determined without due regard to local capacity.

The impact of the local integration strategy on the balance-of-payments and employment is extremely difficult to evaluate. Up to the early 1970s, there were continuing deficits associated with the auto industry, and it is doubtful that the foreign exchange saving was significant. Since the early 1970s, the deficit due to the auto industry has been turned to a surplus in Brazil thanks to the rapid expansion in exports, while the Argentinian and Mexican auto industry continued to exhibit deficits. As far as the employment impact is concerned, the increasing capital intensity as LC is raised makes the auto industry a poor and costly source for generating employment opportunities.

Perhaps an even more important question is the impact of local integration strategy on linkages and technical progress. On this score, although the evidence is far from complete, the result appears to be disappointing. Under the open-door policy there has been a denationalisation in the terminal industry and the components sector has come under foreign dominance. Consequently, the technological and other spinoffs which could have strengthened the indigenous industrial capability have been smaller that expected. One important contributing factor in this respect has been the failure to integrate industrial and commercial policy on LC with technology policy. In conclusion, it is not clear whether the high costs associated with the type of local integration strategy adopted in the three Latin American countries in the form of subsidies to the auto industry by both the government and the consumers has 'paid off'. Certainly, the policy would have been a greater success had there been a greater degree of harmonization of different elements of government policy, had stronger measures been taken to control fragmentation of the market, and had more attention been given to monitoring the total costs of the LC programme and the presumed benefits from linkages to other sectors of the economy.

The Peruvian Auto Industry and Linkages

An examination of the Peruvian auto industry provides an important supplement to the previous section and focuses on the linkage aspects of local integration policies, an important area which has been generally neglected.[24/] Partial assembly mainly of commercial vehicles began during the 1940s in Peru. Under the import substitution strategy, an LC requirement of 30% was decreed in 1963 to be achieved within five years of initiating production. (Jenkins 1977, 56.) As in the other Latin American countries, an open-door policy was adopted. Thirteen firms (nine of which were passenger car firms), each with some foreign ownership, were assembling 18 makes and over 25 models of vehicles by the late 1960s. The total number of vehicles produced was around 12,000, which meant that average output per model was around 500.

In this highly fragmented market, even the largest producer used no more than 30 per cent of the installed capacity. Beginning in 1970, when the costly policy became all too obvious, a degree of rationalization in the context of the Andean Pact programme was carried out and five assemblers were selected to produce vehicles classified by type of use and weight, and no assembler was permitted to enter the market before 1981. Following these measures, the number of vehicles assembled grew considerably up to 1978, when Peru was hit by economic recession. But even at the peak of production in 1976, the average number of vehicles produced by each firm was no more than 7,000.[25/]

Despite the relatively modest LC goal set in the early 1960s, the actual achievement fell far short of it - around 10 per cent in the late 1960s. This was due to the relatively underdeveloped industrial capability, the small and fragmented market, the lack of standardisation of components which hindered economic production of high value added components, and the inadequate local integration strategy (see below). In spite of the failure to meet the target, LC was revised in 1969 to 70 per cent. By 1974, the number of component and parts suppliers grew to 191 (including 33 producers of car bodies and related products). Of this group, most of whom were small-scale producers, 11 had foreign equity participation.

Unlike its counterpart in the other Latin American countries examined, the Peruvian components sector has not seen the same degree of denationalization - though firms with foreign interests did occupy the more important components sectors. This appears, however, to be due less to a conscious government policy to restrict foreign participation than to the small market. The LC reached in 1973 was between 25 and 35 per cent. (Jenkins 1977, 61.) But the distinction between real and nominal LC ought to be noted. The high target set for 1973 was repealed due to difficulties in meeting the requirements to allow the inclusion of all Peruvian inputs as LC regardless of their import content. This "makes LC requirement next to useless as a policy tool: in Peru, 95 per cent of tire producers' and 54 per cent of components suppliers' raw materials are imported." (UNIDO 1984, 131.)

The study of linkages based on a sample of firms reveals a number of things. Locally replaced components were often relatively simple metal items (springs, fuel tanks, brackets, radiators, various nuts and bolts, etc.); some relatively simple unrelated items (glass, mirrors, seat covers, etc.); and a number of relatively complex unrelated items (tires, tubes, paints, electrical cables). Notably, the latter were produced by foreign affiliates, although some local firms were also producing under foreign licence. The largest proportion of the value of bought-out items was from TNC tire firms. Technologically sophisticated or large-scale capital intensive production was beyond the capability of local suppliers and had to be imported. It was also found that production costs for many local components were much higher than for comparable imports.

It is important to note that the government did not specify the items to be produced by foreign assemblers and firms, and by local suppliers. This non-distinction renders the formation of local linkages, technology transfer and assistance to indigeneous producers more difficult . This is because, if permitted, the TNC assemblers would take the easier route of either in-house manufacture, or subcontracting to other foreign firms, even where indigeneous suppliers, given assistance, might attain economic production in the longer term. This was done simply to avoid the extra costs of seeking and launching new suppliers, transferring technical knowledge, and upgrading the capability of the suppliers. Not surprisingly, few, if any, of the local component firms were launched by the foreign assemblers - most of them owed their existence to

the market for spares and replacements before the assembler firms began operations in Peru. Furthermore, it was discovered that the technical linkages created were minor and mainly took the forum of quality control. And "though there are quality control procedures, these seem to be very simplified and are often obliviated by keeping in-house the production of items that require more quality control." (UNCTC 1981, 44.)

More advanced forms of technical linkages involved assistance in design improvements, or actual in-house design and development work by the assembler to suit the capabilities of the supplier; and assistance in solving production problems which already existed. The lack of technology transfer and other assistance could be attributed to deficiencies in the local integration policy, which simply stipulated the LC requirement and failed to facilitate stronger co-operation (where feasible). As a result, the TNC assemblers simply fulfilled the LC requirements by purchasing mostly standardized simple items from the local suppliers. And there was little incentive for the TNCs to establish any closer technical linkages with the larger suppliers as the latter mainly produced technologically unrelated items. In sum, TNC assemblers in Peru have not formed the type of close linkages which could result in a transfer of more sophisticated technical know-how to the local suppliers and a long-run upgrading of their technological capability.

There was also no attempt made to assist or merge the large number of small component firms producing simple items. The keen price competition between the producers made their position vis-a-vis the large assembler firms even weaker and probably hindered the development of a strong local components industry.

In conclusion, the linkages formed in the Peruvian auto industry have given rise to increased production and thereby increased local value added and employment. To this extent, some benefits have been gained. However, the benefit from an upgrading of technological capability of component suppliers has not been maximised by an appropriate integration policy. Furthermore, the costs of fostering an auto industry with sub-optimal scale must have been large. The market in 1980 remained fragmented with five car models and an average output of 2,140 (UNCTC 1983a, 108.), and the recession has further exacerbated the problems of the industry. Price efficiency therefore leaves a great deal to be desired. Not surprisingly, exports from the auto industry have been negligible. The infant, after two decades or more of production and local integration strategy, has hardly reached the 'adolescence' stage.

Local Integration in the Indian Commercial Vehicle Sector. [26/]

Assembly operations were initiated in the Indian auto industry in the inter-war period. After independence, the government promoted national ownership of production facilities, and set a target of 56% LC by 1956. By 1969 all assemblers had indigenous content in excess of 94 per cent. Constrained by the low level of incomes, faced with the problems of older technology, and allocated relatively low priority by the government, the passenger car sector has, however, been stagnant for years - though the take-over by Suzuki of production facilites in 1984, with the promise of attaining 70 per cent LC within three years (Sinclair 1982), could augur well for the future. The commercial vehicle (CV) sector, on the other hand, is one of the success stories of local integration strategy.

Unlike the fragmented market of many developing countries, the Indian market for CVs is almost entirely accounted for by two manufacturers (AL and TELCO)[27/] which supply over 90 per cent of the heavy trucks (over 7 1/2 tons) in India. In 1978 TELCO made around 35,000 vehicles, and AL 9,000 of essentially one model, both large enough to gain the scale economies of truck manufacturing (normally reckoned to be reached at 5,000-6,000 units, though for certain components the required volume is higher). Strict quality control, production adaptation, improvements based on indigeneous R+D, and government encouragement, have led the two leading truck manufacturers to emerge as major exporters (mainly to developing countries), AL and TELCO exporting around 10 and 15 per cent of their output, respectively. Exports of trucks make up a substantial proportion of automobile exports (about 62 per cent in 1977). More recently, TELCO has itself gone multinational with a joint venture affiliate in Malaysia and licensed assembly operations in other developing countries. Furthermore, components' exports rose from $6 million in 1970 to $66 million in 1978. All of this suggests that the Indian CV sector has come a long way in achieving international competitiveness. It should be noted, however, that Indian CV technology is not as modern as that of developed country manufacturers - the design is relatively old and engines are not as fuel-efficient. Nonetheless, the trucks are well-known for being rugged and appropriate to the type of conditions prevalent in many developing countries.

While in 1956 imports came to between 35 and 45 per cent, in compliance with the LC regulations enforced by the government, both manufacturers lowered their imports to less than 4 per cent of their total requirements by 1979. The CV sector is an example of a successful local integration strategy which has resulted, therefore, in efficient production after a period of learning.

Linkages in the CV sector are extensive - AL bought out components and parts equivalent to 59 per cent and TELCO 35 per cent of sales, while keeping the rest for in-house manufacture. Apart from the relatively developed industrial capacity, and the scale factor which enabled efficient components production, the governments' local integration policies have influenced the creation of extensive linkages. It has prevented the terminal firms from acquiring suppliers through its monopoly and foreign investment regulations, and from expanding into their activites by its licensing policies.

The government also actively encouraged the growth of a supplier industry by specifying (since 1965) a 'reserved list' of items that had to be bought out, subject to price and quality considerations, from independent firms and by providing various incentives to small-scale producers. The implementation of the reserved list was gradual and pragmatic. Most of the items reserved for independent suppliers were, by traditional truck manufacturers' practices, farmed out in any case. While some had initially been produced in-house, the installed capacities were allowed to be used, and only additional output was to be farmed out. Furthermore, "the clause regarding satisfactory cost and quality meant that the farming out was achieved without damaging performance, and with due regard to the 'learning' period required by new suppliers to reach the required standards". (Lall 1980, 213.)

The reserve list policy induced the auto firms to search for and develop new suppliers. It accelerated the process of dividing optimally the operations between the auto firms and their suppliers. The former incur the costs of locating and launching the latter, in return for the longer-term benefits of cheaper supplies. The trucks manufacturers have found local procurement cost efficient after the initial investment and provision of all sorts of assistance. Such effort was probably justified on broad macroeconomic grounds, for it led to a wide network of local supplier industries which, after a period of protection, had grown up; and in contrast to the Peruvian experience, to extremely widespread technical linkages. These

have given rise to a great deal of learning and its diffusion. Technical knowledge has been transferred through various mediums, ranging from input specifications and systematic quality control, through joint design and assistance in production techniques, to in-house design and development work (by the manufacturers) to suit the capabilities of its suppliers.

The type of externalities mentioned are extremely difficult, if not impossible, to quantify; but such difficulties should not deter investigation in a murky but vitally important area. The UNCTC and Lall studies on vertical linkages in the Indian and Peruvian auto industry are noteworthy for the insights offered into the process of linkage creation, and they also show how variations in government policies in the two countries have made the difference between success and failure.

Benefits apart, there may of course be social costs associated with the initial inefficiencies of pushing the pace of local procurement, and with the risk of monopolistic-type collusion by the firms involved in the linkage formation. But as Lall concludes, "there seemed little evidence in our case study that these costs were significant in the longer term". (Ibid.) Of course, the conclusion has deliberately abstracted from an evaluation of the broader import-substitution industrialization. To the extent that these costs may be high, they have to be taken into consideration.

The Automotive Industry in the Asean Countries[28/]

In the early stages of the development of the auto industry in the countries which comprise the Asean group - Indonesia, Malaysia, the Philippines, Singapore, and Thailand - the objectives for establishing a local assembly industry were usually cited as employment creation, foreign exchange savings, and technology transfer, with the latter associated to some extent with possibilities for developing inter-industry linkages. These objectives were set, however, without any rigorous criteria or machinery for monitoring performance, and most of these schemes did not set out in the intial period to achieve high levels of LC. Thus, the famous programme for developing LC in the Philippines - one of the most ambitious in the developing countries - proposed a schedule which, had it been adhered to, would no have passed the 60

per cent mark until 1985 [29]; and even now, the Malaysian government - whose national car project represents a major departure from observed behaviour in Asean countries, and which signaled the de facto end to the Asean efforts to co-operate in making a joint car - is only aiming at a 36 per cent LC target by the end of the decade, a goal which represents a doubling of the level attaining at the middle of the decade.

Recently there has been increased attention devoted to the foreign exchange implications of LC and related policies in the industry, and less to the old objectives of employment creation, technology transfer, and inter-industry linkages. It seems agreed, however, that on this criterion the automobile industry in Asean does not perform well. Thus, all countries of the region - except Singapore, which effectively ended local assembly operations when it removed tariffs on fully assembled cars in 1980 - have been trying to reduce their reliance on imports of fully assembled vehicles and to develop local assembly and production as the major source of supply, often introducing "inordinately high levels of effective protection" (World Bank 1979) to achieve this end. But so far the trend has not been sufficient to reduce the import bill; and indeed Japan, the major supplier of vehicles to Asean, has continued to expand its sales in the region.

Viewed generally, the development of the industry has in no country (with the exception of recent declarations in Malaysia and Indonesia) been made part of a coherent industrial planning framework. This contrasts sharply with approaches to the automobile industry in, for example, the Republic of Korea and the Province of Taiwan, where automobile development has been firmly within a setting of expansion of heavy industry. The Asean region has also not been a pole of attraction for foreign investment in the sector, with governments tending to restrict their role to tariff and LC legislation affecting the assembly and component industries while steering away from any more direct forms of commitment. Up till now, no country in the region has succeeded in obtaining long-term involvement from important components producers to promote local technological development on a substantial scale. Here the experience of the Philippines, where major producers have been generally unwilling to provide substantial assistance to local suppliers in the absence of a guarantee of capturing in return the benefits arising from the strengthened suppliers (Hill 1982a, 267-8), appears typical for the Asean countries. The most recent example of this is General Motor's decision to close its car plant in the Philippines, possibly for good. (The Economist, September 21, 1985.)

In examining the potential for LC in the components sector in the Asean countries, it is important to note the differences with countries such as Mexico, in that at least part of industry production in the latter country is aimed at the world market. This type of component production does not exist within Asean, where the component industry has been almost entirely developed from replacement market production, the underlying philosophy appearing to have been that small firms would develop from such replacement market output towards competitive performance in the original equipment market. This focus on the domestic market has been reinforced by the fact that incentive systems have generally been oriented towards the home market.

In practice, there have been several limitations to the development of the component sector. First, there has been no consistent government support for ancillary industry output in any country of the region. Secondly, replacement items cover a much narrower range than do original equipment items and therefore the prospects for moving from one to the other are confined to a small range of products; to go beyond that means a qualitative jump into new areas. Thirdly, and of vital importance, quality standards in the replacement market are by no means the same as those in the original equipment market. In the latter case, it is the TNC producers who are the buyers and thus the quality arbitors, and they impose requirements which are more demanding than in the replacement business. Fourthly, and related to the previous point, entry into the original equipment market almost certainly means establishing technology transfer arrangements with either the TNC itself or with established component suppliers. Fifthly, the original equipment field is nowadays one of considerable technological innovation, closely integrated with changes in design engineering, where local Asean firms are clearly at a disadvantage.

With reference to the 'new made-in-Malaysia' car, called the Proton Saga, the aim of the $320 million project is to establish a car factory with the assistance of the Japanese that will transfer the latest industrial skills to Malaysian workers and nurture home-grown makers of car components. Because the expected output (by 1994) is still less than 120,000 cars a year, the earlier discussion accompanying Table 4 has shown that the factory cannot hope to attain the economies of scale necessary to become internationally competitive. (Economist 1985.) It was mentioned earlier that local production of components is to rise such that, also by 1994, LC levels will be approximately 36 per cent, with components produced in other member countries suitable for incorporation in the Saga model being treated as part of this LC.

Despite this project, however, Malaysia is currently in a much weaker position regarding component production than are some Asean neighbors, especially Thailand and the Philippines. In the late 1960s the government introduced measures regarding LC, but the oil price rises and other shocks led the administration to quietly play down those schemes, presumably because of the judgement that cost rises for LC stemming from greater local inputs would have been unpalatable. So it is that the Proton scheme was launched at a time when local component production covered only a very small number of original equipment items.

Moreover, the quality level of existing production appears to be quite varied, and an evaluation of the Malaysian components industry by the Japanese awarded ratings in both quality and reliability of supply only to producers who either have technical co-operation agreements with Japanese producers, as in the cases of wire harness, batteries, glass, alternators, starters and leaf springs, or who are affiliates of TNCs, as in the case of tires and paint. The remaining firms, which had no technical co-operation agreements, were rated poorly either in terms of quality or reliability, and sometimes on both criteria. (Investigations, 1984.) This suggests that the road to developing a local component industry will be slow and arduous.

The Malaysian government has initiated discussion with the Mitsubishi Motor Company (MMC) concerning expanded possibilities for components production, and MMC has submitted a list of 282 items which could be produced in Malaysia provided quality, price and delivery conditions were met. The government has established a co-ordinating committee for handling the components industry and this committee is now examining the MMC list with a view to developing the more promising areas. It seems that the aim is to establish several new joint venture companies, as opposed to expanding ones which already exist, which would conclude technical assistance arrangements with their Japanese counterparts.

Despite the negative Japanese evaluation of many components, the experience gained by local firms cannot be, and should not be, easily jettisoned. Examination of the parts industry shows that some enterprises have in fact learned quite considerably in the component field and even if that does not take them to the quality level set by MMC, this does not mean

that their capabilities are inadequate. The results could also be interpreted as indicating the need for refinement in government policy towards the sector, including LC regulations. Indeed, the Proton project is already having ramifications in other sectors of industry, where there is now a growing demand for preferential treatment through policies such as LC. In launching the Proton project, the government has thus thrown itself into the center of decision making regarding industrial structure.

By way of comparison, in Thailand automobile assembly based on CKD kits started in the early 1960s, and in 1970 the import tariff on CKD kits was also raised from 10 per cent to 30 per cent for trucks and from 30 per cent to 50 per cent for passenger cars in order to stimulate the domestic manufacture of parts and components.[30/] In 1976 a target in domestic content of 25 per cent, calculated basically as a proportion of the value of the domestically produced components to the cost of production, was established. In 1978 the method of calculating the domestic content ratio was revised to reflect more accurately the technological priorities of the government in the machine-building field. According to a points system elaborated by the government with a total of 100 points, some parts and components were assigned proportionately more (and others fewer) points than suggested by the relative share in average production cost, reflecting a higher (or lower) priority given by the Government. The assemblers were thus encouraged to produce those parts and components with relatively high points (e.g., main body work requiring press work, which constituted one of the governments's priority areas). Nevertheless, they were free to choose the parts from the list. They were, however, obliged to raise the 25 points already achieved in the initial period to 50 points by the end of the fifth year.

As a result of these policy measures, the assemblers started to produce some parts and components within their own plants. However, they also began to subcontract this production to other local firms, including some which were joint ventures with foreign auto parts and comonent makers. In addition to the subcontracting component makers, there are said to be several hundred small scale units which supply the spare parts market. Domestic production was to be reinforced by the requirement to raise the LC requirement to 50 per cent by the end of 1985 - but under pressure from assemblers this requirement was retracted.

This localization was not without its costs, however, and a study by the Thai Government in the 1970s of the cost of locally procured parts with the corresponding c.i.f. values of CKD parts for a small Japanese passenger car showed that the difference between the cost of processing the parts domestically and the value of the components in the CKD kit expressed as a percentage of the latter was 60 per cent for radiators, 175 per cent for starters, 146 per cent for regulators and 180 per cent for wiper sets. A similar example from Malaysia based on 1971 data showed cost penalties of 93 per cent for shock absorbers and 152 per cent for oil filter elements. (Lim and Onn 1983.)

The conclusion of a recent UNCTAD (1985) study as to the fundamental reason why the cost difference was so high was the same as that discussed earlier for the automobile industry in the developing countries in general, as well as for large parts of the capital goods sector: the small size of the domestic market for the vehicles did not permit the parts and components manufacturers to enjoy the scale economies associated with this activity in the industrialized countries. In other words, the minimum efficient scale of production of the parts and components is larger than the scale which the size of the domestic market would justify. Table 6 also shows that the domestic market, in Thailand as well as in the Asean countries generally, is further fragmented by numerous companies and their makes and models. Combined with the fact that the assemblers tend to engage many subcontractors in order to spread risks for missed delivery dates and a high rate of defects, the size of individual orders placed with the component makers by the assemblers is usually quite small. (Ibid.)

In addition to the scale economy factor, there are certain technical weaknesses of the component makers themselves which tend to push up the production cost. According to Nawadhinsukh (1983), these weaknesses are reflected in poor quality of castings (cited by five of 16 firms interviewed), poor quality of equipment (three firms) and poor production organization (three firms). Also mentioned are poor plant layout, deficiency in heat treatment technology, and lack of tooling technology for high precision products.

TABLE 6. FRAGMENTATION OF THE AUTOMBILE MARKET IN SELECTED ASEAN COUNTRIES AND THE REPUBLIC OF KOREA

Country	No. of firms	Estimated no. of makes	Estimated no. of models	No. of vehicles assembled 1978	
				Total (000s)	of which commercial vehicles (per cent)
Thailand (1975)	15 a/ b/	32	31	66	68
Indonesia (1977)	15	37	43	108	86
Philippines (1977)	14	19	48	70	50
Malaysia (1977)	9 a/	27	42	78	18
Rep. of Korea (1978)	5	10	18	158	45

Notes: a/ Only those in operation.
b/ Counting passenger car assembly and commercial vehicle assembly separately; the actual number of firms is 12.

Source: Adachi, Ono and Odaka, 1981, Tables 1 and 7.

The poor product quality of the components supplied may be due to the shortage of certain skilled labour (e.g., for heat treatment and alloy metallurgy) and to inconsistency in the quality of the raw materials used. This inconsistency is due at least partly to the small size of individual orders mentioned above, for the component makers are reluctant to enter into more permanent arrangements concerning the raw material procurement. Because of the small size and the irregularity of orders the component makers hesitate to invest in the upgrading of production facilities and especially in skilled manpower, particularly for quality control, which would imply high fixed costs. Furthermore, the practice of production control to ensure the quality of the products has not yet been established, since the component manufacturing activity linked to assembling is still relatively new.

Unreliability in meeting delivery dates is another complaint Nawadhinsukh found directed against auto component suppliers. While the observance of delivery deadlines is essentially a matter of production management for these firms, from the point of view of the assemblers the observance of delivery dates is inseparable from the guarantee of product quality. Observance of

correct delivery dates is not meaningful if the rate of rejection is high. In fact, both problems arise at the same time with component suppliers with limited production management capability, and this has been an important reason why the assemblers now tend to manufacture key components within their own plants.

The position of the pure domestic firms in the Thai vehicle components industry relative to that of joint venture firms with foreign collaboration agreements is clearly related to the degree of capital intensity and of intensity of skilled labour, with investment per worker being 150 per cent higher in foreign then in domestic firms (in the mid-1970s). In addition, Adachi, Ono and Odaka (1981) argue that the gap between these two groups of firms is widening, as the former become primarily spare parts producers while the latter become dominant in the more technologically, design-, and skilled labour-intensive manufacture of vehicle parts and components. These results appear to be representative for the entire Asean group of countries, and there appears a general requirement for LC policy (and tariff policy) to focus more on stimulating independent local supplier firms, as distinct from vertically integrated assemblers, since in-house manufacture (by foreign subsidiaries or foreign controlled assemblers) markedly limits intra-national transfer and diffusion of technology. And it deprives local firms of important manufacturing expierence.

The Auto Industry in the Republic of Korea

Until as recently as 1974, the Korean auto industry was still essentially at its assembly stage with a relatively low level of LC. In that year, the government formulated a long-term development plan for the industry. The policy objectives were: a) a 95 per cent localisation of components and parts by the end of 1975, b) development of an auto suppliers industry, c) horizontal integration of components' manufacturers, d) promotion of supportive systems for the auto industry, and e) improvements in assembly plants and technology. First priority was given to product development of smaller cars with high LC. Further, each of the the three major firms were allocated specific segements of the passenger cars market in order to avoid market fragmentation. Under this plan, Hyundai and Saehan (now Daewoo Motors) produced 1,300 c.c. and 1,400 c.c. engine models, respectively, and Kia produced 1000 c.c. sub-compact models. (Pyo 1981, 11.)

This is a case of a well-formulated and highly inter- ventionalist government policy aimed at local integration and subsequently export promotion. The government has deliberately avoided an open-door policy to pre-empt the possibility of TNCs' proliferation and dominance in the domestic market, with non-tariff restrictions like LC playing an important role in the protection of Korea's import-substitution industries. (Nam 1981.) In fact, foreign equity participation has been strictly screened and controlled to ensure a more independent industry, while foreign technical assistance was actively sought.[31/] At the same time, as mentioned earlier there are special circumstances which have led Japan and the US to assist in the development of a Korean car industry. (Kraar 1984). These were part of the efforts of Japan to use developing countries as in such a way that cars can be sold in third markets (particularly, of course, in the US and Western Europe) as not-wholly-Japanese products. (Sinclair 1982.)

A number of other favourable factors have also contributed to the success of the local integration strategy. First, dynamic economic growth has led to rising incomes and strong demand for automobiles. Secondly, like in the case of Brazil, the existence of machine building experience and a considerable pool of skilled manpower prior to initating such efforts contributed to making this successful. And sustained expansion in the supporting industries (such as iron and steel, electronics, mechanical engineering, etc.) have made localisation easier to develop - though in crucial areas such as design, metallurgy and electronics, the technological basis for their automobile industry is still judged as 'weak' by some. (ESCAP 1985, 90.)

Finally, as mentioned above, an integrated government strategy - including a system of effective protection which has increasingly become more and more discriminatory in the incentives provided to individual sub-sector (Nam 1981) - has given maximum support to the industry. Under these favourable conditions, local integration was rapidly speeded up. The main model (Pony) manufactured by Hyundai, for instance, is reputed to have a LC of 96 per cent. Underscoring the point that high LC in a developing country does not necessarily lead to inefficiency, the Pony is now internationally competitive after a period of protection of the industry: it is sold in about 50 (mainly developing) countries, and is expected to continue its penetration of key foreign markets with the help of Mitsubishi.

In addition, the high degree of local integration in the industry has been accompanied by technology transfer from TNCs to the Korean firms. Technological assistance ranges from assembly know-how and training of workers to product designs and the production of engines. (Pyo 1981.) It may be noted that under a technology agreement, Ford provides Hyundai with assistance in the local procurement of components.

The domestic auto suppliers industry has been considerably strengthened under the government policies. By the end of 1975, there were 258 subcontractors which supplied a third of the total material procurements of the three auto firms. In recent years, the number of auto parts firms has more than doubled to around 600. And, although no detailed study of local linkages is available, it would seem that a strong domestic suppliers industry has been established and has contributed to the success of the local integration policies.

LOCAL CONTENT LEGISLATION IN THE DEVELOPED COUNTRIES

For purposes of comparison and contrast, the experience of the developed countries in the field of LC can be briefly examined. The earliest case of such regulations in the developed countries appears to be in Canada, where - following standard form - they have been employed in the automobile industry since the mid-1920s (Winham 1984) and where the present system of protecting the automotive industry dates from the tariff revision of 1936. (Johnson 1965.) Examples of regulations in several other developed countries are given on Table 7, to which it should be added that in three of the five countries (Australia, Greece and Spain) these regulations are complemented by other performance requirements, while in Australia and Spain they are also combined with export incentives.

Though often more informal, LC requirements also exist in other developed countries, recent examples being the switch by GM of sourcing from the Federal Republic of Germany to local United Kingdom sourcing - under direct pressure from the UK government - of castings for Vauxhalls produced by GM in Britain (Gooding 1985b); the UK policy of requiring 80 per cent LC in the new Nissan project (Melcher 1985), eighty per cent being, incidently, also the LC goal of the Chinese for the VW joint venture for Santanas by 1990 (Lienert 1985); and requirement that the new Hondas made in Britain have a 50 per cent European Community content or else they will fall under the tight quotas imposed by France and Italy on imported Japanese autos.

The most vigorous recent debate in the developed countries - albeit a baren one, since the proposed legislation has not been passed - has been that in the US concerning the bill to establish "The Fair Practices in Automotive Products Act", and this will be the focus of this section.

The foremost reason behind the growing demand for a more protectionist trade policy in the US has been the rapid growth of imports, and consequent loss of actual and/or potential domestic employment, in the sector concerned. In fact, LC requirements have existed since many years in the US, for example in government-subsidized purchases of buses, railroad logging stock and, until

Table 8: LC Rules in the Auto Industry in Selected Developed Countries

Country	LC Requirement (%)	Import Duty on Cars (%)	LC Rules Established (year)
Australia	85% (can be reduced through exports)	35-57.5% ad valorem, depending on stage of assembly	1976 (closely monitored since late 1940s)
		150% for imports over quota	
Greece	25%	11% ad valorem for non-EC countries	1964
Portugal	22% (upon entering the EC replaced after four years by Community content regulation)	4.5 US cents per kilo (ca. US$400-700 per car)	1963
		For imports of EC origin, dismantled within seven years of entrering the EC	
South Africa	66% by vehicle weight	100% ad valorem on assembled cars	1961
		20% on knocked-down imports	
Spain	55-60% (upon entering the EC replaced after four years by Community-content regulation)	68% ad valorem plus 13% import tax and 24% luxury tax	1964
		For imports of EC origin dismantled within seven years of entry	

Notes: As Table 3.
The data are for circa end-1982.

Sources: US 1983; author's information.

recently, ships (US 1982, 7-8). And an explicit LC requirement has existed since 1965 under the US-Canadian Automotive Products Trade Agreement Act of 1965, which allows the duty-free flow of automobiles between the US and Canada, but also contains a content provision in which automotive products entering Canada from the US must have not more than 50 per cent foreign content in order to qualify for duty-free status (Ibid., 8-9). Another law that relates to LC is the 1980 amendment to Title V of the Motor Vehicle Information and Cost Saving Act, "Improving Automotive Efficiency", which allows foreign auto manufacturers who establish assembly facilities in the US to count their US production as part of their coporate average fuel economy (CAFE) in order to meet CAFE requirements (Ibid., 8).

The record trade deficit and the high unemployment rate in the US have recently prompted several protectionist proposals. One of the proposals is the House Resolution (H.R.) 5133, a bill to establish "The Fair Practices in Automotive Products Act", commonly referred to as the 'domestic content bill', a bill primary designed to force the Japanese to use US parts in cars to be sold in the US. This content bill passed the House of Representative twice during 1982-1983, but was never taken up in the Senate (and therefore never became law), but the discussion generated around the bill is nevertheless relevant to an analysis of LC policies in the developing countries.

The foremost argument for such legislation has been that it would create and/or preserve jobs in the US automobile and supplier industries by increasing demand for their products and reducing foreign competition. The focus of the arguments presented, then, have been basically static ones, rather than the more dynamic and long-term factors and strategic considerations that have been presented for the developing countries above. And the presentation used was similar to that for the effect of tariffs. (E.g., Munk 1969.) (See also the discussion in Wonnacott and Wonnacott 1967, Johnson 1971, Corden 1971, and Grossman 1981.)

Imposing LC on (foreign) automobile producers in the US would mean that the lowest cost sourcing could no longer be fully exploited, and the prices of cars would rise. This price rise induces a reduction in domestic car consumption, and creates a welfare loss for consumers. Those who do gain at the expense of the economic interest of the entire community are producers of

import substitutes, whose previously over-priced products have been made more 'competitive' due to the policy measures (i.e., LC regulations) imposed on the lowest-cost producer.

It follows, however, that cuts in demand due to an increase in price could offset some of the gains in employment generated by the imposed high cost sourcing on manufacturers that sell cars in the US. Since imports still would remain on the market, and consumer would continue to demand competitive prices for cars, US firms would face pressure to reduce costs. One way of doing this would be to substitute capital for labour and this would lead to a further reduction of the domestic labour force in the US auto industry. Such substitution is, of course, presently being pursued - often in a very vigorous way, in cases such as the new GM Sierra - and this underscores the 'special interest' nature of these proposals in the US.

The arguments in favour of LC legislation presented by the United Auto Workers (UAW) rest on the assumption that it is increasing competitive imports that cause the problems in the US automobile and supplier industry. (UAW 1982.) Like any other trade restriction, however, LC requirements imposes the greatest burden on customers in the home country, since they must pay the higher domestic price for the good (both imported and domestically produced). In the case of LC legislation consumers pay twice for it: once in the form of higher domestic prices and again in the form of the potential benefits from foregone government revenues if tariffs had been used instead of LC requirements. LC legislation would also redistribute income within the economy, but it would be done in a hidden way. Estimates suggest that the annual cost to consumers per autoworker re-employed range from US$245,000 to US$1,125,000 (Pearson and Takaes 1981, 50), this cost to consumers including the revenue transferred to the domestic economy. Open redistribution of this amount of money via lump-sum subsidies to car manufacturers would be highly controversial; but redistribution via a LC requirement is hidden redistribution.

The gains from trade through specialization and exchange will not be realized if LC regulations are adopted as long as the Japanese have a comparative advantage in the production of automobiles relative to the US.

The conclusion on the overall impact of LC legislation in the US economy would be reduced efficiency in the US and foreseen responses from US trading partners which would result in a lower demand for American exports and a decrease in overall US economic activity and employment (Carbough 1984, 61).

As part of the LC discussion in the US the Congressional Research Service discussed alternatives to LC, including measures to increase competitiveness in industry in general, to reduce the enforcement of anti-trust legislation to allow more integration (and supposedly increased efficiency) in the auto industry, to promote autombile exports, to increase access of US firms to the "after marked" in accessories and repairs of imported cars, and to attempt to decrease LC requirements in other countries (to allow US firms greater ease in locating abroad). (US 1982.) Just as the discussion of the costs and benefits of LC policies were carried out with reference to the effect on employment in an existing automobile and components industry, so are these proposals specific to an industrialized free market economy - and, unfortunately, little in this US debate appears of relevance to the developing countries in their attempts to formulate and evaluate LC policies as a component of their industrial strategy.

CONCLUSIONS ON LOCAL CONTENT AS A POLICY FOR INDUSTRIAL DEVELOPMENT IN THE DEVELOPING COUNTRIES

Any policy to stimulate investment in the local economy of a developing country depends on a certain degree of health of the economy and political stability in the country, and is made easier by the presence of basic resources and inputs as well as of a suitable market. All of these factors can in turn be influenced both directly and indirectly by an appropriate set of government policies - which could include LC - both with regard to specific production and input sectors as well as with regard to incentive policies.

In the absence of these preconditions and of the appropriate supplementary policies, policies designed to increase the degree of localization of the economy cannot attain their full effectiveness. At the same time, even in their presence, the objectives of poorly conceived policies such as on LC may be unachieveable (because, for example, the required local capacity is not available) - or even if achieved may of limited impact (because, for example the LC provision is met through buying in industrially unimportant products, or because it was achieved at a very high cost in subsidization or tax credits). Content protection can also fail to achieve the desired protectionist objectives motivating this policy because the degree of protection imposed is variable and difficult to predict,[32/] as well as because the timetables are often only weakly monitored and severe penalties are often not imposed for failing to adhere to them.

The effectiveness of LC policies is also difficult to determine when there are problems of measuring the precise degree of LC or of that of verification of this attainment. But this question has been deemed to lie outside the framework of this study, as has the the practice of TNCs of sometimes agreeing to comply with LC regulations, while having no intention of doing so in anything but the formal sense. Further, in some future, more comprehensive examination of industrialization strategies and policies for the developing countries' attention should be devoted to evaluating alternative methods of achieving the objectives which LC regulations attempt to achieve. Alternative policies to deal with employment generation, fostering of entrepreneurship, development and application of technology, infant industry protection, TNC domination, and foreign exchange problems certainly exist, and the relative effectiveness of policies on local content in each area must be critically

examined. Only when more extensive studies of LC as a long-term industrialization policy have been carried out will it be possible to properly assess the appropriate role of LC in the long-term industrialization and development of the developing countries.

But those sectors where local content regulations have traditionally been applied - which includes the majority of the sectors of the capital goods industry - represent important industrial sectors in the industrialized market economies which are large employers, account for a large share of foreign trade, play a central role in the development and diffusion of management techniques and practices, and are an important engine of growth. For the developing countries today they represent 'modern industrial sectors', with all the positive things that implies, are a rapidly growing component of consumer and industrial demand, employers of skilled labour, and potential sources of savings on imports and earnings for exports, and represent a tool for investment policy planners and an important, hoped for source of growth.

These sectors also have a number of intrinsic feature in common, including the requirement of a long planning period for developing the industry, a long gestation period for the human and physical capital utilized in the industry, important economics of scale, crucial tangencies with existing small-scale industry, important linkages with other government policies in areas such as technology, entrepreneurship and skill development, close ties with the entire supplier chain (materials, components, and capital equipment), and a global industrial structure dominated by TNCs. All of these features are such as to make this a very policy- and strategy-intensive industry. They also all represent reasons why national governments have a direct interest in the performance of these industries, and why LC policies have often been applied in this sector.

It is completely understandable that many developing countris feel that it will be of an enormous benefit to them to import equipment for the capital goods sector, even when the equipment is not optimally factor-biased. But it has been argued in this study that if new techniques are regularly transferred en bloc from the industrial countries, this drastically reduces the possibilities for a learning process in the design and production of capital goods to take place. As Rosenberg (1976) argued, "reliance on borrowed technology perpetuates a posture of dependency and passivity. It deprives a

country of the development of precisely those skills which are needed if she is to design and construct capital goods that are properly adapted to her own needs." (166)

These appropriate skills are best - can only be? - acquired through an intimate association between the user and the producer of capital goods. This is particularly true when one realizes that the process of technological change, which is generally seen as the most important source of economic growth, is not just a series of major scientific break-throughs, but also (and perhaps more importantly) "a continuous stream of innumerable minor adjustments, modifications, and adaptations by skilled personnel, and the technical vitality of an economy employing a machine technology is critically affected by its capacity to make these adaptations." (Ibid.) And these are skills that cannot be purchased in bulk, but which must be home-grown in the native environment.

The discussion of LC policies in individual developing countries has illustrated the importance of LC today in the developing world. And while Tables 2 and 3 made it clear that this has been primarily a policy instrument of the more industrialized of the developing countries, the use of LC regulations is growing - both in terms of the number of countries introducing LC and in the number of sectors where it is applied. As the Wall Street Journal (31 July, 1984) put it: "There is little chance that companies trying to do business in the developing world will escape this rising tide of local content demands".

Some of the countres studied can demonstrate clear benefits from their policies; but for many there was a failure to develop a national production structure, to foster exports, and to give appropriate attention to commercial vehicle production where the minimal efficient state is much lower than in autos. (This was the case in Japan, where the development of productivity engineering techniques in passenger car production were based on developments in commercial vehicle production. See Jenkins 1977.) These are all critical areas where the auto industry has often gone wrong, are areas where macroeconomic, industrial, and foreign trade policy need to be co-ordinated with policies on LC, and can all be said to be traceable to the location of key decisions on the auto industry in the developing countries in the industrial market economies where the reference space is the larger global situation and the individual developing country is just one parameter.

And while the analyses quoted in the earlier review of LC policies expressed reservations on some LC policies, the simple fact of the growth in the application of LC policies by developing countries attests to a certain measure of perceived success for the simple reason that rational government planners would not support the implementation of a policy which has knowingly proved a failure in other countries. And a growing number of foreign companies are taking the initiative in establishing relationships with the developing countris that satisfy local content requirements, the methods they have devised to satisfy LC regulations including self-contained direct investment, designating a country a regional or a world-wide export base for certain products or parts, countertrade, and making investments unrelated to their business but which support national objectives. This is at least in part because "the increase in the number of international competitors fighting for the same markets has diminished substantially the ability of companies to resist local content pressure". (Ibid.)

In reviewing the development of LC it is also important to draw lessons that will aid policy makers in evaluating the wisdom of LC policies for the future for developing countries, and here one must be fully aware of the pattern of current development in competition, in automation of information flows, in industrial supply policy, and in macro-economic change in the developing countries themselves. First, in the automotive industry - the capital goods sector where LC policy is most prevalent - the components industry is shrinking and becoming progressively more dominated by TNCs from the industrial market economies. It is simultaneously a fact that the share of imported components into the markets of the industrial market economies is expected to grow (Hampton 1985); but it is very possible that much of this growth will be in-house production by foreign corporations abroad, rather than real domestic production - a distinction that much of contemporary LC legislation does not make.

Secondly, not only in automobiles, but also in other sectors such as aircraft, the suppliers' industry is being transformed by the development of unified automation systems which contain communications rules to which all suppliers must work and which enable the computerized systems in the production plant as well as in all supplier plants to understand each other and work together under unified control. The specification developed by GM (Map, for manufacturing automation protocol), for example, only appeared less

than two years ago, but has already been accepted by hundreds of suppliers in the US, the UK, western Europe, Canada, Australia and Japan. (Charlish 1985.)

Thirdly, simultaneously there is a movement on the part of the major automobile producers to move from short-term supply arrangements to multi-year contracts - a polcy which means that, in the words of one US automobile consultant, "the relationships formed now will last through the turn of the century". (Macosko, quoted in Hampton 1985). Combined with the development of automated factory supply systems, it is clearly going to be extremely difficult for new suppliers in the developing countries to break into the market in the future.

Fourthly, the rate of change in materials used in producing cars and car components - in ceramics, plastics, aluminium, and new steels - is extremely rapid and will impose very large demands on any developing country that attempts to compete internationally. Indeed, these forces are already causing serious problems in establised component and car producers in the developed countries. (See, e.g., Smith 1985.) The companies and countries that are successful will have to invest highly in R and D, capital equipment, and in people, and only then can LC policies have a chance of success.

Finally, there is the simple fact that per capita income, and hence demand, at home in the developing countris themselves is currently growing more slowly than in the past, and therefore the short- and medium-term demand prospects for the sector at home have diminished. To this must be combined the fact that, with the fall in growth rates has come a fall in investment, and hence in the injection of new technology into the industry in the developing countries, which certainly reduces the ability of assemblers and component producers to compete in the medium-term. Taken together, these two factors must reduce the relative priority previously accorded to the sector in many countries.

Thus there are fundamental changes taking place which, when combined, suggest that the successful developments that have been pursued in the most advanced developing countries using LC in the automobile sector as well as in other sectors of the capital goods industry will not be easily repeated in the future.

At the same time, the sheer scale of the investment programme of the automotive TNCs means that the developing countries must rely on the TNCs if they are to play a role in the automobile industry. And one of the only hopes for their participation is through some type of LC programmes, since very, very few developing countries are in a position to even attempt to develop their own, independent automobile industry. The awareness of this fact on the part of the governments in the developing countries is one reason why national governments have been seen to have taken a close interest in the evolution fo the industry automotive from the start.

At the same time, the TNCs have been devoting more attention to exploiting local government incentives to the maximum, as part of attempts to minimize costs. This interest has been complemented by an increased attention by the TNCs to the possibility for increased outsourcing in the developing countries. These points suggest areas of a possible congruence of interests between the TNCs and the developing countries.

The cost to the developing country of these incentives can, of course, be very high, including the revenue lost from the exemption of new cars assembled under LC from duties on imported parts, from exemptions from duty of imported machinery and equipment; from not allowing the import of (taxed) finished products; and from exceptions from income taxes, property taxes, etc. In addition, there is the real cost of assistance from special development funds, investment promotion activities, export tax rebates, low interest loans, etc., as well as from preferencial prices for raw materials.

Simultaneously, there is a growing risk of trade barriers in the North prohibiting many of these imports from the South, a fact that would replace the potential congruence of interests with a possible conflict of interests between the developed and the developing countries. But to the extent that the major investors are the TNCs, they can be counted on to lobby for the possibility of outsourcing. The developing countries also stand to benefit from the attempt of the auto TNCs to diversify their sources of production with, for instance, Japanese corporations co-operating in auto production (through partial ownership) in developing countries that is then shipped to markets where wholly Japanese products would be at a competitive disadvanage.

But the study has also argued that the LC policies that have been implemented have often failed to attain their full potential impact on the national development effort, particularly because the linkages to technology, entrepreneurship, and skills were too weakly developed. And because they were not sufficiently linked either to the existing industrial structure, defined to include factors such as the presence or absence of basic repair and maintenance facilities (and small-scale enterprises in general) upon which the localization programme could build, or to the desired, efficient and competitive industrial structure. Moreover, they were also often very costly, both in the sense of driving up local prices and of misallocating scarce resources.

The various desk studies have partially identified some of the factors which explain why local integration has been judged successful in some cases, and deficient in others. One conclusion that emerges out of this is that a high level of LC may be consistent with efficient production. The conventional view that the problem derives from the small absolute market size is not relevant for the larger developing countries. But even for the majority of small and medium-sized developing countries, the size problem can be overcome via co-operation among developing countries.

A recurring criticism in this study of existing LC policies is that they have been designed in isolation from other key policy and strategic considerations that are integral to the national development effort. Likewise, LC policies in individual countries are, with a few very notable exceptions, almost exclusively designed with a purely national perspective. At the same time, it is well known that the potential for the development of the capital goods industry within the developing countries through trade in manufactured goods is considerable, an observation that is underscored by the fact that roughly half of the exports of capital goods by developing countries are currently destined for other developing countries. (UNIDO 1985.)

The logical extension of this argument would be that, in the course of implementing their LC policies, developing countries with relatively less experience in the assembly and production of components could avail themselves, through licensing and other agreements, of the experience of firms based in the more advanced developing countries. This could follow the lines

generally suggested for such transfer of technology relating to co-operation in capital goods production among developing countries, which would include utilizing the experience of firms in these countries in negotiating licensing agreements with, and local content regulations applicable to, suppliers from developed countries, using skills (including entrepreneurship) available in these countries for training schemes, and encouraging the exchange of technical information.[33/]

Looking specifically at automobiles, one of the leading scenarios for the US auto industry is that, as a natural consequence of maturity, the local content of US car sales will decline, one estimate (National Academy 1982) suggesting that as much as 65 per cent of all cars sold in the US would be produced in foreign countries. Much of these imports would be inputs - components of non-North American origin - into the over 1 million Japanese cars that it is estimated (Gooding 1985) will be produced in the US by 1990, but others would be imported from developing countries - primarily Mexico and Brazil - by American producers. And cheap cars imported from countries like the Republic of Korea, the Province of Taiwan, and Yugoslavia. What can be expected is that the present focus on Japanese imports into the US will be replaced by a focus on Japanese production in the US.

It is difficult to imagine that this will not lead to calls for increased protectionism - and national local content regulations - in the US. And with their relatively greater unemployment problem and excess capacity of 2.3 - 2.5 million units in the automobile industry, western European governments can only be expected to also increase their already strong pressure on foreign producers for local sourcing. This pressure would be increased if the excess capacity created in the US market were then to generate increased exports to western Europe of US-built Japanese cars, as well as more Japanese production in western Europe. But, nevertheless, it is to be expected that there is a market for selected developing countries here, and therefore for LC legislation directed to the production of auto components as a component of development strategy in the developing countries. But it will be one that will most probably be dominated by developing countries that are already established in the components sector, these producers also perhaps having production agreements with the Japanese and/or producers from other developed countries.

On the other hand, an alternative scenario for the North automobile industry in the North would foresee US firms moving to concentrate on more performance-oriented competition and the more expensive end of the market. This would, in turn, prove very beneficial to producers of cheap cars such as the Republic of Korea and Province of Taiwan. Again, in this strategy there would also be a key role for the developing countries; but again, most probably those already established in the industry.

But in developing their automotive industry, like their capital goods industry in general, this study has argued that the market that should loom large in the thinking of the developing countries is their own, i.e., the southern market. For it is here - and not in the North - that future growth can be expected. Thus, to quote the forecasts of Altschuler et al (1984), demand in the developing countries is expected to grow from 3.4 million units in 1980 to 5.2 million in 1990 and to 11.5 million by the year 2000. (But here they may increasingly find themselves facing competition from joint US-Japanese or western European Japanese production oriented directly at the developing countries.)

This would lead to recommendations for the development both of export policies oriented to the southern market but also - and particularly for that majority of developing countries where the domestic market is too small to allow the realization of economies of scale - of a policy of southern content. Under such a policy, with variations for regional groupings, a requirement would be made that a certain percentage of the product came from the South (or from the regional grouping). And the countries that so benefitted would then show a preference for the import of the finished products into their home market. Like well conceived LC policies, such a policy could have a significant impact on the level and structure of industrial production, and become a basic policy for restructuring industry.

An example of the spirit of this proposal would be the automotive industry programme (AIP) adopted by the Andean Pact group in 1977. Since the group represents a market for cars which is expected to exceed 600,000 by 1988, it is a ready-made market - but for subregional, rather than national policy making. Under AIP member countries are obliged to produce or use components

of national manufacture, those components which are commonly used in great amount having been alloted to specific member countries for specialization. After fulfilling its national LC requirement, a producer in a member country can manufacture components for use in vehicles assigned to other member countries. If that compnent is produced efficiently, the Board of the Andean Pact (which functions as the Secretariat of the Pact) can allocate to it a subregional status which accords the component a preferencial status to products imported from third countries.[34/]

Another point that emerges is that a major problem of the auto industry in many of the developing countries examined is due not so much to the inward looking strategy, but rather to the liberal open-door policies towards TNCs. This meant that the firms which gained handsomely from the local integration strategy were the international firms and not indigeneous producers or consumers. It is very clear that rationalisation is difficult to implement for reasons related to political economy rather than economics per se - once a large number of TNCs have invested in the country and productive facilities have been set up, the manouvering room of the host government to regulate and control these firms is seriously limited. For the developing countries whose local content policy has not gone very far, however, the possibilities of rationalisation do exist. But, where rationalisation is directed at reducing the number of firms, it must be complimented by measures to ensure that the limited number of producers actually yield spin-offs for the domestic economy.

The history of LC also suggests that a selective approach to local integration and a concentrated effort on developing specific industries in which the country may posses a long-term competitive advantage is more likely to succeed than an across-the-board, non-discriminating strategy. In this respect it is important to understand that LC is not necessarily either a 'quick' nor a 'clean' solution to development problems, but rather that it is a policy that must be seen as a component of a long-term, sector-wide plan. In addition, it requires caution in its implementation to insure that it does not become a 'dirty' solution, in the sense that LC requirements become an institutionalized method for 'backing loosers', in the form of perinneally inefficient firms and sub-sectors.

It has been emphasized throughout the text that a basic principle in rational policy making in the industrial field is that any policy such as local content regulations must be integrated, both in its conception and in its implementation, with government policies in other fields, and most particularly with those concerned with carrying out the technological transformation of the country, fostering and developing its entrepreneurship capacity, and increasing and diffusing labour skills within the economy, as well as with other policies simultaneously being applied at the micro-level in the same sectors and firms. This is one of the areas of minimum involvement generally agreed as appropriate for the operation of government policy and planning activities in the developing countries today.

For example, a policy of local content in the assembly and manufacture of components must be combined with a policy to reduce the number of domestically produced makes and models of the products concerned, in order to allow the domestic producers to attain - or at least to approach more closely - the minimum efficient scale of operation. Or, also in the same area of scale economies, greater priority in the field of vehicle assembly and components production operations should be attached to commercial vehicles than passenger cars in view of the smaller scale economies associated with the former.

Further, in the formulation and implementation of government policy towards transnational corporations, appropriate attention should be devoted to the elaboration of a carefully designed LC policy as an integral component of the govenment policy in this sphere. Such policies should provide detailed measures to promote the involvement of domestic producers in design work for the products assembled and produced; should increase the specialization of domestic producers within the entire range of products being produced and assembled; and should be based upon the priorities established at the national, macroeconomic level for the creation of technological linkages, the fostering and development of entrepreneurship, and the enhancement of labour skills.

As such, these principles can serve as general guidelines for the design and implementation of LC policies both for countries which are already engaged in assembly operations as well as for those which have progressed into the actual production of more complex components, a means to increase both the efficiency of their operations of these enterprises. In addition, a policy incorporating such objectives can facilitate the efficient entry of other developing countries not presently engaged in the production of capital goods into this area. In all of these cases, however, a recent UNCTAD (1985) study on the capital goods industry argues that this requires that current ad hoc policies need to be transformed into a well-articulated plan, not just for the specific branch in question but also for the capital goods industry as a whole, for other key spheres of the economy (such as technology, entrepreneurship, and labour skills), and for the national economy as a whole.

Where the industrial capacity is underdeveloped, local integration policy must be adopted in conjunction with policies to strengthen domestic firms and suppliers. Such policies may encompass managerial training, skill enhancement encouragement of mergers, an active search for technical assistance to ensure the transfer of know-how, and various assistance and incentives to local firms to alleviate the constraints (where appropriate). The issue of technology transfer is particularly critical in view of the general failure to relate policies on LC to those on technology. Certainly in the auto industry, despite some technological learning, the core technologies in the sector are, in many cases, still to be obtained.

In this regard, one primary objective of government policy in a developing country must be to stimulate a steady graduation of the country through the stages of learning-by-doing, in terms of the implementation, adaptation, assimilation and improvement of imported technology. Such learning can apply to many sub-sectors of the capital goods industry where production involves a large number of parts and components (e.g., electrical appliances, agricultural machinery, and motor vehicles). Such learning-by-doing including simple learning-by-doing, learning by adapting, learning by improving design, learning by setting up complete production systems and learning by innovation - requires a policy of technological unpackaging for its successful implementation and can be fostered by a set of, appropriately differentiated, LC policies.

As far as LC policy itself is concerned, it is desirable to specify not only the particular items to be subcontracted, but also the division of labour between the assembly or terminal industry, and the suppliers' industry. Further, as far as is possible, the suppliers industry should be reserved for indigeneous producers. To the extent that the assembly or terminal industry is dominated by foreign affiliates, policy should be directed towards maximising the linkages between the former and the domestic suppliers. In all of this, of course, consideration must be given to the balance of long-term competitive advantages between foreign and local, large and small firms. This approach is more likely to lead to a widespread diffusion of learning without placing excessive burden on the local industry. In addition, standardisation of components to ensure scale economies is obviously an important policy issue that has to be tackled. These comments apply not only to the auto industry but also to other sectors if local integration is to be implemented.

The setting of the numeral targets is also a very critical point. On the on hand, in many cases LC requirements have not been fulfilled and relaxed owing precisely to the difficulties of the companies in meeting the supposedly overoptimistic targets. At the same time, target setting in LC regulations is a perfect place for the government to apply the doctrine of 'taut planning, under which targets are purposely set above the level that existing resources would suggest is possible in order to extract hidden or unknown resources (which includes new technological ideas or better management practices) which otherwise would not have been forthcoming. At the same time wise policy making would interpret LC targets flexibly in light of the trade-off between the level of LC and the level of costs, rather than pursue the maximum level of LC as an end in itself.

In the desk studies of LC it was also possible to discern some current trends regarding LC in developing countries as a result of the current balance of payments and debt crises. These are leading many developing countries to strengthen their local integration strategy and to place greater emphasis on export promotion and import restraint. First, large subsidies are often required to support export promotion. Secondly, such a LC policy may, however, conflict with other policies directed to advancing indigeneous capability insofar as the former requires a closer integration of the local industry with the global operations of the foreign firms (whose activities the policies may strongly discourage). An ill-conceived export promotion strategy is therefore not unlike badly formulated import substitution policies, in that both lead to excessive costs and uncertain benefits.

It is very clear for the automobile industry, and by extension for much of the capital goods industry, that what happens in the South-east Asian and Latin America developing countries, will in the future be decided, to a far greater degree than in the past, by the dominant forces in the industry worldwide, and that the attention paid to certain developing countries by the automotive TNCs will be very much a function of the changing patterns of the international situation. In this context, it can perhaps be a "serious distortion of reality" (UNIDO, 1986) to talk of industrial policy in these sectors to be a matter for individual developing countries.

More generally, the future prospects for the industry in the majority of developing countries has been fundamentally shaped by the response in the industrial market economies - and especially the United States - to the crisis and economic dislocation of the 1970s. Their strategy became one of aiming to extend the mass-production model globally by linking production facilites and markets of the industrial market economies with the most industrialized developing countries. This in turn represents another example of the phenomon analyzed by Piore and Sabel (1984), where transnational corporations operate to stabilize markets in a world where the forms of co-operation among nation states can no longer do the job.

The results of these developments is that there remains a real role in the global industry for only a handful of developing countries - including particularly Mexico, Brazil, the Republic of Korea, the Province of Taiwan, and perhaps Argentina. This development is, in turn, being reinforced by the growth of TNCs in the component as well as the assembly industry, whose dominance is growing very rapidly, as well as by allied factors such as the advent of requirements by major auto producers for component suppliers to be connected to their automated data communications system. And, rather than disrupt this new order, Japan in the 1980s is being smoothly absorbed into this new global system.

Despite the lack of a significant recovery in the industrial market economies in general, in the capital goods industry there is currently a major programme of investment in automation, robotics, and computer-aided design underway that is drastically reducing th labour content of output and that threatens to leave behind all northern producers who do not do likewise. And this risk is of course much greater for the developing countries. The pace of

this technological acceleration and robotization is so rapid both in terms of products and of production processes that in the developed countries today many capital goods sectors, as Garel Rhys argues, can almost be regarded as new infant industries rather than ones entering the final stages of maturity.35/

There are at least three major implications for the developing countries in these developments: the first is that pressures will remain at a high level in the industrial market economies for protectionist measures to counteract the threatened losses of employment due to this technological revolution; building on these pressures, the second is that it may not be politically acceptable for the governments in the developed countries to allow the importation of imports from lower-cost developing countries such as the Republic of Korea, the Province of Taiwan or Yugoslavia because it could imply further plant closures in the North; and, perhaps most importantly, with this total revolution in production technologies in the North, the countries of the South, with only a small handfull of exceptions, may literally run the risk of being caught in 'the wrong technological revolution'.36/

This study would, however, conclude in a more positive fashion; specifically, given that they are proceeded by careful analysis of the costs and benefits and are carefully monitored, policies on local content represent a rational policy option for developing countries to consider for specific sectors of the capital goods industry (including the automobile sector) - not least because of the considerable positive linkages in the areas of technology, entrepreneurship, labour skills, and indigenous industrialization generally which well-designed policies can bring. And because, when applied in the context of southern content, they represent a policy alternative for fostering, through technology unpackaging, standardization, and local manufacture, industrial co-operation and industrial development within the developing countries that could build on and expand the existing industrial capacity of enterprises in even the smaller of the developing countries.

Further, LC must also be seen to represent one policy element of a long-term strategy to develop an industrial structure that is complementary with the industrial structure of the industrial market economies. By continuing to produce in the traditional industries (such as textiles) the developing countries, while appearing to follow the dictates of international

comparative advantage and to industrialize in a way that would harmonize with development in the industrialized market economies, are de facto putting themselves in a position of competing directly with residual northern producers. These, often being situated geographically in the old industrial areas, are just those industries that are not profiting from the newest impulses to industrialization in the industrialized countries. This produces a North-South conflict situation that leads to the introduction of protectionist barriers by the developed countries and that constrains the potential impulses to global development that are generated by expanding international trade.

On the other hand, by developing themselves as one element in an international production network that harmonizes with the more modern and advanced sectors in the developed countries, the developing countries can develop a complementarily of industrial production within the framework of the intra-firm (i.e., intra-TNC) and intra-sector trade which develops in direct relationship with increases in demand for the output of northern industries (rather than competing for shares of a static market as in the case of textiles). An example of their complementarity would be the production in developing countries of components for autos produced in the developed countries, the demand for the imported components increasing hand-in-hand with the demand for the (at least partially exported) assembled automobiles, thereby generating offsetting import and export flows rather than import flows which compete directly with goods produced primarily for domestic consumption.

Such a long-term development strategy requires, however, conscious government policy to develop the appropriate industrial sectors, one of the possible policy alternatives being LC regulations to establish the industries to participate in the growing volume of intra-firm and intra-sector trade. An evaluation of the benefit of LC, then, is not just that as traditionally calculated in terms of infant industry and import substitution strategies, but also the more embracing consideration that it allows the developing countries to develop a strategy that is more forward-looking and more harmonious with fourishing North-South trade flows than the old inter-firm and inter-sectoral strategy that has traditionally been recommended to them.

In the final analysis, then, a properly conceived policy on LC can be employed to foster the development of indigenous capital goods and electronics, and hence make a critical contribution to the possibility of carrying out an independent industrial policy, but can also generate positive spinoffs for the national economy, particularly in the technology, entrepreneurship, and skill areas, externalities which are often as important, if not more so, than the direct benefits of the policy. It it must be flexible, industry-specific, and part of an innovative set of policy instruments. Because, ill-conceived, it can simply contribute to the inefficient production of simple products which make no positive contribution to the overall development effort and worsen the efficiency of the allocation of resources generally. As in many other areas of the formulation of policies and strategy for industrial development, there is no a priori answer as to the efficiency of LC regulations; it is rather a question of wise design, implementation, monitoring, and evaluation.

FOOTNOTES

1/ A specific example of the maintenance of LC regulations under the different strategic orientations is the case of the automobile industry in Mexico and Brazil discussed below.

2/ One major UNIDO concern has been to foster co-operation among the developing countries themselves in cases where these developments were considered to be beyond their individual capacity.

3/ Where the balance-of-payments consideration is paramount, a degree of flexibility in trading off exports for less LC is permitted in many cases.

4/ See the discussion of technological unpackaging in UNIDO 1985b and the material cited therein.

5/ Where imports are restricted on a detailed, item-by-item basis with a view to guaranteeing a market for local suppliers, the practice is equivalent to an LC policy.

6/ It is the feature of most investment incentives that, while they may be aimed in part at increasing the rate of domestic savings and investment, they are in large part intended to attract foreign investment into certain priority areas. LC regulations on the other hand, while clearly oriented towards increasing output and income, are often primarily imposed as a vehicle for restricting the imports in specific sectors.

7/ See the desk studies presented below and the literature cited therein.

8/ Neither the list of industries or countries is all-inclusive, and has been limited by the information available in Vienna.

9/ See for example, Little, Scitovsky and Scott 1970, Balassa 1982.

10/ Estimates including the effect of LC protection for other developing countries are not available.

11/ See Nam 1981 for evidence on protection in the Republic of Korea.

12/ Or, equivalently, a tariff and a consumption subsidy in like amount.

13/ Westphal 1981, 12. He further notes that the rate of effective protection implied at the start of production is as much as 100%. See also Bell 1982.

14/ Diamond and Diamond, cited in Galenson 1984.

15/ Thus, it is claimed that Japan stimulates auto exports by forgiving a commodity tax on exports; and, by acquiesing in the undervaluation of the yen, gives the Japanese an even greater advantage in the US market. (Iacocca 1984). Crandall 1984, however, cites differences in wage rates, labour productivity, management practices, and inventory costs as the dominant sources of the cost disparity, and is supported in this view by a study by the National Academy of Engineers 1982.

16/ Clearly export-promotion is one possible solution to the problem of limitation of domestic market size; but export promotion in the auto industry without a fairly protected period of protection has not been possible for any developing country. The technical complexity of automotive production requires a fairly long period of learning before international competitiveness can be attained.

17/ These are not, of course, the only reasons for high costs found in many developing countries. Other factors include the taxes and tariffs on components and raw materials, and the cumulative effect of import substitution policy on the cost of input.

18/ The Hyundai Pony is a multi-national product, with a Mitsubishi engine and transmission, a body designed in Italy (and partly stamped out in France), mechanical and electrical components from Britain, technical assistance from Britain, and financial support from Barclays Bank and other overseas institutions. (See Bloomfield 1978 for an extended discussion of these developments.)

19/ At this point one should at least mention what is perhaps the most startling use of LC in the automobile industry. In 1964 the Chilean government prohibited imports of foreign-built cars in order to protect and foster domestic production. At the same time, a minimum local content requirement of 27 per cent was required and the percentage was raised every year. Maddison presents estimates which suggest that Chile paid from $2 to $4 of domestic resources for every dollar of import substitution in the automotive industry. New firms that wished to enter the automobile industry were forced to locate 1600 km from Santiago de Chile. As domestic aviation was heavily subsidized and aircraft were imported at a favourable exchange rate, some of the finished cars were delivered to Santiago de Chile by air. (Maddison 1970.)

20/ Cited in UNCTC 1983, 175.

21/ This may be compared with the other Latin American developing countries with lesser LC, where liberal policies have also been adopted, but with less foreign penetration. See UNCTC 1983a, 108.

22/ Such legislation can also serve other purposes: in the Mexican case the government regulations strengthened the country's bargaining position in its negotiations with IBM and led to an increase of over 1300 per cent in the capital investment to be made by IBM in Mexico, as well as to the agreement that IBM would develop a horizontal industry of fundametnally mexican suppliers. (The New York Times, 24 July 1985.)

23/ This subsidy was granted on the condition that production had at least 78-95 per cent LC, depending on the type of vehicles. World Bank 1983, 121.

24/ The information is drawn from UNCTC 1981, unless otherwise specified. For a general discussion of vertical linkages and TNCs, see Lall 1978.

25/ The largest producer, Chrysler produced around 10,000 vehicles while the smallest, Volvo, had an output of 1,100 in 1974.

26/ This desk study draws mainly on UNCTC 1981 and Lall 1980. Other information comes from UNCTC 1983a and Chaudhuri 1985.

27/ AL is majority-owned by an TNC (British Leyland) while TELCO is almost entirely owned by a group of Indian companies though Daimler-Benz, the original licensor still has some non-voting equity.

28/ This information is drawn mainly from UNIDO 1986b.

29/ For a detailed evaluation of local integration in the Philippines appliance and motorcycle industries see Hill 1982a and Hill 1982b.

30/ This study draws mainly on UNCTAD 1985.

31/ Daewoo Motors, has the most substantial foreign equity (50 per cent owned by General Motors). Chrysler has a joint venture for the procurement, and eventual production, of automotive parts, and Ford has a 50-50 joint venture with Mando Machinery to manufacture auto components (and is reported (Butler 1985) to be holding discussions with KIA Motors concerning the possible purchase of equity in the company)..

32/ On this last point see Baldwin 1984, 608.

33/ See UNCTAD 1985 for a similar discussion related to the capital goods industry.

34/ In cases where national or subregional producers cannot meet the required LC level, the Board can authorize a higher import content. At the same time, to protect against 'over protection', the Board from time to time assesses the levels of protection in accordance with the movement of national and international prices for similar products. LC is also interpreted in a sub-regional sense, in that provision is made for co-production in agreements to be entered into between two or more countries sharing the assignment of the same vehicle, as well as form complementation agreements for the production of parts and components required in both countries, the objective of the agreements being that member countries could specialize in the production of certain parts and components, and thereby more easily attain the required 'critical mass'.

Finally, the AIP also contains provisions for the sub-regional exchange of information covering new foreign investment commitments, the development of new technology in the automotive industry, product specifications, and certification of quality. All of these measures are complementary to the objectives of LC and, like LC, would serve in the long-run to strengthen the technical and economic base of the automotive industry in the subregion.

35/ Rhys, quoted in Painton 1985, speaks only in terms of the automobile industry; but there appears ample evidence to extend this to many subsectors of the capital goods industry generally.

36/ This danger is expanded upon in UNIDO's forthcoming Industry and Development: Global Report 1986 (UNIDO 1986a).

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