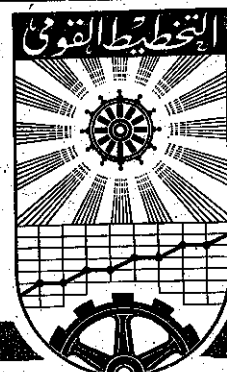


# UNITED ARAB REPUBLIC

## THE INSTITUTE OF NATIONAL PLANNING



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ON ECONOMIC BALANCES AND ALTERNATIVE  
METHODS OF VALUATION

by

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## 1- INTRODUCTION:

The elaboration of a national economic plan usually involves the construction of some or all of the following economic balances:

1. Commodity balances
2. Input-output tables (projected)
3. National budget.

It is evident that the values implied in one of these balances for the components of any of the others should be exactly those which figure out in the latter. If for example commodity balances are constructed in physical terms - as they in fact should - the values of the various resources and uses should express the exact values of the corresponding flows in physical terms. The values of those flows can be calculated in different ways; the specific way chosen in a certain type of balances depends on the type of analysis envisaged through their use. By the same token of consistency of all sets of estimates relating to a given period (whether realized or projected), care should be taken that the flows calculated in a certain way would remain unchanged if they are valued in terms of another set of prices, so that differences in the values of those flows reflect solely differences in prices.

Further, economic balances are not mere accounting frames which satisfy certain accounting or balance equations. They should basically ensure the fulfillment of more basic relationships implied by the structure of the given economy, a fact that has to be taken into account in the construction of the analytical models (mathematical or not) used in building up of the balances. Hence, the choice of a given valuation principle is to be made in the light of the requirements of the economic analysis envisaged.

In the construction of the national budget, attention is paid to the national aggregates, and emphasis is put on income or (product) rather than production. The subdivision of output into current vs. capital uses, as well as into domestic vs. foreign components, is based on the requirements of economic theory which provides an explanation of the factors determining each of these components. Therefore, differentiation between business, households, administration and the rest of the world is based on differences in rules governing economic behaviour. Since demand for any type of goods is determined according to the prices charged for it in the market, estimates at the so-called "market prices" are required. On the other hand, in the analysis of the factors affecting production, only payments paid to production factors in connection with

their contributions to output are relevant. Indirect taxes imposed on output are not determined within the framework of production processes, and it is necessary therefore to introduce another concept, viz., that of "factor costs". The well-known relationship between the two concepts is:

Gross domestic <sup>1)</sup> product at factor costs. - Gross domestic product at market prices - Indirect taxes of subsidies.

This latter concept is the one relevant to the measurement of income (after allowing for capital consumption), which is the decisive factor in determining demand relations.

Now, if we approach the problem from the viewpoint of production, rather than income, (e.g., in commodity balances or input-output tables) the problem of valuation has to be treated again in connection with purposes of analysis. The question might be raised whether the two concepts discussed above are still relevant. Further, if the coverage of the system is incomplete (e.g., commodity balances which concentrates on a number of commodities, excluding others), are we free to devise some concept without regard to its implications for the rest of the system ?

It is our belief that a discussion of the merits of any valuation principle, or the characteristics of a partial system of balances can be only systematically discussed within the framework of complete interflow-tables. Further the passage from one principle to the other can best be studied in terms of the relationships between different variants of those tables. It is true that interflow tables had been closely related to more refined mathematical techniques.<sup>2)</sup> It is also a fact that many planners (as well as economists) prefer not to have much ado about mathematics, either because of natural dislike, or because of fear that the degree of reliability of available data does not warrant the use of those more refined techniques. This is not the place to indicate the dangers of the one view or the fallacies of the other. What we want to emphasise is that, given the amount of detailed information usually involved in the elaboration of a national plan, much of the labour and all of the errors occurring in the construction of the various types of balances which express that information can be avoided through the systematic use of interflow tables.

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- 1) Since we shall base most of our arguments on the conditions in a closed economy, we need not worry about differentiation between domestic and national concepts.
  - 2) See for example, R.Frisch: "From national accounts to macro-economic decision models", pp. 1-26, in Income & Wealth, Series IV, Bowes & Bowes, London, 1955.

## 2. ALTERNATIVE CONCEPTS OF VALUATION:

As indicated before, two main concepts are involved in the valuation of national product in its entirety:

1. The factor cost concept, and
2. the market price concept.

This distinction- in spite of its worldwide acceptance- is somewhat misleading.

In order that the first concept as defined before should qualify for the measurement of costs in the proper economic sense we have to assume a special type of markets, and further to require the existence of a very special case of that market: We have to assume the case of equilibrium in a purely competitive market. The underlying notion is the elaboration of an indicator by which to measure the actual contribution of the various factors contributing to production, excluding any remunerations which are not warranted by production needs, but are due to "market" conditions. Ideally, the term should exclude all incomes accruing to monopolistic powers, as well as abnormal revenues obtained by some factors as a result of deviations from equilibrium conditions (e.g., quasi-rent). If all these imperfections in the market disappear, the only deviation occurring in the market due to extraneous factors would be that due to the interference of the State in the form of taxation. However, even if this is true, the exclusion of commodity taxes does not nullify their effects through the structural relationships in the economy, hence the need for the market value concept.<sup>3)</sup> Further, the exclusion of these taxes is not the only modification required, since this does not take care of the distortions in the market arising from the economic effects of taxes on certain types of income or of capital.

It is not our intention to dwell on this problematic question of national accounting. Our preoccupation here is with the definitions which would be considered as corresponding to those defined above, when the production of a given sector is under or commodity is under consideration. To simplify the argument, let us consider that a given sector specializes in the production of a given commodity or number of commodities, and that each commodity is exclusively produced by one sector.

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3) Probably this has been the reason for the fact that Eastern Countries usually pass from measurements in physical terms to values at market values directly. In those economies little can be said by way of justifying the separation of internal and external powers ruling the market.

The costs of production of the commodity include all payments to inputs, whether secondary (produced by some other sector) or primary (factors of production), including the producer's own services. The whole income of the producer is included even though he might be receiving abnormal profits.

Excluding storage at the source, all production is sold at the same period, either to other production sectors or to final demand sectors. At this point two things occur outside the circuit of production, i.e., within the boundaries of the market:

1. Commodity taxes have to be paid or subsidies taken. These might take various names: excise duties, sales taxes, etc.... But it is customary to charge them to the producer, who in turn charges them to the buyer. Thus, for all practical purposes, we can assume that the producer sells at a price which exceeds his costs by the amount of the tax (a subsidy being considered as a negative tax, hence subtracted)<sup>4)</sup> Since this event takes place during marketing of the commodity rather than during its production, it can be considered that we are dealing with a market price; in fact the first of a series of market prices, noticing that a number of dealers exchange the commodity before it reaches its final destination, each adding a certain markup for his services, thus introducing another market price for the same commodity.

2. The second element is the fact that the passage of the commodity from the producer to its final user is accomplished through the media of those who help to transport it over space and time. In each step extra margins are added within the market, i.e., within the production circuits of sectors involved in the marketing processes. These comprise:

- a) Rail, air, water, truck and pipeline transportation
- b) Warehousing and storage
- c) Retail and wholesale trade agents
- d) Financial agents (banks, insurers, etc...).

The size of each of these items is determined by the relative position of the ultimate user with respect to the producer. Thus they form a part of the price paid by the purchaser, and their total when added to the price charged by the producer form the purchaser's price, which is the final step in market prices. It is clear that this price differs from one user to the other. When the producer is using his own production, also in the case of services, the commodity passes directly and the two market prices, selling and purchasing, are identical. The longer the distance between the producer and the user, the larger the difference between the two.

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4) Further complications are involved when various tax rates are charged against different users, or exemptions awarded to some. But we shall ignore this case for purposes of simplicity.

To summarize, the following items appear in the structure of the final price of the commodity:

- i) value of secondary inputs, evaluated at the price which the producer pays for their purchase;
- ii) payments by the producer to the services of the primary factors, including his own services;
- iii) Indirect taxes (less subsidies) on the production of the commodity;
- iv) Marketing margins on the commodity (trade, transport, and finance).

The three types of prices distinguished above can be defined as follows:

I) costs of production = (i) + (ii)

= value of inputs at purchaser's prices  
+ factor payments

II) Producer's selling price (a market price) = (i)+(ii)+(iii)  
= (I) + (iii)

= Costs of production + indirect taxes on  
production

III) Purchaser's price (another market price) = (i)+(ii)+(iii)+ (iv)  
= (II) + (iii)

= Producer's selling price + trade margins.

Still other concepts can be devised:

IV) Purchaser's price net of taxes = (i)+(ii)+(iv) = (I) + (iv)

= costs of production + marketing margins

This concept ignores taxes on production, although it can be seen to contain taxes on inputs. If for purposes of consistency we exclude taxes on inputs, another producer's concept might be invented.

V) Partial costs of production = value of inputs net of their taxes (but including their own margins) + (ii), payments to primary factors.

### 3. THE PROBLEM:

The problem which we want to discuss in this paper is: What are the interrelations between valuation concepts of national product, and those of commodities? Since in any case the national product concepts exclude the double counting due to secondary inputs, we have to subtract their values as estimated in the calculation of the value of the commodities. Thus, in concepts (I) - (IV), we have to subtract the purchasing value of inputs (defined according to concept III), while in (V) we have to subtract the value of inputs less their taxes (i.e., defined according to V). But this subtraction yields different results:

1. In the case of concepts (I) and (V) the remainder will be factor payments (iii) only, hence when adding up for all commodities and all sectors we obtain national product at factor cost.
2. When use is made of concept (IV), we also obtain national product at factor cost. However, when adding the products of a single sector, subtracting only inputs required for production, it will be clear that the value added by the sector will be containing trade margins which are produced by other sectors. This raises another type of double-counting, which can be treated in either of the following ways:
  - a) To consider the margins as inputs in the specific producing sector. This ensures that the value added in that sector will be exactly attributed to it. Therefore, we have to estimate the value added in the marketing sectors in exactly the same manner.
  - b) To include the margins as value added in the producing sectors. To eliminate double-counting, the value added in marketing sectors is composed of the difference between the value of all their services rendered directly to final users, and all inputs used in the production of these services and those relating to the marketing of the production of other sectors.

It is clear that the second of these approaches, though yielding the same overall total, is not fair in its treatment of the various sectors, and the former approach is therefore preferable.

3. If either of concepts (II) and (III) is used, the aggregation yields total value added at market prices. However, whereas concept (II) yields estimates for various sectors which measure their actual contributions to the aggregate, concept (III) raises problems similar to those faced in using (IV), hence solved in the same manner.



The questions raised earlier can be now restated as follows:

- Can we consider the value of output at production costs (complete or partial) as being value at factor costs, because it leads to national product at factor cost ?
- Further, can we consider values at selling or purchasing prices as market values ? And, if so, which is the most relevant concept ?

#### 4- CURRENT TERMINOLOGY:

As mentioned before, there is no much dispute about concepts relating to national product. But lesser agreement exists in dealing with sectoral productions. Probably the key element in the whole problem is the definition of trade or marketing margins. Viewed from the side of production sectors, all margins defined in Sec.(2) above, as well as indirect taxes are included in trade margins. This view obtains a wide acceptance, both in the Anglo-Saxon and the French schools. In principle two major concepts are identified:

1. Concept (I) defined above, which is called value at producer's price.
2. Concept (III), which is called value at purchaser's price.

In some cases a third concept is used, namely,

3. Concept (II), which is called value at market price.

Thus, a recent U.N. publication<sup>5)</sup> stipulates that: "Net indirect taxes (i.e., taxes minus subsidies) form part of the margin between the producer's price and the purchaser's price. .... market prices .... are producer's prices plus net indirect taxes." Many other writers hold similar views. Thus Chenery<sup>6)</sup> considers that "When output is valued at market prices, indirect taxes must also be treated as a primary input." Similarly J.Sandee<sup>7)</sup> decomposes consumer's value into: producer's value, trade margins, sales taxes and transport costs. Moore<sup>8)</sup> also defined margins so as to include excise taxes.

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- 5) U.N.: Problems of Input-output Tables and Analysis, p.40 - Series F, No.14, 1966
  - 6) H.B.Chenery & P.G.Clark : Interindustry Economics, p.17; John Wiley & Sons, 1959
  - 7) J.Sandee: "Input-output accounts", Ch. 10. in, T.Barna (ed.): The Structural Interdependence of the Economy, p.226-John Wiley & Sons, Milano, 1955.
  - 8) F.T.Moore: "A survey of current interindustry models", in N.B.E.R.: Input-Output Analysis; An Appraisal, p.239, Princeton University Press, 1955.

In spite of this overwhelming agreement, one can spot some differences in the practices adopted by certain writers. For example Richard Stone has recently 9) differentiated between flows at purchaser's values and at producer's values according to whether or not they include trade and transport services. In other words, both concepts include indirect taxes on production (as well as on inputs). To get rid of the cumulative effects of indirect taxes, he excludes all indirect taxes on production and on inputs required both directly and indirectly 10) to arrive at what he calls producer's value at factor cost. This latter concept defines the value if the system was free from any taxation whatsoever, a concept which is consistent with the factor cost principle used in connection with national product. It is clear that the concept is not directly observable; it is a purely analytical concept which has to be calculated after the compilation of the table at producer's value.

Now, if it is true that the latter concept is the one corresponding to the factor cost principle of national accounts, then what about concepts (IV) and (V) defined before? Further, can we therefore consider concepts (I) to (III) as variants of market prices? One might argue that concept (I), viz., the cost of production concept is difficult to consider as a basis for a market price valuation. We shall prove the reverse later (Section 9). But even if we leave this concept for the moment, we might question the advisability of defining one single price (the producer's selling price) as being "the" market price, hence implying that the others are not market prices. It is true that the purchaser's price need not be "a" market price, in the sense that it might include some extra costs (e.g., freight and insurance) over and above what is quoted for the commodity in the last stage of the market. But then, the term "price" itself is misleading and it is preferable to call it "value" as Stone did, or "cost". As it will be shown later, all three variants - when considered within the framework of a complete interflow table - lead to the calculation of national product at market prices.

It seems however, that the current terminology does not convey the underlying notions of the various concepts. To avoid any misunderstanding we propose the following terminology:

- 1) Concept (I) will be taken to stand for "producer's costs of production." They represent the price which if charged will cover all expenses for inputs employed by the factory, firm, establishment, etc..
- 2) Concept (II) will be called "producer's selling price". The word selling is added in order to differentiate this concept from (I) currently called producer's price. This concept is meant to include all indirect taxes whether paid at the point of production or directly by the consumer (e.g. purchase taxes).

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9) R.Stone: Input-output and National Accounts -Ch.III, O.E.E.C., 1961  
10) See section 11 below

- 3) Concept (III) will be called "user's price". The term user replaces the current term "purchaser", simply because we want to distinguish those purchasers who are buying the commodity with the intention of using them either for intermediate or final uses. In fact the term price does not in this connection necessarily stand for a "price quotation" in the market. A better terminology would have been "value" or "cost" as suggested before. However, the adoption of the term user is considered to remove any ambiguity.

Now, if we start by the second concept, it will be seen that it expresses, in most cases, an actual situation in the market. In this version, taxes on commodities are allocated to their producers, while margins allocated to users. Concept (I) is a hypothetical one, in the sense that it means a reallocation of taxes so as to be debited directly to users. On the other hand, concept (III) is also hypothetical since it implies reallocation of margins to producers. The main difference between these two latter concepts is that in the former the item which is reallocated belongs to the treasury, which lies among the primary factors, while in the latter the items reallocated belong to sectors normally included in business. This might involve different treatments as will be shown in section 7-10 below. But the important thing is that both of them introduce alternative treatments of items entering into the set of market prices involved.

#### 5- THE PLANNING COMMITTEE CONCEPTS:

Let us consider first the practices developed by the U.A.R. Planning Committee. <sup>11)</sup> Referring to the first five-year plan's document, we can distinguish a number of concepts which are summarized in the table below. The English version of the document has been compared with the original Arabic to make sure that no additional errors were introduced through translation.

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11) The problem has been recently considered by Mr. F. Afia in Memo. 698, Ministry of National Planning (in Arabic). The author is also indebted to Mr. Afia for valuable comments made on the present paper.

12) U.A.R. National Planning Committee: General Frame of the 5-Year Plan for Economic and Social Development July 1960 - June 1965; Cairo, 1960, Government Printing Offices.

Concept	The N.P.C. corresponding concepts	References to them in General Frame
I	1- " Selling prices of the factory, the farm or the establishment, thus excluding indirect taxes and including government subsidies"	p. 54
	2- " Value at factor cost, which is market prices excluding taxes and including government subsidies"	Tables 29, 30 & 37
II	3- " Producer's price, which is in a sense ...	p. 39
	4- "... market price at some stage or another" (see 2 above)	
III	5- " Users' costs, i.e., market prices inclusive of commodity taxes"	p. 55
	6- " Users' price"	Table 37
	7- " Value at market price"	p. 54 and Table 28
IV	8- " Value of resources to their users at factor cost excluding commodity taxes" or, simply,	p. 54
	9- " Value at factor cost"	Table 28
V	10- "Value at factor cost" <sup>13)</sup>	

The above table exhibits many undesirable features:

1. The lack of a strict terminology that is used throughout the same book.
2. The use of the same term to signify different meanings, even in the same page. Section Three of the document, especially pp. 54 and 55, and table 28 and the following tables are the most striking examples in this connection.

13) This concept seems to have entered into circulation at a later stage; see Memo.698, quoted in footnote 11 before.

3. A more serious problem is that the values standing for the same concept, and the values of the different concepts when compared together, do not fit together. In some cases, footnotes would indicate the source of discrepancy, thus reflecting the existence of more than one conceptual framework.<sup>14)</sup> But in others no logical explanation is given, and there seems to exist certain errors which have been ambiguously treated by means of certain balancing items. A striking example of this latter error relates to the definition of "commodity taxes" in connection with commodity balances. Since the treatment affects the basic conceptual framework of these balances, we shall consider it in the following section.

#### 6- CONTENTS OF COMMODITY TAXES:

In connection with the commodity balance between resources and uses, Section three of the General Frame gives in Tables 29 and 30 details of balances for commodities and commodity groups classified according to sectors, distinguishing agriculture as one sector, and 23 industrial sectors (including electricity). Table (28) summarises the base year estimates, while (28a) summarises the fifth year planned figures. Let us consider the latter of these tables to see what type of balance was envisaged for the plan targets.<sup>15)</sup> Ignoring the first 24 rows for the moment (giving the totals by sector) the remainder of the table runs as follows:

1. Sub-total. This is the total of resources and uses of all products of agriculture and industry according to concept (I), i.e., before inclusion of indirect taxes.
2. Studies, plans and management of investment.
3. Construction and machine installation.
4. Trade margins.
5. Total at factor cost = sum of previous four items. This is in fact concept (IV)

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14) See for example, footnote 1 to Table 74, pp. 213 -219 of the General Frame.

15) Table (28) which relates to the base year includes other sources of errors, due to approximations. This can be seen when comparing its estimates with other estimates in the same document in other sections. The whole problem had been discussed by the present author in his: "Planning for Economic & Social Development", (in Arabic), Cairo 1963, esp. pp. 155-156

6. Net commodity taxes
7. Total at market price & Total at factor cost + net commodity taxes.

The columns of the table run as follows:

- A. Local production (at production costs)
- B. Imports CIF
- C. Total. This gives the total of "Value of available commodity resources"

The remaining columns relate to "Uses", and they are:

- D. Exports
- E. Final consumption
- F. Commodity production requirements
- G. Investments.
- H. Increase in stocks.

The data for 1964/65 are:

Item	Commodity Resources			Uses				
	Local Prod.	Imports C.I.F.	Total	Exports	Final Cons.	Com. Prod. Requirs	Invest ment	Stocks incr.
Sub-Total	2384.4	214.9	2599.3	214.7	824.6	1310.3	137.3	112.4
Invt.Studies	1.5	-	1.5	-	-	-	1.5	-
Machine Inst.	49.5	-	49.5	-	-	-	49.5	-
Trade Margin	220.9	24.0	244.9	14.6	134.4	62.9	30.0	3.0
Total at F.C.	2656.3	238.9	2895.2	229.3	959.0	1373.2	218.3	115.4
Net Comm.Taxes	236.6	107.5 <sup>⌘</sup>		3.0	127.2	124.9	16.1	4.6
Total at M.P.	2892.9	346.4	-	232.3	1086.2	1498.1	234.4	120.0

⌘) Less 8,000,000 pounds value of taxes on exported cigarettes.

§) Since commodity taxes on exports appear in this table, the total balance cannot be shown. They are imposed on production and imports in the columns showing commodity resources and on exports shown in the corresponding columns for uses."