

Kröller, Edgar

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## Capital requirements of developing countries

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not dealt with in the Treaty of Rome. The idea is to promote co-operation among the European States and to escape a widening of the gap between the Six and the applicants. The Italian government produced some suggestions of a more procedural character and very close in content to the Benelux-plan. Finally did the German government work out proposals for commercial arrangements between the Six and the other countries. The proposals were presented after a German-French consultation, which ended in a joint communiqué, but the following debate has shown different interpretations in the two countries on the type of arrangements, which could come into question.

The situation today seems to be characterised by the following. First, all member States seem to realise the necessity of achieving a compromise on the problem of enlargement in order to bring the interior development out of its present deadlock. There is, secondly, no possibility of uniting the five and UK against France. It seems to be a political doctrine in Germany to put the French-German understanding before any European solution, in the hope that it will be possible gradually to smoothen the French attitude. The third problem is the aim of a temporary arrangement (of whatever sort it may be). The French-

German attitude is to accept trade arrangements that may reduce the gap in Europe and by that assist in solving the British economic problems, but under the clear condition that there will be no procedure or political obligation towards a later membership. The four other member States advocate a system of procedure for co-operation and consultation with the clear purpose to put a continued political pressure on France in order to obtain a changed French attitude to the enlargement of the Community.

It is difficult to escape the impression that a distrust of the French-German policy is growing in the various countries and a fear that its realisation may postpone the enlargement of the Community for 5-10 years.

It is difficult to see a solution to the present difficulties, which will not mean that both Western Europe and the Communities will lose a great part of the dynamic economic and thereby political force they have had in the last 10-15 years. This may not become evident immediately, but in the longer run. This would raise the problem, whether it will not be necessary to find a new dynamic factor in a wider European, and not merely Western European co-operation.

## UNCTAD GAP STUDY

# Capital Requirements of Developing Countries

by Dr Edgar Kröller, Paris

The concept of capital "requirements" of less-developed countries has emerged side by side with the conscious effort of the international community to accelerate the economic growth of these countries. This approach has led to various calculations of their prospective capital needs ("gap" studies). The best known of these projections is the one put forward by Dr Prebisch at the First UNCTAD which estimated a \$ 20 billion balance of payments gap in 1970 for the developing countries as a group.

Major gap studies include those by Arthur Lewis<sup>1</sup>, Paul G. Hoffman<sup>2</sup>, P. N. Rosenstein-Rodan<sup>3</sup>, Bela Balassa<sup>4</sup>, GATT<sup>5</sup>, Alfred Maizels<sup>6</sup>, M. F. Millikan and W. W. Rostow<sup>7</sup>, H. B. Chenery and A. M. Strout<sup>8</sup>, as well as by the United Nations and UNCTAD. The

latter have come out with three different studies: (1) by R. Prebisch for the First UNCTAD<sup>9</sup>; (2) by the UN Economic and Social Department<sup>10</sup>; (3) by the UNCTAD Secretariat for the Second UNCTAD.<sup>11</sup>

This article does not intend to review these different studies but to discuss briefly some of the general aspects of gap methodology and to critically assess the latest UNCTAD projections of capital requirements which are included in one of the major documents for consideration at the Second UNCTAD at New Delhi.

## The Gap Approach

It is a feature of gap estimates that they stress the importance of capital inflow in determining how fast the developing countries can develop. It should be borne in mind, however, that capital inflow is only one of the elements determining the pace of growth. Improved performance in mobilising and making efficient use of domestic resources will reduce the amount of external assistance required to attain given development objectives. Gap computations therefore

<sup>1</sup> United Nations, Measures for the Economic Development of Underdeveloped Countries, May 1951.

<sup>2</sup> One Hundred Countries, One and One-Quarter Billion People — How to Speed their Economic Growth and Ours in the 1960s, Washington, 1960.

<sup>3</sup> International Aid for Underdeveloped Countries, Review of Economics and Statistics, May 1961.

<sup>4</sup> Trade Prospects of Developing Countries, Yale University, 1964.

<sup>5</sup> Foreign Trade and Long-Term Economic Growth of the Developing Countries, 1961.

<sup>6</sup> Industrial Growth and World Trade, Cambridge, 1963.

<sup>7</sup> A Proposal, Key to an Effective Policy, New York, 1957.

<sup>8</sup> Foreign Assistance and Economic Development, The American Economic Review, September 1966.

<sup>9</sup> Reprinted in United Nations, World Economic Survey, 1963.

<sup>10</sup> A Methodological Note on Some Gap Projections For Developing Countries, E/AC.54/L.21, 6th April, 1967.

<sup>11</sup> Trade Prospects and Capital Needs of Developing Countries, TD/34, 27th October, 1967.

necessarily assume, whether explicitly or implicitly, certain standards of performance in the developing countries.

There are in principle two methods of making gap calculations: the target-type approach and the absorptive capacity approach.

### **The Target-Type Approach**

The more refined version of the target-type method employs a two-gap approach. This is based on the theory that the amount of capital inflow likely to be needed by a developing country to make possible the attainment of stated development objectives (targets)—usually a specified rate of growth of GDP—can be estimated in two ways. In the first method, an estimate is made of the amount of gross domestic capital formation required to make possible achievement of the development objectives. Against this is set an estimate of the prospective amount of domestic savings. The difference is the gap needed to be filled by capital inflow (savings gap). In the second method, an estimate is made of imports which are required for the achievement of the development objectives and this is set against an estimate for prospective export earnings (trade gap).

The savings-investment type of projection tends to have an optimistic bias. It is generally assumed that a higher proportion can be saved out of increases of income than out of the base level of income. There would thus be a tendency for the proportion saved out of total income to rise. If there is no comparable rise in the investment rate required to achieve the target rate of growth of product, the savings-investment gap will tend to close over time.

By contrast export-import projections have a built-in tendency to indicate a progressive widening of the gap since import requirements of developing countries are assumed to increase by at least the same rate as their total product (elasticity greater than unity), say by 5 per cent per year. Export earnings, on the other hand, are assumed to grow at a lower rate, say by 4 per cent per year, because they are determined by the demand of the industrialised countries which increases less fast than their product (elasticity smaller than unity).

Provided that consistent national accounting definitions are used, the two gaps must after the event—i.e. *ex post*—of necessity turn out to be equal. Both indicate the excess of the amount of resources which an economy has used over the amount which it has produced and the net amount of resources received from abroad (capital inflow, that is additional savings from abroad). Although *ex post* the two gaps are identical, it is important to distinguish *ex ante* between them in the context of development economics. The savings-investment approach implicitly assumes perfect substitutability between domestic and foreign resources. It hence proceeds as if domestic savings can be readily turned into investment, either

directly or through export earnings which permit the import of the needed investment goods.

The export-import view, on the other hand, takes account of the fact that domestic and foreign resources of less-developed countries are not fully substitutable. Domestic industry and technology are not equipped to produce all the required capital goods. On the other hand, to the extent that domestic savings cannot be turned into exports, they cannot be used to import investment goods from abroad.

In some countries and at some stages of development deficiency of savings is the crucial obstacle to development, while in other countries and at other stages of development, limitations on ability to import are the crucial obstacle. Thus either the savings-investment gap or the export-import gap is "dominant", and the magnitudes (whether of savings and investment or of imports and exports) which suggest the smaller prospective gap will in the event adjust to conform with the gap as determined by the "dominant" relationship.

### **The Absorptive Capacity Approach**

The absorptive capacity approach postulates the provision of as much capital for the developing countries as they can use "productively". This type of constraint implies a limit on the capacity to utilise additional resources for growth effectively, due to such factors as structural rigidities of the economies in developing countries, shortage of local skills and a general technological backwardness. Operationally, limitations of absorptive capacity would show up in a sharply falling rate of return on investment—or a rising capital-output ratio—beyond levels which would normally be considered acceptable.

The absorptive capacity approach is not unambiguous. All depends upon what "productive" use of capital is supposed to mean. Limitations of absorptive capacity are not an abrupt barrier between possibilities of providing assistance with positive developmental benefit and the absence of such possibilities. Rather, as assistance is progressively increased beyond a certain volume, costs of capital formation increase and the productivity of the investment decreases. The question of absorptive capacity in its operational sense presents itself in the form of deciding what is the minimum ratio of developmental impact to cost (cut-off rate of return) that is sufficient to justify provision of additional assistance. Moreover, since it may appear more urgent to support accelerated development in one country rather than another, and since the possibilities of, and obstacles to, development vary from country to country, it seems that the minimum ratio applied by assistance-providers following a systematic development policy would probably not be the same in all less-developed countries. Considerations of "need" may over-ride criteria of efficiency in the use of resources.

Any type of gap estimate therefore rests on some underlying assumptions as to the development target,

or—in the absorptive capacity approach—as to the cut-off rate of return which capital-providers would be prepared to accept and to financially support. Another important policy judgement concerns the self-help performance of developing countries whose level and quality essentially determines the residual capital inflow requirements. Hence the gap is not a given property of the developing countries which assistance-providers have only to observe but a function of the need, opportunities and costs of development in the developing countries.

### The UNCTAD Projection for 1975

The study attempts to evaluate the constraints on economic growth represented by limitations of domestic resources (savings) and external resources (export earnings and capital inflow). While past UN gap projections had been based on an aggregative approach taking all the developing countries as a group—which had evoked considerable criticism—the UNCTAD analysis is based on studies for some thirty individual countries. These countries account for "75-80 per cent of the income, population and trade of all the less-developed countries". The countries not separately studied are included in the total estimate by extrapolation.

The study follows the target-type two-gap approach. For most of the countries examined, the trade gap proved to be larger than the savings gap and was thus found to constitute the operative constraint as growth.

The methodology used takes no explicit account of absorptive capacity limitations. But the fact that the study shows different capital-output ratios for different countries implies that different standards of absorptive capacity (as reflected by "criteria of feasibility") have been applied to different countries. It is not clear on what considerations the study based its decision to allow for different capital-output ratios in the various countries (and hence for different "criteria of feasibility") and whether this decision has been taken in view of all its implications for the geographical allocation of assistance.

Doubts on the way in which UNCTAD claims to have selected "absorptive capacity growth rates" also appear in the context of the virtual impossibility of quantifying rates of return on investment in a macro-economic framework. Furthermore, there is the difficulty that certain types of investment (e.g. infrastructure) make their contribution to growth only at a later date (though this can be partially solved by discounting the future income stream).

The study also correctly states that absorptive capacity limitations may be different for different forms of external assistance, suggesting that there exists a relatively large capacity for the absorption of non-project and technical assistance. On the other hand, technical assistance, while it enhances the absorptive capacity of capital assistance, may itself be eventually subject to absorptive capacity limitations due to some

reluctance on the part of the less-developed countries to accept foreigners in unlimited numbers or for certain types of job. This reluctance, however, seems to be the exception rather than the rule.

### Results of the Study

The UNCTAD trade gap projections of the developing countries for 1975 are based on "low" and "high" assumptions as to the average growth rate of GDP of the developing and developed countries — the former determining import requirements, the latter export prospects. Low and high import requirements are based on target rates of growth of the GDP of developing countries of 5.2 and 6.1 per cent per annum. Low and high export prospects relate to growth rates of GDP of developed countries of 4.2 and 4.7 per cent per annum. There are thus, theoretically, four possible combinations of low and high assumptions of which the study shows only the low-low and high-high combinations.

Table 1 presents a summary of the total trade gaps in 1975 of the less-developed countries as a group, together with comparative figures for 1960 and 1963.

Table 1  
The Trade Gap of Developing Countries  
in 1960, 1963 and 1975

	\$ billion at 1960 prices			
	1960	1963	1975	
			Low	High
1. Exports of goods and services	32.1	37.6	67.5	73.5
(a) goods	27.2	31.8	56.7	61.9
(b) services	4.9	5.8	10.8	11.6
2. Imports of goods and services	34.4	37.5	70.9	83.5
(a) goods	29.8	31.9	59.7	70.0
(b) services	4.6	5.6	11.2	13.5
3. Import surplus	2.3	-0.1	3.4	10.0
4. Factor income payments	3.2	4.9	12.0	14.2
5. Technical assistance	1.0	1.0	1.5	1.5
6. Trade gap	6.5	5.8	16.9	25.7

This implies that the difference of 0.9 percentage points between the low and high assumed growth rate entails a drastic increase of the commodity and invisible gaps, a modest increase in factor income payments and no change in technical assistance charges. On an average, each tenth of one percentage point of the growth rate of product above the low assumption involves additional foreign resource requirements of about \$ 1 billion. This suggests a very high sensitivity of the gap to changes in the assumed target rates of growth of product of the less-developed countries.

### Export Prospects and Import Requirements

The estimates on export prospects are based on a projection of world demand for the major commodity groups in 1975. World demand, in turn, was determined by the future income and population of the importing countries. On the basis of low and high assumptions of the growth rate of GDP of the importing countries, exports to developed market economies were estimated to grow per annum at between

5.1 per cent and 5.5 per cent in 1960-75, exports to socialist countries at between 6.5 and 8.2 per cent, and exports to developing countries at between 4.6 and 5.5 per cent. This results in an average growth rate per annum of total exports of between 5.0 and 5.6 per cent: 2.8-3.5 per cent for food stuffs, 1.6-2.3 per cent for agricultural raw materials, 8.3-9.3 per cent for manufactures and 7.5-8.0 per cent for fuels. By 1975, total export earnings are expected to reach a level of \$ 57 to \$ 62 billion depending upon the assumptions as to the income growth of the importing countries.

The global estimates of import requirements have been built up from the historical relationships between imports and economic growth in the individual less-developed countries. Wherever possible, three broad groups of imported commodities have been distinguished: (1) consumer goods (which have been related to total consumption or income), (2) raw materials and intermediate goods (which have been related to total or sectoral manufacturing output) and (3) capital goods (which have been related to domestic fixed investment).

For the developing countries as a group, projected low and high growth rates of imports are based on low and high assumptions of their GDP growth. The average annual rates of increase in commodity import requirements between 1963 and 1975 are estimated at 5.3 per cent and 6.7 per cent, respectively. This implies an elasticity coefficient of about 1.1 — the same as in the past. Wide differences in this parameter prevail of course between the individual countries.

### **Savings and Investment**

The study discusses the various determinants of domestic savings—government, business and private households—as well as some of the special conditions determining the savings performance of certain developing countries. It warns that the estimates have to be treated with caution since the underlying data are not very reliable. Moreover, in the great majority of cases, savings estimates have been derived, though not on a consistent methodology, as residuals between other economic magnitudes (GDP and consumption), thus embodying the accumulation of errors contained in these magnitudes.

The UNCTAD study projects planned savings rates for the different countries and regions in 1975. At the same time, it projects for this year their balance of goods and (non-factor) services (the "import surplus") as well as, on a regional level, the balance on current account (the "trade gap"). Since the trade gap—irrespective of the size of the savings gap—is expected to be the operative one, it is possible to show explicitly what UNCTAD expects projected realised savings rates to be. This is possible by deducting from the required investment volume either the trade gap which gives "national savings", or the import surplus which gives "domestic

savings". Both values can then be expressed as savings rates, i.e. as a percentage of GNP and GDP, respectively.

An illustrative analysis, the comparison of savings rates in India shows that a large discrepancy exists between what the UNCTAD study shows as the planned savings rate in 1975 and what rate would—by mathematical implication—actually be attained, provided that the entire gap was financed by foreign capital inflow. While India plans an average domestic savings rate in 1975 (low assumption) of 14.7 per cent of its GDP, its realised savings rate in 1975 would be as low as 8.2 per cent i.e. below its initial savings rate of 10.4 per cent in 1963. This is the result of a drastic drop in the marginal savings rate over this period from 20.0 per cent to 4.7 per cent. In other words, while the Indian economy in 1963 saved 10.4 per cent of its total product, it is expected that only 4.7 per cent of the increment in product till 1975 will be saved. This is in contrast to the widely held dictum that the marginal savings rate should and could be significantly above the average savings rate.

Theoretically, requirements for the attainment of given development targets might be worked out in the utmost detail, but concerning investment, gap calculations are usually driven back to the use of ratios between investment and output for the economy as a whole or, at best, broken down by fairly broad sectors of activity. The most usual form of this relationship is the incremental capital-output ratio which specifies the number of units of investment held to be necessary to raise the level of production by one unit per annum. The capital-output ratio is a shorthand measure of the efficiency of investment which implicitly has to contain an allowance for the effect on production of non-capital factors.

In the UNCTAD study substantial variations in the capital-output ratios are found among the different countries, reflecting such factors as differences in growth rates, in capacity utilisation, in the structure of capital formation, and in the relative prices of investment goods. These factors reflect also differences in the absorptive capacity of the different countries. Assuming a higher capital-output ratio for one country than another, however, implies that it is considered justified to sustain the selected growth rate although this is more costly than sustaining the growth rate of another country where the capital-output ratio is lower. This is an important value judgement on the allocation of scarce external resources.

### **The Closing of the Trade Gap**

Table 2 presents the estimates by UNCTAD as to how the 1975 trade gaps could be financed. It was assumed by the UNCTAD study that one-half of the projected trade gap would be financed by new public aid on average terms equivalent to those ruling in 1965, and that the other half would be met by methods which would not give rise to additional factor income

payments, except profits and dividends for which allowance has been made. On this assumption and making the "high" target rate of growth of product as basis, official aid would have to reach \$12.9 billion in 1975, private flows were estimated to increase to \$5 billion, while suppliers' credits would decrease to \$0.4 billion. This would leave an unfilled gap of \$7.4 billion (\$4 billion under the "low" assumption).

Table 2

Balance of Payments of Developing Countries  
in 1963 and 1975

	\$ billion		
	1963 (Current Prices)	1975 (1960 prices)	
		Low	High
Import surplus	— 0.8	— 3.4	—10.0
Factor income payments, net	— 4.9	—12.0	—14.2
Technical assistance	— 1.0	— 1.5	— 1.5
Current account	— 6.7	—16.9	—25.7
Official aid, net	6.6	8.5	12.9
Private capital, net	1.8	4.0	5.0
Suppliers' credits, net	1.0	0.4	0.4
Total capital inflow	9.5	12.9	18.3
Capital outflow	— 1.5	—	—
Increase in reserves	— 0.8	—	—
Errors and omissions	— 0.5	—	—
Indigenous capital items	— 2.8	—	—
Unfilled gap	—	4.0	7.4

The suggestions in the UNCTAD study on the closing of the gap raises several doubts. It is, e.g., arguable whether the whole adjustment process between the two gaps should fall exclusively on the savings gap, i.e., whether the theory of "frustrated" savings should be fully accepted. But even if the trade gap is taken as the measure of external resource needs, the assumption that one-half of it should be filled by official aid is a highly arbitrary one. Equally arbitrary, and less realistic, is the assumption that the net inflow in respect of suppliers' credits is to decrease from \$1.0 billion to \$0.4 billion from 1963 to 1975. This is at variance with the growing volume of trade of the developing countries to which the volume of suppliers' credits is functionally related. As to the volume of the private flow, the projected increase from \$1.8 to \$4-5 billion from 1963 to 1975 seems also rather arbitrary.

Comparing the needed capital inflow under the "high" assumption with that under the "low" assumption, it is found that official aid would have to increase by 50 per cent and private capital only by 25 per cent. It is not quite clear what considerations prompted this difference in the assumptions.

The official and private flow under the high assumption (\$18.3 billion) is said by the UNCTAD study to be commensurate with the one per cent aid target. This assertion, however, is more or less correct for the Western donors only if "gross domestic product"—rather than "national income" is taken as the denominator of the one per cent formula. One per cent of their national income in 1975—assuming (as UNCTAD does) an annual growth rate of their prod-

uct of 4.7 per cent would yield (in 1960 prices) \$14.7 billion (against \$18.2 billion on the basis of one per cent of their GNP).

Using the low assumption as to the growth rate of product of the less-developed countries (5.2 per cent per annum)—which, however, is still ambitious compared with the growth performance in the past,—the resulting requirements of official and private capital (\$12.9 billion) would be more than met under the one per cent target, even using "national income" as the denominator.

Another major qualification is that official aid, as used in the study, comprises both Western and East Bloc flows. For the target year, only a total figure of official aid is shown without an indication as to the prospective shares of Western and Eastern donors. If the one per cent formula is equally applied to East Bloc donors—and there is no a priori reason why it should not be—this alone would increase the target of East Bloc flows very substantially.

The residual gap of \$4 or \$7.4 billion in 1975 under the low and high assumption is to be met, as appropriate, by 4 groups of policies: (1) policies to reduce the savings gap where this is dominant; (2) policies to increase import substitution; (3) policies to accelerate exports; and (4) policies to increase private foreign investments. The first two groups are largely domestic policies of the developing countries. The second two involve the policies of both developing and developed countries.

### Conclusion

In conclusion it can be said that the UNCTAD study represents an improvement over the former UN estimates in that it is based on individual country studies, employs a more refined methodology and an improved statistical basis as well as more realistic assumptions. The target rates of growth of GDP of the developing countries are ambitious. Even the low assumption of 5.2 per cent per annum is higher than their recent growth performance and exceeds the UN Development Decade target. The universal treatment of the trade gap as the dominant constraint on growth minimises the role of the mobilisation of domestic resources—as expressed by the savings performance—in economic development.

One basic weakness, admitted in the study, is the fact that it is based on past standards of performance. Another shortcoming is the assumption of the stability over time of the crucial parameters used in the projection. The study also fails to explore alternatives: i.e., the effect on the results of changes in the assumptions and vice versa. The underlying country studies, though based on a similar methodology, differ greatly in depth and quality which affects the reliability of the aggregate figures accordingly. The assumptions about the various means of closing the gap are highly arbitrary and lead to some incongruous results.