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THE TWO GAP APPROACH TO AID AND  
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Henry J. Bruton

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## THE TWO GAP APPROACH TO AID AND DEVELOPMENT

Henry J. Bruton

Within the last decade the "gap analysis" of the role of external aid in economic development has become a significant part of development economics. In a distinguished series of articles Professor Hollis Chenery and various collaborators [1], [9], [10], [11] have not only established a model of great relevance, but, even more impressively, have given that model empirical content of such completeness that great light has been shed on important policy issues. The essence of the gap analysis is the notion that development tends to create situations which at various points in time are characterized by a plentiful supply of all but a few of the factors required for continued development. For these few a gap between the quantity supplied and that required slows growth or halts it completely. When growth is thus limited by a bottleneck, there will be underutilization of other factors. Aid can then serve as a means of breaking the bottleneck thereby permitting a fuller utilization of all resources and a continuation of the development process.

Chenery (read henceforth, Chenery and his collaborators) concentrates most of his attention on two possible gaps, the saving gap and the trade gap. A target rate of growth is postulated and a capital output ratio is accepted as a datum. Hence, a specific saving rate is derived as necessary to achieve the targeted growth rate. Similarly, a fixed relationship between imports and output and the growth of

output is postulated from which one may derive a level and rate of growth of imports required to support the targeted growth of GNP. A saving gap appears when the domestic saving rate is below the level necessary to achieve the target while imports are adequate. In this case aid covers the saving gap and permits the target to be reached, and the import potential is thereby fully utilized. A trade gap appears if the saving rate is adequate, while the flow of imports is below the required level. Here aid breaks the import bottleneck and permits the full saving potential to be realized and the target to be reached. In this latter case the key assumption is that the country is unable to transform its potential saving into exports.

Chenery's empirical material suggests that countries seem to experience first a saving gap, then a trade gap as they proceed with development. And further they seem to have greater difficulty overcoming the trade gap than they do the saving gap. The explanation of this greater difficulty is (in part) due to the fact that as the aid obtained to cover the saving gap is reduced (consequent to the rise in the domestic saving rate) exports must grow more rapidly than imports. It is this necessary increase in the rate of growth of exports that the developing countries have special difficulty (in the Chenery argument) in bringing about. Aid then becomes necessary, not to supplement a low saving rate, but rather to permit the required imports and prevent the "wasting" of saving potential. The two gaps are of course necessarily equal ex post and a major part of the great power of the Chenery studies is in deriving estimates of parameters of a large number of countries such that these gaps may be shown to exist ex ante and their full implications explored.

The purpose of this paper is not to "comment" (i.e. criticize) in the conventional manner on the gap analysis. Rather it is to examine three issues which, though referred to in several places by Chenery, do not receive the full treatment that they seem to merit. A more explicit treatment is useful in itself, and it also shows up certain policy implications somewhat different from those emphasized by Chenery. The three issues have to do with (1) the existence of two gaps during a given short interval of time, (2) the origins of the separate gaps, and (3) some notions as to the role that productivity growth can play in the analysis. These three issues will be taken up in turn.<sup>1</sup>

### I. The Existence of Two Gaps

From the usual form of the national income identities, it is evident that the saving-investment gap and the export-import gap are necessarily equal ex post. For one or the other to be larger ex ante in a given short (or intermediate) run requires specific argument. Consider the trade gap first. Chenery's major argument is familiar. Emphasis is given to a "structural" argument, i.e., in any given time period a developing economy can neither increase its exports at acceptable terms of trade nor decrease its imports (without imposing crippling underutilization on the system). Export earnings for the bulk of products are largely determined by foreign demand conditions, and "a rapid increase in exports typically requires the development of new export products which is limited by productive capacity as well as organizational and institutional factors" [11, pp. 689-90]. Imports are required by the nature and the limited flexibility of the productive system and of

the composition of consumer demand. More generally the argument is that the economy is so rigidly set that neither price adjustments (e.g., devaluation) nor adjustments in the composition of aggregate demand (e.g., increased saving) can reduce the trade gap without penalizing the economy. If then the trade gap is larger than the saving gap, saving potential is wasted as nothing can be done to convert the potential saving into exports. I.e., the resources released by the higher saving rate cannot be used to create the capital or other products required to maintain the development pace. To change this structure requires resources, and time. Aid then supplies the imports necessary to bring about "structural change."

It is this argument that may now be examined.

A. The simplest assumption from which to begin is that all capital goods are imported (and only capital goods are imported) and that all exports are consumer goods. With these assumptions it is evident that to save means to export, and to accumulate capital means to import. Consider Diagram I. Let  $dd$  be the domestic

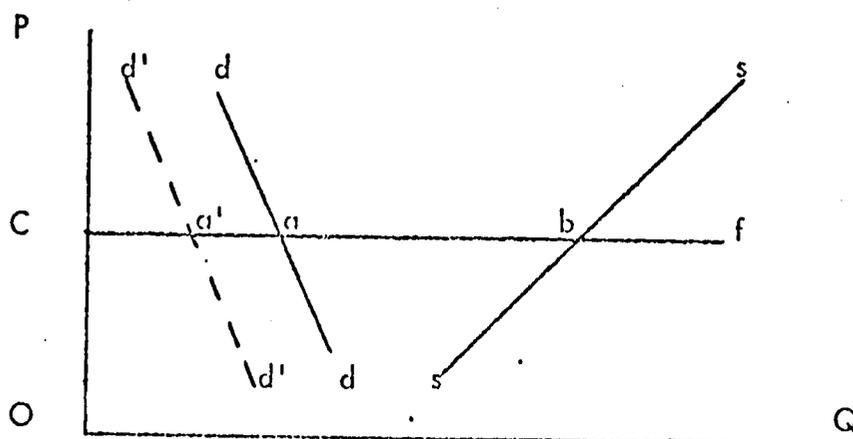


Diagram I

demand curve for a typical export (consumer good) and of the foreign demand curve, i.e., foreign demand is perfectly elastic. The "total" demand curve (the curve relevant to the producers) is  $daf$ . The supply curve is  $ss$  and the quantity supplied at equilibrium price  $OC$  is  $cb$  of which  $ca$  is consumed domestically and  $ab$  is exported. The exports of  $ab$  represent saving, the corresponding imports are capital, and the limitation on the rate of capital accumulation (and hence on growth in the Chenery model) is the saving rate. If the saving rate is increased, the domestic demand curve shifts leftward to  $d'd'$ , domestic consumption is reduced and exports are increased by the same amount. To speed up the growth rate the saving rate is increased. The increased saving rate releases consumer goods which are immediately transformed into capital goods via trade. Evidently there can be no trade gap distinct from the saving gap with these assumptions.

Suppose, however, that the foreign demand curve were vertical, as in Diagram II. (The curve  $tt$  is obtained by summing horizontally  $dd$  and  $ff$ .) In this event an increase in the saving rate -- shown by the shift of  $dd$  to  $d'd'$  --

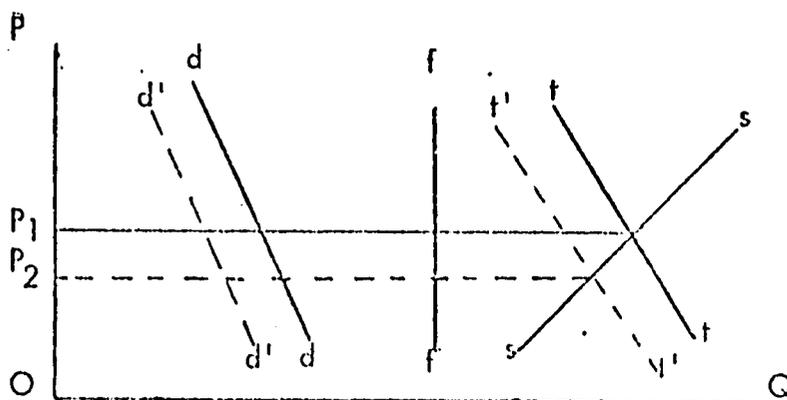


Diagram II

has no effect on exports. Prices will tend to fall, but this cannot help because the foreign demand curve is completely inelastic, and indeed the fall in price must induce an increase in the quantity demanded domestically until the new equilibrium is reached at price  $P_2$ . Evidently a similar result follows if  $ff$  has an elasticity greater than zero but less than unity. If the elasticity of  $ff$  exceeds unity and is less than infinite over the relevant range, the rate of capital formation will rise with an increase in the saving rate, but become increasingly expensive, i.e., a given increase in the rate of capital formation requires "more saving" (more resources devoted to export production) than at price  $P_1$ . At some point the curve will become inelastic and the rate of capital formation will have reached its maximum. If the target rate of growth requires a higher growth rate of capital than this maximum, then a trade gap emerges which cannot be closed by increasing the saving rate. Devaluation will, in domestic currency, shift the foreign demand upward (or rightward); this of course will not solve the problem if the foreign demand curve in foreign currency is inelastic.

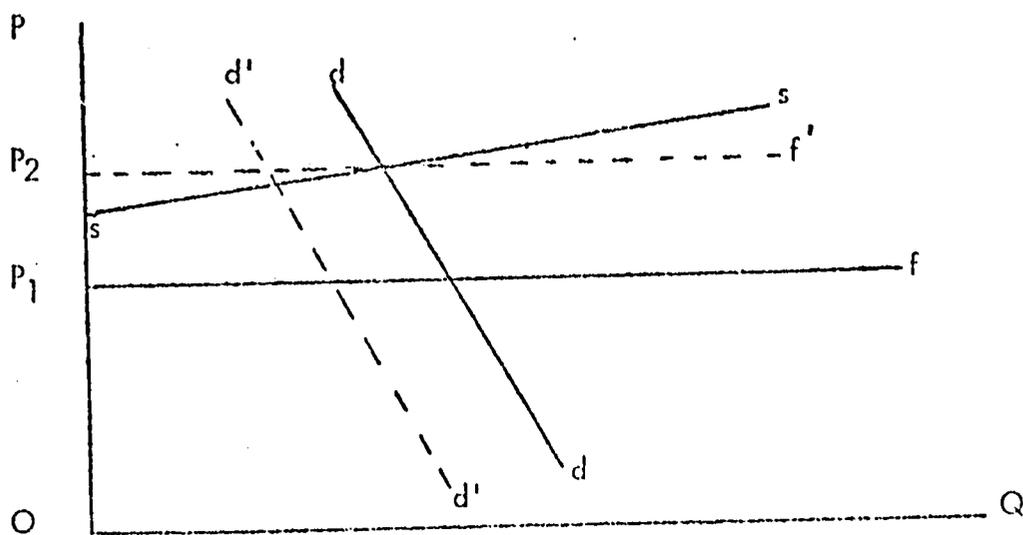


Diagram III

The above explanation of a two gap situation depended on assumptions about the elasticity of the foreign demand curve. There may be a problem on the supply side in a heavily protected domestic market. In Diagram III the foreign demand curve is again horizontal at price  $OP_1$ . At this price, however, domestic suppliers are unwilling to export at all and survive only because they are protected from foreign competition. An increase in the saving rate will move the domestic demand curve to  $d'd'$ , but no increase in exports will be forthcoming. The supply curve's position in Diagram III indicates that (for a given exchange rate) the ratio of factor payments of this country to those in other countries (in this activity) exceeds the ratio of their productivities. Consequently, the country pictured in the diagram cannot compete on world markets, and exports cannot be increased no matter what happens to the saving rate.

In this case devaluation will help. In terms of the domestic currency, devaluation will result in the foreign demand curve rising, and a sufficient devaluation would then push  $P_{1f}$  to (say)  $P_{2f}$ , where increasing the saving rate will necessarily raise the rate of capital formation and the possibility of two gaps disappears.

A common situation in the developing world involves both Diagrams II and III. Diagram II applies to traditional exports, where foreign demand is quite inelastic and devaluation will reduce the rate of foreign exchange earnings. Such exports may constitute a large part of total exports. A non-traditional sector (probably, but not necessarily, manufacturing) newly established may face a horizontal (or almost horizontal) demand curve, but its costs be such that it is

priced out of the world market. This sector now constitutes a very small portion of total exports, but devaluation would raise foreign exchange earnings in this sector. With a very large traditional sector and a small "new" sector, devaluation may not produce increased foreign exchange earnings. But a dual exchange rate would. If dual exchange rates are not accepted, it is still a bit misleading to call this situation one in which two gaps exist. Without two exchange rates there indeed can be two gaps, but they exist not for "structural" reasons, but because of the inability (or unwillingness) to pursue a policy that would reduce the two gaps to one.<sup>2</sup>

The conclusion then seems to be this: with a given structure of productive capacity where only consumer goods are exported and only (and all) capital goods are imported, the existence of two gaps depends on the existence of an inelastic foreign demand curve for all sectors of the economy. The analysis built around Diagrams II and III suggests this condition to be unlikely.

B. In the preceding argument the assumption was made that no capital good sector existed in the developing country. Suppose now, however, that there is such a sector, but continue to suppose that only capital goods are imported. There are two consequences of the relaxation of this assumption, one obvious and one not so obvious.

1. Obviously if a country has a capital goods sector, it may transform a part of its saving into capital without going through international trade. Hence, the rate capital formation required to reach the targeted rate of growth of output

can be achieved with a lower level of exports than would be the case if there were no capital goods sector at all. It may, however, still be "too" small, given the level of exports, and the foreign exchange bottleneck appears as a consequence of the demand situation described above. Consider now a not so obvious point.

2. A capital goods sector is a sector where machines, equipment, plant, and other forms of physical capital are produced, and as such it is reasonably well defined. So defined its capacity to produce can clearly be quite small. Recent literature, however, has emphasized the importance to development of education, technical research, health, and a variety of factors other than physical capital [12], [13]. These sources of growth are not free, but use up investible resources, i.e., the use of resources to improve education, health, etc. is a form of capital formation. The "capital goods sector" must then include all activities whose exercise has the effect of increasing the productive capacity of the economy. With this broad definition of "capital goods sector," the notion of the fixity of size of the sector becomes virtually untenable. For now one must say that there is nothing for which the investible resources made available by an increase in the saving rate can be used that will raise the productive capacity of the economy.

Suppose foreign demand were such that there was no way to increase foreign exchange earnings -- even with dual exchange rates. Investible resources used to increase the capacity of the export sector will, in this case, have a Social Marginal Product of zero (or a capital output ratio infinitely high). Resources used in other -- domestic -- capacity increasing activities (improving or extending education, technical research, economic policy research) will have (in virtually

all cases) a positive SMP (or a finite capital output ratio). Evidently, then investible resources should be applied to these latter activities. If, when available investible resources are applied in this way, the target rate of growth of GNP is not reached the problem is that the saving rate is too low, i.e., there are not two gaps, only one.<sup>3</sup> It is meaningless to say (or imply) that if exports could be increased at "reasonable" prices and physical capital imported, the targeted growth rate could be achieved with a quite low saving rate. Such a statement is equivalent to saying that if we had something that we do not have we could do something other than what we now do.

C. In both A and B the assumption was made that only capital goods were imported. Consider now the consequence of a given structure of production that "requires" imports of raw materials and spare parts to keep the existing capacity fully utilized.<sup>4</sup> For example automobile assembly plants may exist, with no domestic source of steel, and to operate the assembly plants at any given level of capacity requires imports of steel at some specific rate. If steel imports are not available at this rate, the level of utilization of automobile assembly capacity must fall. To curtail imports for this purpose ("maintenance imports") in order to step up capital goods imports means that the economy is penalized in the form of underutilization of existing plant and equipment. This situation then imposes a lower limit below which maintenance imports cannot be reduced without sacrificing the level of output as well as the rate of growth of output.

Even here, however, with a given structure of production, to assume that

import "requirements" are independent of available policy measures is to give in much too easily. Consider the following simple examples.

1. In many countries where the trade gap is apparently the prior constraint on growth, passenger transportation rates -- both urban and cross country -- are well below costs. Urban transportation rates often are so low as to provide little or no rationing effect. The result is a very great deal more riding of public transportation facilities than would be the case if rates covered costs. Buses and trains and their supporting equipment are largely imported. To raise these rates will reduce consumption of transportation -- i.e., induce saving or a shift in the composition of consumption and reduce the maintenance imports required to keep the fleet of buses and trains moving. More accurately, it would reduce the consumer demand for transportation, and permit more of the existing facilities to be used for investment or export purposes.

2. A similar point can be made with respect to electric power. Again quite commonly electric power is underpriced, thereby encouraging "too much" consumption of electric power. A rise in prices -- or simply an increase in saving -- will reduce consumption of electric power permitting either a reduction in maintenance imports for this activity or a shift in the use of power away from consumption to investment or export activities. In either event the reduction in quantity of electric power used for consumption has contributed to a reduction in the imports "required" to keep the economy going at full capacity without imposing underutilization of existing facilities.

3. An increase in saving can reduce the demand for products, the

productive capacity of which cannot be used for any other purpose. Thus -- as in the automobile example above -- assembly capacity becomes idle, at the same time that maintenance imports are reduced. To the extent that this effect is limited to activities producing only consumer goods, there is no real problem. Allowing capacity to produce consumer goods to lie idle for a short period is saving, and while the capacity is idle the scarce input -- imports -- is released for other uses. Evidently productive capacity is not constructed in order that it remain idle. It is, however, important to recognize that imports to maintain the investment rates can be increased in this manner for a reasonably short period of time.

A less obvious point on this same issue has to do with pricing. If domestic demand for consumer products fall as policies to increase the saving rate are implemented the appearance of excess capacity (at the going price) may -- as noted above -- bring about a reduction in prices. This fact alone may have some positive effect on exports. More importantly in the present context is the possibility that declines in domestic demand will lead entrepreneurs to make a greater effort to export. This "greater effort" takes the form of more intensive marketing efforts, attempts to maintain announced schedules, possibly financing arrangements, and the like. If domestic demand is strong, then producers have less incentive to search out export markets, i. e., to make the greater effort.<sup>5</sup>

Summary. In this section the conditions necessary for a two gap situation to exist in the short run with a given and unchangeable productive structure were examined. The general conclusion is this: although it is possible

to devise a set of circumstances where saving cannot be transformed into capacity creating activities, the possibilities are neither numerous nor empirically convincing. Indeed the set of arguments surely suggests quite strongly that, although the cost of growth may rise, the distinction between the two gaps as an empirical phenomenon is a rarity, and its explanation, where it does exist, as a structural phenomenon -- i.e., a phenomenon not lending itself to policy measures -- is most unlikely.<sup>6</sup>

Suppose, however, that a structure does exist where it is meaningful to speak of two gaps, there is still a prior question: namely, where did this structure come from? If it emerged as a necessary and endemic consequence of the nature of the development process, that is one thing. If it emerged as a consequence of specific policy measures, that is, of course, another matter. Consider now the origins of a two gap situation.

## II. The Origins of the Two Gaps

Professor Chenery explains the origin of a two gap economy in terms of the effect of aid supported exchange rates on investment allocation relative to that allocation called for after aid has been reduced or discontinued entirely. In [II, p. 726] Chenery writes, "If investment and other allocation decisions are based on the exchange rate that is appropriate for a substantial flow of aid, they are not likely to induce sufficient import substitution or increased exports to make possible a future reduction in the capital flow. Planning should be based on the higher equilibrium exchange rate that would be appropriate to a declining flow of aid in order for the necessary changes in the productive structure to be brought

about in time." After aid is reduced, the inflexibility and unadaptability of both the export sector and the import requirements prevent the adjustments that would have to be made if the two gaps were not to appear. There are several reasons why this argument may be questioned.

The first is a purely empirical point. Chenery cites Greece, Israel, Taiwan, and the Philippines as instances where "a substantial increase in investment financed largely by foreign loans and grants has led to a rapid growth of GNP followed by a steady decline in the dependence on external financing. Not only was growth accelerated by foreign assistance, but the ability of each economy to sustain further developments from its own resources was substantially increased." [11, pp. 679-80]. If the argument in the preceding paragraph were correct, one would expect to find that these successful countries based their investment and allocation decisions on the "higher equilibrium exchange rate that would be appropriate to a declining flow of aid" rather than on the rate actually prevailing during the aid receiving years. There is no evidence to support the view that this in fact happened. What does seem reasonably accurate to say is that these countries have maintained an exchange rate more nearly appropriate throughout the postwar period than have most other countries. While some other countries, not so clearly on the list of successfuls, also maintained an accurate price for foreign exchange, those countries where the two gap situation seems most nearly applicable are those where foreign exchange was almost always severely undervalued. One might conclude from this that a "correct" current rate was more important than is implied by the Chenery argument, and that basing investment decisions on a future equilibrium rate is less important.

More important than the empirical evidence, however, is the argument that the same exchange rate can be appropriate for a situation where aid is flowing in and for the situation after aid has been reduced. The central point seems not to be the exchange rate, but rather the composition of investment, especially the division between the consumer goods sector and the capital goods sector, and the rate of growth of productivity.

In Part I it was shown that even with a very narrow interpretation of capital and defining physical capital as the chief or sole source of growth, the size of the capital goods sector was strategic in the existence of a two gap situation. If the domestic capital goods sector was large "enough," then the required savings could be -- by definition -- transformed into the physical capital necessary to produce the targeted rate of growth of output. Thus if the capital goods sector is expanded "enough" during the aid receiving period, then in subsequent periods the two gap problem will not emerge. The question now is why does the capital goods sector not expand in the "balanced" way necessary to keep the foreign exchange gap from appearing? There are many possible reasons for this, but one is surely dominant. The following argument seems widely applicable.

A developing country, seeking to industrialize, almost always proceeds by way of the curtailing of imports, i.e., follows an import substitution strategy. In choosing the manufacturing sectors to protect, and hence to encourage the domestic establishment of, it is reasonable and understandable that policymakers select sectors which are least disadvantaged in terms of costs or are least "essential" in some sense.<sup>7</sup> In a great variety of countries consumer durables fall in these

categories and have become the major types of activities to replace imports. Rarely can one find a case where capital goods fall in the protected categories, as the difference between imported price and domestic costs is usually much larger than it is for consumer goods, and of course no one classifies capital goods as luxuries.

So the economy has new consumer goods industries. It has used aid to import capital to build industries and possibly to import raw materials and spare parts to support them. The country has new activities the products of which it cannot export and which cannot be used to produce capital goods. As this process continues, the country acquires more activities of this sort. As the amount of investment rises more imports of capital goods and more maintenance imports are demanded. Some reduction in imports of consumer goods may be possible, but this reduction must be less than the increase in imports due to the increase in investment and in maintenance demands since not all of the increment in saving can be realized in reduced imports of consumer goods. In this case, then, even if  $\Delta S = \Delta I$ , aid would be necessary if the investment rate were to be maintained over time.

Suppose aid were maintained in sufficient quantities to support the investment for a number of years, and then reduced. Evidently, the investment rate would have to fall. Now does this problem emerge because of the exchange rate question referred to by Chenery? It is difficult to believe so. There is indeed a signal problem, but it is not a question of the exchange rate signal. It is rather the absence of a signal. Investing in the "least disadvantaged" sector creates activities whose relevance for a general equilibrium solution is purely

coincidental, and a manipulation of the exchange rate will not remove the difficulties. One must fall back on a projection of the "structure" of the economy to ascertain the "correct" allocation of investment, i.e., the allocation that will prevent the growth process from grinding to a halt when aid is tapered off.

Suppose the activities which are initially least disadvantaged are all consumer goods industries. Then as aid falls and the bottleneck previously described emerges, this is a "signal" that investment should have occurred in the capital goods sector in order for the growth to continue. To produce capital goods domestically is -- by assumption (and in fact) -- more costly than producing consumer goods. If this were not the case, capital goods would have been produced initially domestically rather than consumer goods. As the country reaches the end of its "easy" stage of import substitution ("easy stage" is Prebisch's term [19, p. 217], i.e., as it reaches the point where additional substitution of domestic production for imported consumer goods is not possible -- it must begin to build capital goods. Then the cost of growth begins to rise. More generally one might argue that the production of capital becomes "prohibitively expensive." In this event one would be saying not that the country had hit a foreign exchange barrier, but rather that the country was too poor to support its own development. This, however, is precisely the saving problem.<sup>8</sup> The only difference between this stage and the "easy stage" is the size of the development bill, and the notion that the developing country can pay the lower price, but not the higher price. This then resolves itself into a saving problem.

If one argued that the country could not build capital goods because

it did not have the labor skills, organization skills and technical knowledge to do the job, this fact (assuming it to be a fact) is itself evidence of the wrong allocation of investment at some point in the past. Thus when Chenery writes that the "existing economic structure at any moment of time also limits the feasible growth of export earnings" [11, p. 689] and that "a rapid increase in exports typically requires the development of new export products, which is limited by productive capacity as well as organizational and institutional factors" [11, pp. 689-90] and that these difficulties can be removed only over time, he is saying that investment allocation in the past has now proved to be wrong. It was wrong in the sense that it produced a "structure" which cannot now be fully exploited. Where the difficulties are now skills, and technology, the conclusion is that earlier investments should have been in activities which developed these aspects of the economy.

What emerges from these arguments is quite orthodox, and very much in line with what Professor Chenery has taught us in his several papers on investment allocation criteria [6] [7] [8]. The point here is to emphasize that the special difficulties attributed by Chenery to exchange rates with aid and after the end of aid are not really the heart of the issue. If the exchange rate is "right" with aid, the same rate will be "right" after aid if the saving rate is "right" and the allocation of investment "correct." The problem is then the old hat one of achieving the optimal saving rate and an investment composition that follows the Social Marginal Productivity criteria. This criteria, broadly defined,<sup>9</sup> is of course difficult indeed to apply in any circumstance. In this case -- as noted -- one must project the "structure" and allocate the investment to seek to prevent gaps in the

structure from emerging.<sup>10</sup> The allocation criteria then must be "gap prevention" rather than "least disadvantaged" or some other cost based argument.

Conclusion. In Part I it was found quite difficult to define conditions in which an increase in saving could not be converted into an increase in capacity increasing expenditure with a given structure. In this part a similar difficulty has been found in relating an apparent trade gap to the with aid-after aid exchange rate problem noted by Chenery or to "structural matters" that were beyond the pale of policy. Indeed in almost all instances of an apparent trade gap the issue resolved itself into a resources (saving) gap or a misallocation -- current or past. Thus the preceding arguments are not arguments against aid, but rather are arguments as to the rationale and purpose of aid that are somewhat different from those implied by the two gap model. It is useful to comment specifically on some of these differences in policy implications.

1. The trade gap rationale of aid leads to a point where a saving potential is wasted, where in other words, no effort need be made to raise or, indeed, maintain the saving rate for to do so will not raise (or maintain) the growth rate but would in fact lower it. This is a policy conclusion of a most doubtful sort, and the extended treatment given above to showing how in any circumstance increased saving can be a means to raising the growth rate suggests why.

2. The acceptance of the existence (and especially the inevitability) of a trade gap in excess of the saving gap suggests that countries reach a point where they cannot help themselves. If a given rate of imports are "required" for development, and it is "impossible" to export at that rate, then the country is,

by assumption, helpless.<sup>11</sup> The country must then concentrate its energies on getting more and more aid, and when such efforts fail, the country then must lapse into stagnation. This conclusion, a not uncommon one in the minds of many policy-makers, is surely not justified, and can lead away from development rather than toward it.

3. A similar point emerging from a two gap model has to do with language. The terms "requirements" and "essential" are not only convenience assumptions in the mathematical and statistical manipulations (where they are defensible), but tend to slip over into more directly relevant policy decisions. When a country's policy-makers decide that certain goods are "required" or a certain level of imports is "essential," the country fails to recognize its options and can easily pass up or fail to search out alternative opportunities. The preceding arguments have emphasized the importance and some of the methods of seeking out alternative ways of supporting a targeted growth rate. The emphasis frequently given to the possibility of demand inelasticities and to fixed input coefficients also frequently ignore the wide range of sources of growth. The failure to recognize the wide range of sources of growth in turn is, as noted above, one reason why the two gap approach may seem to describe reality.

4. A final point is of great importance. If as argued above, the appearance of a real or apparent trade gap represents a distortion, a wrong projection, or (in Chenery's argument) a structural problem, aid can provide the resources to correct or to change this set of circumstance. Aid can also do something else. It can provide the resources with which an economy can continue

to function acceptably without bringing about the elimination of the distortions or changing the structure. By relieving the pressure on the system, aid may also reduce not only the incentive to make painful changes,<sup>12</sup> it may hide where the "right" allocations are. Thus allocations decisions are of great relevance all along the line, and some of the (few) signals helpful to securing such right allocations may be made less clear by significant quantities of aid. A guide, probably excessively harsh, might be that if a country claims aid because it faced a trade gap while allegedly having ample domestic saving potential it should not be provided aid. Thus without aid to support its structure and its distortions, a country may be forced to change, where with aid it is not so forced. Similarly without aid a country may see its distortions and misallocations more clearly than it can with aid. The point here is not that international aid should be reduced, but rather that its effective use places great demands on the policymakers as to the understanding of the development process, and policies built around the assumption that a trade gap is a necessary condition of development may impede that understanding.

### III. The Role of Productivity Growth

In the introduction attention was called to the fact that with the trade gap as the prior constraint to growth, potential saving would be "wasted," i.e., the society would be willing to save at a higher rate were it possible to transform the saving into capital goods. In this situation it seems obvious that any activity which saved imports or increased exports would be justifiable irrespective of its other costs.<sup>13</sup> Thus in [1, p. 2] Chenery writes that "the excess of the trade gap over

the saving gap suggests that further import substitution or export promotion would be economical -- even if larger amounts of capital are required per unit of foreign exchange saved -- since otherwise there would be a waste of potential saving." To do this protection or subsidy is necessary or otherwise such activities would have been carried out.

Two points may be made. If there is a use of domestic resources in "inefficient industries" now and the trade and saving gap brought to ex ante equality, then what. The economy has an activity that requires protection. If the trade gap problem continues and further "inefficient activities" established, then the economy becomes increasingly inefficient, and to maintain a given rate of growth requires a rising saving rate. Even if the trade gap is closed in this way now, it does not assure that growth can be sustained in the future. On the other hand if productivity in the new activities grows rapidly enough so that they become competitive in world markets, then as new "inefficient" activities are established, older ones are becoming competitive. This, of course, is a variation of the infant industry argument. If the "inefficient activities" do not become competitive, then their establishment cannot permanently close the trade gap and maintain the growth rate at the same time. The burden then rests on productivity growth rather than on closing the trade gap.

The second point is a variation on the first. Chenery notes that no country has for long sustained, through import substitution, a rate of growth of output in excess of its growth rate of exports. Hence as the flow of unrequited imports is reduced, the rate of growth of exports must increase. As already noted,

it is this increase in exports that so many countries have difficulty in achieving. Chenery's emphasis is on "structural change," i.e., a change in the composition of output from those commodities the demand for which is stagnant or declining to those for which demand appears to be rising. But "structural change" is not enough if new activities have costs above world prices. The situation pictured in Diagram III therefore is applicable. To export the commodities represented by Diagram III the supply curve must fall, i.e., productivity must rise. If this does not occur there will be no increase in exports, there will only be inefficient activities. Structural change must also be accompanied by rapid productivity growth in the "new" activities.<sup>14</sup> Indeed the heart of the matter seems to be productivity growth rather than structural change as such.

Little is known about the sources of productivity growth. The investment in education, in research, etc. noted in Part I represents an attack on the problem, and as noted there investment in these types of activities may, therefore, yield very high return. There remains another side that is more problem creating than problem solving: Productivity growth may be handicapped by the very act of establishing and maintaining protected activities. If this were the case, then the bringing about of "successful structural change" through import substitution becomes exceedingly difficult. Some further elaboration and some empirical evidence on this latter point is given in [4]. The point here is to emphasize that "structural change" alone will not solve the trade problem. The further, and much more complex issue of getting costs down to the world level remains.

The purpose of this note has been to examine several aspects of the two gap model of aid and economic development.<sup>15</sup> In Part I it was argued that even in a given short run interval, the existence of two distinct gaps seems unlikely and demands rather severe and unrealistic assumptions. In Part II the question considered had to do with the origins of a two gap situation. The chief point here was simply that the existence of an apparent trade gap, distinct from a saving gap, represented investment misallocation over the past periods. In this same section it was further argued that accepting the two gap argument led to policy measures or policy ideas that were indeed harmful to the development process. Finally in Part III it was argued that structural change was not a sufficient condition to resolve the difficulties many developing countries have in increasing their exports. Productivity growth is also necessary and indeed would appear to be the central notion rather than structural change.

Two points remain. First, even if there is no trade gap distinct from a saving gap for foreign aid to cover, the saving gap is ample enough. Nothing said above should be taken as an argument against aid as such. Second, the gap analysis has taught us much indeed. Especially has it taught us that traditional allocation issues are as important in understanding development as the more glamorous issues of capital formation and structural change.

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### Footnotes

1. Another issue of importance, not to be discussed here, has to do with repayment problems -- assuming that aid takes the form of loans of one kind or another.
2. The advantages of a dual exchange rate in the context of industrialization have been explored further by Kaldor [13] and Bruton [5].
3. The role of the criteria of allocation of investible resources is not completely clear in any of the literature of the gap analysis. The point will be discussed again in a slightly different context in Section 11 below. On the argument in this paragraph see Gordon C. Winston [17].
4. One may also introduce consumer good imports, but there seems no complication sufficiently demanding to justify a separate analysis of this point. An increase in saving will reduce consumer good imports ( e.g., foreign travel, automobile, etc. ), and thereby free foreign exchange for importing more capital goods.
5. Evidence on this point is, of course, not beyond question. Perhaps the most useful has to do with evidence that in periods of downturns or recessions, in some of the developing countries exports rise even though export prices do not fall or fall only moderately. This seems especially true for some of the Latin American countries. See [18] passim.
6. Attention may be called to the fact that this conclusion does not depend on assumptions as to the empirical magnitudes of the several relevant elasticities. If one does believe that demand elasticities are generally

7. For a very lucid, thoroughly documented discussion of this point as it applies to Latin America see Santiago Macario [14].
8. The usual view of the development process in the USSR illustrates this point. The Soviet Union depended little, if at all, on imports, and did not hit a trade barrier. In the simplest terms the explanation is that the Soviet leaders were willing and able to force a level of saving on the economy that did permit the construction of a large and costly capital goods sector. More directly, the great capacity of the Soviet government to force saving solved the trade gap problem. On the general argument see Winston [17] again.
9. "Broadly defined" means inclusive of the "side" or "indirect" effects -- e.g., effect on saving rates, on labor training, population growth -- commonly included in allocation analysis. See [3].
10. Jaroslav Vanek in [16] carries the two gap approach beyond Chenery. In discussing the possibility of eliminating "dispensable" demand for foreign exchange by devaluation, he concludes this to be generally undesirable because [16, p. 119] "with a very high price of foreign exchange and hence of imported capital goods, internal rates-of-return computations might lead to rejection of necessary development projects." This argument (the opposite incidentally to Chenery's) implies that if foreign exchange is underpriced -- i.e., priced below its cost -- "unnecessary" projects will not be undertaken. More relevantly it states that if the price of foreign exchange is equal to its cost a misallocation of investment may thereby occur.

11. Vanek [16, p. 117], in discussing the inelasticity of the demand for imports, writes that inelasticity "stems primarily from the fact that a prescribed rate of growth calls for a given volume of certain specific goods and services which simply cannot be substituted by domestic sources in substantial amounts prior to the attainment of a relatively advanced stage of development" ( my italics ). This argument is, in effect, an announcement that development is impossible unless aid is forthcoming.
12. In a somewhat similar fashion a large export earner outside the developing sectors ( e.g., tourism ) can support misallocations and distortions within these sectors. With severe fluctuations in export earnings a comparable problem may appear: when export earnings are "high" there is no incentive to alter the situation, and when they are low, there are no resources to alter it. When there is aid, why alter things which are somewhat painful to alter. When there is no aid, alterations are impossible.
13. One might describe such a situation as one in which there were unlimited supplies of everything except foreign exchange.
14. As noted in Part I dual exchange rates can relieve this difficulty, but only temporarily. If new activities are established, and exports growth is generated via the dual exchange route, but productivity does not grow rapidly enough to make the activity competitive in a "reasonable" period

[27] then the problem described in the preceding paragraph (Point 1) emerges. The economy is permanently saddled with inefficient activities.

15. There are other aspects of the two gap model to which attention has not been directed. Chief among these is the argument as to a sequence of gaps through which a developing country travels. This historical sequence hypothesis raises a number of interesting issues, but they all depend on the prior acceptance of the meaningfulness of a multiple gap notion. It is this latter which is questioned here.