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**A Preliminary Survey of Import Substitution**

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**Note: This is part of a working paper, presented to a seminar of the Economics faculty at Williams early in its study of import substitution under a research contract with AID.**

**September 20, 1965**

**(revised)**

"I meant by 'impenetrability' that we've had enough of that subject, and it would be just as well if you'd mention what you mean to do next, as I suppose you don't mean to stop here all the rest of your life."

"That's a great deal to make one word mean, Alice said in a thoughtful tone."

"When I make a word do a lot of work like that," said Humpty Dumpty, "I always pay it extra." /2/

By these rules, "Import substitution" should be paid extra since it has been used to mean many different things. This paper is intended, therefore, to clarify or at least specify some of the issues and ambiguities surrounding the discussions of import substitution in the hope that future efforts can thereby be more efficiently directed. It makes no pretense at originality.

There is wide agreement that import substitution means "the domestic production of that which would otherwise have been imported."<sup>1</sup> But agreement here only pushes dissent back a step since few will agree on what "...would otherwise have been imported..." As with any game of What Would Have Been, the outcome is often determined by unspecified assumptions. So this phrase sets the outline of the ambiguities surrounding import substitution.

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<sup>1</sup> or "an increase in...", but that is not an issue here.

## A. HISTORY OR POLICY

The most important variable in studies of import substitution is their focus -- whether they describe a long run historical pattern of import substitution (coincidental with time, growth, increasing autarky or something) or whether they deal with a policy by which import substitution is to be induced.

This distinction is critical in part because of the attention received by Chenery's attribution of an important place to import substitution as a cause of economic growth /3/.<sup>2</sup> It has been too easy to suggest from his evidence that a policy of import substitution can cause growth. Much of the persuasive appeal of this suggestion could have been avoided had Chenery spoken of import substitution as "a concomittant" of economic growth or something else, rather than "a cause" -- the smell of post hoc is awfully strong.

But the issue is more than a logical nicety since the conditions under which import substitution occurs are very different in the two cases. Chenery's study referred to import substitution as a change in the pattern of a country's imports brought about by changes in comparative advantage. These, in turn, he saw as the result of changing relative factor endowments, increasing labor skills and the economies of scale that result from expanding incomes. Import substitution induced by these long run structural changes is a far cry from the import substitution that may be brought about by a policy of closely licensed imports under disequilibrium exchange rates and it is highly improbable that a relative increase in domestic production under these two very different circumstances would have the same effect on a country's growth. In short, import substitution may always accompany economic

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<sup>2</sup>This is no place to quibble about the historical applicability of cross section results.

growth, yet a policy that induces import substitution may have repercussions that stifle growth. Whatever else we can learn from extant long run historical or cross section studies, they are not going to tell us whether an import substitution policy will encourage economic development.

## B. GROWTH OR AUTARKY

Accepting our primary interest in import substitution policies, the next question is the purpose of an import substitution policy. Imports can be reduced relative to domestic production (or relative to What Would Have Been) in order (a) to achieve a higher rate of growth of income or (b) to achieve a lesser "dependence on" or "vulnerability to" the actions of foreigners.

There is little question that the primary concern of our study is growth and that autarky as a social goal may be antithetical to growth. But though the gospel of autarky may arise from ideology, its recommendations will often parallel those of that large body of pessimists who see developing countries as facing declining exports (and capital flows) hence the necessity to reduce dependence on foreigners through import substitution. Both are autarkic since each, for its own reason, ignores export expansion and tries, instead, to reduce  $M (=X)$ .

An apparently similar if less emotional point rests on the idea of the "essentiality" of imports -- that dependence on foreign supplies per se may not be objectionable, but, due to weather, war, shipping strikes or cycles in advanced nations, the country's export earnings will fluctuate and -- applying Stigler's classic point /11/ to aggregates -- any policy that reduces a country's ability to change its level of imports in this uncertain

world carries an appreciable cost. In simplest terms, this cost is measured by the increase in required international reserves (in an assumed capital-poor country). Note that a policy of minimizing the essentiality of imports deals with import composition, rather than level -- a distinction to which we will return. Still it concentrates on dependence and vulnerability.

Looking more closely at these apparently similar concerns, an interesting conflict appears. On the one hand, the traditional view that the exporter of primary products faces limited world demand for its exports (with or without declining terms of trade) sees the country as suffering an import (= export) constraint to its growth. Given fixed imports, then, growth of domestic income obviously requires a reduction in the ratio of imports to domestic income. So on this basis, more "independence" from foreign trade would be found through a reduction of import coefficients.

On the other hand, if a country "replaces imports" by an import substitution policy -- producing finished goods domestically, and using its imports for goods at progressively "earlier" stages of production -- it increases the proportion of domestic value added that is supported by its imports and thereby reduces the flexibility of imports -- increases the domestic cost, in lost income, of any given change in imports.<sup>3</sup> It is obviously cheaper for a society to cut back \$100 worth of finished rayon shirt imports that support \$3 of domestic income and employment than it is to cut back \$100 worth of chemical cellulose that supports a \$500 output of rayon shirts and \$400 of domestic incomes and employment. In importing progressively less processed products, imports will have become more complementary to domestic income and employment,

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<sup>3</sup>Unless substitutability with domestic production is increased concurrently, which seems unlikely.

increasing the social cost of variations. This comes up again later in a critical way.

So the static or smooth equilibrium path argument discourages a country's dependence on imports per se, calling for lower import coefficients, while the emphasis on flexibility stresses a country's vulnerability to fluctuations in foreign demand, hence its "independence" from trade is to be found by increasing the import coefficients so that any necessary change in imports is less magnified in its impact on domestic income and employment.

Barring evidence to the contrary, however, the contradiction between these concepts of "independence" would not seem to require our attention simply because too many factors are likely to modify the conclusions of this very simplified sort of model. First, systematic "movement back" in the level of processing of the products imported will not affect all industries at the same time -- it will proceed unevenly between industries (as it must in light of the interrelationships on the supply side). There would, on this count, be a residual of "non-(or less-)essential" imports which could be varied with little impact on income and employment.<sup>4</sup> This consideration would certainly recommend against concentrating all imports in intermediate goods, but it wouldn't recommend against any or even most imports being made up of intermediate goods.

Second and more realistically, both Chenery's evidence /3/ and Kindleberger's emphasis /7/ suggest that for the most important aspect of "import substitution" is the change in the pattern of imports and demand. The pattern of imports changes not systematically, only because imports increasingly consist of goods that are less highly processed, but also because of changes in the pattern of final use -- new

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<sup>4</sup>Though this is certainly not the sole criterion on which such decision of "essentiality" would be made.

products are imported as the old ones are increasingly domestically produced.

Both of these considerations reduce the threat of inflexibility in the process of "moving back" in production stages of imports. But they stress the importance of the composition of imports.

### C. AGGREGATE, SECTORAL OR INDUSTRIAL

All this immediately implies something about the need for disaggregation.

Autarky (in its ideological as well as unexpandable-export-market versions) requires a decline (relative or absolute) in aggregate imports. Its rationale depends on aggregates and, as illustrated above, autarky stands up less well in either version when disaggregation is accepted. (Note, too, that on the export side, "disaggregation" leads to less pessimistic views of the possibilities of expanding exports).

But import substitution defined with regard to aggregates -- say as a declining share of imports in GNP -- runs into two troubles. First, a decline in the ratio  $M/GNP$  cannot be identified as "import substitution" any more than as "export atrophy," "capital contraction" or "reserve expansion." In the long run, imports have to equal exports plus capital inflows -- changes in aggregate imports can have too many causes. Second, there seems to be little correlation between relative aggregate imports and economic growth. Though he didn't report it as such, the results in Chenery's "Patterns..." /3/ show that there is no significant change in aggregated  $M/GNP$  despite the very real changes in similar ratios disaggregated for industries and sectors among the countries studied.<sup>5</sup> It

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5. His Table 4 /3, p.634/ shows the results of the regression  $M = Y_0 Y_1^1 Y_2^2$  so that  $M/Y = Y_0 Y_1^{(Y_1 - 1)} Y_2^2$ .  $(Y_1 - 1)$  is  $-.013$ , but  $Y_1$  has a standard error of  $.069$ . This is not significantly different from zero hence it does not indicate a systematic change in the proportion of aggregate imports with increasing income.

in which the data and concepts were  
would be better to run another study / entirely comparable between

the sectors and aggregates (his are not). But it is probably not worth it unless we somehow attribute some significance to the aggregate measure.

The aggregate ratio of imports to income has not been related to development, but ratios of important subgroups have. So the focus of attention on industrialization as the sine qua non of development shows that both in cross-section /3/ and in time series for selected countries /4/, there is a systematic decline in the ratio of imports to total supply of specific industries and industrial sectors as industrialization and development proceed. It is in this sense that Chenery attributes a large part of "the cause" of industrial development to import substitution. But it is important to stress again that increasing ratios of imports to output for industrial goods along with a constant ratio for the aggregates implies either increasing relative imports of some other goods or, more reasonably, the importation of new goods.

The other dimension of disaggregation is also pertinent to a description of past or "natural" import substitution as well as to policies of import substitution. This refers to the differential impact of import substitution between industries when they are classified into consumption, intermediate, and capital goods sectors. Again using Chenery's data, the importance of a declining ratio of imports to supply in explaining domestic growth is greatest (77%) for capital goods, somewhat less (66%) for intermediate goods and quite a bit less for consumption goods (13%). Just what these numbers mean is a question to which we will return but it would seem that our attention, initially at least, should be directed toward these last two measures.

#### D. FIXED INVESTMENT OR INCREASED INVESTMENT

A good deal of Australian energy was needlessly expended for want of explicit recognition of this dimension of import substitution. An import substitution policy can have either of two effects (or both): (a) it can influence the allocation of the country's fixed quantity of investible resources, favoring investment in those industries that produce import-competing goods or (b) it can change the level of investible resources available to the country. The difference between these is the complexity of the secondary effects of the investment that have to be considered. If total investment is fixed and its allocation alone is the question, then income effects of an investment in an import competing industry can be ignored. The fixed amount of investment would have increased incomes anywhere and the fact that this investment is in an import-competing industry makes no difference.<sup>6</sup> But if the investment in an import competing industry is net new investment that would otherwise not have taken place, then in addition to the direct effects of that investment (on saving, consumption, imports, output) it must be credited with the indirect effects that derive from higher incomes and employment. "Import substitution" -- as a reduction of imports that results from such an investment -- may then be negative if the direct import content of the product of investment plus the income-induced imports are sufficiently large. (Note that this is an absolute increase in  $M$  but not an increase in  $M/Y$ . We'll return to the touchy proportionality question below.)

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<sup>6</sup>This is an oversimplification, of course. It can make a difference if (1) capital productivity is systematically different between import substitution investments and other investments or (2) if there is something that changes the behavior of saving out of income arising from these two classes of investment. My guess would be that such differences are unlikely -- that where such differences are found they are more attributable to sectoral or product differences than to import substitution or non-import-substitution investment. I know of no evidence on this, however.

The only suggestion of a direct effect I've found in the literature whereby import substitution policies influence the level of investment is that proposed by Harry Johnson /6/. He describes the results of import substitution policies -- changing the relative profitability of importation and domestic manufacture of a product -- as one that induces the former supplier to set up a branch within the country rather than give up the market. This, of course, is what has happened -- in another context -- with American firms in face of the common market. The investment is a net addition to capital inflow induced by the policy of import substitution. But if this is, in fact, a typical result of import substitution policies -- that they bring with them foreign ownership and control -- then a number of additional questions are raised that revolve around the efficiency, motivation, competitiveness and appropriateness of techniques of production by these firms. If import substitution policies lead to the growth of foreign ownership in the industrial sector this fact might recommend a very different direction of study.

Another case of feedback from import substitution policy to the level of investment resources available for growth would be found if aid agencies were to try crudely to encourage such policies with more or easier capital for those projects that represented import substitution. Although I know of no such bias in AID, the World Bank or whatever, it, like the case above, would complicate the study of import substitution since it would no longer be an issue of investment allocation alone.

The proposals by Power /10/ and Bruton /1/ should be mentioned here since both of them, too, involve a feedback on investment levels. But they differ from the above in two important respects: (1) the feedback is dynamic -- today's actions affect future levels of investment rather than present levels as above -- and (2) though they may --

even universally -- be incorporated in particular import substitution policies, they are logically separable from import substitution as such.

Power's is a model of "capital embodied demand" -- a development of the fact that a pattern of future demand may be ordained by the composition of the capital stock. If there is little substitution in use between capital and consumption goods, the allocation of current investment will constrain the future division of income between consumption and saving and therefore, ceteris paribus, the future rate of investment and growth.

To be pertinent to the study of import substitution, however, it must be shown that there is something particular in an import substitution policy that increases the risk of embodying the wrong future pattern of demand ("wrong" in that it's inconsistent with planned consumption and saving). But even if it could be shown that policies of import substitution magnify these risks of embodying inappropriate future demand patterns, it would seem preferable to deal with capital embodied demand as a general aspect of plan consistency, not only as it appears in the restricted segment of the plan that is import oriented. For this reason -- and because it seems to be a very fruitful direction for study -- I will deal with capital embodied investment patterns in a separate paper.

Bruton's suggestion /1/ starts from a very different base, but evolves in similar ways. The allocation of investment may ignore the import content of the products that that investment is to produce. Then the possibility arises of a marginal import content of the product of investment that is greater than the marginal increase in available imports (net increase in exports, aid, et al plus import substitution). The result is unemployment

of capital because of the import constraint. Then the lower income results in lower saving on the income side while the unavailability of imported intermediate goods lowers the profitability of investment on the expenditures side.

Again, it might be that this tendency to overcommit the increment in imports necessary to utilize new investment is somehow inherent in new investments are in import substitution industries, though it's not self-evident. If not, this possibility is not, per se, pertinent to import substitution, but it is possible that the remedy may be found in an import substitution policy -- in investment in those products which, though they may have high import content themselves, reduce the demand for import by other industries more than they directly increase the demand for imports -- the net effect being a reduction in required imports. This investment criterion might well be developed further as a guide to planning.

Finally, the proposed Williams study has suggested that investment in import substitution industries can feed back on future investment in yet another way.

In sequence:

- (a) protection of manufactured goods leads to import substituting investment in finished goods which then require imported intermediate goods for their production so
- (b) this shift in imports from finished to intermediate goods increases the "essentiality" of imports by increasing their complementarity with domestic income and employment so that
- (c) in response to this increased essentiality the government makes imports of intermediate goods available to domestic manufacturers at favored

terms -- through differential tariff, easier licensing, or whatever, relative to the finished goods. This means that

- (d) import substitution investment in these intermediate goods is systematically discouraged both by a level of protection that is absolutely lower than that afforded finished goods, and by the additional protection to consumer goods implicit in favored prices for their inputs.

So the quantity of investment allocated to "import substitution" industries may be initially high but, due to the unfortunate response to the increased "essentiality" of imports after step (a), its composition is distorted and import substitution must stop when opportunities for investment in finished goods are exhausted.

#### E. WHAT DENOMINATOR?

With few exceptions, import substitution is measured in relative terms so it is important to be in agreement about what it's relative to. Imports have been compared (1) to total supply (2) to income (3) to domestic expenditure on goods but not on services (4) to total consumption expenditure and (5) to domestic value added. Almost any one of these may be appropriate to a particular question, but the behavior of any two may not be similar.

#### F. WHAT WOULD HAVE BEEN

Once again the distinction between descriptive-historical and policy studies of import substitution is important. In a historical study like Chenery's, the definition of import substitution is pure tautology -- since there is no conventional meaning attached to it, whatever he chooses to call by that name is import substitution. But in a policy study, a

good deal more is involved because, in defining something as import substitution, we imply What Would Have Happened in the absence of such a policy. So there is no basis for arguing with the tautology of a historical study and its definition of import substitution at the same time that there may be room for real disagreement on appropriate assumptions of what would have happened in the absence of any policy of import substitution. (Tinbergen's "forecast step" in planning /12/).

The simplest assumption that can be made is that without a policy of import substitution there would have been no change in the absolute quantity of imports (the level of disaggregation having been previously specified). Then import substitution is measured in absolute terms as a decline in the quantity of imports. The only niggling question that remains (here and elsewhere) is whether "quantity" is in value or real physical terms. Only one author I've found has used this definition and, to no one's surprise, he found that there has been virtually no import substitution over the course of the growth of the Australian economy /5/.

Accepting the need for a relative measure of imports in describing import substitution, the most common of these is that import substitution occurs if there is a departure from proportionality (*vis à vis* one of those denominators specified above). Then import substitution has occurred when there is a decline in the proportion represented by imports -- an increase in domestic production. This is the measure used by Chenery and by Lewis and Soligo /9/. It should be stressed that there can be no faulting Chenery's tautology but there may be a basis for disagreement with Lewis and Soligo if proportionality does not appropriately describe what would have happened in the absence of an import substitution policy.

There are two difficulties with measuring (and defining) import substitution as a change in the proportion of imports to total supply of a commodity (to specify a denominator arbitrarily):

- (1) this definition implies that in the absence of an import substitution policy there would have been a proportional increase in imports and domestic supply -- neither more nor less -- and this seems quite unreasonable. This measure will, what's more, tend to overstate the degree of import substitution in industry achieved by any policy if the forces described by Chenery are operative. This objection would be softened if it were likely that people could simultaneously juggle two separate meanings of "import substitution" -- one a tautological measurement and the other a description of the results of a policy. (Perhaps Chenery's cross section coefficients would make a better base for determining What Would Have Happened).
- (2) this definition takes the study of import substitution out of its context as an aspect of investment allocation. It is virtually impossible to talk meaningfully about what the inducement of investment into import substitution should have been to attain the growth goals.

These correspond to Tinbergen's /12/ simple but helpful distinction between (a) the forecast under the assumption of unchanged policies that is compared to (b) desired (planned) goal so that (c) the difference can be reconciled by active policy. (1) above is (a) while (2) is (c), the quantities involved in reaching the plan by this policy -- What Should Have Happened.

To illustrate, consider Chenery's estimate of the amount of sectoral growth "caused by" import substitution as a change in the ratio of imports to total supply. They were 77% for capital goods, 66% for intermediate goods and 13% for consumer goods /3/.

It would be tempting to suggest that this should lead import substitution policies to stress the more basic -- capital and intermediate goods -- industries. But however desirable such a policy may be, Chenery's evidence says nothing of the sort since measures depending on proportionality of output don't say anything about how much relative investment was allocated where. That the typical underdeveloped country has too little capital formation for sustained growth means that consumption is relatively large; that production methods are unsophisticated so that intermediate goods are relatively less important and a very small absolute change in the size of domestic capital goods and intermediate industries could easily account for the very large relative changes in the domestic production of these goods. For consumer goods the opposite is true -- a large absolute increase in domestic production could represent a small relative increase. If growth is the objective, proportionality would seem to say very little about the effectiveness of investment allocation.

Proportionality falls short of adequately measuring import substitution but I don't know what to suggest as an alternative. Khan's use of expenditure elasticities of demand as the basis for measuring import substitution /8/ seems unsatisfactory for the reasons implied above in discussing the whole business of capital embodied demand -- that it then becomes an issue, not of investment in import substitution per se but of investment import substitution in consumption goods. This goes so far that there is no way to measure import substitution in intermediate or capital goods industries using the Khan definition.<sup>7</sup>

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<sup>7</sup>This is not entirely accurate since capital coefficients would provide an analogous technique for these industries.

Even ignoring this very real problem, because aggregate consumption can be assumed to be under constraint -- total (planned) saving is higher than it would be voluntarily at any given income level. Under this disequilibrium, expenditure elasticities -- the pattern of demand that would follow from increasing incomes under conditions of free choice -- are questionably applicable.

There will undoubtedly be no perfect measure of import substitution for all purposes, but it should be an aim of this study to settle on a measure that avoids the worst failings of the traditional measures. For the time being, I would suggest that we consider both changing proportions of goods imported (by industry and by level of production) and investment in import competing capacity relative to total investment in order to keep the study and analysis in the context of the basic investment allocation question.

These issues of pedantry have to be agreed upon in a broad sense to set the limits to the study. Right answers are not going to emerge but we can (1) establish a mutually consistent vocabulary and (2) be aware of dimensions that can be varied in the context of different questions.

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