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Content Protection, Import Substitution and Economic Growth

Bernard E. Munk*

The automotive industry in Latin America has been the concern of several recent research efforts.^{1/} It now seems useful to not only indicate some of the principal findings of that research, but to imbed this work into the larger context of import substitution as a growth strategy for developing countries. I will first very briefly describe the protective arrangements governing the automotive industry in several countries in Latin America and report some evidence on the economic costs of these programs. I will then try to indicate how this research relates to an emerging set of ideas on how growth should be promoted in the developing countries and compare these ideas to past, and all too unfortunately, current practice in many of these countries. Finally, I should like to comment on the implications of this analysis for U. S. aid policy.

Since the late 1950's the process of import substitution has been accelerated in a number of countries. All too frequently one finds that the typical Latin American country imports very few finished consumer goods and supplies its own domestic requirements for these commodities by domestic manufacture or assembly. In some countries such as Argentina and Brazil, the process is virtually complete. Furthermore, these countries now produce many of the capital goods necessary for the manufacture of locally produced consumer goods. This has been particularly the case in the automotive industry. By explicit protective measures, a number of countries have attempted and succeeded, if physical output is used as the success criterion, in developing their own automotive industries. This development in Latin America is part of a worldwide trend toward replacing the exports of finished vehicles from the developed countries as the major source of domestic automotive requirements by output produced locally. In Latin America, no less than seven countries are now engaged in the manufacture of vehicles in some form: Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.

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^{1/} See e.g., Jack Baranson, Automotive Industries in Developing Countries, International Bank for Reconstruction and Development, Washington, D. C., 1968; Jack Baranson, "Integrated Automobiles for Latin America," Finance and Development, December 1968; Leland J. Johnson, "Problems of Import Substitution: The Chilean Automobile Industry," Economic Development and Cultural Change, January 1967; Bernard Munk, "The Welfare Costs of Content Protection: The Automotive Industry in Latin America," Journal of Political Economy, January-February, 1969.

Argentina, Brazil and Mexico are the three that are most advanced in this process, and they are paying the highest costs for their questionable progress.

We may term the protective arrangements that have induced this relocation of production as content protection. Content protection is a system of protection that combines tariffs on the finished commodity with limited entry privileges for imported inputs, subject to the requirement that a certain fraction of total activity takes place within the protecting country. Activity in this context may take on any one of several different meanings. It may be defined in terms of cost or value of output, or even in some cases, by weight of the product. The differences between existing content systems can be characterized in terms of the following criteria:

- (a) the conditions of entry of the final product--for example, can final product be imported at all? If so, what duties apply?
- (b) conditions of entry for intermediate inputs to the finished commodity.
- (c) the definition of domestic content.
- (d) the amount of required domestic content necessary to qualify to locate in the country.

The salient features of content protection can be most easily grasped by considering a simple example. Suppose a country requires that if a firm is to operate in the home market, 50 per cent of the total cost of the vehicle must be accounted for by using domestically-produced parts and materials. Assume that imports of the finished vehicle are prohibited.^{2/} The firm's problem is to choose those parts of the vehicle that should be locally procured. If the firm attempts to minimize costs, it is easily seen that in effect the firm tries to choose parts on the basis of comparing domestic prices to the costs of procurement abroad. If the costs in the home market are higher than the costs of importing, the firm will rank domestic parts by the excess of domestic over c.i.f. costs and find that bundle of domestically-produced parts that simultaneously fulfills the content requirement and produces a car at minimum cost. The higher the content requirement, the more domestic parts that will be required. From the standpoint of

^{2/} Prohibition of finished vehicle imports can be regarded as the result of a sufficiently high tariff on vehicles. This assumption simplifies the exposition without altering the major conclusions.

assessing the economic welfare effects of these systems, two aspects of these content systems are relevant. First, the total cost of vehicles produced under the content system will be higher, the higher the content requirement. Second, unit costs of the complete vehicle rise at an increasing rate when expressed as a function of the domestic content requirement.

One of the ostensible reasons for imposing such systems is to save foreign exchange. Ignoring repercussions in the rest of the economy, this means that the higher the domestic content requirement, the more foreign exchange saved. But because the domestic resource cost of parts exceeds the c.i.f. cost of importing these same parts, it becomes increasingly expensive to substitute local for imported materials. Thus, content systems offer a good illustration of the results of import substitution policies: the larger amounts of foreign exchange to be saved, the higher the domestic resource cost necessary to save that foreign exchange.^{3/} Further, each additional unit of foreign exchange is saved at progressively higher domestic resource costs.

The problems that follow from these import substitution policies are quite obvious. For rational development policy we need to know how expensive can such programs be; how can the domestic costs of producing larger and larger amounts of domestic content be reduced; which lines of activity within an industry are to be encouraged and which discouraged; and, finally, what are the implications of these policies if a number of countries undertake them simultaneously?

Let me now turn to these questions first by focusing on the resource costs of these programs. The easiest way of conveying these costs is to discuss them in terms of how much a country pays to save foreign exchange. If we measure total costs of producing the vehicle in domestic currency and foreign exchange saved in dollars, this would give us a figure with the same dimensions as an exchange rate. Now Pareto Optimality implies that if a country has an optimal mix of import substitution and export promotion activities, exports and imports should be so arranged that if the equilibrium exchange rate were say one peso to one dollar, an extra unit of domestic production instead of imports would cost more than one peso per dollar saved and an extra unit of exports would earn less than a dollar per peso expended. To put it in a different but equivalent way, excess domestic over world costs should be zero, per dollar of foreign exchange earned or saved. In Argentina,

^{3/} Import substitution can and does take place naturally without the stimulus of protective policies. It is the policies designed to deliberately stimulate import competing industries that are the subject of this discussion. See, for example, Reed J. Irvine, A Central Banking Approach to Problems of Import Substitution, Annals of the Seventh Meeting of the Central Bank Technicians of the American Continent, 1963, Vol. 2, p. 167.

Brazil and Mexico, these programs seem to involve premia of at least 10 per cent and as much as 100 per cent.^{4/} In my work on Colombia, I report figures in excess of that for certain vehicle lines.^{5/}

To those familiar with tariff rates, premia of 10 per cent, 50 per cent, or even 100 per cent may seem small--and indeed the welfare costs of a tariff on a particular product of 100 per cent would be relatively small.^{6/} But content protection is a different sort of animal. A 50 per cent premium over the existing exchange rate means that, for example, if 100,000 vehicles are produced instead of imported and if the average world cost of a vehicle is \$2000, the country saves \$200,000,000, but at an additional domestic resource cost of \$100,000,000. That is, the country uses \$300,000,000 of domestic resources to save \$200,000,000 in foreign exchange. This might be contrasted to an export promotion program that converts \$300,000,000 of domestic resources into \$300,000,000 of foreign exchange.

Conservatively, I have estimated these foreign exchange premia in Argentina at 50 per cent, in Mexico at 70 per cent and in Colombia at between 30 and 80 per cent. For certain truck lines they seem less, say 10 per cent to 15 per cent in Brazil.^{7/} In 1967, Argentina produced 177,500 vehicles, Brazil in excess of 228,000 vehicles, Mexico more than 131,000 and Venezuela, Peru, Chile, Colombia and Uruguay as a group, more than 114,000.^{8/} It is not difficult to see that the real costs of these programs can be and are quite high.

There is another side to this, relating to the fact that production of automobiles seems to be subject to increasing returns to scale.^{9/} Larger volumes should imply, *ceteris paribus*, lower costs. Thus, there appears to be a trade-off; scale versus content. Here again, we see another parallel to the overall process of import substitution. If volume could be increased, costs might fall, and this could mean less domestic resource costs per unit of foreign exchange saved. This, I think, can be said to be a principal rationale for the development of LAFTA. How sanguine can we be about this method of cost reduction?

4/ These estimates are derived from Bernard Munk, 1969, op. cit.

5/ The data on Colombia are taken from Bernard Munk, "The Colombian Automotive Industry: The Welfare Consequences of Import Substitution," U. S. A.I.D. Contract 514-91-T, (1968).

6/ For an analysis of these costs, see Harry G. Johnson, "The Costs of Protection and the Scientific Tariff," Journal of Political Economy, August 1960.

7/ Munk (1968), op. cit.

8/ See the data reported in Jack Baranson, "Integrated Automobiles for Latin America?", Finance and Development, 1968.

9/ For a review of the evidence on scale economies in the industry, see Munk (1968), op. cit.

Some evidence accumulated on the trade-off between scale and content suggests that for a given content requirement, every 1 per cent increase in volume will lower costs by say .14 per cent while for constant volume, an increase in content of 1 per cent would increase costs by about 1/3 of 1 per cent. These data seem to imply that to reduce a cost premium of 50 per cent to zero, at a volume of say 200,000 and a content level of say 80 per cent, the country or the entire market would have to increase its volume nearly 4 times. In fact, from evidence that I have found in developing economies, the prospects for cost reduction are even more dismal. To reduce a 50 per cent cost premium to zero, might well require a five-to sevenfold increase in volume. This magnitude of output expansion will require exports to the world market, and not merely production for local requirements.

What about the problems that arise from the simultaneous development of the industry in several countries? The key to possible interchange agreements on industrial products in Latin America is the potential for cost reduction made possible by specialization of parts production between countries. The difficulty, however, is that there is a natural evolution in the development of the automotive industry in the LDC's. First, the least cost parts--in terms of world cost--are products, such as paints, lubricants, glass and minor trim items. Then, as more content is required, the most costly items are domestically sourced: stampings, casting and forgings. This means, however, that if content levels are moderately high, there will be considerable overlap in what is actually produced between countries in Latin America. Yet each country wants to retain that part of the industry that is both most costly and most technologically sophisticated such as certain stampings, castings and forgings. Thus, while the potential benefits are large, the difficulty in negotiating agreements is likewise immense. Second, such a trade pattern implies significant amounts of cross-shipment of parts between countries that have highly underdeveloped transport networks. Finally, each country wishes to carry out this trade within the constraint of balancing its trade bilaterally. The economics of bilateralism are most dubious, however. Efficient production requires that production should be expanded in low-cost areas and contracted in high-cost areas--the very opposite of bilateral balancing.

Several times, I have alluded to the remarkable parallelism between the difficulties of import substitution in the automotive industry and those difficulties encountered in the application of the import substitution path to rapid growth. In recent years, a number of economists who have concerned themselves with the welfare costs of import substitution in the LDC's have come to similar conclusions regarding the efficacy of import substitution as a growth strategy.^{10/} There now

^{10/} See, for example, the work done by Baranson and Irvine cited above as well as Anne Krueger, "Some Economic Costs of Exchange Control: The Turkish Case," Journal of Political Economy, October 1966. See also Reed J. Irvine, "How to Go Broke While Saving Foreign Exchange," Swarajya Annual, 1967, pp. 153-156. (Reprints available from Asia, Africa and Latin America Section, FRB).

appears to have emerged the beginnings of a consensus on some basic principles of efficient growth in the LDC's and I would now like to discuss these ideas, particularly in relation to earlier notions and show how the history of the automotive industry in Latin America fits in as a case study of the older--and somewhat empirically threadbare--notions of economic development.

An integral element in these older thoughts on development involved an equating of growth with industrialization, and industrialization was usually defined in terms of a manufacturing sector that produced the wide variety of consumer and capital goods characteristic of the advanced countries. This desire for a manufacturing sector was further buttressed by terms of trade arguments that suggested that the LDC's faced a bleak future since income growth in the advanced countries would imply a slowing of growth of demand for primary products while demand for manufactured goods in the LDC's would expand more rapidly than their incomes.

The mechanism of the planning process often involved little more than the development of an input-output table and the use of this technique to select industries for local development on the basis of their potential import saving. Thus, a high marginal import coefficient frequently was considered a necessary recommendation of an industry, quite independent of the country's comparative advantage.

In more sophisticated treatments, there developed the so-called two-gap models in which there were two potential constraints on development: saving and foreign exchange.^{11/} Frequently, it was the latter that was the binding constraint. This analysis dovetailed into recommendations for U. S. aid policy. If the required amount of domestic saving could be generated to keep a country on its targeted growth path, and if a foreign exchange gap appeared, international aid could be used to fill the foreign exchange gap and sustain the country's growth program.

The chief device for implementing such a growth strategy was a high degree of protection that often provided the stimulus to foreign firms to locate behind the tariff barrier. The automotive industry is a particularly good case in point. Extreme versions of such a process can be found in Brazil's Law of Similar which said in effect that if a product were produced domestically, similar type imports could be prohibited. Professor Myint of the London School of Economics has termed this strategy "inward looking."^{12/} A major

^{11/} Hollis B. Chenery and Alan M. Strout, "Foreign Assistance and Economic Development," American Economic Review, September 1966.

^{12/} See Hla Myint "International Trade and the Developing Countries," paper presented to the International Economic Association, International Congress on the Future of International Economic Relations, Montreal, September 1968.

consequence of these policies was the rapid proliferation of high-cost import substitution industries, discouragement of exports, and as a result of a mistaken belief that high costs were the sole result of small domestic markets, a trend toward regional trade areas that would spread the cost of protection over larger volumes.

On the other hand, starting with the observation that the need for foreign exchange appeared insatiable, and that the costs of import substitution could be extremely large, recent years have seen the development of what Myint has called an "outward looking" strategy.^{13/} Key elements of this new orthodoxy are the following:

(1) The exchange rate plays a critical role in the development process and it is extremely important for a country to maintain a realistic foreign exchange rate. If internal inflation is substantial, the rate must be readjusted, preferably in a continuous manner to avoid penalizing exporters and preventing excessively costly import substitute industries from developing.

(2) The relevant market for the developing economies is the world market and programs of export promotion offer a promising route for lowering domestic costs.

(3) Agriculture should be modernized via improvements in technology and investment. Not only social overhead investments that permit a more efficient use of resources but investment in the human agent is justified on the grounds that an important input to agriculture, as well as other production, is the human agent and that substantial returns to human capital are available.

(4) Tariff structures need to be reformed to shift resources away from inefficient uses. Of particular importance is the notion of effective protection.^{14/} This concept stems from the observation that a tariff on a final good acts as a subsidy to the producer of that good but a tariff on an input is a tax on the user of that input. Hence, the relevant measure of the protective impact of a tariff system is not given by its structure of nominal rates but by the effective rates on each value-adding activity in the economy. An obvious recommendation following from this concept is that equal effective tariff rates allow a country to discover its comparative advantage and that equalizing effective rates means equalizing nominal rates. Finally, there is a growing awareness that governments need not have any special skill in

^{13/} See Donald B. Keesing, "Outward-looking Policies and Economic Development," Economic Journal, June 1967, and Robert F. Emery, "The Relation of Exports and Economic Growth," Kyklos, Vol. XX, 1967.

^{14/} See H. G. Johnson, "The Theory of Tariff Structure with Special Reference to World Trade and Development," Trade and Development, Geneva, 1965.

locating a country's comparative advantage and that an evenhanded tariff-cum-exchange rate-cum-industrial policy that does not deliberately bias a country toward the development of allegedly foreign exchange saving industrialization may, in the long run, be the best inducement to specialization and exports.

It is easily seen that this "new orthodoxy" is in reality a return in part to older notions of comparative advantage and to the role placed by trade as an engine of growth. There is even some evidence that some of these lessons are being applied. Witness the recent evolution of exchange rate policies in Chile, Colombia and Brazil and the frequent references to the need for tariff reform and export promotion.

I now wish to conclude by drawing some inferences from the import substitution experience in Latin America for our own aid policy. While doing so, I want to make clear that none of this should be taken as an indictment of past or present policy. In many ways, this new orthodoxy is being capably represented within our own aid programs as well as in some international institutions. But as a new administration takes office, it may be appropriate to consider whether some new orientation is desirable.

I would think that a desirable point of departure would be for the U. S. to give a clear statement on the importance of a realistic foreign exchange rate policy. This appears to me to be a sine qua non of development policy.

Second, we should re-orient ourselves away from the notion of aid as "filling the foreign exchange gap" and toward utilizing aid for investment in social and human capital. In particular, the development of educational, research and training programs in developing areas has much to recommend it, not only on social welfare grounds but because education in a broad sense is an important contributor to growth.

Third, on our part, we ought to encourage developing areas to expand their exports. To do this will require elimination of many of our own trade barriers on the exports of agricultural products and semi-manufactures. This policy can be defended not only as good development policy but it is also in our own interest as well. Some evidence now exists that our own tariff structure could be an impediment to their exports.^{15/} We should be prepared to move on the issues of both tariffs and non-tariff barriers on our own initiative.

^{15/} See, for example, Giorgio Basevi, "The United States Tariff Structure: Estimates of Effective Rates of Protection of United States Industries and Industrial Labor," Review of Economics and Statistics, May 1966, and Johnson, op. cit., 1965. The argument that the U. S. tariff structure may impede exports of the LDC's needs to be seen in perspective. It may be that failures to reduce production costs in the developing

Finally, I would hope that in our desire to move the developing countries away from their over-emphasis on import substitution, we could reciprocate by untying all of our own aid. While it is only conjecture on my part, I wonder how much our own programs of tying aid have helped reinforce these countries in their zeal to promote import substitution in spite of the apparent high resource costs of such programs.

countries are a more serious source of poor export performance. Indeed, much of the force of this paper contends that cost behavior in the developing countries is where attention ought to be directed. Nonetheless, while the U. S. can only take indirect measures to assist developing countries in achieving lower costs of potential exports, it can take direct action to assist in developing markets for these exports through modifications of its own tariff structure.