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ECONOMIC AND EMPLOYMENT COMMISSION

PROPOSAL FOR AN INTER-ECONOMIC BUDGET ANALYSIS AS PART OF THE
EMPLOYMENT STUDY OF THE ECONOMIC AND EMPLOYMENT COMMISSION

(Submitted by the Member from Norway
in connection with proposal, Document E/CN.1/18)

The work of the Economic and Employment Commission must in one way or another have points of contact with practically all the economic work that takes place in the specialized agencies of the United Nations, in the Department of Economic Affairs of the Secretariat and in other commissions that handle economic matters, such as the Statistical Commission. No danger of overlapping will exist, however, if the Economic and Employment Commission adheres to the principle of concentrating its efforts on the general aspects of the problems; that is, on the general inter-dependency of the basic factors of steady employment and development, and on the integration of the forces at work, with particular emphasis on the effects of these forces as they are revealed in the aggregate magnitudes that characterize the national economies or the world economy. By following this policy the Economic and Employment Commission will serve more or less as the top of a pyramid whose basis is formed by the specialized agencies, the Department of Economic Affairs and certain other Commissions.

Considering the work of the Economic and Employment Commission from this point of view there is one task which appears to be of central importance, namely, the organization of an inter-economic budget study. In many countries there is now going on work on national budgets. This work is highly important in providing the necessary data for a well

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this work is needed in order to picture in the form most appropriate to employment and development studies, the flows of goods and services and other values, that multilaterally connect the national systems. A unified budgeting and accounting system comprising these flows should be established. Such a budget study becomes indispensable when the general question of internationally operating factors of employment and development is raised. And there seems to be no more logical way of organizing such a study than in connection with the work of the Economic and Employment Commission.

Important parts of the data needed for such a study have for the pre-war years been collected through the Economic and Intelligence Service of the League of Nations.* But much remains to be done, and in particular, the way of presenting the information for the specific purpose of the employment and development studies should be considered.

There are so many different ways in which the elaboration of an inter-economic budget may be useful and so many points where it may have a bearing on the work of the Economic and Employment Commission, and in particular, on the work of the Sub-Commission on Employment and Economic Stability, that there will be no questions of covering all this here. I shall confine myself to certain aspects of the matter that have a particular bearing on the question of whether or not the inter-economic budget is balanced and in what sense it may be balanced.

A preliminary remark may be in order regarding the way in which the economic flows among the national systems could be classified according to type. The classification may be considered in the following form (for any given country or group the amount in question may be an inflow or an outflow or a net-flow, that is outflow minus inflow):

* See, for instance, The Network of World Trade, League of Nations, 1942, and Industrialization and Foreign Trade, League of Nations, 1945, both mainly the work of Mr. Folke Hilgerdt.

Amounts		
Current Items	Physical Transactions	Import and export of merchandise (Balance of trade in the narrow sense)
		Rendering of physical services ("services proper" such as transportation)
		Total physical transactions
		Yields of capital
Total current items		
Payments (Movements of money, claims of all sorts and gold)		To be charged against that part of the current items that are to paid for
		Unilateral financial transactions (Donations, emigrants transactions, etc. of money, claims or gold)
		Total balance of payments
Non-Payment Items		The countervalue of unilateral transactions in kind
		Writing off of bad claims
		Errors and omissions in the statistics
		Total non-payment items

Physical transactions are here taken to include both goods and services proper. All movements of goods and services are to be included regardless of how they are to be paid for, and whether or not they are to be paid for at all. The balance of physical transactions may therefore, in point of principle, be looked upon as a closed system all by itself, entirely independent of whether or not information on payments is available. In the case of merchandise, the only thing one would need to know is whether it has passed from the possession of a citizen or an organization of one country to that of a citizen or organization of another country. And in the case of a physical service, the question would be whether it has been rendered by a citizen or organization of one country to the benefit of a citizen or organization of another.

Part of the physical transactions are to be paid for (business transactions) and part of them are not to be paid for. For those physical transactions that are to be paid for, it seems most consistent and simple to consider payment as taking place immediately upon delivery of the goods and services. This means that the coming into existence of all sorts of claims, whether private or governmental, must be included in the balance of payments. If actual collection is effected only at a later date, this collection will have to be considered only as an exchange of one "financial object" for another, that is to say, it is a transaction that does not concern the balance of physical transactions at all.* Likewise, the writing off of bad claims will only be a transaction between two accounts in the financial system.

The total balance of current items must, for any given period of time, equal the total balance of payments plus the total of non-payment items, excluding however the unilateral financial transactions. Net lending or borrowing (including in this the coming into existence of any kind of claim) will be the same as the total balance of payments. Other conceptions of the classification and terminology are of course possible, but the above seems rather reasonable from the viewpoint of a general inter-economic budget analysis.

For any magnitude entering into the above classification, the multilateral connections may be exhibited in a matrix similar to those exemplified in Tables 1 and 2. The figures are taken from Table 44 "The Network of World Trade," but they are put up in a different way.

The figures of Table 1 represent only merchandise movements while from the viewpoint of inter-economics, the figures representing total physical

* In the orthodox terminology the term "capital" would probably be used for what is here termed "financial capital". In a general analysis such a terminology is confusing. We must be able to distinguish between "financial Capital" and "physical capital" (capital goods).

transactions would for many purposes be more relevant. As a rough indication of the inter-economic structure and as an example of the technique of exhibiting it, Tables 1 and 2 may, however, serve.

If the sum of the elements in a column of Table 1 is larger than the sum of the elements in the corresponding row, the country (group) in question may be called a surplus country (group). The difference between the sum of the column and the sum of the row for each surplus country has been entered at the bottom of the Table. In the opposite case, the country (group) may be called a deficit country (group). The corresponding difference is entered to the right in the Table. These differences entered either at the bottom of the Table or to the right may be called the net marginals of the Table or shorter, the marginals. The sum of the bottom marginals must obviously be equal to the sum of the right-hand marginals. The total of these sums - in the example 304 - may be called the skewness of the matrix. More precisely, it may be called the absolute skewness. The ratio of the absolute skewness to the aggregate volume of the Table - that is, to 3261 - is the relative skewness; in the example, $304/3261 = 9.3\%$. If the Table consists exclusively of non-negative numbers, it can be proved that the relative skewness must be a number between 0 and 100%. It is 0 when and only when the Table is completely balanced, that is when each country (group), considered as part of the multilateral system is in balance.

Table 2 illustrates the similar relations that exist between the import figures. The differences between the two sets of figures in Tables 1 and 2 are due mainly to the cost of transportation. It is remarkable that although the elements of the two tables show considerable differences, the marginals are not very different.

The skewness as here defined also expresses the amount of outside payments that is needed in order to make possible the trade of the matrix in question. In particular, when the figures in the matrix pertain to the total

Table 1

Merchandise Trade Matrix 1928

(Based on export figures, not including transport costs)*

Exporting Country	1 Tropics	2 U.S.A.	3 Regions of recent settlement	4 Conti- nental Europe	5 Non-Conti- nental Europe	6 Rest of World	Total	Deficit
1 Tropics	80	87	18	91	95	32	403	
2 U.S.A.	165	0	74	76	23	57	395	
3 Regions of recent settlement	24	138	22	53	89	55	331	
4 Continental Europe	142	150	135	663	100	81	1271	132
5 Non-Continental Europe	75	86	115	173	39	33	521	146
6 Rest of world	50	55	17	83	29	106	340	26
Total	536	516	381	1139	375	314	3261	
Surplus	133	121	50	50				304

Table 2

Merchandise Trade Matrix 1928

(Based on import figures including transport costs)*

Exporting Country	1 Tropics	2 U.S.A.	3 Regions of recent settlement	4 Conti- nental Europe	5 Non-Conti- nental Europe	6 Rest of World	Total	Deficit
1 Tropics	90	101	21	108	105	37	462	
2 U.S.A.	182	0	78	88	25	68	441	
3 Regions of recent settlement	31	143	24	64	28	7	367	
4 Continental Europe	160	165	149	692	106	86	1358	123
5 Non-Continental Europe	76	91	118	190	40	37	552	146
6 Rest of world	58	60	19	93	132	106	368	27
Total	597	560	409	1235	406	341	3548	
Surplus	135	119	42	42				296

*In tens of millions of dollars according to the parity in force in 1928

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balance of current items, the skewness is an expression for the amount of international lending that is needed. This is another point which suggests the fruitfulness of the parameter designated as the skewness and more generally, the fruitfulness of a set-up as the one exemplified in Tables 1 and 2.

Similar matrices may be constructed for other sets of figures. In particular, it may be done for each of several important commodities or services, and aggregate matrices may be constructed for groups of commodities and services. There may be groupings on different levels, that is we may use a pyramiding appropriate to each type of problem to be discussed.

Still more important, similar matrices may be constructed for quantities or amounts that are not actually traded but are for potential quantities or amounts expressing the power and willingness of the several countries to engage in the trading. The figures of such matrices would have the character of estimates or forecasts or planning figures, all depending on the nature of the systems of trading that prevail in the spheres in question.

To arrive at meaningful figures in such potential matrices may of course not be an easy task, but whether one likes it or not, the problem of constructing such matrices must be faced if the deliberations on how to achieve full employment, economic stability and rapid development shall be carried on in a consistent and systematic way. Indeed, much of the reasoning in this matter does take place as if it should be possible to construct such matrices, so it seems better to face the implications of the reasoning used.

I shall not go into detail regarding the inter-economic budget considerations that are the most important from the viewpoint of development,* but I would like to mention a few things that are important from the

* An interesting summary of some major problems from this viewpoint is to be found in "Industrialization and Foreign Trade," pp. 35-40.

viewpoint of employment and stability. Some of the remarks I am going to make will be more or less familiar to everyone who has been thinking about economics along modern lines but for the sake of systematization, it may be well to state them explicitly.

From the above definitions, it is obvious that any deficit in the physical balance of transactions will always be "paid for" in one way or the other, but that does not mean of course that this deficit is without avail. Much depends on how the deficit is accounted for. We are here confronted with the general problem of the effects of international lending and borrowing.

On the one hand there may, of course, be circumstances under which sizeable international loans may be highly profitable both to the lending and to the borrowing country. This may, in particular, apply to well founded long-term developments. The economic history of the United States is an example in point.

On the other hand, there may be circumstances under which there is less reason for optimism regarding the wholesome effects of international lending on a large scale. In particular, this applies to the employment problem that confronts us in a world of several nations wanting to conduct their affairs to a considerable extent on the "laissez-faire" principle. Even in this case the intervention of international credit will, of course, smooth out a skewness of the trade matrix, and thus temporarily keep things going without trouble. But if the trade skewness is not compensated within a reasonable time by a movement in the opposite direction, the tension is, through the credit system, allowed to accumulate, thus intensifying the difficulties. A similar sort of difficulty is encountered in buffer-stock arrangements.

Once started, such accumulated tensions will, through their psychological and other effects, begin to exert a peculiar influence of their own. Indeed, when the tensions have reached a certain point, the debtor countries (or

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debtor groups) will try to consolidate their financial position by attempting to pay off debts. And the creditor countries will want to safeguard their financial position by demanding cash reimbursement as loans fall due, or at least, they will want to switch to more liquid investments. At the same time they will try to maintain home employment by impeding imports. All this will create the paradoxical downward spiral where each country, through its efforts to strengthen its own financial position, makes that of the others worse and gradually makes the international flow of goods and services dwindle. Of central importance in this development is the lack of balance of the trade matrix as expressed by its skewness.

At the present moment, these depressive factors in world economy do not show up to any great extent, because they are counteracted by other factors, particularly by the fact that there is now a shortage of goods and excess demand nearly everywhere, as a consequence of the war. But history shows, that such periods always give place to periods of excess supply, and then the depressive effects of the maladjustments in international trade will manifest themselves in full if they are not forestalled by appropriate action.

This situation we must be prepared to meet and we must make preparations in advance because the problem of counteracting the vacuum of depression is so much more difficult than the problem of keeping the driving force of an expansion under control:

The essential point to be remembered in this connection is that international lending, if it shall be sound in the sense of not carrying in it the germ of an internationally contagious contraction, must be expressible in terms of a planned or with great probability forecasted timeshift in the import-export balance. Any amount of skewness in the trade matrix must be justified by such considerations if it shall be considered a sound phenomenon. From the viewpoint of a lending country,

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lending must correspond to an excess capacity to export at the time of lending, and the paying back must correspond to an excess capacity to import at the time of paying back. And vice versa for the borrowing country. When due account is taken of a planned or with great probability forecasted timeshifts of this sort - barring outright gifts or lend-lease arrangements - a reasonable degree of consistency between demand and supply of goods and services among countries must be achieved.

Such a balance is a necessary condition for the successful application of a general policy of full employment and economic expansion. True enough, if sensible counter-depressive policies are applied within a given country, the situation within that country and to some extent, the world situation may be alleviated. But this can only be a partial measure when substantial maladjustments between the power and willingness to export and the power and willingness to import are allowed to subsist. The nature of the maladjustments that may exist multilaterally between the figures expressing these potential exports and imports is therefore a very essential fact from the viewpoint of economic stability and development, and the structure of the maladjustments in such figures is an important field of study. It not only offers practical problems of how to get the relevant statistical information, but also reveals problems of principle of a rather fundamental sort. Indeed, it turns out that maladjustments of this sort fall into a number of distinct types that are very different so far as their depressive effects are concerned. Some of them are of a rather benign sort, while others may be highly depressive. A closer study of this situation is not possible except in mathematical terms, but a rough idea of the situation may be obtained through a purposely simplified numerical example.

Table 3

0	5	1	
3	0	2	
8	1	0	6
5	1		6

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Consider the three-country matrix in Table 3. The two first countries are surplus countries and the last, a deficit country. The marginals are indicated as in Tables 1 and 2. Suppose that the figures represent what remain when that part of the inter-trade that can be transacted by means of sound international credits has been subtracted. This means that in some way or another the figures in the matrix must be adjusted so as to bring the matrix into balance. This it is possible to do in many ways; for instance, by a system of proportional adjustment of imports. That is to say, by applying a certain multiplier to all the potential import figures from country Number 1, a certain multiplier to all the potential figures from country Number 2, etc. I am not discussing the practical feasibility of such an adjustment. I only want to point out the theoretical aspect of the problem.

The absolute magnitudes of the multipliers to be applied are obviously immaterial because if a certain set of them brings the matrix into balance, any set that is, say, twice the former, must also give a balanced matrix. In the example, 16, 25 and 51 form such a set of multipliers. That is, if we multiply the first column by 16, the second by 25 and the third by 51, we get a balanced matrix. Carrying out the multiplication, we get the results of Table 4:

Table 4

	0	125	51
48	0	0	102
128	25	0	

If no amount in the new matrix shall exceed the corresponding element in the old one, we must - in order to have the largest possible total trade - take $1/51$ of the numbers of the elements in Table 4. This will make the elements in the last row equal to that they were originally (that is to say, they will be the minimum factors) while the other elements in the adjusted matrix will be smaller than in the original matrix. The result is indicated in Table 5 which is a matrix in complete balance:

Table 5

0.00	2.45	1.00
0.94	0.00	2.00
2.51	0.49	0.00

The aggregate volume of transactions in the matrix in Table 5 is 9.39 that is only 46.9% of the aggregate volume in the first matrix which was 20.

It can be proved that regardless of how many rows (and corresponding columns) a matrix has, and regardless of how the numbers in it are distributed, then, if only the elements are non-negative numbers, it is always possible to find a set of positive multipliers that will balance the matrix. But this method of bringing the matrix into balance may be a very expensive one, in the sense that the total volume of transactions is brought substantially down from what it was originally.

Looking at the figures in Table 3, it is seen that if we give up the condition of proportionality, we may adjust the matrix in such a way that the total volume of transactions is reduced only by a much smaller amount, namely the skewness which is contained in the matrix, that is 6. This can be done, for instance, by reducing the figure 8 by 5 and the lower figure 1 by 1. This gives the result shown in Table 6 which is balanced:

Table 6

0	5	1
3	0	2
3	0	0

Here no element is larger than the corresponding element in the Table, and the aggregate amount of transactions is now 14 as against 9.39 in Table 5 and 20 in the original matrix.

In the general case, it turns out that sometimes the nature of the skewness in a given matrix is such that it is possible to bring it into

balance by only reducing aggregate transactions by an amount equal to the skewness (sum of the marginals on one side). This is the same as to say that it is possible to reach a balanced state by using first-order

reductions only, that is reductions which are such that the aggregate volume of transactions is reduced only by the same amount that the skewness is reduced. In other cases, it may be necessary to use second-order reductions, that is a reduction that will reduce the aggregate volume of transactions by twice the amount by which the skewness is reduced. In some cases it may be necessary to go to third-order reductions, and so on.

It is impossible to discuss these various cases without some mathematical apparatus: A general mathematical solution is as yet not available, but certain rules that will cover the practical problems are known.

Further, there is the problem of studying what can be obtained by increasing some of the elements. And there are also other generalizations to be considered.

Without entering into further details, it will be obvious that the avoidance of depressive maladjustments of this sort is very essential from the viewpoint of employment and stability. The development of the international situation in these matters should therefore be kept constantly under supervision, and when maladjustments develop, their nature - their "danger type" - from the viewpoint of multilateral balancing should be clearly understood. Measures that are appropriate for counteracting certain types of maladjustments may be quite inappropriate for handling other types. Light on this matter is necessary both from the viewpoint of synchronizing counter-depressive measures in the various countries, and from the viewpoint of action on the part of the United Nations itself. I therefore propose that the Secretariat be asked to investigate how such a work may be organized, and to prepare a report on the question in consultation with the World Bank, the International Monetary Fund, and such other organizations as the Secretariat may deem relevant.

My tentative views are that an essential part of the work of putting the various pieces of data together and of putting them into shape for

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analysis might be done most effectively in the Secretariat as part of the fact gathering and scientific analysis activity in the economic and employment field. But this question as well as the others relating to the organization of the inter-economic budget work have to be considered by the Secretariat in preparing its report.

Ragnar Frisch
